ESTRO 35

29 April - 3 May 2016
Turin, Italy

PROGRAMME BOOK & EXHIBITION GUIDE

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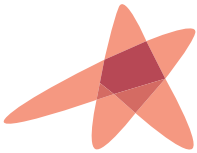
ESTRO



ESTRO 35

29 April - 3 May 2016

Turin, Italy

ESTRO
European Society for Radiotherapy & Oncology

Rue Martin V, 40
1200 Brussels
Belgium

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GENERAL INFORMATION

WELCOME LETTER

Philip Poortmans
ESTRO 35 Chair

Yolande Lievens
ESTRO 35 SPC Chair

Ben Heijmen
ESTRO 35 SPC Chair

It is our privilege and great pleasure to invite you to ESTRO 35 that will take place from 29 April to 3 May 2016 in Turin, Italy.

ESTRO is an interdisciplinary society where radiation oncologists, medical physicists, biologists, brachytherapists and radiation therapists aspire to join forces with other organisations in the oncology field that share ESTRO's vision of excellence in cancer treatment. At ESTRO 35, we draw attention to the multidisciplinarity and interdisciplinary components of our practice, with emphasis on the new opportunities that they represent for all professionals of oncology, not only in research but also in the daily care of patients.

The interdisciplinary component of the scientific programme will include sessions on the following topics:

- Advisory Committee on Radiation Oncology Practice (ACROP)
- Adaptive radiotherapy for coping with anatomical variations: hope or hype?
- Combining radiotherapy with molecular targeted agents: learning from successes and failures
- Communication with patients
- Dose painting: those pending issues
- In room adaptive imaging with a focus on MRI
- MR-PET
- Hot topics in SABR: time for randomised clinical trials?
- Modern ART based on functional / biological imaging
- Moving away from 2 Gray: are we ready for a paradigm shift?
- New concepts of tumour radioresistance

- Protons or heavy ions?
- QA in clinical trials: processes, impact and future perspectives
- Quality beyond accuracy: are we failing to see the forest for the trees?
- Radiomics - the future of radiotherapy?
- Secondary cancer after radiotherapy: from cancer registries to clinical implications
- Selection of patients for proton therapy
- Standardisation in clinical practice
- Time is not on our side: cardiovascular toxicity after radiotherapy
- Towards Personalised Radiation Oncology (PRO)
- Uncovering the gap between optimal and actual utilisation of radiotherapy in Europe

The multidisciplinary component of our profession will be highlighted in several joint sessions with other European and International oncology societies. The Scientific Programme Committee and Scientific Advisory Groups of ESTRO 35 are hard at work to develop the multidisciplinary component of the scientific programme.

The educational aspects of ESTRO 35 will include pre-meeting courses, contouring workshops and multidisciplinary tumour board sessions.

As in previous conferences, ESTRO 35 will offer a Young Scientists Track. This track is fully organised by our young members and it enables them to meet young colleagues, share common interests, network and start to build their own collaborative projects at an international level.

Last but not least, the ESTRO annual meeting has developed into a successful scientific event due to high level contributions via abstract submissions. The Scientific Programme Committee is committed to offering large visibility to promising abstracts by including them in the scientific symposia or via dedicated poster viewing sessions.

All of the leading exhibitors will contribute to ESTRO 35, Europe's largest industrial exhibition in radiation oncology, offering the opportunity to view the latest products and services in cancer treatment and cancer care.

We look forward to welcoming you in Turin.

With warm regards,

Philip Poortmans
ESTRO 35 Chair

Yolande Lievens
ESTRO 35 SPC Chair

Ben Heijmen
ESTRO 35 SPC Chair

SCIENTIFIC & ORGANISING COMMITTEES

ESTRO 35

Chair of the Congress: **P. Poortmans (NL)**

ESTRO 35 SCIENTIFIC PROGRAMME COMMITTEE (SPC)

Chairs: **Y. Lievens (BE), B. Heijmen (NL)**

M. Baumann (DE), J-E Bibault (FR), A. Boejen (DK), A. Chalmers (UK), C. Fiorino (IT), D. Georg (AT), J. Kazmierska (PL), J.C. Lindegaard (DK), C. Marijnen (NL), M. Mast (NL), L. Muren (DK), U. Ricardi (IT), M. Stasi (IT), V. Valentini (IT), W. van Elmpt (NL), C. Vens (NL), D. Zips (DE).

SCIENTIFIC ADVISORY GROUP (SAG) OF YOUNG ESTRO MEMBERS

Chairs: **J-E Bibault (FR), W. van Elmpt (NL)**

P. Blanchard (FR), P. Mancosu (IT), R. Mazeron (FR), L. Mullaney (IE), O. Person (IL), K. Rouschop (NL), M. Schmid (AT), T. Schuffenhauer (DE), E. Sterpin (BE).

SCIENTIFIC ADVISORY GROUP (SAG) FOR CLINICAL RADIOTHERAPY

Chair: **Y. Lievens (BE)**

I. Barillot (FR), A. Bossi (FR), J. Bourhis (CH), K. Bujko (PL), N. Burnet (UK), C. Faivre-Finn (UK), K. Haustermans (BE), M. Hoyer (DK), J. Kazmierska (PL), A. Kirby (UK), P. Lara (ES), C. Marijnen (NL), A.H. Ree (NO), V. Valentini (IT), D. Zips (DE).

SCIENTIFIC ADVISORY GROUP (SAG) FOR BRACHYTHERAPY

Chair: **J.C. Lindegaard (DK)**

D. Baltas (DE), P. Hoskin (UK), C. Kirisits (AT), R. Nout (NL), P. Papagiannis (GR), B. Pieters (NL), C. Polgár (HU), J. Skowronek (PL), K. Tanderup (DK).

SCIENTIFIC ADVISORY GROUP (SAG) FOR RADIATION PHYSICS

Chair: **B. Heijmen (NL)**

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SCIENTIFIC ADVISORY GROUP (SAG) FOR RADIOBIOLOGY

Chair: **C. Vens (NL)**

J. Alsner (DK), A. Chalmers (UK), R. Coppes (NL), N. Cordes (DE), A. Kiltie (UK), H. Lyng (NO), F. Paris (FR), R. Syljuåsen (NO), P. Tsoutsou (GR), M.C. Vozenin (CH), B. Wouters (CA).

SCIENTIFIC ADVISORY GROUP (SAG) FOR RADIATION TECHNOLOGY

Chair: **A. Boejen (DK)**

B. Bak (PL), E. Bloemen-van Gurp (NL), M. Coffey (IE), M. Leech (IE), M. Mast (NL), F. Moura (PT), A. Osztavics (AT), D. Pasini (IT), P. Scherer (AT), B. Speleers (BE), A. Vaandering (BE).

SCIENTIFIC ADVISORY GROUP (SAG) FOR RANDOMISED TRIALS

Chairs: **Y. Lievens (BE), D. Zips (DE)**

W. Budach (DE), E. Deutsch (FR), V. Grégoire (BE), J. Johansen (DK), P. Maingon (FR), C. Nutting (UK), H. Schmidberger (DE), M. Verheij (NL).

NATIONAL ORGANISING COMMITTEE

Chairs: **U. Ricardi, Turin; M. Stasi, Turin**

F. Alongi, Negrar; L. Begnozzi, Rome; G. Biti, Florence; S. Clemente, Naples; R. Corvó, Genoa; C. Fiandra, Turin; C. Fiorino, Milan; M. Iori, Reggio Emilia; L. Livi, Florence; S. Magrini, Brescia; R. Orecchia, Milan; D. Pasini, Rome; N. Romeo, Taormina; E. Russi, Cuneo; V. Valentini, Rome.

ABSTRACT REVIEWERS

Abacioglu, M.U. (TR), Ahnesjö, A. (SE), Alber, M. (DK), Aleman, B. (NL), Al-Mamgani, A. (NL), Alonzi, R. (UK), Alsner, J. (DK), Anacak, Y. (TR), Andersen, C.E. (DK), Arcangeli, S. (IT), Aristei, C. (IT), Aspradakis, M.M. (CH), Aznar, M. (DK), Bak, B. (PL), Bangert, M. (DE), Barillot, I. (FR), Barton, M. (AU), Bastholt, L. (DK), Baumann, M. (DE), Bedford, J. (UK), Bel, A. (NL), Belderbos, J. (NL), Belka, C. (DE), Bibault, J-E. (FR), Biete, A. (ES), Blanchard, P. (FR), Bloemen- van Gurp, E. (NL), Boejen, A. (DK), Boerma, M. (US), Borgmann, K. (DE), Borras, J. (ES), Bortfeld, T. (US), Bossi, A. (FR), Boterberg, T. (BE), Bourgier, C. (FR), Bourhis, J. (CH), Bownes, P. (UK), Brada, M. (UK), Breedveld, S. (NL), Brink, C. (DK), Broggi, Sara (IT), Brunner, T. (DE), Budach, W. (DE), Bujko, K. (PL), Bussink, J. (NL), Buus, S. (DK), Calais, G. (FR), Calandrino, R. (IT), Calvo, F. (ES), Carrie, C. (FR), Cavedon, C. (IT), Ceberg, C. (SE), Cellini, F. (IT), Clark, C. (UK), Cohen-Jonathan Moyal, E. (FR), Coles, C. (UK), Coppes, R.P. (NL), Cordes, N. (DE), Corvò, R. (IT), Cozzarini, C. (IT), Cozzi, L. (IT), Crehange, G. (FR), Creutzberg, C. (NL), Darby, S. (UK), Dasu, A. (SE), De Meerleer, G. (BE), De Ruysscher, D. (NL), De Wagter, C. (BE), Dearnaley,

D.P. (UK), Dekker, A. (NL), Depuydt, T. (BE), Dickie, C. (CA), Dieckmann, K. (AT), Dimopoulos, J.C.A. (GR), Dirkx, M. (NL), Dörr, W. (AT), Duffton, A. (UK), Dunscombe, P. (CA), Dziadziuszko, R. (PL), Eich, H.T. (DE), Elstrøm, U.V. (DK), Eriksen, J.G. (DK), Eudaldo, T. (ES), Evans, P. (UK), Faivre-Finn, C. (UK), Ferrand, R. (FR), Filippi, A.R. (IT), Fiorentino, A. (IT), Fiorino, C. (IT), Fog, L. (DK), Fogliata, A. (IT), Fonteyne, V. (BE), Frasca, S.C. (IT), Freeman, C.R. (CA), Gabrys, D. (PL), Gambacorta, M.A. (IT), Garcia, R. (FR), Garibaldi, C. (IT), Georg, D. (AT), Gérard, J. (FR), Gershkevitsh, E. (EE), Giralt, J. (ES), Glynne-Jones, R. (UK), Grau, C. (DK), Grosu, A. (DE), Grutters, J. (NL), Guckenberger, M. (CH), Guedea Edo, F. (ES), Guinot, J-L (ES), Haas, R. (NL), Haie-Meder, C. (FR), Hammond, E. (UK), Hannoun-Levi, J.M. (FR), Hansen, V.N. (UK), Harrington, K. (UK), Haustermans, K. (BE), Heemsbergen, W. (NL), Heijmen, B. (NL), Hellebust, T.P. (NO), Hennequin, C. (FR), Hernandez, V. (ES), Higgins, G. (UK), Hill, M. (UK), Hoogeman, M. (NL), Hoskin, P. (UK), Hoyer, M. (DK), Hurkmans, C. (NL), Hysing, L.B. (NO), Iori, M. (IT), James, N. (UK), Johansen, J. (DK), Johansen, S. (NO), Joiner, M. (US), Jornet, N. (ES), Jürgenliemk-Schulz, I. (NL), Kaanders, J. (NL), Kaidar-Person, O. (IL), Kamphuis, M. (NL), Kazmierska, J. (PL), Kepka, L. (PL), Khoo, V. (UK), Kiltie, A.E. (UK), Kirby, A. (UK), Kirisits, C. (AT), Kirkove, C. (BE), Kirova, Y. (FR), Knöös, T. (SE), Koritzinsky, M. (CA), Korreman, S. (DK), Kortmann, R. (DE), Kouloulias, V. (GR), Kovács, G. (DE), Krause, M. (DE), Lacornerie, T. (FR), Lagendijk, J. (NL), Lagerwaard, F. (NL), Lara Jimenez, P.C. (ES), Lartigau, E. (FR), Le Pechoux, C. (FR), Leech, M. (IE), Lievens, Y. (BE), Lindegaard, J.C. (DK), Livi, L. (IT), Lomax, T. (CH), Lopes, M.D.C. (PT), Lopez Torrecilla, J. (ES), Lyng, Heidi (NO), Maduro, J.H. (NL), Maingon, P. (FR), Maldonado, J. (ES), Malicki, J. (PL), Malinen, E. (NO), Marchesi, V. (FR), Marijnen, C. (NL), Mast, M. (NL), Mattiucci, G.C. (IT), Mayles, P. (UK), Mazeron, R. (FR), Mc Andrew, N. (UK), McClean, B. (IE), McKenna, G. (UK), Meijer, G. (NL), Mijnheer, B. (NL), Mikhaeel, G. (UK), Mirimanoff, R.O. (CH), Moeckli, R. (CH), Montero, A. (ES), Moonen, L. (NL), Moura, F. (PT), Mullaney, L. (IE), Munck af Rosenschöld, P. (DK), Munoz Montplet, C. (ES), Muren, L.P. (DK), Muschel, R.J. (UK), Nailon, W. (UK), Nestle, U. (DE), Nieder, C. (NO), Nijkamp, J. (NL), Niyazi, M. (DE), Nout, R. (NL), Nyholm, T. (SE), Nyström, H. (SE), Oelfke, U. (UK), Offersen, B. (DK), Ojala, J. (FI), Orecchia, R. (IT), Osztavics, A. (AT), Overgaard, J. (DK), Ozyigit, G. (TR), Pallotta, S. (IT), Palmans, H. (UK), Panettieri, V. (AU), Papagiannis, P. (GR), Paris, F. (FR), Partridge, M. (UK), Pasini, D. (IT), Perez-Calatayud, J. (ES), Perrier, L. (FR), Petersen, C. (DE), Petric, P. (QA), Pettingell, J. (UK), Pieters, B. (NL), Platoni, P. (GR), Polgár, C. (HU), Polo Rubio, J.A. (ES), Poortmans, P. (NL), Pötter, R. (AT), Pruschy, M. (CH), Raaymakers, B. (NL), Ramella, S. (IT), Rancati, T. (IT), Ree, A.H. (NO), Reynaert, N. (FR), Ricardi, U. (IT), Rijnders, A. (BE), Rivera, S. (FR), Rödel, C. (DE), Rodemann, H.P. (DE), Røe, K. (NO), Rossi, L. (NL), Rothkamm, K. (DE), Rouschop, K. (NL), Russell, N. (NL), Sanchez-Doblado, F. (ES), Sarrut, D. (FR), Scalliet, P. (BE), Scherer, P. (AT), Schmid, M. (AT), Schneider, U. (CH), Schwarz, M. (IT), Scoccianti, S. (IT), Sebag-Montefiore, D. (UK), Sedlmayer, F. (AT), Sen, M. (UK), Senan, S. (NL), Seppenwoolde, Y. (AT), Siebert, F. (DE), Skladowski, K. (PL),

Skowronek, J. (PL), Slosarek, K. (PL), Slotman, B. (NL), Smeenk, R.J. (NL), Sobotta, B. (DE), Söhn, M. (DE), Sonke, J. (NL), Sonveaux, P. (BE), Specht, L. (DK), Speleers, B. (BE), Stasi, M. (IT), Sterpin, E. (BE), Stevanovic, J. (RS), Stock, M. (AT), Strnad, V. (DE), Stroom, J. (PT), Sun Myint, A. (UK), Sundaresan, P. (AU), Suwinski, R. (PL), Syljuasen, R. (NO), Tan, LiTee (UK), Tanderup, K. (DK), Thörnqvist, S. (NO), Thorwarth, D. (DE), Timmermann, B. (DE), Tomé, W. (US), Torresin, A. (IT), Troost, E. (DE), Tsoutsou, P. (CH), Vaandering, A. (BE), Valdagni, R. (IT), Valentini, V. (IT), van der Heide, U. (NL), van der Linden, Y. (NL), van Elmpt, W. (NL), van Herk, M. (UK), Van Loon, J. (NL), van Luijk, P. (NL), van Vulpen, M. (NL), Vanderstraeten, B. (BE), Veness, M. (AU), Vens, C. (NL), Verellen, D. (BE), Verhaegen, F. (NL), Verheij, M. (NL), Vestergaard, A. (DK), Vogelius, I.R. (DK), Vordermark, D. (DE), Vozenin, M. (CH), Werner, R. (DE), West, C. (UK), Widesott, L. (IT), Wiegel, T. (DE), Witte, M. (NL), Wouters, B. (CA), Yahalom, J. (US), Zapatero, A. (ES), Ziegenhein, P. (UK), Zilli, T. (CH), Zips, D. (DE), Zubizarreta, E.H. (UY).

ABOUT ESTRO

ESTRO VISION 2020

Every cancer patient in Europe will have access to state of the art radiation therapy, as part of a multidisciplinary approach where treatment is individualised for the specific patient's cancer, taking account of the patient's personal circumstances.

ESTRO MISSION

Founded in 1980, ESTRO is a non-profit scientific organisation whose role is to foster, in all its aspects, radiation oncology, clinical oncology and related subjects, including physics as applied to radiotherapy, radiation technology and radiobiology.

To fulfill its purpose, ESTRO promotes education, science, research and access to radiotherapy through its teaching courses, workshops, meetings, publications and public affairs activities.

ESTRO SCHOOL

The ESTRO School has become an internationally recognised provider of high-quality education in radiotherapy and oncology and has developed a wide array of educational activities:

- Live teaching courses covering basic and continuing medical educational needs of all professionals working in the field of (radiation) oncology
- Pre-meeting teaching courses, workshops, teaching lectures and tumour boards during congresses
- Live and online workshops courses with FALCON (Fellowship in Anatomic deLineation and CONtouring), the online delineation tool
- Hands-on experience through mobility grants programme.

The ESTRO School promotes multidisciplinary education in oncology, basic science, physics and technology, imaging, and interdisciplinary oncology, with the objective of standardising knowledge and clinical practice, whilst recognising the diversity of radiation oncology practice in different parts of the world.

In 2016, the ESTRO School is organising 36 live courses (29 in Europe and 7 outside Europe) and two undergraduate courses.

More information on the 2016 course programme on www.estro.org.

ESTRO CONFERENCES

ESTRO next annual conference:

ESTRO 36
5-9 May 2017 | Vienna, Austria

ESTRO 36 will focus on the latest data in clinical oncology, radiation physics, radiation technology and patient's care, brachytherapy and radiobiology, all contributing to the ultimate goal: a better patients' outcome.

ESTRO MEMBERSHIP

ESTRO is devoted to advancing the goals of radiation oncology. This includes providing its members with a host of advantages such as outstanding science and education, in order to support them in their career advancement:

- Online subscription to *Radiotherapy & Oncology*
- Reduced fees for attending ESTRO conferences or teaching courses
- Online access to scientific material through the e-library (DOVE)
- Eligibility for grants, awards, faculties and governance positions.

ESTRO members are professionals of radiation oncology and beyond: radiation oncologists, clinical oncologists, medical physicists, radiobiologists, radiation therapists (RTTs), dosimetrists, radiotherapy nurses, medical oncologists, surgeons, industry representatives, organ specialists, other medical and non medical professions, coming from more than 100 countries spread all over the world.

2016 membership is available on the ESTRO website and at the ESTRO booth during ESTRO 35, booth # 3000, in the exhibition hall.

More information on www.estro.org.

RADIOTHERAPY AND ONCOLOGY

ESTRO's official scientific journal, *Radiotherapy & Oncology*, also known as the *Green Journal*, publishes original research articles and review articles on all aspects of radiation oncology.

With a current impact factor of 4.363, *Radiotherapy & Oncology* is ranked 45th out of 211 oncology journals and 11th out of 125 radiology, nuclear medicine and imaging journals in the Journal Citation Reports.

Radiotherapy & Oncology is published monthly, in print and electronic formats.

GENERAL INFORMATION

UPDATED INFORMATION

Please consult the ESTRO website on a regular basis for updated information on ESTRO 35.

VENUE

Lingotto Fiere
Via Nizza, 294
10126 Turin, Italy
www.lingottofiere.it

ACCOMMODATION

Ventana Group is the official accommodation agent for ESTRO 35 and will operate an accommodation desk in the registration area on:

Thursday 28 April	16:00 – 18:00
Friday 29 April	09:00 – 17:00
Saturday 30 April	09:00 – 17:00
Sunday 1 May	09:00 – 17:00
Monday 2 May	09:00 – 17:00
Tuesday 3 May	09:00 – 12:00

CME ACCREDITATION

ESTRO 35 is accredited by the European Accreditation Council for Continuing Medical Education (EACCME) to provide the following CME activity for medical specialists. The EACCME is an institution of the European Union of Medical Specialists (UEMS), www.uems.net.

ESTRO 35 is designated for a maximum of (or 'for up to') 21 hours of European external CME credits. Each medical specialist should claim only those hours of credit that he/she actually spent in the educational activity.

Through an agreement between the European Union of Medical Specialists and the American Medical Association, physicians may convert EACCME credits to an equivalent number of AMA PRA Category 1 Credits™. Information on the process to convert EACCME credit to AMA credit can be found at www.ama-assn.org/go/internationalcme.

Live educational activities, occurring outside of Canada, recognised by the UEMS-EACCME for ECMEC credits are deemed to be Accredited Group Learning Activities (Section 1) as defined by the Maintenance of Certification Program of The Royal College of Physicians and Surgeons of Canada.

Select pre-meeting courses have been designated for a maximum of (or 'for up to') 6 hours of European external CME credits.

The course 'Multidimensional dosimetry systems' has been accredited by the European Federation of Organisations for Medical Physics (EFOMP), as a CPD event for medical physicists.

ASSEMBLIES

- The GEC-ESTRO Assembly will be held on Saturday 30 April from 13:30 – 14:30 in room Madrid
- The Physics Assembly will be held on Monday 2 May from 13:30 – 14:30 in room Madrid
- RTT Meet and Greet will take place on Monday 2 from 13.30 - 14.30 in room Parigi
- All ESTRO members are invited to attend the General Assembly on Monday 2 May at 17:45 in room 2.

BADGES

Upon registration you will receive a personal name badge. Participants are kindly requested to wear this badge when attending scientific sessions and/or social events.

CERTIFICATES

Certificates of attendance will be issued as of Monday 2 May through the designated stations in the registration area. Certificates of attendance can also be downloaded online until three months after the event.

CURRENCY

The currency in Italy is the euro (EUR).

E-POSTERS

Electronic poster stations will allow you to view the virtual displays at your leisure and to correspond with presenters or forward a presentation to a colleague or home office. A selection of the best posters will also be displayed in the poster area during the whole congress.

ESTRO CANCER CENTRES PAVILION

The ESTRO Cancer Centres Pavilion will gather institutes in the exhibition area that will welcome attendees on dedicated booths in order to exchange information about science, projects and collaborations as well as job opportunities and mutual interests. Entrance to ESTRO Cancer Centres Pavilion is free to all the ESTRO 35 participants and is open from 29 April to 2 May during the exhibition opening times.

ESTRO SCHOOL SYMPOSIUM

All participants are invited to the ESTRO School Symposium on Sunday 1 May at 16:15, in the Istanbul room. It will be followed by a reception at 17:15.

EXHIBITION

An exhibition featuring equipment and medical publishers will be held in the exhibition area. The opening of the exhibition will be on Friday 29 April around 19:15. The exhibition will remain open from Friday 30 April to Monday 2 May from 9:30 to 17:00. Entrance is free for all registered participants.

INFORMATION FOR ABSTRACT AUTHORS

ESTRO 35 abstracts were selected for the following types of presentations.

Oral communication

Abstract is presented in one of the proffered papers sessions.

Poster viewing

Posters selected for the poster viewing sessions will be highlighted in the conference final programme and will be displayed in a central section of the poster area. Posters on a similar topic will be grouped together. The presenting authors of the selected posters in the group will visit all the posters within each group, along with the audience. At each poster, the presenting author will present his/her poster in five minutes, and then there will be three minutes for discussion, which will be lead by two chairpersons for the group.

Poster

Authors are required to display a poster on the designated poster panel. Posters are grouped by topic. Poster mounting time:

- Posters can be mounted as of 16:00 on Thursday 28 April 2016 or anytime after that.
- Poster removal time: Posters should be removed by Tuesday 3 May 2016 before 13:00.

Any posters remaining after that time will be discarded. Authors are requested to be present next to their poster during the poster reception which will be held on **Saturday 30 April 2016 as of 18:30**. It will also be indicated in the official schedule, that posters can be viewed during lunch time on Sunday 1 May and Monday 2 May 2016.

E-poster

Authors upload an electronic poster in the ESTRO system. E-posters will be available for viewing in special stations available at the conference venue, anytime during the conference. There is no designated time slot for viewing. Participants will be able to view all electronic posters as frequently, and as often as they wish.

In the abstract book
Oral Communication abstracts are designated with OC + number.
Poster Viewing abstracts are designated with PV + number.
Posters are designated with PO + number.
Electronic Posters are designated with EP + number.

INSURANCE

The organiser does not accept liability for individual medical, travel or personal insurance. Participants are strongly advised to take out their own personal insurance policies.

LUNCHEONS AND REFRESHMENTS

The registration fee for the conference includes coffee breaks to all participants and exhibitors wearing their conference badges. Lunch will be available for purchase in the exhibition area and is not included in the registration.

MEETING POINTS

Special designated meeting points for each ESTRO discipline are located near the poster area.

OFFICIAL LANGUAGE

The official language of the congress is English. No simultaneous translation will be provided.

OPENING CEREMONY AND WELCOME NETWORKING

All participants and company delegates are invited to the official opening ceremony which will be held in the main auditorium on Friday 29 April at 18:00. The opening ceremony will be followed by the welcome networking which will take place in the exhibition area.

Opening remarks (18:00 – 18:15)
Philip Poortmans (NL), ESTRO President and ESTRO 35 Chair
Yolande Lievens (BE), Chair of Scientific Programme Committee of ESTRO 35
Ben Heijmen (NL), Chair of Scientific Programme Committee of ESTRO 35
Umberto Ricardi (IT), Chair of Local Organising Committee
Michele Stasi (IT), Chair of Local Organising Committee

Keynote lecture (18:15 – 18:45)
Christian Greco (IT), Keynote speaker
A dialogue between Egyptology and Science: Archaeometry as a tool, Research as an end

SATELLITE SYMPOSIA

Commercial satellite symposia will be held during lunch breaks. Please refer to the "Satellite Symposium" section of this book for additional information.

SMOKING

There will be a strict non-smoking policy within all areas of the conference facilities.

SOCIAL ACTIVITIES

Friday 29 April 2016

All registered participants and all company delegates are invited to the welcome reception which will take place in the exhibition area around 19:15.

Saturday 30 April 2016

All participants and company delegates are invited to the poster reception and poster awards, which will be held in the poster area at 18:30. Canapés and drinks will be served while participants view approximately 500 of the best posters.
During the reception, three ESTRO awards of 1,000€ each will be handed out to the best scored posters.

Sunday 1 May 2016

2nd Super Run
The Super Run will start at 19.00 from the roof on top of Lingotto Fiere.
The registration pack can be picked up at the ESTRO booth #3000 in the exhibition area.

Monday 2 May 2016

All participants are invited to the special after dinner evening which will take place in an exclusive venue in Turin. Additional tickets for this event are available for purchase at 80€ + VAT per person.

SPEAKER PREVIEW

The Speaker Preview Room is located in the main congress area. Speakers are requested to bring their PowerPoint presentations to the Speaker Preview Room at least three hours prior to the start of the session or the day before if the session is planned in the early morning.

Opening hours

Thursday 28 April	>	16:00-18:00
Friday 29 April	>	07:30-18:00
Saturday 30 April	>	07:00-18:00
Sunday 1 May	>	07:00-18:00
Monday 2 May	>	07:00-18:00
Tuesday 3 May	>	07.30-12:00

WIFI

Wireless internet will be in all meeting rooms.

ACKNOWLEDGEMENTS

ESTRO would like to extend a special thank you to the Chair of ESTRO 35, Philip Poortmans and to the Chairs of the Scientific Programme Committee, Yolande Lievens and Ben Heijmen for having accepted the responsibility to develop the scientific programme.

Thank you to the National Organising Committee Chairs, Umberto Ricardi and Michele Stasi for having gracefully accepted to host ESTRO 35.

Special thanks go to all the members of the scientific advisory groups, national organising committee members as well as the abstract reviewers for their valuable contribution to this congress.

ESTRO WELCOMES AS SPECIAL GUESTS:

AAPM	American Association of Physicists in Medicine
ASTRO	American Society for Radiation Oncology
EFOMP	European Federation of Organisations for Medical Physics
ESR	European Society for Radiology
IAEA	International Atomic Energy Agency
ILROG	International Lymphoma Radiation Oncology Group
PTCOG	Particle Therapy Co-Operative Group

ESTRO AWARDS

AWARDS OVERVIEW

★ LIFETIME ACHIEVEMENT AWARD

Michael Brada (UK)
Mary Coffey (IE)
Jean-Pierre Gérard (FR)
Ben Mijnheer (NL)

★ ESTRO AWARD LECTURES

Emmanuel van der Schueren Award

Did I do it right? What was the result? Process and outcomes in radiotherapy
Ann Barrett (UK)
Saturday 30 April from 12:35-13:15

Donal Hollywood Award

FLAME randomized trial: 95Gy MRI-boost vs 77Gy prostate radiotherapy: toxicity and quality of life
Marco van Vulpen (NL)
Sunday 1 May 2016 from 12:00-12:15

Klaas Breur Award

Whither fractionation?
Peter Hoskin (UK)
Monday 2 May from 12:45-13:15

★ HONORARY MEMBER LECTURES

Evidence-based education: Radiation Oncology's forgotten foundation?
Sandra Turner (AU)
Saturday 30 April from 17:45-18:00

The future of surgical oncology
Riccardo Audisio (UK)
Saturday 30 April from 18:00-18:15

Imaging in lung cancer radiotherapy: beyond the "pictures"
Lorenzo Bonomo (IT)
Saturday 30 April from 18:15-18:30

★ ESTRO ACADEMIC AWARD

Jack Fowler University of Wisconsin Award
Moving away from binary definition of PTVs: a novel probabilistic approach to PTV definition
Henry Shui-heng Tsang (UK)
Sunday 1 May 2016 from 17:30-17:40

Michael Brada

★ LIFETIME ACHIEVEMENT

MICHAEL BRADA
University of Liverpool & Clatterbridge Cancer Centre
Liverpool, UK

Michael Brada FRCP FRCR DSc is a Professor of Radiation Oncology at the University of Liverpool and Clatterbridge Cancer Centre; previously at the Royal Marsden Hospital, London. A leading expert in neuro-oncology and thoracic oncology and author and co-author of more than 250 peer-reviewed articles, editorials and book chapters.

As the President of ESTRO (2003-2005) he restored the focus on education; as the President of EANO (European Association of Neuro-oncology) nurtured a young organisation towards the principal European force it is now.

He has been a leader in the development of radiotherapy in neuro-oncology, with benchmark studies of technical aspects and clinical outcome of stereotactic radiotherapy and key studies of late toxicity of cranial irradiation. He made a major contribution to chemotherapy and radiotherapy in glial tumours and brain metastases. In lung cancer he developed and tested novel technologies including motion management techniques and high precision irradiation. Throughout his career has been a passionate believer in evidence based medicine. He has a deep interest in improving care and developing and testing novel methods of follow-up. His studies have resulted in widespread changes to clinical practice.

His interest in evaluation of novel technologies through systematic reviews and meta-analyses focusing on benefit to patients have generated heated debates and continue to irritate "believers" in technical innovation as a sufficient goal for the future of radiotherapy.

Mary Coffey

★ LIFETIME ACHIEVEMENT AWARD

MARY COFFEY
TCD School of Radiation Therapy St James's Hospital
Dublin, Ireland

Mary spent her working life improving the quality of care given to cancer patients through high-level education for Radiation Therapists (RTTs) and raising safety awareness. She led the development of the degree programme in Radiation Therapy in Ireland and was head of the Division of Radiation Therapy in Trinity College Dublin until 2012. She was chairperson of the project groups responsible for the development of ESTRO European curriculum for RTTs, the International Atomic Energy Agency (IAEA) Handbook for the Education of Radiation Therapists and the ESTRO Benchmarking document for RTTs. She is chair of the ESTRO project *Best Practice in Radiation Oncology: a Project to Train RTT Trainers* now in its eighth year.

She has been active in health economics having been a member of the expert group reporting on radiotherapy services in Ireland which resulted in a major development of radiotherapy services in the country, a member of the IAEA group on staffing and currently a member of the ESTRO Health Economics in Radiation Oncology (HERO) group.

She has been interested in risk management and safety in radiotherapy for many years, is a founder member of the Radiation Oncology Safety Information System (ROSIS) aimed at sharing information on incidents and near incidents, and is the current chair of the Radiation Oncology Safety Committee.

Mary established the RTT committees of the EORTC and ESTRO and is still active in the ESTRO RTT committee. She is a member of the ESTRO Board.

Jean-Pierre Gérard

★ LIFETIME ACHIEVEMENT AWARD

JEAN-PIERRE GÉRARD

Centre Antoine Lacassagne, Nice, France

Jean-Pierre Gérard graduated as a specialist in oncology in 1973 and worked with Prof Papillon in Centre Léon Bérard until 1979, when he was nominated Professor in the Lyon University for Oncology-Radiotherapy, and became head of the new department of Radiation Oncology in CHU Lyon-Sud. He moved to Nice to become Directeur Général of Centre Antoine Lacassagne in 2001. He was President of ESTRO between 1999 and 2000, and President of the French Radiation Oncology Society, SFRO, from 2004 to 2005. He was a visiting professor at the medical faculty in Alexandria, Egypt, in 2009, and in 2012 was awarded honorary Professorship at the Oncology University of Wuhan-Hubei, in China. Since 2013, he has been Professor Emeritus at the University of Nice – Consultant Centre Antoine-Lacassagne.

Professor Jean-Pierre Gérard is presently clinically active in the field of rectal cancer where he is leading the OPERA phase III trial to test the role of contact x-ray brachytherapy for organ preservation. He is also involved in the development of the new Proteus one proton machine 230 Mev in Nice. He was awarded several French distinctions, such as the Palmes académiques: Chevalier in 1996 and Officier in 2001, the Médaille d'honneur du Service de Santé des Armées, in 1997, the Insignes de Chevalier de la Légion d'Honneur in 2004, and the Antoine Béclère medal in 2015.

Ben Mijnheer

★ LIFETIME ACHIEVEMENT AWARD

BEN MIJNHEER

The Netherlands Cancer Institute, Amsterdam, The Netherlands

Ben Mijnheer got his PhD in 1971 at the University of Amsterdam based on a study concerning neutron measurements. He was appointed on a neutron therapy project in the Netherlands Cancer Institute – Antoni van Leeuwenhoek Hospital in Amsterdam, and after this project finished, he joined this institution as a clinical physicist, where he remains until now involved in various research projects and teaching activities.

His main research activities are in the field of dosimetry of ionising radiation, the development of new irradiation techniques, and quality assurance of radiotherapy. He was Professor in Medical Technology in Oncology at Inholland University of Professional Training and the first Physics Editor of Radiotherapy and Oncology. He is co-author of about 250 articles and chapters in books, has received approximately 20 personal research grants, and was supervisor of about 25 PhD theses.

He was involved in the organisation of the physics part of many ESTRO scientific meetings and faculty member/course director of several ESTRO teaching courses. He was also involved in numerous other courses dealing with various aspects of radiotherapy for medical physicists, radiation oncologists and radiation therapy technologists, both at national and international level.

He received the ESTRO Breur Medal Award in Edinburgh in 1998 and the ESTRO Emmanuel van der Schueren Award in 2013 in Geneva.

Ann Barrett

★ EMMANUEL VAN DER SCHUEREN AWARD

ANN BARRETT

University of East Anglia, Norwich, UK

Ann started her radiotherapy career in London and worked with Professor Michael Peckham at the time when he and Emmanuel van der Schueren set up ESTRO. She fostered her European links when she worked with Ms.Bataini, Laugier and Gerbaulet in Paris.

She then returned to the Royal Marsden Hospital where she worked until 1986 with a practice in lymphoma, testicular, breast and paediatric cancers. She also developed a TBI schedule with a purpose built machine for the new technique of BMT. She then accepted a position as a Foundation chair in Glasgow, the second largest cancer centre in the UK, where she remained for 16 years with a national sarcoma practice and a laboratory programme with Tom Wheldon in targeted radiotherapy before moving to Norwich as Deputy Dean of a new medical school.

She is co-author of *Practical Radiotherapy Planning*, now in its fifth edition, *Cancer in Children*, several Oxford oncology books and more than 150 publications.

She was a long term member of the Education and Training Committee of ESTRO and President of ESTRO in 1997. In the UK she was President of the Scottish Radiological Society in 1996, Dean of the Royal College of Radiologists from 2002 to 2004, and a member of many committees including those involved in the CHART and START trials. She has held travelling professorships in Australasia and Canada. She is Emeritus Professor of Oncology and has acted as an advisor to the UK government on radiotherapy and NATO on the acute effects of radiation.

Marco Van Vulpen

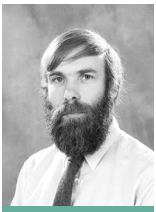
★ DONAL HOLLYWOOD AWARD

MARCO VAN VULPEN
University Medical Center Utrecht, Utrecht, The Netherlands

Dr van Vulpen obtained his MD at the University of Amsterdam and his PhD at the University of Utrecht, both in The Netherlands. After graduation as a radiation oncologist he pursued a fellowship at the Cross Cancer Institute, Department of Radiation Oncology in Edmonton, Alberta, Canada, where he participated in the Image-guided Adaptive Radiotherapy (IGART) program within the Center for Biological Imaging and Adaptive Radiotherapy.

In 2011 he was appointed full Professor and held his inaugural speech entitled "the End of Radiotherapy". Since 2013 he has been chair of the Department of Radiotherapy at the University Medical Center Utrecht, The Netherlands. He is clinical chair of the Center of Image Guided Oncological Interventions at the Universitair Medisch Centrum (UMC) Utrecht, where a 1.5 Tesla magnetic resonance imaging (MRI) linear accelerator is being developed. He is clinical chair of the International Consortium, ATLANTIC, on the worldwide clinical introduction of the MRI linear accelerator. He currently serves as adjunct professor and faculty member at the Department of Radiotherapy at the University of Texas MD Anderson Cancer Center, Houston, Texas.

His major research interests include the development and clinical introduction of different adaptive MRI guided oncological interventions. He has published over 130 papers in peer-reviewed journals.



Peter Hoskin

★ KLAAS BREUR AWARD

PETER HOSKIN

Mount Vernon Cancer Centre, Mount Vernon Hospital, Northwood UK

Peter Hoskin trained in clinical oncology at the Royal Marsden Hospital London and has been consultant in clinical oncology at Mount Vernon Cancer Centre, Northwood UK since 1992. He is also Professor in Clinical Oncology at University College London.

Research interests have ranged from palliative radiotherapy to the use of hypoxic radiosensitisers and brachytherapy. Current research programmes focus on radiotherapy quality assurance, palliative radiotherapy, and the role of HDR brachytherapy in prostate cancer. He has published over 350 original papers and reviews and nine textbooks.

Other activities include: elected member of ESTRO Board, chair of the GEC-ESTRO prostate brachytherapy group UROGEC and past chair of the GEC-ESTRO Committee, course organiser for the ESTRO prostate brachytherapy course, chair of the FRCR examination Board, Past Editor of *Clinical Oncology*, currently Clinical Editor of *Radiotherapy and Oncology* and member of the Editorial Boards of the *Journal of Contemporary Brachytherapy* and the *Journal of Bone Oncology*.

Sandra Turner

★ HONORARY MEMBER

SANDRA TURNER

Crown Princess Mary Cancer Centre, Westmead Hospital
Sydney, Australia

Sandra is a radiation oncologist working in Sydney, sub-specialising in genitourinary malignancies. Outside her clinical role, she is a councilor on the RANZCR, Faculty of Radiation Oncology (FRO) Board, and is chair of their Media & Profile Committee leading an international patient advocacy campaign, 'Targeting Cancer', which raises community awareness and educates primary care health professionals about radiation therapy. Her other passion is in the area of radiation oncology professional education.

Ass. Prof Turner was the previous past Chief Censor, Chief Examiner and Chair of the FRO Education and Training Committee, playing a major role in the modernisation of the training programme curriculum, and its implementation across Australia, New Zealand, and Singapore. She remains keenly involved with on-going evolution in radiation oncology teaching and learning methods, both in her country and around the world, aiming to align medical educational developments with best practice in this area. She is enthusiastic about increasing her colleagues understanding of the evidence behind, the scholarly approach to studying, and the critical importance of education of all radiation oncology practitioners to the highest quality achievable.

Ass. Prof Turner has facilitated formalisation of the strong educational links between the ESTRO and RANZCR societies. She is committed to strengthening ongoing linkages between those entrusted with educational developments around the globe, so that we can learn from each other and continue raising the bar in this sphere, ultimately for the benefit of our patients.

Riccardo Audisio

★ HONORARY MEMBER

RICCARDO AUDISIO

St Helens Teaching Hospital, University of Liverpool, Liverpool, UK

Riccardo was born in Milan, Italy and graduated in Padua (1980). He specialised in General Surgery (1985) and Diagnostic Radiology (1994). Trained at the National Cancer Institute of Milan (1980-94) he was appointed deputy director at the Department of General Surgery, European Institute of Oncology, Milan (1994-1998).

He moved to the United Kingdom in 1999 to become Consultant Surgical Oncologist and Honorary Professor at the University of Liverpool.

Past Editor of *Surgical Oncology*, published by Elsevier (2007-2013) he is Editor-in-Chief of the *European Journal of Surgical Oncology*. Author of 220 peer-reviewed publications and 36 book chapters, Professor Audisio has edited 20 book projects and is guest reviewer to 39 international scientific journals.

Professor Audisio is past-President of BASO (British Association of Surgical Oncologists) and President of ESSO (European Society of Surgical Oncology). He is serving as an advisor to the Department of Health and to the All Party Parliamentary Group on Breast Cancer in Older Women. Professor Audisio sits on the Board of Directors of ECCO, the European CanCer Organisation. He is member of several international scientific societies including BASO, ESSO, SSO, ASGBI, ASCRS, AAA, SIOG and EUSOMA. He is past-chair of the Education and Training Committee of ESSO. His clinical research focuses on breast cancer and geriatric oncology. Past-President of SIOG (International Society of Geriatric Oncology) and past-chair the Surgical Task Force, Professor Audisio has organised several international advanced courses/meeting on cancer surgery, breast cancer and geriatric-oncology.

Lorenzo Bonomo

★ HONORARY MEMBER

LORENZO BONOMO

Catholic University of Rome, Rome, Italy

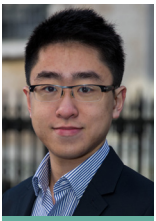
Lorenzo Bonomo, has been a respected leader and educator among international radiologists during his career in chest imaging. His research is covered by more than 350 scientific publications. Currently Professor of Radiology at the Catholic University of Rome, Dr Bonomo is also Director of the University's Training Programme in Radiology.

Parallel to his professional activities, Dr Bonomo has served as president in several radiological organisations, including the Italian Society of Thoracic Radiology, from 1992 to 1996; the European Society of Thoracic Imaging (ESTI), from 1999 to 2000; and the First World Congress of Thoracic Imaging and Diagnosis in Chest Disease, in 2005. He also received honorary membership from ESTI in 2006.

His dedication to radiology has brought him numerous awards, including honorary membership of the Argentinean, French, German, Greek, Italian, Romanian, Spanish, Bulgarian and RSNA radiological societies. He was awarded a gold medal by the European Society of Emergency Radiology in 2013.

Over the past decade, Dr Bonomo has held several prestigious positions within national and international radiological societies. He served as president of the Italian Radiological Society from 2002 to 2004, during which time he was also a member of the Education Committee of the European Association of Radiology (EAR).

He went on to serve as treasurer of the EAR, from 2005 to 2007, before the organisation became a part of the newly founded European Society of Radiology (ESR), where he is now the past-President. Dr Bonomo oversaw the organisation of the European Congress of Radiology, as ECR 2012 Congress President.



Henry Shui-heng TSANG

★ ESTRO-JACK FOWLER UNIVERSITY OF WISCONSIN AWARD

HENRY SHUI-HENG, TSANG

Moving away from binary definition of PTVs: a novel probabilistic approach to PTV definition, London, UK

Henry Tsang is currently working towards his PhD at the Institute of Cancer Research, London, under the supervision of Prof Uwe Oelfke. Entitled "Optimisation of radiotherapy in the presence of uncertainty", his primary research focus is in probabilistic treatment planning. Currently, he is investigating the trade-off between target coverage and the dose delivered to nearby organs at risk.

Prior to medical physics, Henry completed his BSc in physics at Imperial College London, graduating with first-class honours in 2013. For his bachelor thesis, Henry was builtding models of proton precipitation in the Jovian atmosphere, in preparation for data Juno will collect later this year.

Henry's interest has not always been in medical physics. Back in secondary school, Henry he had a keen interest in nuclear physics. It was not until his first year at university, when Henry attended a seminar on hadron therapy, that he became captivated by the application of physics to medicine.

He is still in the early stages of his career and is currently discovering the realm of medical physics with great enthusiasm. Outside of academia, Henry enjoys recreational badminton and travelling. He is also a proficient classical pianist, having completed his associate diploma in piano recital in 2007.

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The abstract book will be directly downloadable from the app.

PROGRAMME

PRE-MEETING COURSES

Radiobiology track

CLINICAL APPLICATION OF NEW COMBINATIONS: HOW TO TEST AND OPTIMISE NOVEL BIOLOGICAL AGENTS IN COMBINATION WITH RADIOTHERAPY

09:15 - 17:00 | LONDRA

Course Directors: A. Chalmers (UK) and D. Zips (Germany)

09:15	**INTRODUCTION AND OVERVIEW** *Course Director: A. Chalmers (UK)*
09:30	**INTRINSIC CELLULAR TARGETS, INCLUDING THE DNA DAMAGE RESPONSE AND ONCOGENIC SIGNALLING PATHWAYS** *A. Chalmers (UK)*
10:00	**TUMOUR MICROENVIRONMENT TARGETS, INCLUDING HYPOXIA, VASCULATURE AND THE IMMUNE SYSTEM** *R. Bristow (Canada)*
10:30	**COFFEE BREAK**
11:00	**PRECLINICAL EVALUATION OF NOVEL DRUG-RADIOTHERAPY COMBINATIONS: IN VITRO AND EARLY IN VIVO TESTING** *Teacher: C. Vens (The Netherlands)*
11:30	**PRECLINICAL EVALUATION OF NOVEL DRUG-RADIOTHERAPY COMBINATIONS: COMPLEX IN VIVO MODELS** *Teacher: M. Baumann (Germany)*
12:00	**CLINICAL TRIAL DESIGN: INCLUDING DOSE SELECTION, DOSE ESCALATION AND BIOMARKER DRIVEN STUDY DESIGNS** *Teacher: P. Lambin (The Netherlands)*
12:30	**DISCUSSION**
13:00	**LUNCH**
14:00	**MOLECULAR BIOMARKERS FOR OPTIMISATION OF NOVEL RADIOTHERAPY-DRUG COMBINATIONS** *Teacher: D.G. Duda (USA)*
14:30	**IMAGING BIOMARKERS FOR OPTIMISATION OF NOVEL RADIOTHERAPY-DRUG COMBINATIONS** *Course Director: D. Zips (Germany)*
15:00	**COFFEE BREAK**

15:30 **LESSONS LEARNED: EXAMPLES FROM ONGOING TRIALS FOCUSING ON TARGETING DNA REPAIR**

Teacher: M. Verheij (The Netherlands)

16:00 **LESSONS LEARNED: EXAMPLES FROM ONGOING TRIALS FOCUSING ON TRIALS TESTING IMMUNOTHERAPIES WITH RADIATION**

Teacher: E. Deutsch (France)

16:30 **FINAL DISCUSSION**

Course Directors: A. Chalmers (UK) and D. Zips (Germany)

Clinical track

PRE-CONGRESS COURSE: RE-IRRADIATION: BACKGROUND, STATE OF ART AND PERSPECTIVES FOR CLINICAL PRACTICE

08:30 - 17:30 | ROOM 3

Course Directors: N. Burnet (UK) and V. Valentini (Italy)

08:30	**WELCOME AND INTRODUCTION** *Course Directors: N. Burnet (UK) and V. Valentini (Italy)*
08:35	**NORMAL TISSUE TOLERANCE CONSTRAINS TO RE-IRRADIATION** *Teacher: N. Russell (The Netherlands)*
09:05	**THE ISSUE OF FRACTIONATION AND TOTAL DOSE** *Teacher: C. Nieder (Norway)*
09:35	**POSSIBILITY TO INCREASE THERAPEUTIC RATIO WITH SENSITISERS, CYTOTOXIC DRUGS, TARGETED AGENTS, HYPERTHERMIA** *Teacher: P. Tsoutsou (Switzerland)*
10:05	**DISCUSSION**
10:20	**COFFEE BREAK**
10:45	**IMAGING** *Teacher: U. Nestle (Germany)*
11:15	**BRAIN TUMOURS** *Teacher: G. Minniti (Italy)*
11:45	**HEAD AND NECK CANCER** *Teacher: G. Kovács (Germany)*
12:15	**DISCUSSION**
12:30	**LUNCH**
13:30	**PROSTATE CANCER** *Teacher: M. Van Vulpen (The Netherlands)*
14:00	**RECTAL CANCER** *Teacher: M. Massaccesi (Italy)*
14:30	**BONE METASTASES** *Teacher: P. Hoskin (UK)*
15:00	**DISCUSSION**

15:15	**COFFEE BREAK**
15:45	**RE-IRRADIATION AND MODERN PLANNING** *Teacher: D. Verellen (Belgium)*
16:15	**RE-IRRADIATION AND NEW BEAMS** *Teacher: J. Debus (Germany)*
16:45	**RECCOMMENDATION FOR BACK TO THE CLINIC AND DISCUSSION** *Course Director: N. Burnet (UK)*
17:25	**CONCLUSIONS** *Course Directors: N. Burnet (UK) and V. Valentini (Italy)*

Physics track

PRE-CONGRESS COURSE: MULTIDIMENSIONAL DOSIMETRY SYSTEMS

09:00 - 17:10 | ROOM 2

Course Directors: N. Jornet (Spain) and J. Van de Kamer (The Netherlands)

09:00	**WELCOME**
09:10	**INTRODUCTION AND MOTIVATION** *Course Directors: N. Jornet (Spain) and J. Van de Kamer (The Netherlands)*
09:30	**PASSIVE DETECTORS FOR 2D DOSIMETRY (FILMS, ALANINE,...)** *Teacher: N. Jornet (Spain)*
10:00	**ACTIVE 2D AND 2.5D DETECTORS (EPID, ARRAYS, TRANSMISSION DETECTORS,...)** *Teacher: F. Wittkämper (The Netherlands)*
10:30	**COFFEE BREAK**
11:00	**DOSE TO WATER VS DOSE TO MEDIUM - IMPLICATIONS TO (SOLID) PHANTOM DESIGN** *Teacher: J. Seuntjens (Canada)*
11:30	**TIME RESOLVED DOSIMETRY** *Teacher: F. Nordström (Sweden)*
12:00	**ANALYSIS OF MULTIDIMENSIONAL DOSIMETRIC INFORMATION** *Course Director: J. Van de Kamer (The Netherlands)*
12:30	**LUNCH**
13:45	**LINAC LOGFILE BASED DOSE ASSESSLMENT - NO NEED FOR MEASUREMENTS?** *Teacher: W. Lechner (Austria)*
14:15	**NOVEL DOSIMETRY SYSTEMS: SCINTILLATION DETECTORS** *Teacher: C.E. Andersen (Denmark)*
14:45	**NEW DEVELOPMENTS: DEFORMABLE SILICON DOSIMETER** *Teacher: P.S. Skyt (Denmark)*
15:15	**COFFEE BREAK**
15:45	**DOSIMETRY FOR CHARGED PARTICLE THERAPY** *Teacher: H. Palmans (UK)*

16:15 **DOSIMETRIC ASPECTS IN MAGNETIC FIELDS**

Teacher: B. Van Asselen (The Netherlands)

16:45 **CONCLUDING REMARKS**

Course Directors: N. Jornet (Spain) and J. Van de Kamer (The Netherlands)

RTT TRACK

PRE-CONGRESS COURSE: CONTOURING OF ORGANS AT RISK: THEORY AND PRACTICE

08:30 - 17:45 | ISTANBUL

Course Directors: M. Leech (Ireland) and D. Pasini (Italy)

08:30	**WELCOME AND INTRODUCTION** *Course Directors: M. Leech (Ireland) and D. Pasini (Italy)*
08:45	**INTRODUCTION TO THE CONCEPTS OF OAR CONTOURING** *Teacher: J.G. Eriksen (Denmark)*
09:15	**THEORY: THE OAR IN HEAD AND NECK (PAROTIDS, COCHLEA, PHARYNX MUSCLES) DELINEATION AND DOSE TOLERANCE** *Teacher: N. Dinapoli (Italy)*
09:45	**FALCON SOFTWARE** *Course Director: D. Pasini (Italy)*
10:00	**PRACTICE IN OAR DELINEATION: HEAD AND NECK CONTOURING SESSION (1)**
11:00	**PRACTICE IN OAR DELINEATION: HEAD AND NECK CONTOURING SESSION (2)**
11:30	**VERIFICATION AND DISCUSSION** *Teacher: N. Dinapoli (Italy)*
12:00	**THEORY: THE OAR FOR SBRT IN THORAX (HEART, BRACHIAL PLEXUS, TRACHEA AND LARGE BRONCHI) DELINEATION AND DOSE TOLERANCE** *Teacher: N. Andratschke (Switzerland)*
12:30	**PRACTICE IN OAR DELINEATION: THORAX CONTOURING SESSION (1)**
14:00	**PRACTICE IN OAR DELINEATION: THORAX CONTOURING SESSION (2)**
14:30	**VERIFICATION AND DISCSUSSION** *Teacher: N. Andratschke (Switzerland)*
15:00	**THEORY: THE OAR SBRT IN UPPER ABDOMEN (STOMACH, LIVER, DUODENUM/BOWEL, PANCREAS, KIDNEYS, BILE DUCTS) DELINEATION AND DOSE TOLERANCE** *Teacher: A. Mendez Romero (The Netherlands)*

16:00 **PRACTICE IN OAR DELINEATION: UPPER ABDOMEN CONTOURING SESSION**

17:00 **VERIFICATION AND DISCUSSION**

Teacher: A. Mendez Romero (The Netherlands)

17:30 **CONCLUSIONS**

Course Directors: M. Leech (Ireland) and D. Pasini (Italy)
Tutor: S. Hol (The Netherlands)
Tutor: E. Forde (Ireland)

Interdisciplinary track

PLANNING AND DELIVERING HIGH-DOSE LUNG RADIOTHERAPY IN CLINICAL PRACTICE

09:00 - 17:20 | ROOM 4

Course Directors: M. Schwarz (Italy) and D. De Ruysscher (The Netherlands)

09:00	**INTRODUCTION TO THE COURSE** *Course Directors: M. Schwarz (Italy) and D. De Ruysscher (The Netherlands)*
09:10	**SOLVED PROBLEMS AND OPEN QUESTIONS IN RT OF LUNG CANCER** *Teacher: F. McDonald (UK)*
09:45	**ANATOMICAL AND FUNCTIONAL IMAGING FOR TARGET DELINEATION** *Teacher: S. Peeters (Belgium)*
10:30	**COFFEE BREAK**
11:00	**PHYSICS ASPECTS OF TREATMENT PLANNING IN HIGH DOSE LUNG RT** *Teacher: M. Söhn (Germany)*
11:40	**DOSE-EFFECT RELATIONS FOR NORMAL TISSUES INVOLVED IN LUNG RT** *Teacher: J.J. Sonke (The Netherlands)*
12:20	**HYPOFRACTIONATION: THE ANSWER FOR ALL LUNG CANCER PATIENTS OR A SPECIFIC TOOL FOR SPECIFIC NEEDS?** *Teacher: S. Ramella (Italy)*
13:00	**LUNCH**
14:00	**3D AND 4D IMAGE GUIDANCE IN CLINICAL PRACTICE** *Teacher: T. Schytte (Denmark)*
14:45	**ADAPTIVE RADIOTHERAPY OF LUNG CANCER IN CLINICAL PRACTICE** *Teacher: D. Moeller (Denmark)*
15:30	**COFFEE BREAK**
16:00	**(POTENTIAL) ROLE OF PARTICLE THERAPY** *Teacher: M. Engelsman (The Netherlands)*
16:40	**GENOMICS AND RADIOMICS: READY FOR THE CLINIC?** *Course Director: D. De Ruysscher (The Netherlands)*
17:10	**CONCLUSION**

CONTOURING WORKSHOPS

SPINE SBRT

Friday 29 April from 08:00-10:00 I Room Verde
Repeated on Saturday 30 April 2016 from 14:30-16:30

Chair: M. Guckenberger (Austria)
Panellists: M. Dahele (The Netherlands) and L. Schiappacasse (Switzerland)
Tutors: B. Tamaskovics (Germany) and A. Branquinho (Portugal)

OAR FOR THE UPPER ABDOMEN

Friday 29 April from 10:30-12:30 I Room Verde
Repeated on Sunday 1 May 2016 from 14:15-16:15

Chair: T. Brunner (Germany)
Panellists: A. Mendez Romero (The Netherlands) and G. Macchia (Italy)
Tutors: B. Tamaskovics (Germany) and A. Branquinho (Portugal)

ANAL CANAL

Friday 29 April from 13:30-15:30 I Room Verde
Repeated on Monday 2 May 2016 from 14:30-16:30

Chair: A. Gambacorta (Italy)
Panellists: M. Hawkins (UK) and J. Mills (UK)
Tutors: C. Panje (Switzerland) and R. Simões (UK)

PROSTATE CANCER IN THE POST PROSTATECTOMY

Friday 29 April from 16:00-18:00 I Room Verde
Repeated on Tuesday 3 May 2016 from 08:30-10:30

Chair: P. Ost (Belgium)
Panellists: C. Salembier (Belgium) and B. Pieters (The Netherlands)
Tutors: C. Panje (Switzerland) and R. Simões (UK)

FALCON DEMONSTRATIONS
ESTRO BOOTH (#3000)

Free 15 minute demonstrations take place everyday
at lunch time and coffee breaks at the ESTRO booth:
10:15 – 10:30
13:45 – 14:00
16:00 – 16:15

Educational aims of the workshops
- Provide attendees with the opportunity for interactive training on contouring CTV, GTV and when relevant OAR and to discuss their results with international experts in the field.
- Provide the participants with knowledge on how contouring is performed in different institutions and on the existing recommendations and guidelines.
- Provide the participants with consistent information to validate or modify/improve their daily contouring practice.

Methodology for the workshops
- Clinical case presentation
- Two delineations; pre- and post guidelines
- Presentation of the contouring guidelines recommended by the experts for the delineation of the CTV, GTV +/- OAR and bibliographic references for the therapeutic strategy chosen
- Inter-comparison of the contours by the participants and by the experts
- Justification and comments
- Analysis of the heterogeneity index.

Requirements
Participants are required to bring their own computer for contouring.

FALCON (Fellowship in Anatomic deLineation and CONtouring) is the multifunctional ESTRO platform for contouring and delineation. Attending a FALCON contouring workshop offers the opportunity for individual professionals:
- to validate their contouring practice during live workshops by comparing them with existing guidelines
- to learn the indications proposed by experts
- to discuss with other participants, experts and panelists
- to adopt delineation guidelines in order to further integrate themselves into daily practice.

MULTIDISCIPLINARY TUMOUR BOARD SESSIONS

BOARD – BREAST CANCER

Saturday 30 April 2016 from 14:30-15:45 I Room Istanbul

Chair: A. Kirby (UK)
Panellists: ESTRO fellow: D. Vordermark (Germany)
Clinical oncologist: B. Offersen (Denmark)
Radiologist: M. Durando (Italy)
Surgeon: R. Audisio (UK)

BOARD – RECTAL CANCER

Sunday 1 May 2016 from 14:15-15:30 I Room Istanbul

Chair: TBC
Panellists: ESTRO fellow: F. Cellini (Italy)
Medical oncologist: TBC
Surgeon: S. Bach (UK)
Radiologist: B. Barbaro (Italy)

OLIGOMETASTATIC DISEASE

Monday 2 May 2016 from 14:30-15:45 I Room Istanbul

Chair: M. Hoyer (Denmark)
Panellists: Young ESTRO member: J-E Bibault (France)
Medical oncologist: M. Di Maio (Italy)
Interventional radiologist: A. Veltri (Italy)
Thoracic surgeon: E. Ruffini (Italy)

YOUNG PROGRAMME

SUNDAY 1 MAY
08.00-17.15 HRS
ROOM MADRID

08:00-08:40

Teaching Lecture
E-LEARNING FOR PROFESSIONALS IN RADIATION ONCOLOGY WHAT, WHY AND HOW?
Chair: C. Belka (Germany)
Speaker: A. Berlanga (The Netherlands)

08:45-10:00

Scientific symposium
THE FUTURE OF RADIATION ONCOLOGY PUBLISHING: VIEWS THROUGH THE *GREEN* AND *RED* TELESCOPES
Chair: P. Mancosu (Italy)
Chair: M. Schmid (Austria)

Green Journal
Speaker: J. Overgaard (Denmark)

Publishing the science of radiation oncology: the perspective of the *Red Journal's* editor
Speaker: A. Zietman (USA)

How to do a good manuscript review
Speaker: L. Muren (Denmark)

13:00-14:15

Lunch symposium
PLANNING AHEAD: HOW TO FINISH RESIDENCY / PHD PROJECT WITH A JOB OFFER
Chair: D. Verellen (Belgium)
Co-chair: U. Oelfke (UK)

Radiation Oncologist
Speaker: S. Rivera (France)

Radiobiologist
Speaker: M-C Vozenin (Switzerland)

Physicist
Speaker: D. Verellen (Belgium)

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

RESEARCHER
Speaker: U. Oelfke (UK)

14:15-15:30 **Symposium**
A JOINT SESSION OF YOUNG RADIATION ONCOLOGISTS NATIONAL SOCIETIES & YROG
Chair: J-E Bibault (France)
Co-chair: O. Person (Israel)

What is the Young ESTRO Committee and what can it do for young radiation oncology professionals?
Speaker: J-E Bibault (France)

The Young Radiation Oncology Group of EORTC
Speaker: O. Person (Israel)

The French Society of Young Radiation Oncologists
Speaker: T. Leroy (France)

The Young AIRO (Italian Association of Radiation Oncology) Group
Speaker: D. Greto (Italy)

The British Institute of Radiology
Speaker: S. Hafeez (UK)

Round table with present young national societies

16:15-17:15 **YOUNG NETWORKING**

The ESTRO Physics Research Masterclass – Support in starting up physics research
Speaker: B. Heijmen (The Netherlands)

SCIENTIFIC PROGRAMME

SATURDAY 30 APRIL 2016

ABS. N°

Teaching Lecture
TECHNOLOGY ASSESSMENT
08:00 - 08:40 | ROOM 2
Chair: Y. Lievens (Belgium)
08:00 > Technology assessment
Speaker: D. Verellen (Belgium) SP-0001

Teaching Lecture
CRISPR/CAS TECHNOLOGY: FROM CELLS TO MICE TO STEM CELL THERAPY
08:00 - 08:40 | LONDRA
Chair: B. Wouters (Canada)
08:00 > CRISPR/Cas9 technology: from cells to mice to stem cell therapy
Speaker: H. Te Riele (The Netherlands) SP-0002

Teaching Lecture
PARTIAL BREAST IRRADIATION: WHO, WHEN AND HOW?
08:00 - 08:40 | AUDITORIUM
Chair: D. Gabrys (Poland)
08:00 > Partial Breast Irradiation: who, when and how?
Speaker: C. Coles (UK) SP-0003

Teaching Lecture
NEW TOOLS TO REDUCE TOXICITY IN PELVIC RADIATION
08:00 - 08:40 | GIALLA
Chair: M. A. Gambacorta (Italy)
08:00 > New tools to reduce toxicity in pelvic radiation
Speaker: K. Haustermans (Belgium) SP-0004

Teaching Lecture
ROLE OF BRACHYTHERAPY IN THE MANAGEMENT OF PAEDIATRIC TUMOURS
08:00 - 08:40 | ROOM 4
Chair: G. Kovács (Germany)
08:00 > Role of brachytherapy in the management of paediatric tumours
Speaker: C. Haie-Meder (France) SP-0005

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

Teaching Lecture

CHALLENGES IN MR GUIDED RADIOTHERAPY

08:00 - 08:40 | ROOM 1

Chair: C. Kirisits (Austria)

08:00 > Challenges in MR guided radiotherapy
Speaker: J. Jonsson (Sweden) SP-0006

Teaching Lecture

PATIENT SPECIFIC QUALITY ASSURANCE IN PROTON THERAPY

08:00 - 08:40 | ROOM 500

Chair: S. Molinelli (Italy)

08:00 > Patient specific quality assurance in proton therapy
Speaker: R. Amos (UK) SP-0007

Teaching Lecture

BALANCING TOXICITY AND DISEASE CONTROL IN THE EVOLUTION OF RADIOTHERAPY TECHNOLOGY

08:00 - 08:40 | ROOM 3

Chair: A. Vaandering (Belgium)

08:00 > Balancing toxicity and disease control in the evolution of radiotherapy technology
Speaker: B. O'Sullivan (Canada) SP-0008

Symposium

SELECTION OF PATIENTS FOR PROTON THERAPY

08:45 - 10:00 | ROOM 2

This session will provide three different views on how to select the patients for proton therapy. Proton therapy is not magic and proton therapy risk within the target volume is identical to other radiation therapies, the differences are most often in the intermediate and low dose volumes outside the target. Comparative treatment planning is essential and it should be free from observer bias. Automated treatment planning and robust optimisation techniques should be considered. NTCP modeling is suggested as an unbiased method for patient selection. Differences in DVHs (Δdose) require translation into clinical effects (ΔNTCP) to become clinically meaningful..

Chair: M. Hoyer (Denmark)

Co-Chair: M. Ciocca (Italy)

08:45 > Patient selection for proton therapy: a clinicians view
Speaker: A. Mahajan (USA) SP-0009

09:10 > Selection of patients for proton therapy: a physicists view
Speaker: M. Hoogeman (The Netherlands) SP-0010

09:35 > Future selection practice for proton therapy: selection of patients based on treatment planning comparison and NTCP-modelling
Speaker: H. Langendijk (The Netherlands) SP-0011

Symposium

MITIGATING NORMAL TISSUE TOXICITY

08:45 - 10:00 | LONDRA

The session is a well balanced session consisting of two biologically-oriented and experimental talks (by S. van der Veen and L. Meziani) and one clinically oriented (by S. Delanian). The first talk will show the benefit triggered by molecular modulation using ACE inhibitors on cardiopulmonary function and cardiac damage. The second will review the clinical benefit of the combination Pentoxifyllin, Vitamin E and Clodronate with possible mechanistic insights. The third will show the contribution of innate immune system to late radiation-induced pulmonary damages with a specific focus on macrophages leading to innovative therapeutic intervention.

Chair: M-C Vozenin (Switzerland)
Co-Chair: L. Pirtoli (Italy)

08:45 > The use of ACE inhibitors to attenuate thoracic irradiation-induced cardiopulmonary toxicity.
Speaker: S. Van der Veen (The Netherlands) SP-0012

09:10 > Radiation-induced musculosqueletic late damages: possible clinical cure or simple mitigation?
Speaker: S. Delanian (France) SP-0013

09:35 > Radiation-induced lung fibrosis is associated with M2 interstitial and hybrid alveolar macrophages
Speaker: L. Meziani (France) SP-0014

Symposium

REGIONAL NODAL IRRADIATION FOR BREAST CANCER

08:45 - 10:00 | AUDITORIUM

The first speaker in this session will review conflicting data around surgical and radiotherapeutic management of the axilla in breast cancer patients and how these impact on current clinical practice. The second speaker will review recently published data on irradiation of the internal mammary chain (IMC) with a view to determining whether every node-positive patient should have the IMC irradiated. The final talk will cover technical approaches to treating locoregional lymph nodes and will review the evidence base for dose constraints, the dosimetric consequences of different technical approaches including protons, and the resource impact on our departments.

Chair: A. Kirby (UK)
Co-Chair: R. Orecchia (Italy)

08:45 > The axilla- less surgery, more radiotherapy?
Speaker: M.I. Algara López (Spain) SP-0015

09:10 > The internal mammary chain - should we treat it in every node-positive patient?
Speaker: P. Poortmans (The Netherlands) SP-0016

09:35 > Technical approaches to regional lymph node irradiation for breast cancer
Speaker: A. Kirby (UK) SP-0017

Symposium

ASSESSMENT AND MANAGEMENT OF RECTAL MORBIDITY

08:45 - 10:00 | GIALLA

This symposium is dedicated to clarifying the rectal symptoms after radiotherapy to the small pelvis. Only a few are directly linked to ionizing radiation to the bowel or anal sphincter region. It will be discussed the definition of unique set of pathophysiology to be introduced in the planning of radiotherapy. The second topic will aim to distinguish between objective toxicity scoring and subjective patient reported outcomes. Rectal and anal toxicity dose volume histogram and changes will be discriminated. Lastly, the impact and the interest of using rectal spacer to minimized morbidity during irradiation of prostate cancer will be commented.

Chair: P. Maingon (France)
Co-Chair: D. Genovesi (Italy)

08:45 > Towards a scoring system built on six distinct radiation-induced illnesses producing late gastrointestinal effects
Speaker: G. Steineck (Sweden) SP-0018

09:10 > Measuring anorectal toxicity and function
Speaker: D. Vordermark (Germany) SP-0019

09:35 > Rectal spacers to minimise morbidity in radiotherapy for prostate cancer
Speaker: M. Pinkawa (Germany) SP-0020

Symposium

TOWARDS USER ORIENTED QA PROCEDURES FOR TREATMENT VERIFICATION

08:45 - 10:00 | ROOM 4

The session comprises presentations on treatment planning, imaging, and actual dose verification procedures. Treatment planning will cover acceptance testing, commissioning (general data, TG-43 and non-TG-43 dose calculation algorithms, applicators), periodic QA, TPS inter-comparison, and phantom based tests. Within the context of imaging, all modalities in use for clinical applications will be discussed (x-ray, CT, MRI, US, PET-CT). Dose verification will focus on real-time verification methods including classic applications of in vivo dosimetry, real-time in vivo dosimeters, and applications of real-time in vivo dosimetry.

Chair: A. Haworth (Australia)
Co-Chair: S. Bresciani (Italy)

08:45 > How to ensure the quality in brachytherapy treatment planning systems?
Speaker: F. A. Siebert (Germany) SP-0021

09:10 > Imaging
Speaker: T.P. Hellebust (Norway) SP-0022

09:35 > Dose verification
Speaker: K. Tanderup (Denmark) SP-0023

Symposium

ROBUST AND ACCURATE FUNCTIONAL MRI FOR RADIOTHERAPY

08:45 - 10:00 | ROOM 1

This session will focus on different aspects in terms of image acquisition and technical requirements for the integration of Functional Magnetic Resonance Imaging (f-MRI) into radiotherapy (RT). F-MRI can be applied in RT for tissue classification, monitoring of treatment response and dose painting. The geometrical accuracy of the images is of crucial importance. In the second talk, different issues concerning data acquisition and analysis in dynamic contrast enhanced (DCE) MRI will be discussed. Accurate quantification of DCE-MRI parameters is difficult and requires the use of dedicated models. The third speaker will focus on diffusion weighted (DW) MRI including the importance of the choice of b-values, acquisition problems and geometric distortion in extracranial applications of DW-MRI as well as implications for RT.

Chair: D. Thorwarth (Germany)
Co-Chair: G. Loi (Italy)

08:45 > Needs and technical requirements for functional MRI in radiotherapy
Speaker: U. Van der Heide (The Netherlands) SP-0024

09:10 > Variation in DCE-MRI methodology and its implications for radiotherapy
Speaker: A. Garpebring (Sweden) SP-0025

09:35 > Importance of b-value selection and geometrical accuracy in DW-MRI for radiotherapy
Speaker: M. Lambrecht (Belgium) SP-0026

Joint Symposium ESTRO-IAEA

JOINT ESTRO-IAEA EFFORTS ON DOSIMETRY, QA AND AUDIT FOR ADVANCED TREATMENT TECHNIQUES

08:45 - 10:00 | ROOM 500

Advanced treatment techniques present increasingly complex challenges for commissioning, dosimetry, QA and verification. This joint ESTRO-IAEA symposium reviews activities in some key areas supporting the clinical implementation, evaluation, assurance and development of advanced radiotherapy methods. It focusses on i) the new small/non-standard field dosimetry CoP, to ensure consistent dosimetry in these situations; ii) discussion of small field dosimetry uncertainties for significance/acceptability in VMAT/IMRT, considering whether current practice and tools for patient specific QA can detect such uncertainties; and iii) recent developments and results in the IAEA external audit system and their application and lessons for advanced radiotherapy.

Chair: D.I. Thwaites (Australia)
Chair: J. Izewska (Austria)

08:45 > New IAEA-AAPM Code of Practice for dosimetry of small photon fields used in external beam radiotherapy
Speaker: H. Palmans (UK) SP-0027

09:10 > Which dosimetric uncertainties in small fields are clinically acceptable for IMRT/VMAT?
Speaker: W. Lechner (Austria) SP-0028

09:35 > IAEA external audits for advanced radiotherapy - lessons learnt and their relevance for industrialised countries
Speaker: J. Izewska (Austria) SP-0029

Symposium

STRATEGIES FOR TREATMENT PLANNING

08:45 - 10:00 | ROOM 3

Chair: A. Duffton (UK)
Co-Chair: F. Fellin (Italy)

08:45 > Comparisons of treatment planning with photons and protons
Speaker: M. Enmark (Sweden) SP-0030

09:10 > When to re-plan: a practical perspective
Speaker: B. Bak (Poland) SP-0031

09:35 > Fully automated treatment planning: benefits and potential pitfalls
Speaker: E. Damen (The Netherlands) SP-0032

Poster Viewing 1
BRACHYTHERAPY

08:45 - 10:00 | POSTER AREA

Chair: T. Major (Hungary)
Chair: M. Schmid (Austria)

> Assessing dose contribution to pelvic lymph nodes in intracavitary brachytherapy for cervical cancer
G.W.Y. Chua (Singapore), D.B.H. Tan, G.H. Tay, Y.W. Foo PV-0033

> HDR BT alone in endometrial cancer: up-date of Piedmont experience in 18 years (71 patients)
S. Gribaudo (Italy), U. Monetti, E. Madon, V. Richetto, M. Tessa, F. Moretto, A. Ruggieri, S. Cosma, S. Danese, A. Urgesi PV-0034

> Electronic Brachytherapy for basal cell carcinoma: two prospective pilot trials with different doses
O. Pons (Spain), R. Ballester-Sánchez, C. Candela-Juan, F.J. Celada-Álvarez, C. Barker, R. Chicas-Sett, J. Burgos-Burgos, D. Farga-Albiol, M.J. Pérez-Calatayud, A. Tormo-MicÃ³, J. Pérez-Calatayud, R. Botella-Estrada PV-0035

> Dosimetric evaluation of 3D printed applicators for High Dose Rate brachytherapy
A. Vavassori, R. Ricotti (Italy), A. Bazani, F. Pansini, R. Spoto, D. Ciardo, V. Sammarco, F. Cattani, R. Orecchia, B.A. Jereczek-Fossa PV-0036

> Application of brachytherapy for residual nasopharyngeal carcinoma after external beam radiotherapy
G. Cheng (China), H. Zhao, M. He, J. Wang, Z. Zhao PV-0037

> Multivariable model development for mortality after total salvage Iodine-125 prostate brachytherapy
M. Peters (The Netherlands), J.R.N. Van der Voort van Zyp, M.A. Moerland, C.J. Hoekstra, S. Van de Pol, H. Westendorp, M. Maenhout, R. Kattevilder, H.M. Verkooijen, P.S.N. Van Rossum, H.U. Ahmed, T. Shah, M. Emberton, M. Van Vulpen PV-0038

> Urinary incontinence rates in salvage high-dose-rate brachytherapy prostate cancer patients.
P. Wojcieszek (Poland), M. Szlag, A. Cholewka, B. BiaÅ‚as, S. Kellas-Sleczka, M. FijaÅ‚kowski, A. Andrejczuk PV-0039

> MRI guided focal primary and (secondary) salvage HDR-BT in prostate cancer patients seems safe
M. Maenhout (The Netherlands), M.A. Moerland, K.M. Van Vliet-van den Ende, R.I. Schokker, M. Borot de Battisti, M. Peters, M. Van Vulpen, J.R.N. Van der Voort van Zyp PV-0040

Symposium

PROTONS OR HEAVY IONS?

10:45 - 11:45 | ROOM 2

Proton beam therapy is developing rapidly, although clinical evidence is still sparse and its cost-effectiveness is still unclear. Radiotherapy with heavier ions is an even more complex technology but may offer additional clinical benefits. This symposium focuses on the scientific basis of these modalities and discusses potential advantages of protons vs. heavier particles. The session will present first the physical characteristics of the various ion types and relevant differences for radiotherapy. Then radiobiology will be discussed, including a critical discussion of RBE models and the role of preclinical studies. Finally, the clinical evidence for ion beams will be summarised discussing esp. the question of feasibility and necessity of randomised clinical trials.

Chair: O. Jäkel (Germany)
Co-Chair: M. Krengli (Italy)

10:45 > Physical advantages of particles: protons vs. heavy ions, what is certain what is not?
O. Jäkel (Germany) OC-0041

11:05 > Radiobiological benefits of protons and heavy ions - advantages and disadvantages
C.P. Karger (Germany) OC-0042

11:25 > How strong is the current clinical evidence for protons and heavy ions?
P. Fossati (Italy) OC-0043

Proffered Papers

RADIOBIOLOGY 1: RADIATION EFFECTS ON NORMAL TISSSUES AND THE MICROENVIROMENT

10:45 - 11:45 | LONDRA

Chair: D. Kirsch (USA)
Chair: N. Russell (The Netherlands)

10:45 > Fingolimod mitigates radiation-induced cognitive deficits by restoring dentate gyrus neurogenesis
A. Stessin (USA), M. Banu, V. Blaho, S. Ryu OC-0044

10:55 > Dual pathway inhibition attenuates radiation-induced pulmonary inflammation and fibrosis
N.H. Nicolay (Germany), M. Dadrich, R. Lopez Perez, U. Wirkner, P. Peschke, J. Debus, P.E. Huber OC-0045

11:05 > Radiation induced carcinogenesis of cells with stem cell potential from breast and thyroid gland
M. Zwar (Germany), N. Hosper, K. Manda, D. Buttler, U. Giesen, R. Nolte, R. Coppes, G. Hildebrandt OC-0046

11:15 > Tumour microenvironment response and bone marrow cell migration after pulsed radiotherapy
K. Reynders (Belgium), E. Wauters, J. Vansteenkiste, H. Decaluwé, P. De Leyn, K. Nackaerts, S. Peeters, C. Dooms, W. Janssens, D. Lambrechts, D. De Ruysscher OC-0047

11:25 > A three stage genome wide association study reveals susceptibility for late radiotherapy toxicity at the 2q24 locus
J.L. Kane (USA), S.A. Krueger, A. Hanna, T.R. Raffel, G.D. Wilson, G.J. Madlambayan, B. Marples OC-0048

Proffered Papers
CLINICAL 1: BREAST
10:45 - 11:45 | AUDITORIUM
Chair: C. Vidali (Italy)
Chair: S. Rivera (France)

10:45 > Trends in the use of postoperative radiotherapy following mastectomy: a population-based study
S. Corradini (Germany), J. Engel, C. Belka, M. Niyazi OC-0049

10:55 > Variations in use of hypofractionation for early, node-negative breast cancer in NSW 2007-2012
G. Delaney (Australia), S. Gandhidasan, F. Terlich, D. Baker, R. Walton, D. Currow OC-0050

11:05 > Variability in lymph node delineation for breast cancer radiotherapy: an AIRO multicenter study
D. Ciardo (Italy), R. Ricotti, B.A. Jereczek-Fossa, A.I.R.O. Breast Cancer Working Group OC-0051

11:15 > Long-term age dependent failure pattern after BCT vs. mastectomy in low-risk breast cancer patients
T. Laurberg (Denmark), C. Lyngholm, J. Alsner, P. Chritiansen, J. Overgaard OC-0052

11:25 > Re- irradiation for locally recurrent breast cancer
E. Bräutigam (Austria), C. Track, M. Geier, H. Geinitz OC-0053

11:35 > Reirradiation and hyperthermia for recurrent breast cancer-en-cuirasse in previously irradiated area
S. Oldenborg (The Netherlands), J. Crezee, Y. Kusumanto, R.M. Van Os, S.B. Oei, J.L.M. Venselaar, P.J. Zum Vörde Sive Vörding, C.R.N. Rasch, G. Van Tienhoven OC-0054

Proffered Papers

CLINICAL 2: ADVERSE EFFECTS IN RADIOTHERAPY

10:45 - 11:45 | GIALLA

Chair: K. Dieckmann (Austria)
Chair: S. Chiesa (Italy)

10:45 > Pseudo-progression after stereotactic radiotherapy of brain metastases is serious radiation toxicity
R. Wiggenraad (The Netherlands), M. Mast, J.H. Franssen, A. Verbeek- de Kanter, H. Struikmans OC-0055

10:55 > FLAME: Influence of dose escalation to 95Gy for prostate cancer on urethra-related toxicity and QOL
J. Van Loon (The Netherlands), M. Van Vulpen, F. Pos, K. Haustermans, R. Smeenk, L. Van den Bergh, S. Isebaert, G. McColl, M. Kunze-Busch, B. Doodeman, J. Noteboom, E. Monninkhof, U.A. Van der Heide OC-0056

11:05 > Cardiotoxicity and cardiac substructure dosimetry in dose-escalated lung radiotherapy
S. Vivekanandan (UK), N. Counsell, A. Khwanda, S. Rosen, E. Parsons, Y. Ngai, L. Farrelly, L. Hughes, M. Hawkins, D. Landau, J. Fenwcik OC-0057

11:15 > Coronary calcifications in breast cancer patients and association with cardiovascular risk factors
S.A.M. Gernaat (The Netherlands), H.J.G. Van den Bongard, B.D. De Vos, I. Isgum, N. Rijnberg, T. Leiner, D.E. Grobbee, Y. Van der Graaf, J.P. Pignol, H.M. Verkooijen OC-0058

11:25 > A radiation dose-response relationship for risk of heart failure in survivors of Hodgkin lymphoma
B.M.P. Aleman (The Netherlands), F.A. Van Nimwegen, G. Ntentas, S.C. Darby, M. Schaapveld, M. Hauptmann, P.J. Lugtenburg, C.P.M. Janus, A.D.G. Krol, F.E. Van Leeuwen, D.J. Cutter OC-0059

11:35 > Cardiac risk prediction: Moving beyond a mean heart dose model?
M. Maraldo (Denmark), F. Giusti, I. Vogelius, M. Lundemann, S. Bentzen, M. Van der Kaaij, B. Aleman, M. Henry-Amar, P. Meijnders, E. Moser, C. Fortpied, L. Specht OC-0060

Proffered Papers

BRACHYTHERAPY 1: PROSTATE

10:45 - 11:45 | ROOM 4

Chair: F.A. Siebert (Germany)
Chair: R. Alonzi (UK)

10:45 > Focal Brachytherapy: what dose to what volume?
A. Haworth (Australia), H. Reynolds, M. DiFranco, Y. Sun, D. Wraith, S. Williams, B. Parameswaran, C. Mitchell, M. Ebert OC-0061

10:55 > High-dose-rate HDR boost for localized prostate cancer decreases long term rectum toxicity
S. Aluwini (The Netherlands), M. Hoogeman, J. Lebesque, C. Bangma, L. Incrocci, W. Heemsbergen OC-0062

11:05 > Real-time in-vivo dosimetry in HDR prostate brachytherapy
J. Mason, B. Al-Qaisieh, A. Henry, P. Bownes (UK) OC-0063

11:15 > A prediction model for biochemical failure after salvage Iodine-125 prostate brachytherapy
M. Peters (The Netherlands), J.R.N. Van der Voort van Zyp, M.A. Moerland, C.J. Hoekstra, S. Van de Pol, H. Westendorp, M. Maenhout, R. Kattevilder, H.M. Verkooijen, P.S.N. Van Rossum, H.U. Ahmed, T. Shah, M. Emberton, M. Van Vulpen OC-0064

11:25 > Risk of second malignancies after seed prostate brachytherapy as monotherapy in a single institution
A. Fernandez Ots (Australia), J. Bucci, D. Malouf, L. Browne, Y. Chin OC-0065

11:35 > Adaptive cone-beam CT planning improves progression-free survival for I-125 prostate brachytherapy
M. Peters, D. Smit Duijzentkunst (The Netherlands), H. Westendorp, S. Van de Pol, R. Kattevilder, A. Schellekens, J. Van der Voort van Zyp, M. Moerland, M. Van Vulpen, C. Hoekstra OC-0066

Proffered Papers

PHYSICS 1: IMAGES AND ANALYSES

10:45 - 11:45 | ROOM 1

Chair: A. Dekker (The Netherlands)
Chair: M. Esposito (Italy)

10:45 > An automated patient-specific and quantitative approach for deformable image registration evaluation
R.G. Kierkels (The Netherlands), C.L. Brouwer, R.J. Steenbakkers, H.P. Bijl, J.A. Langendijk, N.M. Sijtsema OC-0067

10:55 > Can atlas-based auto-contouring ever be perfect?
B.W.K. Schipaanboord, J. Van Soest, D. Boukerroui, T. Lustberg, W. Van Elmpt, T. Kadir, A. Dekker, M.J. Gooding (UK) OC-0068

11:05 > Using texture analysis to detect prostate cancer for automated outlining and adaptive radiotherapy
D. Welsh (UK), D. Montgomery, D.B. McLaren, W.H. Nailon OC-0069

11:15 > Do radiomics features excel human eye in identifying an irradiated tumor? Rat tumor to patient HNSCC
K. Panth (The Netherlands), S. Carvalho, A. Yaromina, R. T.H. Leijenaar, S. J. Van Hoof, N. G. Lieuwes, B. Rianne, M. Granzier-Peeters, F. Hoebers, D. Eekers, M. Berbee, L. Dubois, P. Lambin OC-0070

11:25 > Analysis and reporting patterns of failure in the era of IMRT: head and neck cancer applications
A.S.R. Mohamed (USA), D.I. Rosenthal, M.J. Awan, A.S. Garden, E. Kocak-Uzel, A.M. Belal, A.G. El-Gowily, J. Phan, B.M. Beadle, G.B. Gunn, C.D. Fuller OC-0071

11:35 > Respiratory time-resolved 4D MR imaging for RT applications with acquisition times below one minute
C.M. Rank (Germany), T. Heußer, A. Wetscherek, A. Pfaffenberger, M. Kachelrieß OC-0072

Proffered Papers

PHYSICS 2: BASIC DOSIMETRY

10:45 - 11:45 | ROOM 500

Chair: S. Cora (Italy)

Chair: R. Cirio (Italy)

10:45 > Difference in using the TRS-398 code of practice and TG-51 dosimetry protocol for FFF beams
J. Lye (Australia), D.J. Butler, C.P. Oliver, A. Alves, I.W. Williams OC-0073

10:55 > A real time in vivo dosimeter integrated in the radiation protection disc for IORT breast treatment
M. Iori (Italy), A. Montanari, N. Tosi, E. Cagni, A. Botti, A. Ciccotelli, G. Felici OC-0074

11:05 > Impact of air around an ion chamber: solid water phantoms not suitable for dosimetry on an MR-linac
S. Hackett (The Netherlands), B. Van Asselen, J. Wolthaus, J. Kok, S. Woodings, J. Lagendijk, B. Raaymakers OC-0075

11:15 > Towards MR-Linac Dosimetry: B-Field Effects on Ion Chamber Measurements in a Co-60 beam
J. Agnew (UK), G. Budgell, S. Duane, F. O'Grady, R. Young OC-0076

11:25 > Dual energy CT proton stopping power ratio calibration: Validation with animal tissues
Y. Xie (USA), L. Yin, C. Ainsley, J. McDonough, T. Solberg, A. Lin, B.K. Teo OC-0077

11:35 > Monte Carlo calculated beam quality correction factors for proton beams
C. Gomà (Switzerland), P. Andreo, J. Sempau OC-0078

Proffered Papers

RTT 1: NOVELTIES IN TREATMENT PLANNING

10:45 - 11:45 | ROOM 3

Chair: B. Kraan (The Netherlands)

Chair: S. Johansen (Norway)

10:45 > Automated instead of manual planning for lung SBRT?
A plan comparison based on dose-volume statistics
B. Vanderstraeten (Belgium), B. Goddeeris, C. Derie, K. Vandecasteele, M. Van Eijkeren, L. Paelinck, C. De Wagter, Y. Lievens OC-0079

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

10:55 > In-silico implementation of MRI-60Co based RT: a dosimetrical comparison with rectal cancer (SIMBAD)
E. Placidi, N. Dinapoli, L. Boldrini, G.C. Mattiucci, L. Azario, D. Piccari (Italy), S. Teodoli, M.A. Gambacorta, S. Chiesa, A. Piermattei, V. Valentini OC-0080

11:05 > Robust photon versus robust proton therapy planning with a library of plans for cervical cancer
K. Crama (The Netherlands), A. Van de Schoot, J. Visser, A. Bel OC-0081

11:15 > Validation of MR based dose calculation of prostate cancer treatments
R.L. Christiansen (Denmark), H.R. Jensen, D. Georg, C. Brink OC-0082

11:25 > When using gating in left tangential breast irradiation? A planning decision tool
N. Dinapoli (Italy), D. Piro, M. Bianchi, S. Teodoli, G.C. Mattiucci, L. Azario, A. Martino, F. Marazzi, G. Mantini, V. Valentini OC-0083

11:35 > Hybrid RapidArc for breast with locoregional lymph node irradiation spares more normal tissue
E. Bucko (The Netherlands), M. Jeulink, P. Meijnen, B. Slotman, W. Verbakel OC-0084

Poster Viewing 2
CLINICAL: HEALTH ECONOMICS, UROLOGY AND BRAIN

10:45 - 11:45 | POSTER AREA

Chair: J.M. Borras (Spain)
Chair: F. Alongi (Italy)

> The level of innovations routinely implemented in Dutch radiotherapy centers: a cross-sectional study
M. Jacobs (The Netherlands), A. Dekker, L. Boersma, F. Van Merode, G. Bosmans, L. Linden, P. Simons, S. Moorman, P. Lambin PV-0085

> Clinical implementation of research within a radiotherapy department. A quality indicator?
M. Jacobs (The Netherlands), L. Boersma, F. Van Merode, A. Dekker, F. Verhaegen, L. Linden, S. Moorman, P. Lambin PV-0086

> Non-publication of Phase-3 clinical trails in radiotherapy
J. Perez-Alija (Spain), P. Gallego PV-0087

> Rapid changes in brain metastasis during radiosurgical planning - implications for MRI timing
A.L. Salkeld (Australia), W. Wang, N. Nahar, L. Gomes, K. Ng PV-0088

> CyberKnife for prostate cancer patients – early results of 350 patients irradiation
L. Miszczyk, A. Namysl-Kaletka (Poland), A. Napieralska, G. Wozniak, M. Stapor-Fudzinska, G. Glowacki, K. Grabinska PV-0089

> Stereotactic body radiotherapy for localized prostate cancer: a 7-year experience
Y.W. Lin (Taiwan), K.L. Lin, L.C. Lin PV-0090

> Early salvage RT for PSA recurrence postprostatectomy improves biochemical progression free survival
A.B. Hopper (USA), A.P.S. Sandhu, J.P. Einck PV-0091

PRESIDENTIAL SYMPOSIUM
12:00 - 12:35 | AUDITORIUM

12:05 > Patient centric approach: myth or fact?
Speaker: P. Poortmans (The Netherlands) SP-0092

AWARD LECTURE: EMMANUEL VAN DER SCHUEREN AWARD
12:35 - 13:15 | AUDITORIUM

12:35 > Introduction
Chair: V. Valentini (Italy)

12:40 > Did I do it right? What was the result? Process and outcomes in radiotherapy
Speaker: A. Barrett (UK) SP-0093

Symposium with proffered papers

HOT TOPICS IN SABR: TIME FOR RANDOMISED CLINICAL TRIALS?
14:30 - 15:45 | ROOM 2

The session will be dedicated to the role of randomised clinical trials in SABR. After reviewing the existing evidenced and lessons learned by David Palma, some biological endpoints will be presented by Martin Brown. Because the results obtained with stereotactic radiosurgery (SRS) and stereotactic ablative radiotherapy (SABR) have been impressive they have raised the question of whether classic radiobiological modeling is appropriate for large doses per fraction. Finally, Marianne Aznar will talk about developments in image guidance, treatment delivery methods (i.e. VMAT, etc...), dose calculation algorithms and their common impact on the development of future clinical trials as well as the issue of common standards in normalisation and reporting of the prescription dose.

Chair: E. Lartigau (France)
Co-chair: R. Ruggieri (Italy)

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

14:30 > Do we need randomised clinical data to justify the use of SABR for primary and oligometastatic cancer?
Speaker: F. Mcdonald (UK) SP-0094

14:50 > Pre-clinical and clinical data on the radiobiological mechanism for the efficacy of SABR
Speaker: M. Brown (USA) SP-0095

15:10 > Technical developments in high precision radiotherapy: a new era for clinical SABR trials?
Speaker: M. Aznar (Denmark) SP-0096

15:30 > Radiation dose-volume effects for liver SBRT
M. Miften (USA), Y. Vinogradskiy, V. Moiseenko, J. Grimm, E. Yorke, A. Jackson, W.A. Tomé, R. Ten Haken, N. Ohri, A.M. Romero, K.A. Goodman, L.B. Marks, B. Kavanagh, L.A. Dawson OC-0097

Symposium

TUMOUR TARGETING - CONSIDERING NORMAL TISSUE BIOLOGY

14:30 - 15:45 | LONDRA

Stem cells are thought to be major players in the response of normal tissue and tumours to (chemo-) radiation. In this symposium recent developments in the field of (cancer) stem cell science and genetics are combined. Using several techniques such as the stem cell culturing as organoids or basal cell layers derived from biopsies enabled the study the molecular cues involved in the (patient specific) treatment response. Mathematical modelling of signalling network, (epi)genetic changes and response analysis of specific stem/progenitor cells involving known and less well know cues are discussed in the light of potential modification, optimisation and personalisation of radiotherapy.

Chair: R. Coppes (The Netherlands)
Co-chair: M. Mangoni (Italy)

14:30 > Organoids, a disease and patient specific in vitro model system
Speaker: R. Vries (The Netherlands) SP-0098

14:48 > The role of ATM and p53 in normal tissue radiation response
Speaker: D. Kirsch (USA) SP-0099

15:06 > Radiation sensitivity of human skin stem cells: dissecting epigenetic effects of radiation
Speaker: M. Martin (France) SP-0100

15:24 > A radiation systems biology view of radiation sensitivity of normal and tumour cells
Speaker: K. Unger (Germany) SP-0101

Debate

THIS HOUSE BELIEVES THAT PROGRESS IN THE TREATMENT OF LOCALLY ADVANCED NSCLC WILL COME FROM:

14:30 - 15:45 | AUDITORIUM

The prognosis of locally advanced NSCLC remains poor with the majority of patients failing locally and/or distantly. Evidence supports that improved local tumour control improves survival and this can be improved by the use of advanced radiotherapy techniques and altered fractionation. In the field of systemic treatment, immune checkpoint inhibition and targeted agents, which have changed the treatment paradigm in advanced NSCLC, are being evaluated in locally advanced disease. The speakers will debate which of the two treatment modalities is the most likely to have a significant impact on the outcome of this group of patients.

Chair: C. Faivre-Finn (UK)
Chair: P. Van Houtte (Belgium)

14:30	>	Radiation treatment intensification *Speaker: J. Belderbos (The Netherlands)*	SP-0102
14:50	>	Better systemic therapy *Speaker: J. Van Meerbeeck (Belgium)*	SP-0103
15:10	>	Rebuttal *Speaker: J Belderbos (The Netherlands)*	
15:20	>	Rebuttal *Speaker: J. Van Meerbeeck (Belgium)*	
15:30	>	Discussion	

Symposium

ACTIVE SURVEILLANCE FOR LOW RISK PROSTATE CANCER: TO TREAT OR NOT TO TREAT?

14:30 - 15:45 | GIALLA

Chair: A. Bossi (France)
Co-chair: C. Cozzarini (Italy)

14:30	>	Does (very) low risk prostate cancer really exist? *Speaker: F. Algaba (Spain)*	SP-0104
14:55	>	The role of MRI in active surveillance *Speaker: G. Villeirs (Belgium)*	SP-0105
15:20	>	Active surveillance: challenges and perspectives. The clinician point of view *Speaker: R. Valdagni (Italy)*	SP-0106

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

Symposium

ACHIEVING EXCELLENCE IN IMAGE GUIDED BRACHYTHERAPY

14:30 - 15:45 | ROOM 4

This session will give an overview of the basic concepts of 3D dose planning including imaging, radiobiology and underlying physics including planning algorithms. There will be a focus on the uncertainties in the pathway with particular attention to the training needs for both physicists and clinicians. Tools for training in 3D outlining will be demonstrated and the impact of different methods of teaching explored. The challenge of creating acceptable reference outlines will be considered together with the best metrics for assessing the impact of training on performance.

Chair: P. Hoskin (UK)
Co-chair: A. Vavassori (Italy)

14:30 > Physician training in contouring
Speaker: P. Petric (Qatar) SP-0107

14:55 > Physicist training in 3D dose planning
Speaker: P. Bownes (UK) SP-0108

15:20 > New avenues for training with e-learning
Speaker: L.T. Tan (UK) SP-0109

Symposium

IMAGING MARKERS FOR RESPONSE PREDICTION AND ASSESSMENT

14:30 - 15:45 | ROOM 1

This symposium will start with a general introduction to the clinical need of biomarkers for response assessment with an emphasis on current images methods: strengths and limitations. Furthermore, the potential of hybrid imaging using new PET/MRI machines will be discussed. Followed by an upcoming image analysis technique based on standard CT and FDG-PET imaging: radiomics allowing a high throughput image analysis strategy for assessment and prediction of treatment outcome. Illustrated in the context of rectal cancer. Finally some examples will be given for imaging based treatment verification and tumour/normal tissue characterisation using MRI imaging in the setting of stereotactic and proton therapy.

Chair: W. Van Elmpt (The Netherlands)
Co-chair: A.G. Morganti (Italy)

14:30 > Imaging markers for response prediction: the clinical need
Speaker: V. Goh (UK) SP-0110

14:55 > Response prediction in rectal cancer using PET Radiomics
Speaker: R. Leijenaar (The Netherlands) SP-0111

15:20 > MRI imaging of irradiated liver tissue for *in vivo* verification in particle therapy
Speaker: C. Richter (Germany) SP-0112

Debate

THERE ARE MANY EXISTING IGRT OPTIONS FOR HIGHLY ACCURATE DOSE DELIVERY. IS THERE A NEED FOR LARGE-SCALE IN-ROOM MR-GUIDANCE?

14:30 - 15:45 | ROOM 500

There is no doubt that the ideal situation for radiotherapy would be a treatment under more or less static conditions in an ideal dosimetric situation with permanent on-line image based control of the position of tumor, organs-at-risk (OAR) and patient surface.

This debate will first outline how close we have already come to this objective with available advanced image guidance strategies and then explore, if/how/where in-room MR-guidance may go beyond current strategies and what requirements must be fulfilled on the way.

Chair: H. Nyström (Sweden)
Chair: B. Heijmen (The Netherlands)

14:30 > For the motion
Speaker: F. Lohr (Germany) SP-0113

14:50 > Clinical evidence for in-room MRI guidance
Speaker: P. Keall (Australia) SP-0114

15:10 > For the motion rebuttal
Speaker: F. Lohr (Germany)

15:20 > Against the motion rebuttal
Speaker: P. Keall (Australia)

15:30 > Discussion

Symposium

ADDITIONAL TOOLS FOR CONTOURING

14:30 - 15:45 | ROOM 3

As we find ourselves in the era of advanced imaging and adaptive radiotherapy, novel tools that aim to streamline and improve the accuracy of delineation has become the focus of many recent research efforts. In the pre treatment stage, functional imaging such as PET continues to play a role in target volume delineation as we investigate new tracers beyond FDG and explore the role of the biological target volume. At the treatment stage automated tools for deformable registration, recontouring and class solutions will be central to the success of adaptive radiotherapy in a busy clinical environment. This dynamic session will discuss these technologies as we move closer towards personalised radiotherapy.

Chair: E. Forde (Ireland)
Co-chair: C. Brooks (UK)

14:30 > Functional and molecular imaging techniques and personalised radiotherapy
Speaker: M. Niyazi (Germany) SP-0115

14:55 > General recontouring with deformal registration
Speaker: X. Geets (Belgium) SP-0116

15:20 > Clinical appplication of ATLAS-based autosegmentation for contouring of multiple treatment sites
Speaker: M. Ten Kley (The Netherlands) SP-0117

Poster Viewing 3
CLINICAL: GASTROINTENSTINAL AND GYNAECOLOGY
14:30 - 15:45 | POSTER AREA
Chair: K. Bujko (Poland)
Chair: G. Macchia (Italy)

> Prognostic impact of presurgical Ca 19-9 level in pancreatic adenocarcinoma: a pooled analysis.
G.C. Mattiucci (Italy), A. Arcelli, F. Bertini, F.A. Calvo, M. Falconi, A. Farioli, A. Guido, G. Frezza, J.M. Herman, R.C. Miller, V. Picardi, G. Macchia, W. Regine, M. Reni, N. Sharma, A.G. Morganti, V. Valentini PV-0118

> Pattern of regional recurrence in adenocarcinoma of GEJ: implication for target delineation
J. Zhang (China), J. Jin, X. Wang PV-0119

> Gastric fundus irradiation increases risk of postoperative anastomotic leakage in esophageal cancer
L. Goense, P.S.N. Van Rossum (The Netherlands), J.P. Ruurda, M. Van Vulpen, G.J. Meijer, R. Van Hillegersberg PV-0120

> FALCON based clinical target volume delineation to support inter-society rectal cancer guidelines.
M. Gambacorta (Italy), G. Chiloiro, P. Das, K. Haustermans, I. Joye, L. Kachnic, P. Maingon, C. Marijnen, S. Ngan, V. Valentini PV-0121

> Clinical factors as a selection tool for organ-preserving treatment strategies in rectal cancer
I. Joye, A. Debucquoy, S. Fieuws, A. Wolthuis, A. D'Hoore, K. Haustermans (Belgium) PD-0122

> Gender and secondary malignancies in rectal cancer patients with and without radiation therapy
R. Warschkow, U. Güller, T. Cerny, B.M. Schmied, L. Plasswilm, P.M. Putora (Switzerland) PD-0123

> Does daily intake of resistant starch reduce the acute bowel symptoms in pelvic radiotherapy? RCT
B.K. Sasidharan (India), P.N. Viswanathan, S. Prasanna, B. Ramadass, S. Pugazhendhi, B.S. Ramakrishna PD-0124

> Chemoradiation+surgery vs chemoradiation+BRT in advanced cervical carcinoma: a case-control study
S. Cima (Switzerland), G. Macchia, A. Galuppi, M. Nuzzo, P. De Iaco, F. Deodato, A.M. Perrone, M.C. Valli, A. Richetti, A. Arcelli, F. Bertini, A. Farioli, S. Cammelli, A. Bisceglie, M. Pieri, S.G. Picchi, A. Zamagni, G. Frezza, A.G. Morganti, G. Ferrandina PD-0125

MULTIDISCIPLINARY TUMOUR BOARD:SESSION 1: BREAST

14:30 - 15:45 | ISTANBUL

Chair: A. Kirby (UK)

ESTRO fellow
Panellist: D. Vordermark (Germany)

Clinical oncologist
Panellist: B. Offersen (Denmark)

Radiologist
Panellist: M. Durando (Italy)

Surgeon
Panellist: R. Audisio (UK)

Joint Symposium

ESTRO-ESR: MR-PET

16:30 - 17:30 | ROOM 2

Advanced radiotherapy recognises a crucial role to modern hybrid imaging techniques, which enrich the morphological tissue analysis with metabolic information. MR-PET imaging represents to date one of the most promising techniques in this scenario, offering the advantages of anatomical detail enhancement, gain of morphological reliability, soft tissue contrast and multiparametric studies together with biological details obtained through the use of specific tracers describing molecular pathways from cell proliferation to hypoxia.

This joint ESTRO-ESR Symposium will highlight the added values and the great potentialities of this hybrid technique with an eye to image segmentation, sub volume definition, planning and patient positioning.

Chair: V. Valentini (Italy)
Chair: K. Riklund (Sweden)

16:30 > MR-PET for radiation oncology: the imaging perspective
Speaker: K. Riklund (Sweden) SP-0126

16:50 > MR-PET for radiation oncology: the sub-volume opportunities
Speaker: D. Thorwarth (Germany) SP-0127

17:10 > MR-PET for radiation oncology: the implementation issues
Speaker: T. Nyholm (Sweden) SP-0128

Proffered Papers

RADIOBIOLOGY 2: INTERPLAY BETWEEN CANCER STEM CELLS, HYPOXIA AND THE RADIATION RESPONSE

16:30 - 17:30 | LONDRA

Chair: N. Gomez-Roman (UK)
Chair: P. Span (The Netherlands)

16:30 > Nitroglycerin decreases the hypoxic fraction of non-small cell lung cancer lesions
B. Reymen (The Netherlands), C.M.L. Zegers, W. Van Elmpt, F. Mottaghy, A. Windhorst, A. Van Baardwjik, S. Wanders, J. Van Loon, D. De Ruysscher, P. Lambin OC-0129

16:40 > Biomarker-based hypoxia-adapted radiochemotherapy: preclinical study in HPV+/- H&N cancer xenografts
L. Koi (Germany), L. Moebius, C. Weise, C. Erdmann, C. Valentini, M. Schmidt, M. Krause, M. Baumann OC-0130

16:50 > miR-875-5p enhances radiation response of prostate cancer cells via EGFR suppression
R. El Bezawy (Italy), D. Cominetti, P. Gandellini, R. Valdagni, N. Zaffaroni OC-0131

17:00 > FoxO proteins and non-functional p53 determine stemness and radio-sensitivity of GBM-stem cells
E. Firat (Germany), G. Niedermann OC-0132

17:10 > Radioresistance of glioblastoma stem-like cells is associated with replication stress
R. Carruthers, S. Ahmed (UK), D. Biasoli, K. Strathdee, E. Hammond, A. Chalmers OC-0133

17:20 > Irradiation-induced plasticity of the cancer stem cell population in prostate cancer
C. Peitzsch (Germany), M. Cojoc, L. Hein, M. Baumann, A. Dubrovska OC-0134

Proffered Papers

CLINICAL 3:LUNG

16:30 - 17:30 | AUDITORIUM

Chair: J. Belderbos (The Netherlands)
Chair: S. Ramella (Italy)

16:30 > Can we select stage I NSCLC patients at high risk for early death prior to SBRT treatment?
R. Klement (Germany), I. Grills, J. Belderbos, J.J. Sonke, F. Mantel, A. Hope, M. Johnson, M. Werner-Wasik, M. Guckenberger OC-0135

16:40 > Primary Study Endpoint Analysis of NRG Oncology/RTOG 0813 Trial of SBRT for centrally located NSCLC
A. Bezjak (Canada), R. Paulus, L. Gaspar, R.D. Timmerman, W. Straube, W. Ryan, Y.I. Garces, A.T. Pu, A.K. Singh, G.M.M. Videtic, R.C. McGarry, P. Iyengar, J.R. Pantarotto, J.J. Urbanic, A.Y. Sun, M.E. Daly, I.S. Grills, D.P. Normolle, J. Bradley, H. Choy OC-0136

16:50 > Tumour size but not location determines survival and control of lung stereotactic body radiotherapy
M. Roach (USA), S. Rehman, T. DeWees, J. Bradley, C. Robinson OC-0137

17:00 > Apnea-like suppression of respiratory motion: first clinical evaluation
N. Peguret (Switzerland), M. Ozsahin, C. Beigelman, M. Zeverino, A. Durham, F. Duclos, K. Grant, B. Belmondo, J. Simons, O. Long, R. Moeckli, J. Prior, R. Meuli, J. Bourhis OC-0138

17:10 > Expert knowledge vs. data-driven algorithms: Bayesian prediction models for post-radiotherapy dyspnea
T.M. Deist (The Netherlands), A. Jochems, C. Oberije, B. Reymen, K. Vandecasteele, Y. Lievens, R. Wanders, K. Lindberg, D. De Ruysscher, W. Van Elmpt, S. Vinod, A. Dekker, P. Lambin OC-0139

17:20 > Management of patients with extensive-stage small-cell lung cancer: A European survey of practice
K. Haslett (UK), D. De Ruysscher, R. Dziadziuszko, M. Guckenberger, C. Le Pechoux, U. Nestle, C. Faivre-Finn OC-0140

Proffered Papers

CLINICAL 4: LATE BREAKING ABSTRACTS

16:30 - 17:30 | GIALLA

Chair: L. Kepka (Poland)
Chair: U. Nestle (Germany)

16:30 > Does an integrated boost increase acute toxicity in prone hypofractionated breast irradiation?
L. Paelinck, A. Gulyban, F. Lakosi, T. Vercauteren, W. De Gersem, B. Speleers, C. Monten, T. Mulliez, P. Berkovic, A. Van Greveling, P. Coucke, W. De Neve, L. Veldeman (Belgium) OC-0141

16:40 > Hypo- vs normofractionated radiation of early breast cancer in the randomised DBCG HYPO trial
B.V. Offersen (Denmark), E.H. Jacobsen, M.H. Nielsen, M. Krause, L. Stenbygaard, I. Mjaaland, A. Schreiber, U.M. Kasti, M.B. Jensen, J. Overgaard OC-0142

16:50 > A Bayesian randomisation trial of IMRT vs. PSPT for locally advanced non-small cell lung carcinoma
Z. Liao (USA), J. Lee, R. Komaki, D. Gomez, M. O'Reilly, P. Allen, F. Fossella, J. Heymach, N. Choi, T. Delaney, S. Hahn, C. Lu, J. Cox, R. Mohan OC-0143

17:00 > Maximum response and PCI are important prognostic factors in LD SCLC patients staged with cMRI
C. Eze (Germany), O. Roengvoraphoj, M. Niyazi, S. Gerum, G. Hildebrandt, R. Fietkau, C. Belka, F. Manapov OC-0144

17:10 > Preoperative radiotherapy with an integrated boost compared to chemoradiotherapy for rectal cancer
M. De Ridder (Belgium), A. De Paoli, E. Delmastro, F. Munoz, S. Vagge, D. Norkus, H. Everaert, G. Tabaro, E. Garibaldi, U. Ricardi, E. Borsatti, T. Gevaert, P. Gabriele, G. Boz, A. Sermeus, M.A. MahéB. Engels OC-0145

17:20 > The PROS-IT CNR study: comorbidities and medications at the time of diagnosis of prostate cancer
S. Magrini (Italy), U. Ricardi, F. Bertoni, R. Corvò, E. Russi, R. Santoni, W. Artibani, P. Bassi, S. Bracarda, G. Conti, M. Gacci, P. Graziotti, S. Maggi, V. Mirone, R. Montironi, G. Muto, S. Pecoraro, A. Porreca, A. Tubaro, V. Zagonel, F. Zattoni, G. Crepaldi OC-0146

Proffered Papers

BRACHYTHERAPY 2: EYE GI

16:30 - 17:30 | ROOM 4

Chair: J. Hannoun-Levi (France)
Chair: L. Tagliaferri (Italy)

16:30 > Organ preservation in T2 T3 NX M0 rectal. French results using the new Papillon 50TM machine
J.P. Gérard (France), A. Frin, J. Doyen, N. Barbet, R. Coquard, K. Benezery, S. Marcié OC-0147

16:40 > Evaluation of EBRT and HDRBT for inoperable rectal cancer patients: an update of the HERBERT study
E.C. Rijkmans (The Netherlands), L.A. Velema, A. Cats, K.J. Neelis, Y.M. Van der Linden, R.A. Nout, B. Van Triest, J. Buijsen, T. Rozema, M. Ketelaars, C.A.M. Marijnen OC-0148

16:50 > Patterns of relapse in rectal cancer patients following pre-operative high dose rate brachytherapy
T. Vuong (Canada), F. Desjardins, V. Pelsser, T. Niazi, A. Robillard, M. Leventhal OC-0149

17:00 > Intraluminal brachytherapy in unresectable biliary carcinoma with malignant biliary obstruction
N. Rastogi (India), V.A. Saraswat, S.S. Baijal OC-0150

17:10 > Radiation induced toxicity and tumour control in pts treated for uveal melanoma with ru-106 plaques
C.A. Espensen (Denmark), L.S. Fog, M.C. Aznar, L. Specht, J.F. Kiilgaard OC-0151

17:20 > Novel software modules for treatment planning of 106Ru eye plaque brachytherapy
G. Heilemann (Austria), L. Fetty, I. Birlescu, M. Blaickner, N. Nesvacil, D. Georg OC-0152

Proffered Papers

PHYSICS 3: ANATOMICAL CT AND MR IMAGING FOR TREATMENT PREPARATION

16:30 - 17:30 | ROOM 1

Chair: J. Korhonen (Finland)

Chair: V. Landoni (Italy)

16:30 > Dual energy CT and iterative metal artefact reduction for accurate tumour delineation
D. Kovacs (Denmark), L. Rechner, J. Bangsgaard, A. Berthelsen, J. Costa, J. Friborg, G. Persson, L. Specht, I. Vogelius, M. Aznar OC-0153

16:40 > Clinical use of dual-energy CT for proton treatment planning to reduce CT-based range uncertainties
P. Wohlfahrt (Germany), C. Möhler, A. Jakobi, M. Baumann, W. Enghardt, M. Krause, S. Greilich, C. Richter OC-0154

16:50 > MR-guided multi-atlas based synthetic CT for MR-only radiotherapy of head and neck cancer patients
R. Farjam (USA), N. Tyagi, H. Veeraraghavan, A. Apte, K. Zakian, M. Hunt, J. Deasy OC-0155

17:00 > MRI only prostate radiotherapy using synthetic CT images
E. Persson (Sweden), F. Nordström, C. Siversson, C. Ceberg OC-0156

17:10 > Prostate fiducial markers detection with the use of multiparametric-MRI
C.D. Fernandes (The Netherlands), C. Dinh, L.C. Ter Beek, M. Steggerda, M. Smolic, L.D. Van Buuren, P.J. Van Houdt, U.A. Van der Heide OC-0157

17:20 > Impact of breathing guidance and prospective gating on 4DCT image quality: a digital phantom study
S. Pollock (Australia), J. Kipritidis, D. Lee, K. Bernatowicz, P. Keall OC-0158

Proffered Papers

PHYSICS 4: INTER-FRACTION MOTION MANAGEMENT I

16:30 - 17:30 | ROOM 500

Chair: M. van Herk (UK)

Chair: M. Zani (Italy)

16:30 > X-ray tube current modulation with dynamic blade collimation for CBCT guidance
D. Parsons (Canada), J. Robar OC-0159

16:40 > Growth and oedema related shifts of brain metastasis treated with stereotactic radiosurgery
K. De Vries (The Netherlands), M. Beerendonk, L. Dewit, W. Boogerd, D. Brandsma, A. Van Mourik, G. Borst OC-0160

16:50 > Renal and diaphragmatic interfractional motion in children and adults: is there a difference?
I.W.E.M. Van Dijk (The Netherlands), S.C. Huijskens, M.A.J. De Jong, J. Visser, R. DÃ¡vila Fajardo, C.R.N. Rasch, T. Alderliesten, A. Bel OC-0161

17:00 > Liquid fiducial markers' performance in non small cell lung cancer during radiotherapy
I. Scherman Rydhög (Denmark), S. Riisgaard Mortensen, K. Richter Larsen, P. Clementsen, R. Irming Jølck, M. Josipovic, M. Aznar, G. Persson, T.L. Andresen, L. Specht, P. Munck af Rosenschöld OC-0162

17:10 > Robustness of proton RT with different beam angles towards inter-fractional motion in the pelvis
A. Andersen (Denmark), O. Casares-Magaz, J. Petersen, J. Toftegaard, L. Bentzen, S. Thörnqvist, L. Muren OC-0163

17:20 > Integrate range shifting in immobilisation for proton therapy: 3D printed materials characterisation
S. Michiels (Department of Oncology), N. Lammens, A. D'Hollander, K. Poels, W. Crijns, G. Defraene, S. Nuyts, K. Haustermans, T. Depuydt OC-0164

Proffered Papers

RTT 2: IMPROVING QUALITY FOR BREAST CANCER TREATMENTS

16:30 - 17:30 | ROOM 3

Chair: L. Van den Berghe (Belgium)
Chair: P. Simons (The Netherlands)

16:30 > Deep inspiration breath hold - can it be detrimental to the heart?
B. Done (Australia), A. Michalski, A. Windsor OC-0165

16:40 > The influence of tumour location in the breast on boost modality selection.
E. Reilly (UK), C. Baker, M. Flynn, H.M.O. Mayles, A.J. Reilly OC-0166

16:50 > Advanced left-side breast cancer: does VMAT allow doses of organs at risk to be reduced?
P.C. Yu (Taiwan), H.H. Nien, C.J. Wu, Y.L. Tsai OC-0167

17:00 > A simple visual test is adequate for testing vmDIBH reproducibility in locoregional breast cancer
L.A. Den Otter (The Netherlands), T.T. Nuver, M. Boerhof, H.H. Kolkman-Nijland, W.J. Schoevers, K. Muller, A.W.H. Minken OC-0168

17:10 > Patient information through group sessions to improve knowledge regarding breast cancer radiotherapy
M.T.A. Tinggaard Axelsen (Denmark), M.J. Jensen, B.H. Haislund, H.M.N. Melgaard Nielsen OC-0169

17:20 > Detection of setup errors with body surface laser scanning system for whole breast irradiation
P. Jiang (China), Z. Liu, J. Wang, S. Zhou, J. Li, H. Sun, S. Jiang OC-0170

Poster Viewing:4

PHYSICS: TREATMENT PLANNING: APPLICATIONS III

16:30 - 17:30 | POSTER AREA

Chair: S. Petit (The Netherlands)
Chair: M. Söhn (Germany)

> Can protons reduce bone marrow toxicity in definitive chemoradiotherapy for oesophageal tumours?
S. Warren (UK), C. Hurt, T. Crosby, M. Partridge, M. Hawkins PV-0171

> Selecting patients with lung cancer for proton therapy should be based on multivariable NTCP models.
M.C.A. Kramer (The Netherlands), A.G.H. Niezink, E.W. Korevaar, R.G.J. Kierkels, H.P. Van der Laan, A. Van der Schaaf, V.C. Hamming, P. Kalk, J.A. Langendijk, J. Widder PV-0172

> Dosimetric assessment of three-source Co-60 and Linac-based lung SBRT for feasibility of MR-IGRT
N. Dogan (USA), N. Lamichhane, A. Ishkanian PV-0173

> Experimental verification of 4D Monte Carlo calculations of dose delivered to a moving anatomy
I. Cygler (Canada), S. Gholampourkashi, J. Belec, M. Vujicic, E. Heath PV-0174

> Knowledge-based DVH predictions for automated individualised treatment plan quality assurance
I. Tol (The Netherlands), M. Dahele, A. Delaney, B. Slotman, W. Verbakel PV-0175

> Evaluation of biologically effective dose in stereotactic radiotherapy for prostate cancer
T. Viren (Finland), T. Lahtinen, J. Hopewell, J. Seppälä PV-0176

Honorary Members Lecture

17:45 - 18:30 | AUDITORIUM

Chair: P. Poortmans (The Netherlands)

Chair: V. Valentini (Italy)

17:45 > Evidence-based education: Radiation Oncology's forgotten foundation?
Speaker: S. Turner (Australia) SP-0177

18:00 > The future of surgical oncology
Speaker: R. Audisio (UK) SP-0178

18:15 > Imaging in lung cancer radiotherapy: beyond the "pictures"
Speaker: L. Bonomo (Italy) SP-0179

SUNDAY 1 MAY 2016

ABS. N°

Teaching Lecture

TRADE OFF BETWEEN STANDARDISATION AND INDIVIDUALISATION

08:00 - 08:40 | ROOM 2

Chair: P. Scalliet (Belgium)

08:00 > Trade off between standardisation and individualisation
Speaker: Y. Lievens (Belgium) SP-0180

Teaching Lecture

DNA REPAIR AND RESPONSE FOR BEGINNERS

08:00 - 08:40 | LONDRA

Chair: A. Kiltie (UK)

08:00 > DNA repair and response for beginners
Speaker: K. Borgmann (Germany) SP-0181

Teaching Lecture

ANAL CANCER: CURRENT GUIDELINES AND REMAINING QUESTIONS

08:00 - 08:40 | AUDITORIUM

Chair: K. Haustermans (Belgium)

08:00 > Anal cancer: current guidelines and remaining questions
Speaker: D. Sebag-Montefiore (UK) SP-0182

Teaching Lecture

RADIOTHERAPY AND IMMUNE-THERAPY, BIOLOGICAL BASIS AND POTENTIAL FOR FUTURE CLINICAL TRIALS

08:00 - 08:40 | GIALLA

Chair: P. Ost (Belgium)

08:00 > Radiotherapy and immune-therapy, biological basis and potential for future clinical trials
Speaker: E. Deutsch (France) SP-0183

Teaching Lecture

UNDERESTIMATED IMPORTANCE OF INTRALUMINAL BRACHYTHERAPY: BRONCHUS, OESOPHAGEAL, ANORECTAL AND HEPATOBILIARY DUCT CANCER

08:00 - 08:40 | Room 4

Chair: L.U. Fokdal (Denmark)

08:00 > Underestimated importance of intraluminal brachytherapy: bronchus, oesophageal, anorectal and hepatobiliary duct cancer
Speaker: J. Skowronek (Poland) SP-0184

Teaching Lecture

BIG DATA IN RADIOTHERAPY: TECHNOLOGY, CHALLENGES AND OPPORTUNITIES

08:00 - 08:40 | ROOM 1

Chair: C. Hurkmans (The Netherlands)

08:00 > Big data in radiotherapy: technology, challenges and opportunities
Speaker: A. Dekker (The Netherlands) SP-0185

Teaching Lecture

THE ROLE OF DOSIMETRY AUDIT IN SAFETY, QUALITY AND BEST PRACTICE FOR EXTERNAL BEAM AND BRACHYTHERAPY

08:00 - 08:40 | ROOM 500

Chair: R. Garcia (France)

08:00 > The role of dosimetry audit in safety, quality and best practice for external beam and brachytherapy
Speaker: C. Clark (UK) SP-0186

08:20 > The role of dosimetry audit in safety, quality and best practice for external beam and brachytherapy
Speaker: A. Palmer (UK) SP-0187

Teaching Lecture

GENERAL INTRODUCTION TO HEAD AND NECK RADIOTHERAPY

08:00 - 08:40 | ROOM 3

Chair: M. Coffey (Ireland)

08:00 > General introduction to head and neck radiotherapy
Speaker: V. Grégoire (Belgium) SP-0188

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

Teaching Lecture

E-LEARNING FOR PROFESSIONALS IN RADIATION ONCOLOGY: WHAT, WHY AND HOW?

08:00 - 08:40 | MADRID

Chair: C. Belka (Germany)

08:00 > e-Learning for Professionals in Radiation Oncology: What, Why and How?
Speaker: A. Berlanga Flores (The Netherlands) SP-0189

Symposium with Proffered Papers

QUALITY BEYOND ACCURACY: ARE WE FAILING TO SEE THE FOREST FOR THE TREES?

08:45 - 10:00 | ROOM 2

The rapid technological advances in radiotherapy have led to an increased focus on accuracy, often, but not always, as a tool to obtain quality. In this symposium, Neil Burnet will review the clinical impact (or lack thereof) of increased accuracy in treatment delivery. Severine Cucchiaro will try to answer a key question: what is quality from the patients' perspective? What are their needs and expectations? Finally, Håkan Nystrom will discuss the role of the medical physicist in finding the optimal balance between safety and quality, within a multidisciplinary strategy.

Chair: M. Aznar (Denmark)
Co-chair: S. Magrini (Italy)

08:45 > Has higher accuracy in treatment delivery translated into noticeable improvements in clinical outcomes?
Speaker: N. Burnet (UK) SP-0190

09:05 > The patient: an active partner in quality and safety process in radiotherapy
Speaker: S. Cucchiaro (Belgium) SP-0191

09:25 > Beyond accuracy: how can medical physics help improve treatment quality?
Speaker: H. Nyström (Sweden) SP-0192

09:45 > Evaluation of models for plan QA using fully automated Pareto-optimal plans for prostate patients
Y. Wang (The Netherlands), S. Breedveld, B. Heijmen, S.F. Petit OC-0193

Symposium

TARGETING DNA REPAIR / DDR PRE-CLINICAL EVIDENCE

08:45 - 10:00 | LONDRA

Chair: C. Vens (The Netherlands)

Co-chair: M.F. Osti (Italy)

08:45 > Tumour-specific radiosensitisation by ATR inhibitors
Speaker: T. Brunner (Germany) SP-0194

09:10 > Inhibition of ATR kinase activity for the treatment of lung cancer
Speaker: C. Bakkenist (USA) SP-0195

09:35 > Realising the full potential of DNA damage response inhibition in the treatment of cancer
Speaker: S. Galbraith (UK) SP-0196

Symposium

NEW APPROACHES IN RECTAL CANCER

08:45 - 10:00 | AUDITORIUM

Chair: TBC

Co-chair: C. Aristei (Italy)

08:45 > Consequences of bowel cancer screening programmes
Speaker: M. Van Leerdam (The Netherlands) SP-0197

09:10 > The way forward in organ preservation strategies for rectal cancer
Speaker: S. Bach (UK) SP-0198

09:35 > How to delineate the CTV for rectal cancer? An international consensus
Speaker: V. Valentini (Italy) SP-0199

Symposium

CHANGING PARADIGM IN THE MANAGEMENT OF KIDNEY CANCER

08:45 - 10:00 | GIALLA

Chair: O. Chapet (France)

Co-chair: G. Frezza (Italy)

08:45 > Partial nefrectomy: indication and results
Speaker: P. Gontero (Italy) SP-0200

09:10 > Stereotactic radiotherapy for renal cell carcinoma: the hidden treasure or the forbidden kingdom
Speaker: G. De Meerleer (Belgium) SP-0201

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

09:35 > Ablative treatment for renal cancer
Speaker: H. Baumert (France) SP-0202

Symposium

MODERN TECHNIQUES FOR OLD INDICATIONS

08:45 - 10:00 | ROOM 4

Brachytherapy can be considered as an "old" treatment for cancer. In the course of decennia brachytherapy has evolved for which new and modern techniques can be used for old indications.
New developments are underway for robotic prostate implantations. Bladder implantations are traditionally performed by a laparotomy approach, but laparoscopic implantations can be performed nowadays. Head-and-neck brachytherapy has evolved from low-dose rate brachytherapy to stepping source techniques allowing for dose distribution optimisation. This development has stimulated further developments in treatment planning and imaging. The economic aspects of modern brachytherapy will be addressed. Vaginal cancer is a rare disease, reason why developments in this field are not so fast compared to other gynecologic malignancies. To introduce image-guided brachytherapy for vaginal cancer a new concept should be developed with a new or adapted definitions for target volumes, dose prescription, dose reporting, etc. This symposium illustrates the development of an "old"treatment to modern standards, but also the possible drawbacks and uncertainties of such development.

Chair: B. Pieters (The Netherlands)
Co-chair: P. Muto (Italy)

08:45 > Robotic surgery and brachytherapy
Speaker: B. Pieters (The Netherlands) SP-0203

09:10 > New techniques in brachytherapy for head and neck
Speaker: G. Kovács (Germany) SP-0204

09:35 > Image guided brachytherapy in vaginal cancer
Speaker: L.U. Fokdal (Denmark) SP-0205

Symposium

QUANTITATIVE IMAGING TO INDIVIDUALISE RADIOTHERAPY

08:45 - 10:00 | ROOM 1

Imaging is nowadays an integral part of radiotherapy. Still, quantitative imaging providing measurable features reflecting tissue function and biology, of high relevance for radiotherapy, is still not in extensive use. The symposium addresses current developments in imaging, quantification and image-based applications. Further aspects to be covered are standardisation of image acquisition and analysis. Examples of quantification in tumour and normal tissues will be given, and correlations with underlying pathology elucidated. Also, intra-tumour heterogeneity is addressed alongside image-based tumour control probability modelling with applications in dose painting.

Chair: E. Malinen (Norway)
Co-chair: C. Cavedon (Italy)

08:45 > Tissue characterisation using quantitative radiomics
Speaker: W. Van Elmpt (The Netherlands) SP-0206

09:10 > Image-based radiobiological tumour control probability modelling
Speaker: E. Malinen (Norway) SP-0207

09:35 > Validation of imaging with histology: implications for dose prescriptions
Speaker: G. Ghobadi (The Netherlands) SP-0208

Proffered Papers

PHYSICS 5: INTRA-FRACTION MOTION MANAGEMENT I

08:45 - 10:00 | ROOM 500

Chair: T. Depuydt (Belgium)
Chair: M. Paiusco (Italy)

08:45 > Real-time liver motion monitoring on conventional linac by external surrogate and sparse kV imaging
I. Bertholet (Denmark), E. Worm, R. Hansen, M. Høyer, P. Poulsen OC-0209

08:55 > Motion management for partial arc VMAT treatments using intra-fractional 2D/3D registration
H. Furtado, Y. Seppenwoolde (Austria), E. Steiner, M. Bsteh, W. Birkfellner, D. Georg OC-0210

09:05 > Real-time MRI-guided radiotherapy for pancreatic cancer
S.A. Rosenberg (USA), A. Wojcieszynski, C. Hullett, M. Geurts, S.J. Lubner, N.K. LoConte, D.A. Deming, D.L. Mulkerin, C.S. Cho, S.M. Weber, E. Winslow, K.A. Bradley, J. Bayouth, P.M. Harari, M.F. Bassetti OC-0211

09:15 > Liver motion tracking using optical flow cine-MRI registration
M. Seregni (Italy), C. Paganelli, P. Summers, M. Bellomi, G. Baroni, M. Riboldi OC-0212

09:25 > Towards on-line sub-mm and sub-second positional verification during stereotactic spine radiotherapy
C. Hazelaar (The Netherlands), M. Dahele, B. Slotman, W. Verbakel OC-0213

09:35 > Hybrid MLC and couch tracking
J. Toftegaard (Denmark), R. Hansen, K. Macek, P.R. Poulsen OC-0214

09:45 > Mapping of breathing and cardiac induced motion of lymph node targets in lung cancer patients
M.L. Schmidt (Denmark), L. Hoffmann, M. Knap, T.R. Rasmussen, B.H. Folkersen, J. Toftegaard, D.S. Møller, P.R. Poulsen OC-0215

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

Symposium

HEAD AND NECK: REDUCTION OF MARGINS AND SIDE EFFECTS

08:45 - 10:00 | ROOM 3

This session will focus on the reduction of margins in radiotherapy and their impact on late effects. First, the contouring of organs at risk in the head and neck will be addressed including how differences in delineation can impact on dosimetric analysis and should therefore be guideline-based. Second, an overview of the recent ESTRO guidelines published to assist RTTs in positioning, immobilisation and patient verification for head and neck cancer patients will be given. The final presentation in this session will focus on late effects for patients following radiotherapy and discuss the multidimensional consequences of treatment in every day life.

Chair: M. Leech (Ireland)
Co-chair: G. Petrilli (Italy)

08:45 > Contouring of normal tissues in head and neck radiotherapy
Speaker: S. Hol (The Netherlands) SP-0216

09:10 > The ESTRO perspective - a guideline for positioning of head and neck patients
Speaker: M. Mast (The Netherlands) SP-0217

09:35 > Late effects in patients treated for head and neck cancer
Speaker: K. Henneberg (Denmark) SP-0218

Symposium

THE FUTURE OF RADIATION ONCOLOGY PUBLISHING: VIEWS THROUGH THE RED AND GREEN TELESCOPES

08:45 - 10:00 | MADRID

Chair: P. Mancosu (Italy)
Chair: M. Schmid (Austria)

08:45 > *Green Journal*
Speaker: J. Overgaard (Denmark) SP-0219

09:10 > Publishing the science of radiation oncology: the perspective of the *Red Journal*'s editor
Speaker: A. Zietman (USA) SP-0220

09:35 > How to do a good manuscript review
Speaker: L.P. Muren (Denmark) SP-0221

Poster Viewing 5

RTT

08:45 - 10:00 | POSTER AREA

Chair: M. Coffey (Ireland)

Chair: A. Kostovski (Bosnia and Herzegovina)

> Enhancing safety and quality of the radiotherapy process using a multidisciplinary end-to-end review
M. Albers (The Netherlands), J. Stam, T. Janssen, A. Van Mourik, A. Van Giersbergen, C. Van Vliet-Vroegindeweij PV-0222

> Accuracy of 2D angiogram to 3D MRI registration for frameless stereotactic targeting of brain AVM
I.T. Kuijper (The Netherlands), O. Hertgers, J.P. Cuijpers, F.J. Lagerwaard PV-0223

> To be greeted as a human being - A meta-synthesis of cancer patients' experiences of radiotherapy
S. Petri (Denmark) PV-0224

> Investigating optimal modality for boost treatment of left breast with deep inspiration breath hold
A. Sen, A. Michalski, B. Done (Australia), A. Windsor PV-0225

> Pattern of relapse of glioblastoma treated with Stupp protocol: could a margin reduction be proposed?
S. Pedretti (Italy), M. Buglione, P. Borghetti, L. Costa, L. Triggiani, L. Pegurri, P. Ghirardelli, F. Foscarini, S. Pandini, L. Spiazzi, G. Tesini, C. Uccelli, F. Saiani, S. Magrini PV-0226

> Radiotherapy in elderly patients with lung cancer. Performance status and fractionation analysis
J.L. Monroy Anton (Spain), V. Sanz Ballester, R. Gironés Sarrió, C. Gaspar Martinez, M. Soler Tortosa, A. Navarro Bergada, M. Estornell Gualde PV-0227

> Size and impact of intra-fractional changes in baseline shift during lung SBRT
M. Kamphuis (The Netherlands), M.A.J. De Jong, E.M. Dieleman, A. Bel, N. Van Wieringen PV-0228

> IGRT for pediatric patients: How much can we reduce the dose?
L. Johansen (Denmark), T.H. Larsen, M. Aznar, B. Smulders PV-0229

> Risk assessment of solid secondary malignancies in childhood Hodgkin Lymphoma after radiotherapy
G. Zanella, M. Mascarin (Italy), A. Drigo, A. Pusiol, E.C. Fuga, F.M. Giugliano, A. Rosolen, M.G. Trovò PV-0230

Symposium

QA IN CLINICAL TRIALS: PROCESSES, IMPACT AND FUTURE PERSPECTIVES

10:45 - 11:45 | ROOM 2

Clinical trials traditionally form the basis on which evidence-based guidelines are made. Therefore the quality of the data should be closely monitored. Quality Assurance requirements for every step of the process of trial preparation, conduct and analysis will be presented and illustrated using several practical examples on how protocol deviations led to jeopardising significant investments in terms of manpower and money. Recent developments towards intensive international collaboration across different trial organisations will contribute to the streamlining of this process. Ultimately, effective QA management in clinical trials will be of benefit of all patients whether they participate or not in clinical trials.

Chair: P. Poortmans (The Netherlands)
Co-chair: N. Romeo (Italy)

10:45 > How effective is current clinical trial QA?
Speaker: E. Miles (UK) SP-0231

11:05 > How does QA impact on clinical outcomes?
Speaker: D.C. Weber (Switzerland) SP-0232

11:25 > What will we need for future RTQA in clinical trials?
Speaker: C. Hurkmans (The Netherlands) SP-0233

Proffered Papers

RADIOBIOLOGY 3: NOVEL TARGETING APPROACHES IN COMBINATION WITH RADIATION

10:45 - 11:45 | LONDRA

Chair: G. Higgins (UK)
Chair: M. Verheij (The Netherlands)

10:45 > Radiotherapy and L19-IL2: perfect match for an abscopal effect with long-lasting memory
N.H. Rekers (The Netherlands), A. Yaromina, N.G. Lieuwes, R. Biemans, W.T.V. Germeraad, D. Neri, L. Dubois, P. Lambin OC-0234

10:55 > Enhancing stereotactic radiation schedules using the vascular disrupting agent OXi4503
M.R. Horsman (Denmark), T.R. Wittenborn OC-0235

11:05 > DTP-006: a novel, orally bioavailable hypoxia-activated prodrug
R. Niemans (The Netherlands), A. Yaromina, J. Theys, A. Ashoorzadeh, R. Anderson, M. Bull, C. Guise, H.L. Hsu, M. Abbattista, A. Mowday, A.V. Patterson, J.B. Smaill, D.F. Ackerley, L. Dubois, P. Lambin OC-0236

11:15 > Adding Notch inhibition increases efficacy of standard of care treatment in glioblastoma
S. Yahyanejad, H. King, V. Iglesias, P. Granton, L. Barbeau, S. Van Hoof, A. Groot, R. Habets, J. Prickaerts, A. Chalmers, J. Theys (The Netherlands), S. Short, F. Verhaegen, M. Vooijs OC-0237

11:25 > Akt1 facilitates DNA double-strand breaks repair through a direct physical interaction with DNA-PKcs
M. Toulany (Germany), J. Maier, U. Rothbauer, H.P. Rodemann OC-0238

Proffered Papers
CLINICAL 5: UPPER AND LOWER GI

10:45 - 11:45 | AUDITORIUM

Chair: D. Sebag-Montefiore (UK)
Chair: G. Mantello (Italy)

10:45 > Survival of clinical stage I-III rectal cancer patients: a population-based comparison
I. Joye, G. Silversmit, E. Van Eycken, A. Debucquoy, T. Vandendael, F. Penninckx, K. Haustermans (Belgium) OC-0239

10:55 > Lumbarsacral bone marrow modeling of acute hematological toxicity in chemoradiation for anal cancer
P. Franco (Italy), F. Arcadipane, R. Ragona, M. Mistrangelo, P. Cassoni, J. Di Muzio, N. Rondi, M. Morino, P. Racca, U. Ricardi OC-0240

11:05 > MR radiomics predicting complete response in radiochemotherapy (RTCT) of rectal cancer (LARC)
N. Dinapoli (Italy), B. Barbaro, R. Gatta, G. Chiloiro, C. Casà, C. Masciocchi, A. Damiani, L. Boldrini, M.A. Gambacorta, M. Di Matteo, G.C. Mattiucci, M. Balducci, L. Bonomo, V. Valentini OC-0241

11:15 > Follow-up time and prediction model performance in a pooled dataset of rectal cancer trials
I. Van Soest (The Netherlands), E. Meldolesi, A. Damiani, N. Dinapoli, J.P. Gerard, C. Van de Velde, C. Rödel, K. Bujko, A. Sainato, R. Glynne-Jones, P. Lambin, A. Dekker, V. Valentini OC-0242

11:25 > Randomised trial on preoperative platin-based radiochemotherapy in rectal cancer: 10-years analysis
M. Gambacorta (Italy), F. Cellini, M. Colangione, M. Lupattelli, V. Lancellotta, D. Genovesi, M. Cosimelli, V. Picardi, M. Osti, M. Portaluri, F. Tramacere, E. Maranzano, G. Mantello, V. Valentini OC-0243

11:35 > Similar quality of life after short-course radiation versus chemoradiation in rectal cancer patients
A.M. Couwenberg (The Netherlands), J.P.M. Burbach, M. Van Vulpen, M.P.W. Intven, O. Reerink, W.M.U. Van Grevenstein, M. Koopman, H.M. Verkooijen OC-0244

Proffered Papers

CLINICAL 6: HADRON THERAPY

10:45 - 11:45 | GIALLA

Chair: M. Krause (Germany)
Chair: S. Combs (Germany)

10:45 > Protontherapy for uveal melanomas of temporal superior
S. Lanteri (France), C. Maschi, J. Herault, G. Angellier, M. Peyrichon, S. Baillif, J. Thariat, J. Caujolle OC-0245

10:55 > Visual outcomes of parapapillary uveal melanomas following proton beam therapy
J. Thariat (France), J. Grange, C. Mosci, L. Rosier, C. Maschi, F. Lanza, A. Nguyen, F. Jaspart, F. Bacin, M. Bonnin, D. Gaucher, W. Sauerwein, G. Angellier, M. Peyrichon, J. Herault, J. Caujolle OC-0246

11:05 > Carbon ion radiotherapy for adenoid cystic carcinomas invading the skull base
A. Hasegawa (Japan), M. Koto, R. Takagi, K. Naganawa, H. Ikawa, H. Tsuji, T. Kamada OC-0247

11:15 > Proton Beam Therapy in childhood - First 2-years of practice results from the WPE
A.L. Mazhari, S. Schulze Schleithoff, F. Guntrum (Germany), C. Plass, M. Stickan-Verfürth, J. Lambert, C. Blase, G. Fleischhack, M. Christiaens, B. Timmermann OC-0248

11:25 > Five-year clinical outcomes after dose-escalated image-guided proton therapy for prostate cancer
C. Bryant (USA), W. Mendenhall, B. Hoppe, R. Henderson, R. Nichols, C. Morris, C. Williams, Z. Su, Z. Li, N. Mendenhall OC-0249

11:35 > Hadrontherapy as re-irradiation using active beam delivery at CNAO
E. Ciurlia (Italy), M. Bonora, P. Fossati, V. Vitolo, A. Iannalfi, M. Fiore, B. Vischioni, A. Facoetti, A. Hasegawa, F. Valvo, M. Krengli, R. Orecchia OC-0250

Proffered Papers
BRACHYTHERAPY 3: DETECTORS AND DOSE VERIFICATION
10:45 - 11:45 | ROOM 4
Chair: T.P. Hellebust (Norway)
Chair: N. Nesvacil (Austria)

10:45 > Electromagnetic tracking for error detection in interstitial brachytherapy
M. Kellermeier, D. Elz, V. Strnad, C. Bert (Germany) OC-0251

10:55 > BrachyView: A novel technique for seed localisation and real-time quality assurance
S. Alnaghy (Australia), M. Petasecca, M. Safavi-Naeini, J.A. Bucci, D.L. Cutajar, J. Jakubek, S. Pospisil, M.L.F. Lerch, A.B. Rosenfeld OC-0252

11:05 > A high sensitivity plastic scintillation detector for in vivo dosimetry of LDR brachytherapy
F. Therriault-Proulx (USA), L. Beaulieu, S. Beddar OC-0253

11:15 > MR compatibility of fiber optic sensing for real-time needle tracking
M. Borot de Battisti (The Netherlands), B. Denise de Senneville, M. Maenhout, G. Hautvast, D. Binnekamp, J.J.W. Lagendijk, M. Van Vulpen, M.A. Moerland OC-0254

11:25 > Correction function for MOSkin readings in realtime in vivo dosimetry in HDR prostate brachytherapy
G. Rossi, M. Carrara (Italy), C. Tenconi, A. Romanyukha, M. Borroni, G. Gambarini, D. Cutajar, M. Petasecca, M. Lerch, J. Bucci, A. Rosenfeld, E. Pignoli OC-0255

11:35 > Column generation-based Monte Carlo treatment planning for rotating shield brachytherapy
M.A. Renaud (Canada), G. Famulari, J. Seuntjens, S. A. Enger OC-0256

Proffered Papers
PHYSICS 6: RADIOBIOLOGICAL MODELLING
10:45 - 11:45 | ROOM 1
Chair: I. Vogelius (Denmark)
Chair: S.M. Tomatis (Italy)

10:45 > A Bayesian network model for acute dysphagia prediction in the clinic for NSCLC patients
A.T.C. Jochems (The Netherlands), T.M. Deist, E. Troost, A. Dekker, C. Faivre-Finn, C. Oberije-Dehing, P. Lambin OC-0257

10:55 > Linear-quadratic modeling of acute rectum toxicity in a prostate hypo-fractionation trial
M. Witte, W. Heemsbergen (The Netherlands), F. Pos, C. Vens, S. Aluwini, L. Incrocci OC-0258

11:05 > Spatial rectal dose-response for patient-reported leakage, obstruction, and urgency in prostate RT
O. Casares-Magaz (Denmark), L.P. Muren, S.E. Petersen, V. Moiseenko, M. Høyer, J.O. Deasy, M. Thor OC-0259

11:15 > Local dose predictors of acute urinary toxicity after RT for prostate cancer
I. Improta (Italy), F. Palorini, C. Cozzarini, T. Rancati, B. Avuzzi, P. Franco, C. Degli Espositi, E. DelMastro, G. Girelli, C. Iotti, V. Vavassori, R. Valdagni, C. Fiorino OC-0260

11:25 > CT Image biomarkers improve the prediction of xerostomia and sticky saliva
N.M. Sijtsema (The Netherlands), L.V. Van Dijk, C.L. Brouwer, R.J. Beukinga, A. Van der Schaaf, H.G.M. Burgerhof, J.A. Langendijk, R.J.H.M. Steenbakkers OC-0261

11:35 > Comparison of machine-learning methods for predictive radiomic models in locally advanced HNSCC
S. Leger (Germany), A. Bandurska-Luque, K. Pilz, K. Zöphel, M. Baumann, E.G.C. Troost, S. Löck, C. Richter OC-0262

Proffered Papers

PHYSICS 7: TREATMENT PLANNING: OPTIMIZATION ALGORITHMS

10:45 - 11:45 | ROOM 500

Chair: M. Alber (Denmark)
Chair: F. Banci Buonamici (Italy)

10:45 > VMAT plus few optimised non-coplanar IMRT beams is equivalent to multi-beam non-coplanar liver SBRT
A.W.M. Sharfo (The Netherlands), M.L.P. Dirkx, S. Breedveld, A.M. Mendez Romero, B.J.M. Heijmen OC-0263

10:55 > Fast biological RBE modelling for carbon ion therapy using the repair-misrepair-fixation (RMF) model
F. Kamp (Germany), D. Carlson, J. Wilkens OC-0264

11:05 > Efficient implementation of random errors in robust optimisation for proton therapy with Monte Carlo
A.M. Barragán Montero (Belgium), K. Souris, E. Sterpin, J.A. Lee OC-0265

11:15 > Automated treatment plan generation for advanced stage NSCLC patients
G. Della Gala (The Netherlands), M.L.P. Dirkx, N. Hoekstra, D. Fransen, M. Van de Pol, B.J.M. Heijmen, S.F. Petit OC-0266

11:25 > Fully automated planning for non-coplanar CyberKnife prostate SBRT - comparison with automatic VMAT
L. Rossi (The Netherlands), S. Breedveld, S. Aluwini, B. Heijmen OC-0267

11:35 > Fully automated VMAT plan generation - an international multi-institutional validation study
B. Heijmen (The Netherlands), P. Voet, D. Fransen, H. Akhiat, P. Bonomo, M. Casati, D. Georg, G. Goldner, A. Henry, J. Lilley, F. Lohr, L. Marrazzo, M. Milder, S. Pallotta, J. Penninkhof, Y. Seppenwoolde, G. Simontacchi, V. Steil, F. Stieler, S. Wilson, R. Pellegrini, S. Breedveld OC-0268

Proffered Papers

RTT 3: ENSURING QUALITY IN HEAD AND NECK TREATMENT

10:45 - 11:45 | ROOM 3

Chair: A. O'Donovan (Ireland)
Chair: A. Schouboe (Denmark)

10:45 > Comparison of dosimetric parameters of two techniques with VMAT for head and neck cancers
M. Miyazaki (Japan), Y. Ueda, S. Ohira, K. Tsujii, M. Isono, A. Masaoka, T. Teshima OC-0269

10:55 > Development of a model to produce reference parotid dose from anatomical parameters in IMRT of NPC
W.S. Leung (Hong Kong SAR China), V.W.C. Wu, F.H. Tang, A.C.K. Cheng OC-0270

11:05 > Positional accuracy valuation of a three dimensional printed device for head and neck immobilisation
K. Sato (Japan), K. Takeda, S. Dobashi, K. Kishi, N. Kadoya, K. Ito, M. Chiba, K. Jingu OC-0271

11:15 > A comparison of CTCAE version 3 and 4 in assessing oral mucositis in oral/oropharyngeal carcinoma
M. Hickman (UK), J. Good, A. Hartley, P. Sanghera OC-0272

11:25 > Including specific symptoms in clinical scoring: predictive modelling and nursing of swallowing pain
D. Nyeng Christiansen (Denmark), K. Olling, L. Wee OC-0273

11:35 > Analysis of set-up errors in head and neck cancer treated with IMRT technique assessed by CBCT
D. Delishaj (Italy), S. Ursino, E. Lombardo, F. Matteucci, C. La Liscia, A. Sainato, F. Pasqualetti, B. Manfredi, L.R. Fatigante, M. Panichi, S. Spagnesi, M.G. Fabrini OC-0274

Poster Viewing 6
CLINICAL: LUNG, PALLIATION, SARCOMA, HAEMATOLOGY

10:45 - 11:45 | POSTER AREA

Chair: U. Ricardi (Italy)
Chair: J-E Bibault (France)

> IMRT for non-small cell lung cancer: a decade of experience at the Ghent University Hospital.
P. Deseyne (Belgium), Y. Lievens, W. De Gersem, P. Berkovic, M. Van Eijkeren, V. Surmont, C. Derie, B. Goddeeris, W. De Neve, K. Vandecasteele PV-0275

> Adaptive radiotherapy: rate of "marginal" failure after "replanning" in combined treatment of NSCLC
S. Silipigni (Italy), E. Molfese, E. Ippolito, M. Fiore, B. Floreno, P. Matteucci, A. Sicilia, L. Trodella, R. D'Angelillo, S. Ramella PV-0276

> SBRT with concurrent chemoradiation in stage III NSCLC: first results of the phase I Hybrid trial
H. Peulen (The Netherlands), J.J. Sonke, E. Van der Bijl, E. Damen, J. Belderbos PV-0277

> Volume concepts in routine radiotherapy for localized Hodgkin lymphoma: results of a national survey
R. Mazeron (France), L. Gonzague-Casabianca, K. Peignaux, V. Remouchamps, C. Chira, P. Moisan, J. Lazarovici, V. Edeline PV-0278

> Role of IFRT prior or after autologous stem cell rescue for refractory or relapsed Hodgkin lymphoma
M. Levis (Italy), C. Piva, A.R. Filippi, P. Pregno, P. Gavarotti, B. Botto, R. Freilone, G. Parvis, D. Gottardi, U. Vitolo, U. Ricardi PV-0279

> Adjuvant radiotherapy in abdominal desmoplastic small round cell tumor: analysis of 107 patients
V. Atallah (France), C. Honoré, D. Orbach, S. Helfre, A. Ducassou, L. Thomas, M. Levitchi, A. Mervoyer, S. Naji, C. Dupin, G. Kantor, M. Sunyach, P. Sargos PV-0280

> (ICORG 05-03): Radiotherapy in malignant spinal cord compression; the quality of lfe analysis
K. Lee (Ireland), C. Small, P. Kelly, O. McArdle, J. O'Sullivan, D. Hacking, M. Pomeroy, M. Stevenson, J. Armstrong, M. Moriarty, M. Dunne, A. Clayton-Lea, I. Parker, C. Collins, P. Thirion PV-0281

Proffered Papers
DONAL HOLLYWOOD AWARD
12:00 - 12:15 | AUDITORIUM
Chair: P. Poortmans (The Netherlands)

12:05 > FLAME randomised trial: 95Gy MRI-boost vs 77Gy prostate radiotherapy: toxicity and quality of life
M. Van Vulpen (The Netherlands), J. Van Loon, F. Pos, K. Haustermans, R. Smeenk, L. Van den Bergh, S. Isebaert, G. McColl, M. Kunze-Busch, B. Doodeman, J. Noteboom, E. Monninkhof, U. Van der Heide OC-0282

Proffered Papers
HIGHLIGHTS OF PROFFERED PAPERS
12:15 - 13:00 | AUDITORIUM
Chair: Y. Lievens (Belgium)
Chair: B. Heijmen (The Netherlands)

12:15 > Dose escalation with contact x-ray brachytherapy to improve organ preservation in rectal cancer
A. Sun Myint (UK), F. Smith, K. Whitmarsh OC-0283

12:25 > PD-L1 inhibition improves response of pancreatic cancer to radiotherapy
A. Azad, Z. D'Costa, S.Y. Lim, O. Sansom, W.G. McKenna, R. Muschel, E. Fokas (UK) OC-0284

12:35 > Experimental benchmarking of a probe-format calorimeter for use as an absolute clinical dosimeter
J. Renaud (Canada), A. Sarfehnia, J. Seuntjens OC-0285

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

12:45 > From pixel to print: clinical implementation of 3D-printing in electron beam therapy for skin cancer
R. Canters (The Netherlands), I. Lips, M. Van Zeeland, M. Kusters, M. Wendling, R. Gerritsen, P. Poortmans, C. Verhoef OC-0286

Symposium

PLANNING AHEAD: HOW TO FINISH YOUR RESIDENCY / PHD PROJECT WITH A JOB OFFER

13:00 - 14:15 | MADRID

Chair: D. Verellen (Belgium)
Chair: U. Oelfke (UK)

13:00 > Planning ahead: how to finish your residency / PhD project with a job offer as a radiation oncologist
Speaker: S. Rivera (France) SP-0287

13:18 > Planning ahead: how to finish your residency / PhD project with a job offer as a radiobiologist
Speaker: M. Vozenin (Switzerland) SP-0288

13:36 > Planning ahead: how to finish your residency / PhD project with a job offer as a physicist
Speaker: D. Verellen (Belgium) SP-0289

13:54 > Planning ahead: how to finish your residency / PhD project with a job offer as a researcher
Speaker: U. Oelfke (UK) SP-0290

Symposium with Proffered Papers

STANDARDISATION IN CLINICAL PRACTICE

14:15 - 15:30 | ROOM 2

Standardisation is of outmost importance if we want to monitor and improve quality in radiation oncology. It does not only reduce variability, increasing quality but also increases efficiency. In this symposium we will cover how standardisation can be implemented in different areas of the treatment process and what is its impact on quality.
The standardisation of clinical target delineation and organ at risk contouring will be covered by the first two speakers, Caroline Weltens and Stefania Pallotta. Ben Heijmen will cover treatment planning while Angela Baker will focus on the implementation of standardisation at a local and national level.

Chair: N. Jornet (Spain)
Co-chair: G. Biti (Italy)

14:15 > Guideline-based contouring and clinical audit systems
Speaker: C. Weltens (Belgium) SP-0291

14:30 > Standardisation and treatment planning
Speaker: B. Heijmen (The Netherlands), A. Henry, S. Breedveld SP-0292

14:45 > Potentials and challenges of automated contouring in treatment planning
Speaker: S. Pallotta (Italy) SP-0293

15:00 > Implementation of new standards in your department: an RTT perspective
Speaker: A. Baker (UK), Y. Tsang SP-0294

15:15 > Improvement of delineation quality of organs at risk in head and neck using the consensus guidelines
R. Steenbakkers (The Netherlands), C. Brouwer, J. Bourhis, W. Budach, C. Grau, V. Grégoire, M. Van Herk, A. Lee, P. Maingon, C. Nutting, B. O'Sullivan, S. Porceddu, D. Rosenthal, N. Sijtsema, J. Langendijk OC-0295

Symposium

DNA REPAIR INHIBITION AND RADIOTHERAPY: MOVING TOWARDS CLINIC

14:15 - 15:30 | LONDRA

For many years the radiosensitising effects of DNA repair inhibitors have been presented at ESTRO. But only recently have these agents progressed to clinical testing in combination with radiotherapy and systemic anti-cancer agents.
In this symposium three internationally leading researchers will present groundbreaking work evaluating the most advanced class of DNA repair antagonists: PARP inhibitors.
Jan Schellens will report on studies combining PARP inhibitors with chemotherapy while Marcel Verheij will describe the challenges associated with combining PARP inhibitors and radiation. Finally David Raben will present a novel strategy combining PARP inhibition with radiation and the EGFR targeting agent cetuximab.

Chair: A. Chalmers (UK)
Co-chair: M. Buglione (Italy)

14:15 > Challenges in combining radiation and chemo-radiation with PARP inhibitors
Speaker: J. Schellens (The Netherlands) SP-0296

14:40 > Results of phase I trials combining PARP inhibition and radiotherapy in multiple sites
Speaker: M. Verheij (The Netherlands) SP-0297

15:05 > Phase I results of PARP Inhibition + Radiation + Cetuximab in heavy smoker LAHNSCC
Speaker: D. Raben (USA) SP-0298

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

Symposium

RADIOTHERAPY OF PROSTATE CANCER: TECHNICAL CHALLENGES

14:15 - 15:30 | AUDITORIUM

This GU symposium is aimed at reviewing the most challenging technical innovations in the field of radiation therapy for localized prostate cancer. The speakers will cover relevant aspects regarding 3 topics: 1) Dr Alberto Bossi will review the current status of focal therapy with special focus on indications, techniques, results and limitations. 2) Dr Peter Hoskin will analyse the emergent role of HDR brachytherapy in dose escalation RT, radiobiological basis and the updated results of randomised trial. 3) Finally, Dr Widmark, will discuss the relevant aspects of extreme hypofractionation: indications and clinical trials.

Chair: A. Zapatero (Spain)
Co-chair: S. Arcangeli (Italy)

14:15 > Extreme hypofractionation: indications and results
Speaker: L. Beckman (Sweden) SP-0299

14:40 > Focal strategies: ready for prime time?
Speaker: A. Bossi (France) SP-0300

15:05 > Brachytherapy as a boost: the way to go?
Speaker: P. Hoskin (UK) SP-0301

Debate

THIS HOUSE BELIEVES THAT SBRT SHOULD BECOME THE STANDARD OF CARE FOR T1 AND SMALL T2 NSCLC TUMOURS

14:15 - 15:30 | GIALLA

Stereotactic body radiotherapy (SBRT) has become the standard of care for patients, who are medically inoperable. This is because of high local control rates combined with a favorable toxicity profile, even in high-risk and elderly populations. With overall survival after SBRT mostly influenced by the patients` comorbidities, it is discussed controversially, whether SBRT might be an alternative to surgical resection. The lack of high level of evidence, concerns regarding omission of regional treatment and the lack of histopathology are points against this motion. Consistent evidence in non-randomised studies and in a small pooled analysis of two randomised studies speak for the motion.

Chair: M. Guckenberger (Switzerland)
Chair: D. De Ruysscher (The Netherlands)

14:15 > For the motion
Speaker: K. Franks (UK) SP-0302

14:35 > Against the motion
Speaker: P. Van Schil (Belgium) SP-0303

14:55 > For the motion rebuttal
Speaker: K. Franks (UK)

15:05 > Against the motion rebuttal
Speaker: P. Van Schil (Belgium)

15:15 > Discussion

Debate

IS BRACHYTHERAPY THE BEST FOR PARTIAL BREAST IRRADIATION?

14:15 - 15:30 | ROOM 4

Four experts in the field of APBI will review the pros and cons of available APBI techniques:
Based on the recently published results of the GEC-ESTRO APBI trial, Prof Strnad will emphasise that multicatheter brachytherapy is the only technique which proved to be non-inferior to WBI concerning 5-year local control and side effects.
In contrast, Prof Orecchia will focus on the advantages of IORT, which offers the opportunity to complete RT at the time of lumpectomy. He believes that the results of the ELIOT and TARGIT trials demonstrate that IORT yields a low rate of breast recurrence in selected patients with low toxicity profile.
Dr Offersen will report the highly-awaited 5-year results of the IMPORT-LOW and DBCG APBI trials using EBI. She will also emphasise the wide-spread availability of EBI techniques, and the importance of dose homogeneity delivered with IMRT.
Finally, Dr Major will provide an objective evaluation on the dosimetric pros and cons of available APBI techniques. He will show that there is no best' one-size-fits all' technique for all clinical cases.

Chair: C. Polgár (Hungary)
Chair: E. Van Limbergen (Belgium)

14:15 > Multicatheter brachytherapy is the best for APBI
Speaker: V. Strnad (Germany) SP-0304

14:30 > IORT is the best for PBI
Speaker: R. Orecchia (Italy) SP-0305

14:45 > IMRT is the best for PBI
Speaker: B. Offersen (Denmark) SP-0306

15:00 > Dosimetric pros and cons of available PBI techniques
Speaker: T. Major (Hungary) SP-0307

15:15 > Discussion

Symposium

NEW CHALLENGES IN MODELLING DOSE-VOLUME EFFECTS

14:15 - 15:30 | ROOM 1

This symposium on normal tissue complication will cover current approaches to modelling, challenges in selection of patient and treatment related variables, as well as the impact of uncertainties on complication probability. Phenomenological approaches to modelling will be introduced and current challenges in collection of data as well as data mining will be discussed. The integration of image information for

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improvement of complication prediction models will be specifically considered. Furthermore, random and systematic dosimetric uncertainties will be discussed in the light of the impact on modelling as well as patient outcome in terms of complication probability.

Chair: K. Tanderup (Denmark)
Co-chair: G.M. Cattaneo (Italy)

14:15 > Evaluating the impact of clinical uncertainties on TCP/NTCP models in brachytherapy
Speaker: N. Nesvacil (Austria) SP-0308

14:40 > Incorporation of imaging-based features into predictive models of toxicity
Speaker: C. Brink (Denmark) SP-0309

15:05 > Growing importance of data-mining methods to select dosimetric/clinical variables in predictive models of toxicity
Speaker: T. Rancati (Italy) SP-0310

Symposium

AUTOMATED TREATMENT PLAN GENERATION IN THE CLINICAL ROUTINE

14:15 - 15:30 | ROOM 500

During the session we will hear about several implementations of automated treatment planning. We will have the Zurich, Milan and Rotterdam experiences to be reported on, in this workshop. We will hear about the different approaches and how this have helped(?) the planning for different tumour sites e.g. head and neck, prostate, breast etc. The presentations will follow a common structure:

- Implementation or pre-clinical activities for automated planning
- Clinical examples and experience
- Plan quality
- Changes in workflow

This will help radiation oncologists, medical physicists, RTTs and dosimetrists to plan for a future implementation at their departments at home.

Chair: T. Knöös (Sweden)
Co-chair: M. Iori (Italy)

14:15 > Automated treatment plan generation - the Zurich experience
Speaker: J. Krayenbuehl (Switzerland) SP-0311

14:40 > Automated treatment plan generation - the Milan experience
Speaker: A. Fogliata (Italy) SP-0312

15:05 > Fully automated treatment plan generation using Erasmus-iCycle - the Rotterdam experience
Speaker: M. Dirkx (The Netherlands) SP-0313

Symposium

ELDERLY AND RADIATION THERAPY

14:15 - 15:30 | ROOM 3

The symposium will focus on how geriatric assessment can be adapted to daily cancer care and radiation therapy. The preference of older females with breast cancer for either surgery or radiation therapy will be explored and how further information may influence this choice. Finally a quick-guide, Palliative Radiation Treatment Summary (PaRTS), dedicated to all health care professions has been developed, and possibilities to bridge the gap between the radiation medicine and primary care team, using the tool, will be discussed.

Chair: A. Boejen (Denmark)
Co-chair: S.C. Frasca (Italy)

14:15 > Geriatric assessment is a requirement to effectively provide a quality radiotherapy service to the older person
Speaker: A. O'Donovan (Ireland) SP-0314

14:40 > Treatment choices in the elderly: focus on breast cancer
Speaker: N. De Glas (The Netherlands) SP-0315

15:05 > Palliative radiation therapy in geriatric cancer patients
Speaker: C. Nieder (Norway) SP-0316

Symposium

A JOINT SESSION OF YOUNG RADIATION ONCOLOGISTS NATIONAL SOCIETIES & YROG

14:15 - 15:30 | MADRID

One of the goals of the ESTRO Young Committee is to bring together all young radiation oncology professionals across Europe. This session will present you some examples of young societies and their activities in their respective country and field (yESTRO, EORTC YROG, France, Italy, and UK). It should be a great opportunity for networking and creating synergies between each other.

Chair: J-E Bibault (France)
Chair: O. Kaidar-Person (Israel)

14:15 > What is the Young ESTRO Committee and what can it do for young radiation oncology professionnals?
Speaker: J-E Bibault (France) SP-0317

14:30 > The Young Radiation Oncology Group of EORTC -ROG
Speaker: O. Kaidar-Person (Israel) SP-0318

14:45 > The French Society of Young Radiation Oncologists
Speaker: T. Leroy (France) SP-0319

14:55 > The Young AIRO (Italian Association of Radiation Oncology) Group
Speaker: D. Greto (Italy) SP-0320

15:05 > The British Institute of Radiology
Speaker: S. Hafeez (UK) SP-0321

15:15 > Round table discussion with present Young National Societies

Poster Viewing

PHYSICS: INTRA-FRACTION MOTION MANAGEMENT II

14:15 - 15:30 | POSTER AREA

Chair: P. Poulsen (Denmark)
Chair: R. Perrin (Switzerland)

> Target displacement evaluation for fluoroscopic and four-dimensional cone-beam computed tomography
H. Iramina (Japan), M. Nakamura, Y. Iizuka, Y. Matsuo, T. Mizowaki, M. Hiraoka, I. Kanno PV-0322

> Prospective evaluation of markerless tumour tracking using 4D3D registration and dual energy imaging
J. Dhont (Belgium), D. Verellen, K. Poels, M. Burghelea, K. Tournel, T. Gevaert, B. Engels, C. Collen, R. Van Den Begin, G. Storme, M. De Ridder PV-0323

> Intra-fraction motion characterisation of head-and-neck tumors using cine-MRI
T. Bruijnen (The Netherlands), B. Stemkens, M.E.P. Philippens, L.P.W. Canjels, R.H.N. Tijssen, T. Schakel, C.H.J. Terhaard, J.J.W. Lagendijk, C.P.J. Raaijmakers PV-0324

> Retrospective self-sorted 4D-MRI for the liver
T. Van de Lindt (The Netherlands), U. Van der Heide, J. Sonke PV-0325

> Respiratory gating guided by internal electromagnetic motion monitoring during liver SBRT
P. Poulsen (Denmark), E. Worm, R. Hansen, L. Larsen, C. Grau, M. Høyer PV-0326

> Patient-specific motion management and adaptive respiratory gating in Pancreatic SBRT
B.L. Jones (USA), W. Campbell, P. Stumpf, A. Amini, T. Schefter, B. Kavanagh, K. Goodman, M. Miften PV-0327

> Rectal immobilisation device in stereotactic prostate treatment: intrafraction motion and dosimetry
I. De Leon (Australia), D. Rivest-Henault, S. Keats, M. Jameson, R. Rai, S. Arumugam, L. Wilton, D. Ngo, J. Martin, M. Sidhom, L. Holloway PV-0328

> Modulation indexes for predicting interplay effects in lung SABR treatments
I. Puxeu Vaqué(Spain), V. Hernandez, J. Saez, P. Saldaña, W.H. Nailon, A. Sankar, M.A. Duch PV-0329

Multidisciplinary Tumour Board
SESSION 2: RECTAL CANCER
14:15 - 15:30 | ISTANBUL
Chair: TBC

ESTRO fellow
Panellist: F. Cellini (Italy)

Medical oncologist
Panellist: TBC

Surgeon
Panellist: S. Bach (UK)

Radiologist
Panellist: B. Barbaro (Italy)

Symposium with Proffered Papers
UNCOVERING THE GAP BETWEEN OPTIMAL AND ACTUAL UTILISATION OF RADIOTHERAPY IN EUROPE
16:15 - 17:15 | ROOM 2
Chair: C. Grau (Denmark)
Co-chair: M. Barton (Australia)

16:15 > Introduction: The HERO data on optimal versus actual utilisation of radiotherapy in Europe
Speaker: C. Grau (Denmark) SP-0330

16:19 > How many new cancer patients in Europe will require radiotherapy by 2025? An ESTRO-HERO analysis
J.M. Borras (Spain), Y. Lievens, M. Barton, J. Corral, J. Ferlay, F. Bray, C. Grau OC-0331

16:29 > Modelled effects of hypofractionation on radiotherapy demand in England
T. Mee (UK), N.F. Kirkby, K.J. Kirkby, R. Jena OC-0332

16:39 > Evaluation of radiotherapy utilisation in Belgium: patterns and possible causes of suboptimal use
Speaker: E. Van Eycken (Belgium), H. De Schutter, K. Stellamans, M. Rosskamp, Y. Lievens SP-0333

16:57 > Cancer plans in Europe and radiotherapy needs assessment: can we dance a tango?
Speaker: T. Albreht (Slovenia) SP-0334

Debate

MAXIMISING TUMOUR CONTROL: CRANK UP THE VOLUME OR TURN OFF THE SWITCHES?

16:15 - 17:15 | LONDRA

Chair: C. Vens (The Netherlands)
Chair: A. Chalmers (UK)

16:15 > For the motion
Speaker: A. Tree (UK) SP-0335

16:30 > Against the motion
Speaker: J. Sonke (The Netherlands) SP-0336

16:45 > For the motion rebuttal
Speaker: B. Wouters (Canada)

16:55 > Against the motion rebuttal
Speaker: A. Dekker (The Netherlands)

17:05 > Discussion

Proffered Papers

CLINICAL 7: UROLOGY

16:15 - 17:15 | AUDITORIUM

Chair: R. Valdagni (Italy)
Chair: C. Salembier (Belgium)

16:15 > More acute proctitis symptoms with hypofractionation (3.4 Gy) than 2 Gy fractions
W. Heemsbergen (The Netherlands), L. Incrocci, C. Vens, M. Witte, S. Aluwini, F. Pos OC-0339

16:25 > Effect of dose and image guided radiotherapy (IGRT) on erectile potency (EP) in prostate radiotherapy
J. Murray (UK), J. Dean, H. Mossop, E. Hall, D. Dearnaley, S. Gulliford OC-0340

16:35 > Anal dose reduction for radiotherapy of prostate cancer does not lead to less rectal incontinence
F. Pos (The Netherlands), L. Incrocci, R. Wortel, U. Van der Heide, J. Lebesque, S. Aluwini, M. Witte, W. Heemsbergen OC-0341

16:45 > Chemoradiotherapy in high-risk prostate cancer (QRT SOGUG trial): Preliminary report
P. Foro Arnalot (Spain), X. Maldonado, M. Bonet, J. Jove, A. Rovirosa, M. Rico, A. Bejar, G. Sancho, M.J. Vega, M. Mira, M. Martinez, M. Algara, J. Carles OC-0342

16:55 > Pattern of intraprostatic recurrence on multiparametric MRI after radiotherapy for prostate cancer
H. Ariyaratne (UK), D. Kopcke, A. Padhani, R. Alonzi OC-0343

17:05 > Risk of second primary cancers after radiotherapy for prostate cancer
N.S. Hegemann (Germany), U. Ganswindt, J. Engel, C. Belka OC-0344

Proffered Papers
CLINICAL 8: ADULT AND PAEDIATRIC CNS MALIGNANCIES
16:15 - 17:15 | GIALLA
Chair: R. Kortmann (Germany)
Chair: S. Scoccianti (Italy)

16:15 > Patterns of failure after radiotherapy in pediatric ependymoma: correlation with dose parameters
F. Tensaouti (France), A. Ducassou, S. Bolle, X. Muracciole, B. Coche-Dequeant, L. Claude, S. Supiot, C. Alapetite, V. Bernier, A. Huchet, C. Kerr, E. Le Prise, G. Truc, E. Regnier, S. Chapet, A. Lisbona, G. Hangard, A. Laprie OC-0345

16:25 > Pediatric diffuse intrinsic pontine glioma re-irradiation: better survival and better time
L. Gandola (Italy), E. Pecori, V. Biassoni, B. Diletto, E. Schiavello, S. Meroni, F. Spreafico, E. Pignoli, M. Massimino OC-0346

16:35 > Outcome and prognosticators in adult patients with medulloblastoma: a Rare Cancer Network study
B. Atalar (Turkey), M. Ozsahin, J. Call, A. Napieralska, S. Kamer, V. Salvador, P. Erpolat, L. Negretti, Y.L. Ramstad, C. Onal, S. Akyurek, G. Ugurluer, B. Baumert, S. Servagi-Vernat, R.C. Miller, E. Ozyar, T. Sio OC-0347

16:45 > Tumor bed radiosurgery vs. whole brain radiotherapy after surgery of single brain metastasis
L. Kepka (Poland), D. Tyc-Szczepaniak, K. Bujko, M. Olszyna-Serementa, W. Michalski, A. Sprawka, B. Trabska-Kluch, K. Komosinska, E. Wasilewska-Tesluk, B. Czeremszynska OC-0348

16:55 > Hippocampal dosimetry predicts the change in neurocognitive functions after whole brain radiotherapy
S.Y. Lin (Taiwan), C.C. Yang, C.C. Chuang, P.C. Pai, P.F. Tsai, D.L. Tsan, C.K. Tseng OC-0349

17:05 > Post-radiation neuronal depletion in hippocampus measured by in-vivo magnetic resonance spectroscopy
P. Pospisil, T. Kazda (Czech Republic), R. Jancalek, P. Slampa OC-0350

Proffered Papers
BRACHYTHERAPY 4: GYNAE-BREAST

16:15 - 17:15 | ROOM 4

Chair: A. Cerrotta (Italy)
Chair: H. Westerveld (The Netherlands)

16:15 > MRI-guided brachytherapy in cervical cancer: high doses to small bowel don't predict late morbidity
C. Petit (France), R. Mazeron, C. Chargari, I. Dumas, P. Maroun, P. Annede, T. Seisen, C. Haie Meder OC-0351

16:25 > The high doses employed in brachytherapy of cervical cancer counteract hypoxia - a modelling study
E. Lindblom (Sweden), A. Dasu, I. Toma-Dasu OC-0352

16:35 > EBRT and interstitial brachytherapy for recurrent vault carcinomas: Factors influencing the outcomes
R. Engineer (India), S. Chopra, U. Mahantshetty, A. Maheshwari, R. Kerkar, R. Phurailatpam, J. Swamidas, S.K. Shrivastava OC-0353

16:45 > Artificial neural network for bladder dose interfractional variation prediction in GYN brachytherapy
Z. Siavashpour (Iran), M.R. Aghamiri, R. Jaberi, R. Ghaderi, C. Kirisits OC-0354

16:55 > Long term analysis of electron vs. HDR boost in breast conservation - an Indian experience
S. Saha (India), S. Sarkar, A. Mitra, A. Ghosh Dastidar, S. Chattopadhyay, S. Gupta OC-0355

17:05 > Long terms results of permanent breast seed implants (PBSI) as partial breast irradiation
I.P. Pignol (The Netherlands), J. Caudrelier, C. McCann, S. Doggett, J. Crook OC-0356

Proffered Papers

PHYSICS 8: DOSE MEASUREMENT AND DOSE CALCULATION I

16:15 - 17:15 | ROOM 1

Chair: V.N. Hansen (UK)
Chair: S. Russo (Italy)

16:15 > Pilot study of a remote end-to-end dosimetry audit for IMRT and VMAT treatments
P. Wesolowska (Austria), B. Almady, E. Adolfsson, A. Carlsson Tedgren, D. Georg, S. Kry, W. Lechner, J. Povall, M. Tenhunen, M. Tomsej, J. Izewska OC-0357

16:25 > Surface doses with FFF VMAT dose delivery for breast cancer
I. Seppala (Finland), A. Voutilainen, J. Heikkilä, T. Koivumäki, T. Viren, M. Vauhkonen OC-0358

16:35 > Superficial dose verification of four dose calculation algorithms
Y. Cao (China), Z. Yang, X. Yang, X. Qiu OC-0359

16:45 > TomoTherapy tangential breast treatment position uncertainty via exit detector fluence
N. Corradini (Switzerland), P. Urso, C. Vite OC-0360

16:55 > Simulation of clinical relevance errors detected by real-time EPID-based patient verification system
T. Fuangrod, J. Simpson (Australia), R. Middleton, P. Greer OC-0361

17:05 > EPID-based in-vivo dosimetry results: a national statistic
A. Piermattei (Italy), S. Menna, F. Greco, S. Cilla, R. Caivano, V. Fusco, L. Orlandini, G. Benecchi, R. Nigro, D. Falco, A. Fidanzio OC-0362

Proffered Papers

PHYSICS 9: ADAPTIVE RT FOR INTER-FRACTION MOTION MANAGEMENT

16:15 - 17:15 | ROOM 500

Chair: B. Raaymakers (The Netherlands)

Chair: A.F. Monti (Italy)

16:15 > Dose escalation in lung cancer patients, the dosimetric implications of inter-fractional change
L. Hoffmann (Denmark), M. Knap, A. Khalil, D. MÃ¸ller OC-0363

16:25 > Adaptive radiotherapy for advanced lung cancer ensures target coverage and decreases lung dose
D.S. Moeller (Denmark), M.I. Holt, M. Alber, M.M. Knap, A.A. Khalil, L. Hoffmann OC-0364

16:35 > The need for anatomical landmarks in adaptive rectal cancer boost radiotherapy
J.J.E. Kleijnen (The Netherlands), B. Van Asselen, M. Intven, J.J.W. Lagendijk, B.W. Raaymakers OC-0365

16:45 > Dosimetric benefit of adaptive proton therapy compared to adaptive photon therapy in cervical cancer
A.J.A.J. Van de Schoot (The Netherlands), P. De Boer, K.F. Crama, J. Visser, L.J.A. Stalpers, C.R.N. Rasch, A. Bel OC-0366

16:55 > A Neural Network analysis to support adaptive RT strategies: a multicenter retrospective study
G. Guidi (Italy), N. Maffei, B. Meduri, S. Maggi, M. Cardinali, V.M. Morabito, F. Rosica, S. Malara, A. Savini, G. Orlandi, C. D.Ugo, F. Bunkheila, M. Bono, S. Lappi, C. Blasi, G.M. Mistretta, P. Ceroni, A. Ciarmatori, A. Bernabei, P. Giacobazzi, T. Costi OC-0367

17:05 > Accurate CBCT based dose calculations
R.S. Thing (Denmark), U. Bernchou, O. Hansen, C. Brink OC-0368

Proffered Papers

RTT 4: HOW TO INCREASE THE KNOWLEDGE FOR PATIENTS AND STAFF

16:15 - 17:15 | ROOM 3

Chair: C. Nomden (The Netherlands)

Chair: A. Baker (UK)

16:15 > Video glasses to reduce claustrophobic anxiety in radiotherapy treatment
V. Althof (The Netherlands), H. Althof, E. Dahmen, P. Bouma OC-0369

16:25 > The influence of virtual training on pelvic radiotherapy education for the multidisciplinary team
A. Williams (UK), U. Shah, G. Fury, L. Codd, M. Brown, Y. Tsang OC-0370

16:35 > Introduction of a consultant radiographer to stereotactic radiotherapy service
Y. Tsang (UK), P. Ostler, N. Shah, J. Kudhail, P. Hoskin OC-0371

16:45 > Changes in student attitudes following a pre-registration interprofessional learning experience
K. Coleman (New Zealand), B. Darlow, E. McKinlay, P. Gallagher, M. Perry, L. Beckingsale, B. Gray, H. Neser, S. Donovan, J. Stanley, S. Pullon OC-0372

16:55 > IGRTonline: development and evaluation of a free online course on Image Guided Radiation Therapy
I. Mallick (India), R. Achari, S. Chatterjee, R. Shrimali, S. Prasath, B. Arun, A. Mahata OC-0373

17:05 > Use of IV contrast media in pre-treatment radiotherapy planning CT scans: A UK study
K. Williams (UK), H. Probst OC-0374

Plenary Session
YOUNG NETWORKING
16:15 - 17:15 | MADRID

16:15 > The ESTRO Physics Research Masterclass – support in starting up physics research
Speaker: B. Heijmen (The Netherlands)

Poster Viewing 8
PHYSICS: INTER-FRACTION MOTION MANAGEMENT II
16:15 - 17:15 | POSTER AREA
Chair: M. Hoogeman (The Netherlands)
Chair: S. Thörnqvist (Norway)

> Comparison of carina- versus bony anatomy-based registration for IGRT in esophageal cancer.
M. Machiels (The Netherlands), P. Jin, C.H.M. Van Gurp, J.E. Van Hooft, T. Alderliesten, M.C.C.M. Hulshof PV-0375

> Contrast-enhanced respiration managed cone-beam CT for image guided intrahepatic radiotherapy
M. Lock (Canada), N. Jensen, R. Kozak, J. Chen, T. Lee, E. Wong PV-0376

> Inter-fraction bladder variations in RT of prostate cancer: impact on dose surface maps
A. Botti, F. Palorini (Italy), V. Carillo, I. Improta, S. Gianolini, C. Iotti, T. Rancati, C. Cozzarini, C. Fiorino PV-0377

> CBCT derived CTV-PTV margins for elective pelvic node irradiation of prostate cancer patients
C.A. Lyons (UK), R.B. King, C.J. Ho, J.Y. Sun, J.M. O'Sullivan, S. Jain, A.R. Hounsell, C.K. McGarry PV-0378

> 4D Cone-Beam CT reconstruction with 60s acquisition and 60s reconstruction
D. Hansen (Denmark), T. Sørensen PV-0379

Plenary Session

ESTRO SCHOOL SYMPOSIUM

16:15-17:15 | ISTANBUL

Chair: R. Pötter

16:15 > The ESTRO School: from 2016 to 2025
J. Eriksen (Denmark)

16:50 > New directions to go: Blended learning at ESTRO
M. Leech (Ireland)

17:00 > New directions to go: German undergraduate network of radiotherapy CLUB 100 - a European perspective
L. Bolm (Germany)

17:10 > Conclusion
J. Eriksen (Denmark)

Award Lecture

ACADEMIC AWARD: JACK FOWLER UNIVERSITY OF WISCONSIN AWARD

17:30 - 17:40 | AUDITORIUM

Chair: P. Poortmans (Belgium)
Chair: Y. Lievens (Belgium)
Chair: B. Heijmen (The Netherlands)

17:30 > Moving away from binary definition of PTVs: a novel probabilistic approach to PTV definition
H. Tsang (UK), C.Kamerling, S. Nill, U. Oelfke, U OC-0380

Award Lecture

COMPANY AWARD LECTURES

17:40 - 18:00 | AUDITORIUM

Chair: P. Poortmans (Belgium)
Chair: Y. Lievens (Belgium)
Chair: B. Heijmen (The Netherlands)

17:40 > Perfusion SPECT can quantify radiation-induced changes in the lung after IMRT for NSCLC
K. Farr (Denmark), A. Khalil, D. Møller, H. Bluhme, S. Kramer, A. Morsing, C. Grau OC-0381

17:50 > A novel concept to tumour targeting: inverse dose-painting or targeting the "Low uptake drug volume"
A. Yaromina (The Netherlands), M. Granzier, W. van Elmpt, R. Biemans, N. Lieuwes, L. Dubois, P. Lambin OC-0382

MONDAY 2 MAY 2016

ABS. N°

Teaching Lecture

HOW TO BRING QUANTEC INTO THE 21ST CENTURY?

08:00 - 08:40 | ROOM 2

Chair: B. Heijmen (The Netherlands)

08:00 > How to bring QUANTEC into the 21st century?
Speaker: C. Fiorino (Italy) SP-0383

Teaching Lecture

SHARED DECISION MAKING

08:00 - 08:40 | ROOM 4

Chair: N. Dinapoli (Italy)

08:00 > Shared decision making
Speaker: D. Tomson (UK) SP-0384

Teaching Lecture

THE STUDY OF THERAPY RESISTANCE IN GENETICALLY ENGINEERED MOUSE MODELS FOR BRCA1-MUTATED BREAST CANCER

08:00 - 08:40 | LONDRA

Chair: K. Borgmann (Germany)

08:00 > The study of therapy resistance in genetically engineered mouse models for BRCA1-mutated breast cancer
Speaker: S. Rottenberg (Switzerland) SP-0385

Teaching Lecture

SBRT/SABR FOR OLIGOMETASTATIC DISEASE

08:00 - 08:40 | AUDITORIUM

Chair: G. De Meerleer (Belgium)

08:00 > SBRT/SABR for oligometastatic disease
Speaker: E. Lartigau (France) SP-0386

Teaching Lecture

ADVANCED TREATMENT STRATEGIES FOR HEAD AND NECK CANCER

08:00 - 08:40 | GIALLA

Chair: I. Barillot (France)

08:00 > Advanced treatment strategies for head and neck cancer
Speaker: W. Budach (Germany) SP-0387

Teaching Lecture

DOSE TO WATER VS. DOSE TO TISSUE IN ADVANCED TREATMENT PLANNING: MYTHS, REALITIES AND CONCERNS

08:00 - 08:40 | ROOM 1

Chair: E. Spezi (UK)

08:00 > Dose to water vs. dose to tissue in advanced treatment planning: myths, realities and concerns
Speaker: N. Reynaert (France) SP-0388

Teaching Lecture

NANODOSIMETRY: FROM RADIATION PHYSICS TO RADIATION BIOLOGY

08:00 - 08:40 | ROOM 500

Chair: H. Palmans (UK)

08:00 > Nanodosimetry: from radiation physics to radiation biology
Speaker: H. Rabus (Germany) SP-0389

Teaching Lecture

BRACHYTHERAPY FOR THE PELVIC REGION: STATUS AND PERSPECTIVE FOR THE FUTURE

08:00 - 08:40 | ROOM 3

Chair: E. Bloemen van Gurp (The Netherlands)

08:00 > Brachytherapy for the pelvic region: status and perspectives for the future - Gynaecology
Speaker: R. Mazeron (France) SP-0390

08:20 > Brachytherapy for the pelvic region: status and perspective for the future - Prostate
Speaker: A. Henry (UK) SP-0391

Symposium with Proffered Papers

ADAPTIVE RADIOTHERAPY FOR COPING WITH ANATOMICAL VARIATIONS: HOPE OR HYPE?

08:45 - 10:00 | ROOM 2

A huge step in radiation therapy is the introduction of Adaptive Radiotherapy (ART). With ART the treatment can be individualised, according to changes in the anatomy of the patient. To date the clinical implications are not yet known; several studies are developed to get more information concerning these clinical implications. In this symposium, we will focus on different ART strategies, selection of the patients, as well as the practical challenges and costs of ART.

Chair: M. Mast (The Netherlands)
Co-chair: G. Guidi (Italy)

08:45 > Overview of clinical practice of ART for pelvic tumours
Speaker: S. Thörnqvist (Norway), L.B. Hysing, L. Tuomikoski, A. Vestergaard, K. Tanderup, L.P. Muren, B.J.M. Heijmen SP-0392

09:05 > The challenges of ART from a physician's perspective
Speaker: S. Nuyts (Belgium) SP-0393

09:25 > The practical "costs" of adaptive radiotherapy
Speaker: C. Rowbottom (UK) SP-0394

09:45 > Patient selection in head and neck adaptive radiotherapy
C. Brouwer (The Netherlands), R. Steenbakkers, A. Van der Schaaf, C. Sopacua, L. Van Dijk, R. Kierkels, H. Bijl, J. Burgerhof, J. Langendijk, N. Sijtsema OC-0395

Symposium with Proffered Papers

TIME IS NOT ON OUR SIDE: CARDIOVASCULAR TOXICITY AFTER RADIOTHERAPY

08:45 - 10:00 | ROOM 4

Radiotherapy is often used in patients with expected prolonged disease-free-survival. Long term follow up of cancer survivors, indicated that the therapeutic effect of radiotherapy is compromised by cardio-vascular disease (CAD) aggravated by radiation exposure of the heart and coronary arteries. Recent publications have shown a dose-effect relationship with no apparent threshold. In this multidisciplinary symposium we will discuss the clinical aspects of CAD along with quantitative analyses beyond the QUANTEC and whether the use of innovative techniques compared to conventional radiation will change the magnitude of radiation induced CAD. Impotently, we will show that in 2016 we still have open questions.

Chair: O. Kaidar-Person (Israel)
Co-chair: C. Fiandra (Italy)

08:45 > The risk of cardiovascular disease after breast cancer treatment: the clinician's point of view
Speaker: C. Taylor (UK) SP-0396

09:03 > Predicting cardiac toxicity after breast irradiation: new quantitative data and new challenges
Speaker: G. Gagliardi (Sweden) SP-0397

09:21 > Active surveillance for cardiovascular disease after Hodgkins lymphoma
Speaker: L. Daniels (The Netherlands) SP-0398

09:39 > Dose to heart substructures is associated with non-cancer death after SBRT in stage I NSCLC patients
B. Stam (The Netherlands), H. Peulen, M. Guckenberger, F. Mantel, A. Hope, J. Belderbos, I. Grills, M. Werner-Wasik, N. O'Connell, J.J. Sonke OC-0399

09:49 > Risk estimation of cardiac toxicity following craniospinal irradiation of pediatric patients.
G. Engeseth (Norway), C. Stokkevåg, L. Muren OC-0400

Symposium

EMERGING BIOMARKERS

08:45 - 10:00 | LONDRA

In the coming era of precision medicine, or Personalised Radiation Oncology (PRO), reliable predictive biomarkers are desperately needed. During this symposium, the promises and pitfalls of predictive biomarkers for radiotherapy will be discussed in general. There will be special emphasis on three encouraging biomarker areas. The concept of liquid biopsies will be exemplified by the promising results seen when analysing circulating tumour cells in lung cancer. The concept of classifying solid tumours based on genomic subtypes, especially how genomic classifications can aid in treatment decisions, will be discussed for two of the most abundant cancer types, breast and prostate cancer.

Chair: J. Alsner (Denmark)
Co-chair: R. Corvò(Italy)

08:45 > Circulating tumour cells as biomarkers in lung radiotherapy
Speaker: K. Haslett (UK) SP-0401

09:03 > The fall and raise of predictive radiotherapy biomarkers
Speaker: M. Baumann (Germany) SP-0402

09:21 > Genomic breast cancer subtype classification for response prediction
Speaker: N. Somaiah (UK) SP-0403

09:39 > Genomic subtypes in prostate cancer and its influence in treatment response
Speaker: R. Bristow (Canada) SP-0404

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

Symposium

SBRT FOR OLIGOMETASTATIC DISEASE

08:45 - 10:00 | AUDITORIUM

The use of SBRT for oligometastatic disease is a developing clinical strategy that harnesses our greater understanding of disease biology and new technology. In this session, we will explore the complex tumour environment with attention to radiation related immuno-modulating mechanisms, its targets and abscopal effects. This session will review the current status, definitions and current evidence for the treatment of oligometastatic disease. Rationale and data will be presented for combination therapies, evaluating the aggressiveness of SBRT approaches, abdomino-pelvic examplers and the clinical decision making process.

Chair: V. Khoo (UK)
Co-chair: V. Donato (Italy)

08:45 > Combining SBRT and immunotherapy: a promising approach?
Speaker: F. Herrera (Switzerland) SP-0405

09:10 > SBRT for metastatic disease: how far can and should we go?
Speaker: M. Dahele (The Netherlands) SP-0406

09:35 > Abdominal-pelvic targets
Speaker: M. Hoyer (Denmark) SP-0407

Symposium

HEAD AND NECK: STATE-OF-THE-ART AND DIRECTIONS FOR FUTURE RESEARCH

08:45 - 10:00 | GIALLA

Chair: J. Bourhis (Switzerland)
Co-chair: E.G. Russi (Italy)

08:45 > Molecular targeting with radiotherapy
Speaker: K. Harrington (UK) SP-0408

09:10 > Immunotherapy for HNSCC: an emerging paradigm?
Speaker: J. Guigay (France) SP-0409

09:35 > Proton therapy in HNSCC: better than IMRT?
Speaker: C. Rasch (The Netherlands) SP-0410

Symposium

SBRT IN LUNG - CHOICES AND THEIR IMPACT ON RELATED UNCERTAINTIES

08:45 - 10:00 | ROOM 1

This symposium will review current practice of SBRT in lung from different angles, i.e. view of medical physics, radiation oncology and radiation biology. The impact of dose calculation and fluence optimization on outcome will be addressed, together with aspects of treatment plan robustness against motion. Furthermore dose effect relationships for local tumor control in NSCLC will be presented, and the pitfalls of current treatment/prescription protocols with in-homogeneous dose distributions within the PTV. In this context also the impact of dose profiles on the effective dose delivered to the GTV will be discussed. Furthermore, the balance between maximizing local tumor and minimizing the risk of toxicity will be covered in this symposium. The different "Rs" of radiobiology will be reviewed together with limitations of the LQ model at high doses, since this is often applied for relating morbidity endpoints with current knowledge on toxicity. Finally, new aspects of "high dose biology" will be presented.

Chair: W. Lechner (Austria)
Co-chair: S. Clemente (Italy)

08:45 > Dosimetric aspects and robustness in treatment plan optimisation of small tumours
Speaker: A. Ahnesjö (Sweden) SP-0411

09:10 > Does the prescription isodose matter?
Speaker: M. Guckenberger (Switzerland) SP-0412

09:35 > To use or not to use the LQ model at "high" radiation doses
Speaker: W. Dörr (Austria) SP-0413

Proffered Papers

PHYSICS 10: FUNCTIONAL IMAGING I

08:45 - 10:00 | ROOM 500

Chair: M. Philippens (The Netherlands)
Chair: S. Agostinelli (Italy)

08:45 > Assessing 4DCT-ventilation as a functional imaging modality for thoracic radiation therapy
Y. Vinogradskiy (USA), L. Schubert, T. Waxweiler, Q. Diot, R. Castillo, E. Castillo, T. Guerrero, C. Rusthoven, L.E. Gaspar, B. Kavanagh, M. Miften OC-0414

08:55 > The effect of breathing motion on CT radiomics feature extraction in oesophageal cancer
R.T.H.M. Larue (The Netherlands), L. Van De Voorde, R.T.H. Leijenaar, M. Berbée, M.N. Sosef, W.J.C. Van Elmpt, P. Lambin OC-0415

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

09:05 > FDG-PET can objectively quantify esophageal dose-response and toxicity during radiation therapy
J. Niedzielski (USA), Z. Liao, R. Mohan, J. Yang, F. Stingo, D. Gomez, M. Martel, T. Briere, L. Court OC-0416

09:15 > Functional imaging using dual energy Computed Tomography and its application in radiation oncology
A. Lapointe (Canada), M.B. Besnier, D.B. Blais, H.B. Bahig, J.G. De Guise, J.F.C. Carrier, E.F. Filion, D.R. Roberge, S.B. Bedwani OC-0417

09:25 > Cluster analysis of DCE MRI reveals tumor subregions related to relapse of cervical cancers
T. Torheim (Norway), A.R. Groendahl, E.K.F. Andersen, H. Lyng, E. Malinen, K. Kvaal, C.M. Futsaether OC-0418

09:35 > Association between pathology and texture features of multi parametric MRI of the prostate
P. Kuess (Austria), D. Nilsson, P. Andrzejewski, J. Knoth, P. Georg, M. Susani, D. Georg, T. Nyholm OC-0419

09:45 > Radiomics in OPSCC: a novel quantitative imaging biomarker for HPV status?
R.T.H. Leijenaar (The Netherlands), S. Carvalho, F.J.P. Hoebers, S.H. Huang, B. Chan, J.N. Waldron, B. O'Sullivan, P. Lambin OC-0420

Symposium

ADAPTIVE TREATMENTS IN THE PELVIC REGION

08:45 - 10:00 | ROOM 3

In this session latest developments in the world of adaptive radiotherapy (ART) are presented. Christel Nomden starts the session, presenting an online adaptive brachytherapy strategy for gynecological cancers. Furthermore, she will pay attention to the future use of the MR-Linac for this treatment site. The second speaker, Yvette Seppenwoolde, will discuss different aspects of implementing ART for cervical cancer into the department. The session will be closed by Rianne de Jong. She will share first clinical experiences of implementing an online adaptive strategy for patients treated for rectal cancer.

Chair: M. Kamphuis (The Netherlands)
Co-chair: C. Galeotti (Italy)

08:45 > Brachytherapy pelvic and MRI-Linac combination
Speaker: C. Nomden (The Netherlands) SP-0421

09:10 > Clinical implementation of ART for cervix
Speaker: Y. Seppenwoolde (Austria) SP-0422

09:35 > Implementation of daily plan selection in rectum
Speaker: R. De Jong (The Netherlands) SP-0423

Poster Viewing 9
RADIOBIOLOGY
08:45 - 10:00 | POSTER AREA
Chair: T. Brunner (Germany)
Chair: L. Marignol (Ireland)

> Cyclin D1 silencing radiosensitises prostate cancer cells by impairing DNA-DSBs repair pathways.
F. Marampon (Italy), G. Gravina, C. Festuccia, A. Colapietro, E. Di Cesare, E. Tombolini PV-0424

> EEF2K promotes progression and radioresistance of esophageal squamous cell carcinoma
H.C. Zhu (China), X. Yang, X.L. Ge, J.Y. Chen, H.M. Song, J. Liu, Z.L. Pei, M.Q. Chen, X.C. Sun PV-0425

> Targeting PI4K for radiosensitisation: a viable model of drug repositioning
I.A. Kim (Republic of Korea), J. Kwon, Y. Park, D. Kim, J. Park PV-0426

> Real-time tumour oxygenation changes following a single high dose radiotherapy in mouse lung cancers
C. Song (Republic of Korea), B.J. Hong, S. Bok, C.J. Lee, Y.E. Kim, S.R. Jeon, H.G. Wu, Y.S. Lee, G.J. Cheon, J.C. Paeng, G.O. Ahn, H.J. Kim PV-0427

> Factor 2.5 radiosensitivity difference determined by ex vivo γH2AX assay in prostate cancer patients
C. De Colle (Italy), A. Menegakis, A.C. Mueller, A. Yaromina, J. Hennenlotter, A. Stenzl, M. Scharpf, F. Fend, U. Ricardi, M. Baumann, D. Zips PV-0428

> A 3D in vitro cancer model and imaging platform to measure proton radiation-induced cellular damage
T. Long (UK), M. Loizidou, G. Schettino, G. Royle, K. Ricketts PV-0429

> Late radiation enteropathy: do tissue cytokines play a protective role? A first-in-man study.
M. Reis Ferreira (UK), H.J.N. Andreyev, K. Mohammed, S. Gowan, D.P. Dearnaley PV-0430

> Changes of the density CD8+ tumour infiltrating lymphocytes after neoadjuvant radiochemotherapy
D. Buka (Czech Republic), J. Dvorak, V. Sitorova, I. Richter, I. Sirak PV-0431

> Mechanisms and abscopal effects of combined mRNA-based radioimmunotherapy in a syngenic mouse model.
L. Basler (Germany), A. Kowalczyk, M. Fotin-Mleczek, K.J. Kallen, D. Zips, S.M. Huber PV-0432

Symposium

MODERN ART BASED ON FUNCTIONAL / BIOLOGICAL IMAGING

10:45 - 11:45 | ROOM 2

This session covers functional imaging for adaptive radiotherapy, with a focus on head and neck cancer. FDG, hypoxia tracers such as F-MISO and FAZA and tracers for proliferation imaging are interesting PET tracers that may be used in adaptive radiotherapy and for patient selection in targeted therapy. How can these imaging modalities be incorporated in an adaptive workflow and what is the rol/ responsibility of the RTT in this process? As example the ARTFORCE trial is described, with a discussion on the use of dose accumulation for assessment of local dose. Future perspectives on imaging and adaptive replanning will be addressed.

Chair: U. Van der Heide (The Netherlands)
Co-chair: F. Alongi (Italy)

10:45 > Functional imaging for ART; biological bases and potential impact on clinical outcome
Speaker: B. Hoeben (The Netherlands) SP-0433

11:05 > Adaptive radiation therapy by the example of head and neck cancer: is there any role for a RTT?
Speaker: B. Speleers (Belgium) SP-0434

11:25 > Dosimetric impact of dose painting and replanning: ARTFORCE project
Speaker: J. Sonke (The Netherlands) SP-0435

Symposium

SECONDARY CANCER AFTER RADIOTHERAPY: FROM CANCER REGISTRIES TO CLINICAL IMPLICATIONS

10:45 - 11:45 | ROOM 4

Chair: L.P. Muren (Denmark)
Co-chair: A.R. Filippi (Italy)

10:45 > Radiotherapy-related second cancer risks from epidemiological studies, and their application to newer therapies
Speaker: A. Berrington de González (USA) SP-0436

11:05 > Modelling of secondary cancer risks
Speaker: U. Schneider (Switzerland) SP-0437

11:25 > Clinical implications of secondary cancer risks in pediatric and adult patients
Speaker: D. Hodgson (Canada) SP-0438

Proffered Papers

RADIOBIOLOGY 4: MOLECULAR BIOMARKERS FOR PATIENT SELECTION

10:45 - 11:45 | LONDRA

Chair: C. West (UK)
Chair: M. De Jong (The Netherlands)

10:45 > Localization of p16 expression is an important factor to determine radiotherapy response in HNSCC
R. Dok (Belgium), L. Abbasi Asbagh, E. Van Limbergen, A. Sablina, S. Nuyts OC-0439

10:55 > Impact of chemokine receptor CXCR4 and its ligand SDF1 expression on loco-regional control in HNSCC
A. Menegakis (Germany), C. De Colle, D. Moennich, F. Fend, P.S. Mauz, S. Welz, I. Tinhofer, V. Budach, E. Gkika, M. Stuschke, P. Balermpas, C. Roedel, M. Avlar, A.L. Grosu, A. Abdollahi, J. Debus, C. Bayer, C. Belka, S. Pigorsch, S.E. Combs, M. Krause, M. Baumann, D. Zips OC-0440

11:05 > Genomic amplification of FancA in HNSCC: mechanisms of radioresistance and clinical relevance
I. Hess (Germany), I. Gimenez Aznar, A. Michna, D. Klein, U. Schötz, M. Orth, L. Schneider, H. Braselmann, L. SchÃ¼ttrumpf, V. Jendrossek, C. Belka, V. Zangen, K. Unger, H. Zitzelsberger, K. Lauber OC-0441

11:15 > Does miR-210 predict benefit from hypoxia modification in BCON randomised bladder cancer patients?
C. West (UK), J. Irlam-Jones, A. Eustance, H. Denley, P. Hoskin, A. Choudhury OC-0442

11:25 > Radiotherapy sensitivity in breast cancer is influenced by the DNA cytosine deaminase APOBEC3B
P.N. Span (The Netherlands), A. Post, J.W.M. Martens, R.S. Harris OC-0443

Proffered Papers

CLINICAL 9: SBRT AND OLIGOMETASTATIC DISEASE

10:45 - 11:45 | AUDITORIUM

Chair: J. Bibault (France)

Chair: M. Scorsetti (Italy)

10:45 > Stereotactic body radiotherapy of hepatocellular carcinoma lesions in liver transplant candidates
J. Shiao (USA), A. Gutierrez, A. Patel, A. Harris, K. Washburn, G. Halff, J. Lopera, F. Sharkey, R. Crownover OC-0444

10:55 > Patterns of care and outcome analysis of SBRT for liver metastases - a DEGRO database initiative
N. Andratschke (Switzerland), H. Alheid, M. Allgäuer, G. Becker, O. Blanck, J. Boda-Hegemann, T. Brunner, S. Combs, M. Duma, S. Gerum, M. Guckenberger, G. Hildebrandt, C. Ostheimer, C. Panje, A. Papachristofilou, C. Petersen, T. Schneider, R. Semrau, S. Wachter, D. Habermehl OC-0445

11:05 > Extra-cranial SBRT in patients with oligometastatic disease: a dose-escalation study
F. Deodato (Italy), G. Macchia, S. Cilla, M. Nuzzo, L. Ronchi, A. Ianiro, R. Autorino, G. Mantini, R. Frakulli, S. Cammelli, G. Compagnone, A.L. Angelini, G. Frezza, L. Caravatta, A. Farioli, V. Valentini, A.G. Morganti OC-0446

11:15 > Stereotactic Body Radiotherapy (SBRT) in oligometastatic prostate cancer patients
C.L. Chaw (UK), D. Henderson, V. Khoo, A. Tree, R. Eeles, N. Van As OC-0447

11:25 > Give me five: extreme hypofractionated IG-IMRT for organ confined prostate cancer
B.A. Jereczek-Fossa, D. Ciardo (Italy), S.P. Colangione, C. Fodor, D. Zerini, A. Cecconi, A. Surgo, M.A. Gerardi, M. Muto, G. Timon, S. Comi, F. Pansini, A. Bazani, D. Maestri, M. Garioni, V. Scroffi, F. Cattani, R. Cambria, O. De Cobelli, R. Orecchia OC-0448

Proffered Papers

CLINICAL 10: HEAD AND NECK

10:45 - 11:45 | GIALLA

Chair: W. Budach (Germany)

Chair: D. Alterio (Italy)

10:45 > Pattern of failure and disease control in patients treated for glottic cancer in Denmark 1971-2011.
N. Lyhne (Denmark), H. Primdahl, C. Kristensen, E. Andersen, J. Johansen, L. Andersen, J. Overgaard OC-0449

10:55 > Failure pattern and salvage treatment after radical treatment of head and neck cancer
A. Pagh (Denmark), C. Grau, J. Overgaard OC-0450

11:05 > Tumour volume, hypoxia and cancer stem cells as prognosticators for LRC after primary RCT in HNSCC
A. Linge (Germany), F. Lohaus, S. Löck, V. Gudziol, A. Nowak, C. Von Neubeck, I. Tinhofer, V. Budach, A. Sak, M. Stuschke, P. Balermpas, C. Rödel, M. Avlar, A.L. Grosu, A. Abdollahi, J. Debus, C. Belka, S. Pigorsch, S.E. Combs, D. Mönnich, D. Zips, G.B. Baretton, F. Buchholz, M. Baumann, M. Krause OC-0451

11:15 > Prospective randomized adaptive dose-de-escalation in the elective neck: late toxicity and control
J. Schatteman (Belgium), D. Nevens, S. Nuyts, D. Berwouts, W. De Gersem, L. Olteanu, T. Vercauteren, W. De Neve, F. Duprez OC-0452

11:25 > Phase II trial of de-intensified chemoradiotherapy for HPV-associated oropharyngeal cancer
B. Chera (USA), R. Amdur, J. Tepper, B. Qaqish, R. Green, N. Hayes, J. Weiss, J. Grilley-Olson, A. Zanation, T. Hackman, W. Funkhouser, N. Sheets, M. Weissler, W. Mendenhall OC-0453

11:35 > Clinical outcome in nasopharyngeal carcinoma patients with post-radiation detectable plasma EBV DNA
J.C. Lin (Taiwan), W.Y. Wang, C.W. Twu OC-0454

Proffered Papers

PHYSICS 11: DOSE MEASUREMENT AND DOSE CALCULATION II

10:45 - 11:45 | ROOM 1

Chair: J. Seuntjens (Canada)

Chair: E. Cagni (Italy)

10:45 > Development of activity pencil beam algorithm using nuclear reaction for innovative proton therapy
A. Nishio-Miyatake (Japan), T.N. Teiji Nishio OC-0455

10:55 > Translation of a prompt gamma based proton range verification system to first clinical application
C. Richter (Germany), G. Pausch, S. Barczyk, M. Priegnitz, C. Golnik, L. Bombelli, W. Enghardt, F. Fiedler, C. Fiorini, L. Hotoiu, G. Janssens, I. Keitz, S. Mein, I. Perali, D. Prieels, J. Smeets, J. Thiele, F. Vander Stappen, T. Werner, M. Baumann OC-0456

11:05 > Towards analytic dose calculation for MR guided particle beam therapy
H. Fuchs (Austria), P. Moser, M. Gröschl, D. Georg OC-0457

11:15 > Delivery errors detectability with IQM, a system for real-time monitoring of radiotherapy treatments
L. Marrazzo (Italy), C. Arilli, M. Casati, S. Calusi, C. Talamonti, L. Fedeli, G. Simontacchi, L. Livi, S. Pallotta OC-0458

11:25 > Small fields output factors and correction factors determination for a linac with circular cones
A. Girardi (Italy), C. Fiandra, E. Gallio, F.R. Giglioli, R. Ragona OC-0459

11:35 > Common errors in basic radiation dosimetry and radiotherapy practice
S. Kry (USA), L. Dromgoole, P. Alvarez, J. Leif, A. Molineu, P. Taylor, D. Followill OC-0460

Proffered Papers

PHYSICS 12: TREATMENT PLANNING: APPLICATIONS I

10:45 - 11:45 | ROOM 500

Chair: M. Stock (Austria)

Chair: A. Maggio (Italy)

10:45 > Does the dosimetric advantage of prone setup persist in small-margin IMRT for gynecological cancer?
S.T. Heijkoop (The Netherlands), G.H. Westerveld, N. Bijker, R. Feije, A.W. Sharfo, N. Van Wieringen, J.W.M. Mens, B.J.M. Heijmen, L.J.A. Stalpers, M.S. Hoogeman OC-0461

10:55 > Motion induced interplay effects for hypo-fractionated FFF VMAT treatment of liver tumours
A. Edvardsson (Sweden), F. Nordström, C. Ceberg, S. Ceberg OC-0462

11:05 > Improving treatment plan quality of SBRT lung tumors using a new gradient index
E. Van der Bijl (The Netherlands), M. Witte, C. Van Vliet-Vroegindeweij, E. Damen OC-0463

11:15 > Integration of fMRI and MEG functional maps into a Cyberknife planning system:a feasibility study
E. De Martin, D. Duran, F. Ghielmetti, E. Visani, D.R. Sebastiano, D. Aquino, M. Marchetti, D. Cusumano (Italy), M.G. Bruzzone, F. Panzica, L. Fariselli OC-0464

11:25 > Quality of treatment plans in hybrid IMRT and VMAT for prostate radiotherapy
I. Bedford (UK), G. Smyth, I. Hanson, A. Tree, D. Dearnaley, V. Hansen OC-0465

11:35 > Dynamic Wave Arc: initial characterisation, dosimetric benchmark and performance validation
M. Buleteanu (Belgium), D. Verellen, M. Nakamura, K. Poels, C. Hung, T. Gevaert, J. Dhont, T. Kishi, V. Simon, M. Hiraoka, M. De Ridder OC-0466

Proffered Papers

RTT 5: OPTIMIZING TREATMENT PLANNING AND DELIVERY IN THE PELVIC REGION

10:45 - 11:45 | ROOM 3

Chair: A. Osztavics (Austria)
Chair: G. Engeseth (Norway)

10:45 > Can a VMAT radiotherapy planning solution match brachytherapy in cervical cancers?
E. Buck (UK), J. Mcgrane, I. Fraser, N. Simpson OC-0467

10:55 > Validation of Mask Based Registration in CBCT pretreatment imaging of locally advanced cervix ca
L. Van den Berghe (Belgium), K. Vandecasteele, A.L. Michiels, Y. Lievens, C. De Wagter, E. Bogaert OC-0468

11:05 > Genitalia contouring in anal cancer IMRT; comparisons of volumes with and without a genitalia atlas
C. Brooks (UK), V. Hansen, D. Tait OC-0469

11:15 > Library of plans in radiotherapy of rectal cancer: feasible and inter-observer consistent?
S. Van Beek (The Netherlands), L. Hartgring, A. Betgen, J. Stam, M. Buijs, B. Van Triest, P. Remeijer OC-0470

11:25 > Influence of rectum volume on fine-tuning of image registration in bladder adaptive radiotherapy
L.S. Sier-Wismeijer (The Netherlands), L.J. Lutkenhaus, K.N. Goudschaal, M. Frank, M.C.C.M. Hulshof, A. Bel, N. Van Wieringen OC-0471

11:35 > Patient preference-driven plan optimisation for shared decision making in anal cancer radiotherapy
H.S. Rønde (Denmark), J. Pløen, L. Wee, A.L. Appelt OC-0472

Poster Viewing 10

PHYSICS: FUNCTIONAL IMAGING II

10:45 - 11:45 | POSTER AREA

Chair: T. Nyholm (Sweden)
Chair: A. Yaromina (The Netherlands)

> Diagnostic and predictive values of quantitative analysis on T2-w and ADC map MRI in prostate cancer
K. Gnep (France), A. Fargeas, R.E. Gutiérrez-Carvajal, F. Commandeur, R. Mathieu, J.D. Ospina, G. Jimenez, T. Rohou, O. Acosta, R. De Crevoisier PV-0473

> Comparison of DCE MRI and FMISO-PET kinetic parameters in head and neck cancer patients
U. Simoncic (Germany), S. Leibfarth, S. Welz, N. Schwenzer, H. Schmidt, D. Zips, D. Thorwarth PV-0474

> Probability map prediction of relapse areas in glioblastoma patients using multi-parametric MR
A. Laruelo (France), J. Dolz, S. Ken, L. Chaari, M. Vermandel, L. Massoptier, A. Laprie PV-0475

> Fractional anisotropy dose-response relationship of the corpus callosum
N. Pettersson (USA), H. Bartsch, J. Brewer, L. Cervino, M. Connor, A. Dale, D. Hagler, R. Karunamuni, A. Krishnan, J. Kuperman, C. McDonald, N. Farid, N. White, J. Hattangadi-Gluth, V. Moiseenko PV-0476

> Early CT image biomarkers change and xerostomia score are strong predictors for late xerostomia
L.V. Van Dijk (The Netherlands), C.L. Brouwer, R.J. Beukinga, A. Van de Schaaf, H.P. Van der Laan, H.G.M. Burgerhof, J.A. Langendijk, R.J.H.M. Steenbakkers, N.M. Sijtsema PV-0477

> Predicting pulmonary function loss in lung cancer radiotherapy patients using CT ventilation imaging
C. Brink (Denmark), J. Kipritidis, K.R. Jensen, T. Schytte, O. Hansen, U. Bernchou PV-0478

Proffered Papers

SELECTED RANDOMISED TRIALS

12:00 - 12:45 | AUDITORIUM

Chair: Y. Lievens (Belgium)

Chair: B. Heijmen (The Netherlands)

12:00 > Neoadjuvant chemoradiation for fixed cT3 or cT4 rectal cancer: results of a phase III study
K. Bujko (Poland), L. Wyrwicz, A. Rutkowski, M. Malinowska, L. Pietrzak, J. Krynski, W. Michalski, W. Polkowski, R. Stylinski, R. Wierzbicki, M. Jankiewicz, B. Cisel, M. Bebenek, A. Maciejczyk, T. Lesniak, J. Zygulska, W. Zegarski, M. Las, L. Kolodziejski, A. Radkowski, B. Czeremszynska, L. Kepka, Z. Toczko, A. Danek, W. Markiewicz OC-0479

12:10 > Discussant: D. Sebag-Montefiore (UK)

12:15 > Five-year clinical outcome of the Phase III ACCORD 12 neoadjuvant trial in rectal cancer
J. Doyen (France), S. Gourgou-Bourgade, D. Azria, I. Martel-Laffray, C. Hennequin, V. Vendrely, G. De Laroche, T. Conroy, J.P. Gérard OC-0480

12:25 > Discussant: C. Rödel (Germany)

12:30 > Late toxicity and cosmesis after APBI with brachytherapy vs WBI: 5-year results of a phase III trial
C. Polgár (Hungary), V. Strnad, O. Ott, G. Hildebrandt, D. Kauer-Dorner, H. Knauerhase, T. Major, J. Lyczek, J. Guinot, J. Dunst, C. Gutierrez Miguelez, P. Slampa, M. Allgäuer, K. Lössl, B. Polat, G. Kovács, A. Fischedick, T. Wendt, M. Hindemith, A. Resch, P. Niehoff, F. Guedea, R. Pötter, C. Gall, W. Uter OC-0481

12:40 > Discussant: P. Poortmans (The Netherlands)

Award Lecture

K. BREUR AWARD LECTURE

12:45 - 13:15 | AUDITORIUM

12:45 > Introduction
Chair: P. Poortmans (The Netherlands)

12:50 > Whither fractionation?
Speaker: P. Hoskin (UK) SP-0482

Joint Symposium

ESTRO-ASTRO: IN ROOM ADAPTIVE IMAGING WITH A FOCUS ON MRI

14:30 - 16:00 | ROOM 2

This session will focus on the opportunities ensuing from the use of MRI imaging in radiation oncology, for external beam as well as for brachytherapy.

The physics perspective will not only cover infrastructural needs, dosimetry consequences and MRI-based feedback, but will also shed light on the use of MRI in pre-treatment planning and discuss on-line to real-time plan adaptation.

The speakers will examine clinical goals and clinical experience with the Linac-based MRI device, the ViewRay MR-Guided IMRT system and of using MRI in brachytherapy.

Lastly, workflow practicalities, quality assurance needs and consortium activities will be presented.

Chair: Y. Lievens (Belgium)
Chair: B. Minsky (USA)

14:30 > MRI Linac: physics perspective
Speaker: B. Raaymakers (The Netherlands) SP-0483

14:52 > First two years clinical experience with low-field MR-IGRT: system practicality and future implications
Speaker: J.M. Michalski (USA) SP-0484

15:14 > MR-linac: Clinical introduction
Speaker: C. Schultz (USA) SP-0485

15:36 > Adaptive planning dose delivery and verification with MRI based brachytherapy
Speaker: C. Kirisits (Austria) SP-0486

Symposium

COMMUNICATION WITH PATIENTS

14:30 - 16:00 | ROOM 4

Patients suffer a relevant psychological and social impact of cancer diagnosis and treatment. They have to deal with an array of medical practitioner styles, with their (health professionals' and patients') fears and psychological approaches to coping and sometimes with participation in clinical trials.

In this session we will try to define attitudes and factors acting on healthcare professionals that contribute to a successful communication with patients. Also will be discussed how different strategies could be used to improve and coordinate such communication.

Chair: P.C. Lara Jimenez (Spain)
Co-chair: L. Begnozzi (Italy)

14:30 > Patient's Perspective
Speaker: E. Naessens (Ireland) SP-0487

14:52 > Healthcare professional's perspective
Speaker: G. Sancho Pardo (Spain) SP-0488

15:14 > RTT/Nurse's perspective: Patient is the key element of communication
Speaker: L. Koevoets (The Netherlands) SP-0489

15:36 > Interaction between patients and professionals: a psycho-oncologist's view
Speaker: E. Van Hoof (Belgium) SP-0490

Symposium
IMAGING BIOLOGY
14:30 - 16:00 | LONDRA

In this session the speakers will give a broad overview of the current status of functional imaging by means of PET and MRI for radiotherapy. Important features such as temporal and spatial resolution and associations with (heterogeneity in) biopsy based genomic signatures and, how this potentially can be used to predict outcome after radiotherapy, will be addressed. Also, the applicability of these imaging strategies for diagnosis and staging as well as target volume delineation and early-RT imaging for adaptation is addressed.

Chair: J. Bussink (The Netherlands)
Co-chair: S. Pergolizzi (Italy)

14:30 > What do we really see?
Speaker: D. Zips (Germany) SP-0491

15:00 > Genomics and imaging: a pas-de-deaux in response prediction
Speaker: H. Lyng (Norway) SP-0492

15:30 > Molecular imaging for radiotherapy optimisation
Speaker: R. Jeraj (Slovenia) SP-0493

Debate

THIS HOUSE BELIEVES THAT CENTRALISED LARGE RADIOTHERAPY UNITS WILL PROVIDE THE BEST ACADEMIA AND THE BEST TREATMENT QUALITY

14:30 - 16:00 | AUDITORIUM

Chair: C. Grau (Denmark)

Co-chair: S. Magrini (Italy)

14:30 > For the motion - size matters
Speaker: B. Slotman (The Netherlands) SP-0494

15:00 > Against the motion - against dinosaurs
Speaker: S. Bodis (Switzerland) SP-0495

15:30 > For the motion rebuttal
Speaker: B. Slotman (The Netherlands)

15:45 > Against the motion rebuttal
Speaker: S. Bodis (Switzerland)

Joint Symposium

ESTRO-ILROG: MODERN RADIOTHERAPY IN LYMPHOMA

14:30 - 16:00 | GIALLA

This session will focus on all different facets of modern lymphoma radiotherapy. In particular, the aims will be to make the attendants more familiar with the current indications, both in terms of standard of care and in terms of controversial situations; concepts regarding new radiation volumes (IS-RT, IN-RT), based on different published ILROG guidelines, will be deeply presented and analysed.
The contribution of modern technology in all different phases of the RT process will be fully discussed (4D-CT, IMRT, IGRT, DIBH), as well as the role of modern imaging in lymphoma radiotherapy (staging and planning needs).

Chair: U. Ricardi (Italy)

Chair: T. Illidge (UK)

14:30 > Indications to radiotherapy for lymphoma in 2016: what is standard of care and what remains controversial?
Speaker: J. Yahalom (USA) SP-0496

15:00 > New concepts for lymphoma radiotherapy and the use of advanced technology
Speaker: L. Specht (Denmark) SP-0497

15:30 > Modern imaging and radiotherapy in lymphoma
Speaker: G. Mikhaeel (UK) SP-0498

Joint Symposium

ESTRO-PTCOG: ART IN PARTICLE THERAPY

14:30 - 16:00 | ROOM 1

Chair: M. Schwarz (Italy)

Chair: A. Lomax (Switzerland)

14:30 > The need for adaptive approaches in proton therapy (compared to photons)
Speaker: M. Schwarz (Italy) SP-0499

14:45 > Cone beam CT for adaptive proton therapy
Speaker: S. Both (USA) SP-0500

15:05 > Adaptive practice and techniques in proton therapy of the lung
Speaker: P.C. Park (USA) SP-0501

15:25 > In-vivo range estimation and adaptive particle therapy
Speaker: T. Lomax (Switzerland) SP-0502

15:40 > European strategy
Speaker: M. Baumann (Germany) SP-0503

Symposium

SMALL ANIMAL IRRADIATION

14:30 - 16:00 | ROOM 500

Chair: U. Oelfke (UK)

Co-chair: L. Strigari (Italy)

14:30 > Preclinical radiotherapy technology, dosimetry and treatment planning
Speaker: K. Butterworth (UK) SP-0504

15:00 > Radiation biology studies with a small animal irradiator: results from the research programme at Johns Hopkins University
Speaker: P. Tran (USA) SP-0505

15:30 > How do we select meaningful pre-clinical models for studies in radiation biology?
Speaker: D. De Ruysscher (The Netherlands) SP-0506

Symposium

FOCUS ON THE PELVIC REGION

14:30 - 16:00 | ROOM 3

This session will focus on issues relating to pelvic radiation therapy and shared decision making in this patient cohort. Our session opens with a discussion on bladder filling and its impact on pelvic radiation

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

therapy treatment. This will be followed by the merits of intraprostatic fiducial markers and the potential for fiducial migration will be analysed. We conclude our session with an overview of shared decision making and the validation of a decision aid tool for shared decision making in prostate cancer.

Chair: L. Mullaney (Ireland)
Co-chair: C. Dionisi (Italy)

14:30 > Bladder variability for pelvic radiotherapy: its approaches and impact
Speaker: V. Khoo (UK) SP-0507

15:00 > An evaluation of GoldAnchor intraprostatic fiducial marker stability during radiotherapy
Speaker: D. Bodusz (Poland) SP-0508

15:30 > Validation of a prostate cancer decision aid tool for shared decision making
Speaker: E. Bloemen- van Gurp (The Netherlands) SP-0509

Poster Viewing 11

CLINICAL: BREAST, HEAD AND NECK

14:30 - 16:00 | POSTER AREA

Chair: V. Grégoire (Belgium)
Chair: A. Fozza (Italy)

> Evaluation of a breast cancer nomogram to predict local relapse after breast conserving therapy
I. Kindts (Belgium), A. Laenen, S. Peeters, H. Janssen, T. Depuydt, E. Van Limbergen, C. Weltens PV-0510

> Hypofractionated VMAT for early stage breast cancer: acute toxicity and cosmesis in 840 patients
C. Iftode (Italy), F. De Rose, D. Franceschini, A. Fogliata, E. Villa, A.M. Ascolese, P. Navarria, G.R. D'Agostino, C. Franzese, T. Comito, A. Tozzi, E. Clerici, R.L.E. Liardo, A. Stravato, M. Scorsetti PV-0511

> Accelerated partial breast irradiation for Luminal-A breast cancer: analysis from a phase 3 trial
I. Meattini (Italy), C. Saieva, I. Desideri, G. Simontacchi, L. Marrazzo, S. Scoccianti, C. De Luca Cardillo, V. Scotti, P. Bonomo, M. Mangoni, F. Rossi, J. Nori, D. Casella, M. Bernini, L. Sanchez, L. Orzalesi, S. Pallotta, S. Bianchi, L. Livi PV-0512

> The impact of chemotherapy on toxicity in the era of hypofractionated radiotherapy
M.C. De Santis (Italy), F. Di Salvo, F. Bonfantini, M. Dispinzieri, M. Franceschini, F. Soncini, E.D. Mantero, V. Cosentino, D. Postè, P. Baili, M. Sant, E. Pignoli, L. Lozza PV-0513

> Chest wall radiotherapy and complications after flap reconstruction
Y. Rao (USA), A. Mull, A. Qureshi, T. Myckatyn, I. Zoberi PV-0514

> GTV delineation of laryngopharyngeal carcinoma on PET is more accurate than on CT and MRI
H. Ligtenberg (The Netherlands), E.A. Jager, J. Caldaz-Magalhaes, T. Schakel, N. Kasperts, F.A. Pameijer, N. Kooij, L.M. Janssen, C.H.J. Terhaard, S.M. Willems, C.P.J. Raaijmakers, M.E.P. Philippens PV-0515

> Guideline development for tumor delineation on MR-images for laryngeal and hypophargeal cancer
E. Jager, N. Raaijmakers (The Netherlands), H. Ligtenberg, J. Caldas-Magalhaes, T. Schakel, F. Pameijer, N. Kasperts, N. Willems, C. Terhaard, M. Philippens PV-0516

> Upfront vs. no upfront neck dissection in primary head and neck cancer radio(chemo)therapy
D. Nevens (Belgium), F. Duprez, K. Bonte, P. Deron, W. Huvenne, A. Laenen, W. De Neve, S. Nuyts PV-0517

> Phase 1 study of Debio 1143 in combination with Concurrent Chemo-Radiotherapy in LA-SCCHN
Y. Tao (France), C. Le Tourneau, H. Bouchaab, J. Delord, V. Calugaru, P. Crampton, B. Gavillet, E. Rouits, C. Zanna, C. Schusterbauer, E. Deutsch, J. Bourhis PV-0518

> The hypoxic radiosensitizer, nimorazole, in RT of HNSCC: pharmacokinetics, toxicity and compliance
M.A.H. Metwally (Denmark), J. Overgaard PV-0519

Multidisciplinary Tumour Board
SESSION 3: OLIGOMETASTATIC DISEASE

14:30 - 15:45 | ISTANBUL

Chair: M. Hoyer (Denmark)

yESTRO
Panellist: J-E Bibault (France)

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

Medical oncologist
Panellist: M. Di Maio (Italy)

Interventional radiologist
Panellist: A. Veltri (Italy)

Thoracic surgeon
Panellist: E. Ruffini (Italy)

Symposium

DOSE PAINTING: THOSE PENDING ISSUES

16:45 - 17:45 | ROOM 2

Dose painting is the delivery of a non-uniform dose distribution according to a spatial distribution of a given phenotype of the tumour volume, supposedly provided by functional imaging (PET, MR...). Such strategy would enable tailored dose escalation/redistribution in radio resistant regions of the tumour volume, mitigating toxicity issues that would originate from a flat, homogeneous dose escalation. Although conceptually appealing and relatively simple in its formulation, a dose painting treatment strategy involves a complex chain of technical steps with uncertainties that could ultimately make the delivered dose distribution unrepresentative of the actual biology of the tumour.
In this symposium, we will first define the biological and clinical rationale supporting the dose painting concept before covering the challenges to be solved before a meaningful clinical implementation.

Chair: E. Sterpin (Belgium)
Co-chair: P. Franco (Italy)

16:45 > The promises of dose painting
Speaker: W. De Neve (Belgium) SP-0520

17:05 > The biological rationale of dose painting: is it realistic?
Speaker: M. Alber (Denmark) SP-0521

17:25 > Dose prescription and treatment delivery at the voxel scale: a fantasy?
Speaker: J. Lee (Belgium) SP-0522

Symposium

ACROP

16:45 - 17:45 | ROOM 4

Since 2012 the Advisory Committee for Radiation Oncology Practice (ACROP) has taken over the responsibility for the initiation and coordination of ESTRO internal guidelines ae well as multidisciplinary guidelines together with other scientific societies.
During this ESTRO 35 ACROP session C. Belka will present the workflow and SOP of ACROP; K. Tanderup will give a brief overview of the ongoing and mature guidelines in the areas of brachtherapy and physics; and, M. Niyazi will present the new guideline on 'Target volume delineation in Glioblastoma'.

Chair: C. Belka (Germany)
Co-chair: E. Gershkevitsh (Estonia)

16:45 > ACROP: General procedures, SOPs and current status
Speaker: C. Belka (Germany) SP-0523

17:05 > Clinical guidelines, update and introduction of recent clinical guidelines
Speaker: M. Niyazi (Germany) SP-0524

17:25 > Brachytherapy and physics guidelines, update and introduction of recent guidelines
Speaker: K. Tanderup (Denmark) SP-0525

Proffered Papers

RADIOBIOLOGY 5: IMAGING AND MOLECULAR BIOMARKERS IN RADIATION ONCOLOGY

16:45 - 17:45 | LONDRA

Chair: G. Ghobadi (The Netherlands)
Chair: A. Grosu (Germany)

16:45 > Noninvasive imaging of the PD-1/PD-L1 checkpoint in naïve mice and after combined radioimmunotherapy
M. Hettich (Germany), F. Braun, G. Niedermann OC-0526

16:55 > Monitoring mitochondrial complex-I using novel PET probe allows early detection of radiosensitivity
C. Murayama (Japan), A. Kawaguchi, A. Kamijo, K. Naito, M. Kanazawa, H. Tsukada OC-0527

17:05 > Modelling tissue radiosensitivity and PET hypoxia image contrast in acute and chronic hypoxia
D.R. Warren (UK), M. Partridge OC-0528

17:15 > A MR-based IGRT platform using the KPC transgenic mouse model of pancreatic cancer
J. Thompson, J. Beech, D. Allen, S. Gilchrist, R. Newman, P. Kinchesch, A. Gomes, Z. D'Costa, L. Bird, K. Vallis, R. Boghozian, A. Kavanagh, O. Sansom, I. Tullis, R. Muschel, M. Hill, B. Vojnovic, S. Smart, E. Fokas (UK) OC-0529

17:25 > Nanoparticle-enhanced MRI-guided radiation therapy
A. Detappe (USA), S. Kunjachan, O. Tillement, R. Berbeco OC-0530

Proffered Papers:

CLINICAL 11: HEALTH ECONOMICS AND PATIENT REPORTED OUTCOMES

16:45 - 17:45 | AUDITORIUM

Chair: G. Delaney (Australia)

Chair: V. De Sanctis (Italy)

16:45 > Time driven activity based costing: a conceptual framework for cost assessment in radiation therapy
N. Defourny (Belgium), P. Dunscombe, L. Perrier, C. Grau, M. Coffey, J. Van Loon, C. Gasparotto, Y. Lievens OC-0531

16:55 > Improved cost-effectiveness of short-course radiotherapy in elderly or frail glioblastoma patients
S. Baker (Canada), S. Ghosh, D. Guedes de Castro, L. Kepka, N. Kumar, V. Sinaika, J. Matiello, D. Lomidze, K. Dyttus-Cebulok, E. Rosenblatt, E. Fidarova, W. Roa OC-0532

17:05 > TGUGT and G8 tests predicting frailty and radiotherapy compliance and acute toxicity in the elderly
J. Middelburg (The Netherlands), T. Rozema, H. Maas, E. Baartman, M. Aarts, D. Geijsen, A. Leest, J. Jobsen, J. Coebergh, H. Struikmans OC-0533

17:15 > No decline in patient reported outcomes following radiotherapy for breast cancer patients ≥ 60 years
K.R. Charaghvandi (The Netherlands), D.A. Young-Afat, C.H. Van Gils, M.L. Gregorowitsch, B. Van Asselen, M. Van Vulpen, H.M. Verkooijen, H.J.G.D. Van den Bongard OC-0534

17:25 > How patient-reported urinary symptoms predict impairment of urinary QoL from RT for prostate cancer
C. Cozzarini (Italy), F. Badenchini, T. Rancati, G. Girelli, P. Gabriele, C. Degli Esposti, P. Franco, V. Vavassori, M. Galeandro, C. Bianconi, C. Improta, F. Palorini, R. Valdagni, C. Fiorino OC-0535

17:35 > Course of quality of life after radiotherapy for painful bone metastases
P. Westhoff (The Netherlands), M. Verdam, F. Oort, J. Jobsen, M. Van Vulpen, J.W. Leer, C. Marijnen, A. De Graeff, Y. Van der Linden OC-0536

Proffered Papers

CLINICAL 12: RARE TUMOURS

16:45 - 17:45 | GIALLA

Chair: E.M. Ozsahin (Switzerland)

Chair: A. De Paoli (Italy)

16:45 > p16 and high risk-HPV in node positive cutaneous squamous cell carcinoma of the head and neck
L. McDowell (Australia), R. Young, M. Johnston, T. Tan, C. Liu, M. Bressel, V. Estall, B. Solomon, J. Corry OC-0537

16:55 > Tumor-related leukocytosis associated with poor radiation response and outcome in cervical cancer
Y. Cho (Republic of Korea), K. Kim, K. Keum, C. Suh, G. Kim, Y. Kim OC-0538

17:05 > Stage II testicular seminoma: patterns of care and survival by treatment strategy
S.M. Glaser (USA), G.K. Balasubramani, S. Beriwal OC-0539

17:15 > IOERT after gross total resection combined with EBRT in extremity sarcoma: a pooled analysis
F. Roeder (Germany), A. De Paoli, I. Alldinger, G. Bertola, G. Boz, J. Garcia-Sabrido, M. Uhl, A. Alvarez, B. Lehner, F. Calvo, R. Krempien OC-0540

17:25 > Long-term results of the AIEOP MH-89 protocol for pediatric Hodgkin lymphoma
M. Robazza (Italy), M. Mascarin, C. Elia, A. Todesco, G. Scarzello, A. Pession, A. Garaventa, S. Barra, M. Zecca, N. Santoro, M. Bianchi, U. Riccardi, F. Locatelli, R. De Santis, P. Indolfi, M. Nardi, F. Porta, T. Casini, C. Consarino, S. Dâ€™Amico, M. Provenzi, G.A. Zanazzo, P. Farruggia, G. Guerrini, R. Burnelli OC-0541

17:35 > Benign tumours among long-term childhood cancer survivors: a DCOG LATER record linkage study
J. Kok (The Netherlands), J. Teepen, H. Van der Pal, W. Dolsma, E. Van Dulmen-den Broeder, M. Van den Heuvel-Eibrink, J. Loonen, W. Tissing, D. Bresters, B. Versluys, S. Neggers, M. Van der Heiden-van der Loo, F. Van Leeuwen, H. Caron, F. Oldenburger, G. Janssens, J. Maduro, R. Tersteeg, C. Van Rij, L. Daniels, C. Haasbeek, The DCOG LATER Study Group, A. Gijsbers-Bruggink, L. Kremer, C. Ronckers OC-0542

Proffered Papers
PHYSICS 13: NEW TECHNOLOGY AND QA
16:45 - 17:45 | ROOM 1
Chair: J. Lagendijk (The Netherlands)
Chair: C. Marino (Italy)

16:45 > Technical development and clinical implementation of an MR-guided radiation therapy environment
T. Stanescu (Canada), S. Breen, C. Dickie, D. Letourneau, D. Jaffray OC-0543

16:55 > Heterogeneous FDG-guided dose escalation of locally advanced NSCLC, the NARLAL2 phase III trial
D.S. Moeller (Denmark), L. Hoffmann, C.M. Lutz, T.B. Nielsen, C. Brink, A.L. Appelt, M.D. Lund, M.S. Nielsen, W. Ottosson, A.A. Khalil, M.M. Knap, O. Hansen, T. Schytte OC-0544

17:05 > Results of a national audit of IMRT and VMAT patient QA
E. Seravalli (The Netherlands), A.C. Houweling, M.P.R. Van Gellekom, J. Kaas, M. Kuik, E.A. Loeff, T.A. Raaben, J.A. De Pooter, J.H.W. De Vries, J.B. Van de Kamer OC-0545

17:15 > The development of proton-beam grid therapy (PBGT)
T. Henry (Sweden), A. Valdman, A. Siegbahn OC-0546

17:25 > Towards Portal Dosimetry for the MR-linac: back-projection algorithm in the presence of MRI scanner
I. Torres Xirau (The Netherlands), R. Rozendaal, I. Olaciregui-Ruiz, P. Gonzalez, U. Van der Heide, J.J. Sonke, A. Mans OC-0547

17:35 > Hyperthermia treatment planning in the pelvis using thermophysical fluid modelling of the bladder
G. Schooneveldt (The Netherlands), H.P. Kok, E.D. Geijsen, A. Bakker, E. Balidemaj, J.J.M.C.H. De la Rosette, M.C.C.M. Hulshof, T.M. De Reijke, J. Crezee OC-0548

Proffered Papers

PHYSICS 14: TREATMENT PLANNING: APPLICATIONS II

16:45 - 17:45 | ROOM 500

Chair: M. Tenhunen (Finland)
Chair: E. Moretti (Italy)

16:45 > The effects of a magnetic field and real-time tumor tracking on lung stereotactic body radiotherapy
M.J. Menten (UK), M.F. Fast, S. Nill, C.P. Kamerling, F. McDonald, U. Oelfke OC-0549

16:55 > Investigation of magnetic field effects for the treatment planning of lung cancer
O. Schrenk (Germany), C.K. Spindeldreier, A. Pfaffenberger OC-0550

17:05 > Advantage of IMPT over IMRT in treatment of gynaecological cancer with para-aortic nodal involvement
M. Van de Sande (The Netherlands), C.L. Creutzberg, S. Van de Water, A.W. Sharfo, M.S. Hoogeman OC-0551

17:15 > Skin-NTCP driven optimization for breast proton treatment plans
L. Cella (Italy), F. Tommasino, V. D'Avino, G. Palma, F. Pastore, M. Conson, M. Schwarz, R. Liuzzi, R. Pacelli, M. Durante OC-0552

17:25 > Relative risks of radiation-induced secondary cancer following particle therapy of prostate cancer
C. Stokkevåg (Norway), M. Fukahori, T. Nomiya, N. Matsufuji, G. Engeseth, L. Hysing, K. Ytre-Hauge, A. Szostak, L. Muren OC-0553

17:35 > Robustness recipe for minimax robust optimisation in IMPT for oropharyngeal cancer patients
S. Van der Voort, S. Van de Water, Z. PerkóB. Heijmen, D. Lathouwers, M. Hoogeman (The Netherlands) OC-0554

Proffered Papers

RTT 6: ADVANCED RADIATION TECHNIQUES IN PROSTATE CANCER

16:45 - 17:45 | ROOM 3

Chair: R. De Jong (The Netherlands)
Chair: U. Shah (UK)

16:45 > Organ at risk dose parameters increased by daily anatomic changes in prostate cancer SBRT
M. Faasse-de Hoog (The Netherlands), M.S. Hoogeman, J.J.M.E. Nuyttens, S. Aluwini OC-0555

16:55 > Early clinical outcomes of prostate SABR treated with VMAT-FFF
A. Dufffton (UK), C. Duncanson, S. Paterson, L. Dallas, S. Smith, M. McJury, C. Lamb, N. MacLeod, A. Sadozye, D. Dodds OC-0556

17:05 > Feasibility of single fraction HDR brachytherapy in patients with prostate cancer: a planning study
M. Roos (The Netherlands), C. De Pan, I.K.K. Kolkman-Deurloo, S. Aluwini OC-0557

17:15 > Automated VMAT planning in prostate cancer patients using a Single Arc SIB Technique
N. Simpson (UK), G. Simpson, R. Laney, A. Thomson, D. Wheatley, R. Ellis, J. Mcgrane OC-0558

17:25 > The impact of rectal interventions on target motion and rectal variability in prostate radiotherapy
C. Smith (Ireland), B. O'Neill, L. O'Sullivan, M. Keaveney, L. Mullaney OC-0559

17:35 > Plan of the day approach in post prostatectomy radiation therapy
C. Lac (Australia), A. Sims, T. Eade, A. Kneebone OC-0560

Poster Viewing 12

PHYSICS: DOSE MEASUREMENT AND DOSE CALCULATION III

16:45 - 17:45 | POSTER AREA

Chair: J. Van de Kamer (The Netherlands)
Chair: P.S. Skyt (Denmark)

> Validation of an optimised MC dose prediction for low energy X-rays intraoperative radiation therapy
P. Ibáñez (Spain), M. Vidal, P. Guerra, J.M. Udías PV-0561

> Hadron-therapy monitoring with in-beam PET: measurements and simulations of the INSIDE PET scanner
F. Pennazio (Italy), M. Bisogni, N. Camarlinghi, P. Cerello, E. Fiorina, M. Morrocchi, M. Piliero, G. Pirrone, R. Wheadon PV-0562

> Dosimetric comparisons of 1H, 4He, 12C and 16O ion beams at HIT
T. Tessonnier (Germany), A. Mairani, S. Brons, T. Haberer, J. Debus, K. Parodi PV-0563

> Experimental validation of proton stopping power calculations based on dual energy CT imaging
J.K. Van Abbema (The Netherlands), M.J. Van Goethem, J. Mulder, A.K. Biegun, M.J.W. Greuter, A. Van der Schaaf, S. Brandenburg, E.R. Van der Graaf PV-0564

> Dosimetric response maps of diode and diamond detectors in kilovoltage synchrotron beams
T. Wright (Australia), D. Butler, A. Stevenson, J. Livingstone, J. Crosbie PV-0565

> Improving image reconstruction for Compton camera based imaging for proton radiotherapy verification
E. Draeger (USA), S. Peterson, D. Mackin, S. Beddar, J. Polf PV-0566

TUESDAY 8 APRIL 2014

ABS. N°

Teaching Lecture
THE NEW 'R'S IN RADIATION BIOLOGY
08:30 - 09:10 | ROOM 2
Chair: A. Nahum (UK)

08:30 > The new 'R's in radiation biology
Speaker: M. De Jong (The Netherlands) SP-0567

Teaching Lecture
TEXTURE ANALYSIS OF MEDICAL IMAGES IN RADIOTHERAPY
08:30 - 09:10 | ISTANBUL
Chair: TBC

08:30 > Texture analysis of medical images in radiotherapy
Speaker: E. Scalco (Italy) SP-0568

Teaching Lecture
BIOLOGY OF HIGH-ENERGY PROTON AND HEAVY ION PARTICLE THERAPY VERSUS PHOTON THERAPY: RECENT DEVELOPMENTS
08:30 - 09:10 | LONDRA
Chair: F. Paris (France)

08:30 > Biology of high-energy proton and heavy ion particle therapy versus photon therapy: recent developments
Speaker: M. Pruschy (Switzerland) SP-0569

Teaching Lecture
NEUROENDOCRINE TUMOURS - PERSONALISED DIAGNOSIS AND TREATMENT USING RADIOLABELLED PEPTIDES
08:30 - 09:10 | GIALLA
Chair: J. Kazmierska (Poland)

08:30 > Neuroendocrine tumours - personalised diagnosis and treatment using radiolabelled peptides
Speaker: R. Baum (Germany) SP-0570

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

Teaching Lecture

RADIOTHERAPY FOR PAEDIATRIC BRAIN TUMOURS

08:30 - 09:10 | Room 4

Chair: N. Burnet (UK)

08:30 > Radiotherapy for paediatric brain tumours
Speaker: R. Kortmann (Germany) SP-0571

Teaching Lecture

ROLE AND VALIDATION OF DEFORMABLE IMAGE REGISTRATION IN CLINICAL PRACTICE

08:30 - 09:10 | ROOM 1

Chair: M. Söhn (Germany)

08:30 > Role and validation of deformable image registration in clinical practice
Speaker: M. Van Herk (UK) SP-0572

Teaching Lecture

VMAT QA: TO DO AND NOT TO DO, THOSE ARE THE QUESTIONS

08:30 - 09:10 | ROOM 500

Chair: M.d.C. Lopes (Portugal)

08:30 > VMAT QA: To do and not to do, those are the questions
Speaker: J. Van de Kamer (The Netherlands) SP-0573

Teaching Lecture

OPTIMISING WORKFLOW IN A RADIOTHERAPY DEPARTMENT - AN INTRODUCTION TO LEAN THINKING

08:30 - 09:10 | ROOM 3

Chair: B. Bak (Poland)

08:30 > Optimising workflow in a radiotherapy department - an introduction to lean thinking
Speaker: B. Naddy (Ireland) SP-0574

Symposium

NEW CONCEPTS OF TUMOUR RADIORESISTANCE

09:15 - 10:30 | ROOM 2

The session will address tumour radioresistance in relation to cancer stem cells, immunology and next generation sequencing. The talks will cover: 1) evidence that radiotherapy can cause immunogenic cell death and that combined radiotherapy and immunotherapy can cause systemic long-term effects. 2) Evidence that cancer stem cells are radioresistant and that DNA damage response inhibitors can overcome the radioresistance and have therapeutic potential. 3) The potential of molecular profiling by next-generation sequencing for dissecting mechanisms of resistance to radiotherapy/chemoradiation, as exemplified by results from a recent multicenter trial in locally advanced head and neck cancer.

Chair: R. Syljuasen (Norway)
Co-chair: R. Santoni (Italy)

09:15 > Radiotherapy combined with immunotherapy: present status and future perspectives
Speaker: P. Lambin (The Netherlands) SP-0575

09:40 > The contribution of cancer stem cells to tumour radioresistance
Speaker: A. Chalmers (UK) SP-0576

10:05 > Novel insights in radioresistance of head and neck cancer
Speaker: I. Tinhofer-Keilholz (Germany) SP-0577

Symposium with Proffered Papers

TOWARDS PERSONALISED RADIATION ONCOLOGY (PRO)

09:15 - 10:30 | ISTANBUL

Personalised Radiation Oncology (PRO), integrating omics technology, is a rapidly developing concept that will have an enormous impact on radiation therapy in the near future. Besides fascinating science PRO brings also major new challenges before the concept can be successfully translated into the clinic, e.g. understanding the potential and limitations of modern omics technologies, interpretation of results and integration with established clinical parameters to personalise treatment. In this session we will inform and discuss about developments in genomics, results from studies using gene expression profiles and data integration approaches. We aim for interdisciplinary audience, i.e. the presentations will be understandable also for non-experts. In addition, we will discuss where we are today (ready for implementation?) or what needs to be done to accelerate translation of PRO into the clinics.

Chair: D. Zips (Germany)
Co-chair: V. Tombolini (Italy)

09:15 > New technologies for genomic tumour profiling
Speaker: W. Weichert (Germany) SP-0578

09:30 > Gene expression profiles in tumours for PRO
Speaker: J. Alsner (Denmark) SP-0579

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG
INTERDISCIPLINARY WITH RADIOBIOLOGY FOCUS

09:45 > GWAS, SNPs and normal tissue toxicity for personalised radiation oncology
Speaker: C. West (UK) SP-0580

10:00 > Integrative data analysis for PRO
Speaker: M.A. Gambacorta (Italy) SP-0581

10:15 > Gene signatures predict loco-regional control after postoperative radio-chemotherapy in HNSCC
S. Schmidt (Germany), A. Linge, F. Lohaus, V. Gudziol, A. Nowak, I. Tinhofer, V. Budach, A. Sak, M. Stuschke, P. Balermpas, C. Rödel, M. Avlar, A.L. Grosu, A. Abdollahi, J. Debus, C. Belka, S. Pigorsch, S.E. Combs, D. Mönnich, D. Zips, G.B. Baretton, F. Buchholz, M. Baumann, M. Krause, S. Löck OC-0582

Symposium

THE TUMOUR IN 3D: THE ROLE OF TUMOUR MICROENVIRONMENT

09:15 - 10:30 | LONDRA

The microenvironment is an integral part of normal and tumour tissue development, homeostasis and 3D architecture. For the generation of clinically relevant data, we need to take these characteristics into consideration. Recent observations using 3D cell culture models provide evidence that the cellular response to irradiation is similar to the effects seen in tissues and different from conventional 2D cell cultures. In this symposium, we will show the advantage of 3D cell culture models over 2D and how they can be used for (i) testing tumor and normal cell radiation responses with and without chemo-therapy/novel molecular drugs and (ii) expansion of stem cells for therapy. Further, we will demonstrate the differential impact of hypo- and hyperfractionation radiotherapy on the immune system.

Chair: N. Cordes (Germany)
Co-chair: G.L. Gravina (Italy)

09:15 > Relevance of 3D cultures to address radiation response and novel RT combination strategies
Speaker: N. Cordes (Germany) SP-0583

09:33 > The potential of normal tissue organoid cultures
Speaker: R. Coppes (The Netherlands) SP-0584

09:51 > The impact of a novel 3D cell culture model of glioblastoma on radiation and drug-radiation responses
Speaker: N. Gomez-Roman (UK) SP-0585

10:09 > Radiotherapy supports tumour-specific immunity
Speaker: M. Van den Broek (Switzerland) SP-0586

Symposium

WBRT FOR BRAIN METASTASES- THE END OF AN ERA?

09:15 - 10:30 | GIALLA

This session will address an actual outline of the efficacy of whole brain radiotherapy (WBRT) in the treatment of multiple brain metastases. First speaker, Paula Mulvenna, will give an overview of WBRT including history, aims and toxicities. Additionally, she will shortly present the outcomes of the MRC QUARTZ trial. Luis Schiappacasse will address the role of stereotactic radiosurgery to treat limited and extensive brain metastases especially in conjunction with WBRT. Finally, Rafal Dziadziuszko will present systemic therapies for the treatment of brain metastases originated from lung and breast cancer with focus on chemotherapy alone or in combination with radiotherapy.

Chair: B. Timmermann (Germany)
Co-chair: D. Greto (Italy)

09:15 > Whole brain radiotherapy for brain metastases - the end of an era? SP-0587
Speaker: P. Mulvenna (UK)

09:40 > Focal radiotherapy for multiple brain metastases SP-0588
Speaker: L. Schiappacasse (Switzerland)

10:05 > Role of systemic therapy in the treatment of brain metastases SP-0589
Speaker: R. Dziadziuszko (Poland)

Symposium

RADIOTHERAPY "AUTOVACCINATION"; WITH SYSTEMIC IMMUNE MODULATORS FOR MODERN IMMUNOTHERAPY

09:15 - 10:30 | ROOM 4

The current understanding of the impact of radiation therapy on anti tumour immunity has changed our understanding of tumour resistance to radiotherapy which is no longer perceived as the only consequence of tumour cells intrinsic clonogenic resistance to cell kill.
The interplay between tumour cells and the immune stroma is influenced by cell death triggered by irradiation which dictates the immunological response. Immune checkpoints inhibitors may increase tumour response and also propagate systemic anti tumour immune response thus converting the tumour into an immunogenic hub.

Chair: E. Deutsch (France)
Co-chair: M. Trovo (Italy)

09:15 > Should the combined treatment be part of our field of knowledge? The 5th 'R' (immune-mediated) rejection of radiobiology SP-0590
Speaker: P.C. Lara Jimenez (Spain)

09:40 > Radiotherapy for immunotherapy: optimising the doses and fractionation SP-0591
Speaker: S. Demaria (USA)

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

10:05 > Combining immunotherapy and anticancer agents: the right path to achieve cancer cure?
Speaker: L. Apetoh (France) SP-0592

Joint Symposium

ESTRO-AAPM-EFOMP: FUNCTIONAL / BIOLOGICAL IMAGING AND RADIOTHERAPY PHYSICISTS: NEW REQUESTS/CHALLENGES AND THE NEED FOR BETTER AND MORE SPECIFIC TRAINING

09:15 - 10:30 | ROOM 1

Chair: C. Fiorino (Italy)
Chair: A. Torresin (Italy)

09:15 > The role of the medical physicist in integrating quantitative imaging in RT: practical and organisational issues
Speaker: G.M. Cattaneo (Italy) SP-0593

09:35 > Individualised image-guided adaptive therapy in Michigan: lessons learned from clinical trial implementation
Speaker: J. Balter (USA) SP-0594

09:55 > Training in biological/functional imaging: lacks and opportunities
Speaker: A. Torresin (Italy) SP-0595

10:15 > Discussion

Symposium

THE FUTURE OF QA LIES IN AUTOMATION

09:15 - 10:30 | ROOM 500

This symposium will focus on the challenges and approaches in automating quality assurance tasks in the radiotherapy work flow. Specifically we will focus on automation of QA for individual patients in treatment plans and in delivery using log files and in-vivo dosimetry. We will review the different methods for state of the art approaches and ask 'What are the limits of automation and can automated processes ever be used in decision making?'

Chair: C. Clark (UK)
Co-chair: M. Stasi (Italy)

09:15 > The need of automation in QA, state of art and future perspectives
Speaker: N. Jornet (Spain) SP-0596

09:27 > Automated QA for radiotherapy treatment planning
Speaker: S. Petit (The Netherlands) SP-0597

09:47 > Automated QA using log files
Speaker: V. Hernandez (Spain) SP-0598

10:07 > Automation in patient specific QA using in vivo portal dosimetry
Speaker: P. Francois (France) SP-0599

Symposium

MANAGEMENT AND OPTIMISATION OF THE DAILY WORKFLOW

09:15 - 10:30 | ROOM 3

Implementation of workflow management systems in a department is a real asset for continuous quality improvement and increased efficiency. In order to properly implement workflow management systems, it is important to properly define the current workflow of the department while allowing enough flexibility to integrate modifications emanating from improvement action or process changes.
These systems are also tightly linked to patient safety. Improvement and continuous development of this important aspect depends also on the possibility to measure it. Patient safety culture is a complex phenomenon and quantitative and qualitative measures should be combined to increase understanding in the actual effects.
Lean can serve as an overall philosophy to create quality/safety improvement. In addition to the cultural aspects, also structural elements and clinical process improvements should be addressed.
Lastly, we will see a model to plan the number of therapy units according to demographical and epidemiological aspects.

Chair: D. Pasini (Italy)
Co-chair: P. Cornacchione (Italy)

09:15 > Optimising workflow using a workflow management system
Speaker: A. Vaandering (Belgium) SP-0600

09:40 > Does lean management improve patient safety culture?
Speaker: P. Simons (The Netherlands) SP-0601

10:05 > The impact of demographics trend, cancer incidence and cancer prevalence for planning numbers of treatment units in Austria
Speaker: A. Osztavics (Austria) SP-0602

Symposium

COMBINING RADIOTHERAPY WITH MOLECULAR TARGETED AGENTS: LEARNING FROM SUCCESSES AND FAILURES

11:00 - 12:00 | ROOM 2

In this session, the rationale for combining radiation and molecular targeted agents in cancer therapy will be described with a focus on targeting of EGFR, the immune system and tumor angiogenesis and hypoxia. For the combination of radiation with immunotherapy, examples of proimmunogenic and immunosuppressive effects of radiation and differences in the effect based on dose and fractionation

will be given. Safety issues will be covered, and major clinical trial successes and challenges will be highlighted. In addition, future opportunities for advances in preclinical and clinical development of combination therapies will be presented.

Chair: H. Lyng (Norway)
Co-chair: L. Livi (Italy)

11:00 > Interaction of radiotherapy with molecular targeting agents
Speaker: P. Harari (USA) SP-0603

11:20 > Challenges combining radiotherapy with immunotherapy
Speaker: S. Formenti (USA) SP-0604

11:40 > New strategies to targeting tumour angiogenesis and hypoxia
Speaker: O. Chinot (France) SP-0605

Symposium with Proffered Papers

RADIOMICS - THE FUTURE OF RADIOTHERAPY?

11:00 - 12:00 | ISTANBUL

Chair: P. Lambin (The Netherlands)
Co-chair: G. Mantini (Italy)

11:00 > Imaging-genomics: identifying molecular phenotypes by integrating radiomics and genomics data
Speaker: TBC SP-0606

11:15 > PET/CT heterogeneity quantification through texture analysis: potential role for prognostic and predictive models
Speaker: M. Hatt (France) SP-0607

11:30 > The potential of radiomics for radiotherapy individualisation
Speaker: E. Troost (Germany), K. Pilz, S. Löck, S. Leger, C. Richter SP-0608

11:45 > Radiomic CT features for evaluation of EGFR and KRAS mutation status in patients with advanced NSCLC
E.E.C. De Jong (The Netherlands), W. Van Elmpt, L.E.L. Hendriks, R.T.H. Leijenaar, A.M.C. Dingemans, P. Lambin OC-0609

Symposium

RADIOBIOLOGY OF PROTON / CARBON / HEAVY IONS

11:00 - 12:00 | LONDRA

Chair: M. Pruschy (Switzerland)
Co-chair: M. Amichetti (Italy)

11:00 > Gene expression alterations to carbon ion and X-irradiation
Speaker: M. Moreels (Belgium) SP-0610

11:20 > Normal tissue response in particle therapy
Speaker: B.S. Sørensen (Denmark) SP-0611

11:40 > Preclinical studies using protons for high-precision irradiation of small animals
Speaker: P. Van Luijk (The Netherlands) SP-0612

Symposium

NEW INSIGHTS IN TREATING VERTEBRAL METASTASES

11:00 - 12:00 | GIALLA

Choosing the most optimal treatment for patients suffering from spinal metastases can be complex, and, the focus of treatment may change during the course of disease. During this session, the speakers will, from their own clinical perspective, present an update on the place and timing of different treatment modalities ranging from interventional radiologal procedures as RFA or vertebroplasty, to minimal invasive surgical techniques as percutaneous pedicle screw-based stabilization or limited open decompressive procedures, to, finally, non-invasive high dose radiotherapy using stereotactic techniques. Important criteria to consider are selection of patients for either modality, based on patient criteria, expected spinal stability, effectiveness of the intervention, its limitations, side effects, and, duration of metastastic control versus expected survival.

Chair: Y. Van der Linden (The Netherlands)
Co-chair: E. Maranzano (Italy)

11:00 > Recent progresses in interventional radiology
Speaker: P. Bize (Switzerland) SP-0613

11:20 > What are the limits of minimally invasive surgery?
Speaker: F. Zairi (France) SP-0614

11:40 > How to optimise the potential of SBRT
Speaker: P. Ost (Belgium) SP-0615

Symposium

IMRT, THE NEW STANDARD IN TREATMENT OF GYNAECOLOGICAL, LUNG AND BREAST CANCERS?

11:00 - 12:00 | ROOM 4

Chair: Y. Lievens (Belgium)

Co-chair: B.A. Jereczek-Fossa (Italy)

11:00 > Organ motion: is it an obstacle to the use of IMRT as a standard technique for gynecological cancers?
Speaker: I. Barillot (France) SP-0616

11:20 > IMRT for lung cancer: current status and future developments
Speaker: C. Faivre-Finn (UK) SP-0617

11:40 > Are there early and late benefits of breast IMRT for improving dose distribution homogeneity?
Speaker: J. Pignol (The Netherlands) SP-0618

Symposium with Proffered Papers

PLAN OF THE DAY (POTD): CURRENT STATUS

11:00 - 12:00 | ROOM 1

Chair: L. Tuomikoski (Finland)

Co-chair: C. Garibaldi (Italy)

11:00 > PotD external beam: overview of current practice
Speaker: J. Penninkhof (The Netherlands), S. Heijkoop, S. Quint, A.P. Kanis, A. Akhiat, R. Langerak, J.W. Mens, B.J.M. Heijmen, M.S. Hoogeman SP-0619

11:25 > In-room MR image-guided plan of the day
Speaker: R. Kashani (USA), J. Olsen, O. Green, P. Parikh, C. Robinson, J. Michalski, S. Mutic SP-0620

11:45 > A population based library of plans for rectal cancer: design and prospects for margin reduction
L. Hartgring, J. Nijkamp, S. Van Kranen, S. Van Beek, B. Van Triest, P. Remeijer (The Netherlands) OC-0621

Debate

WE DON'T NEED BETTER DOSE CALCULATION, IT'S DOING MORE BAD THAN GOOD

11:00 - 12:00 | ROOM 500

Chair: D. Verellen (Belgium)
Chair: B. McClean (Ireland)

11:00	>	For the motion *Speaker: E. Sterpin (Belgium)*	SP-0622
11:15	>	Against the motion *Speaker: T. Knöös (Sweden)*	SP-0623
11:30	>	For the motion rebuttal *Speaker: E. Sterpin (Belgium)*	
11:40	>	Against the motion rebuttal *Speaker: T. Knöös (Sweden)*	
11:50	>	Discussion	

Debate

ARE WE PRECISELY INACCURATE IN OUR ADAPTION?

11:00 - 12:00 | ROOM 3

This debate will critically discuss recent developments in adaptive radiotherapy (ART). ART is being introduced in many departments nowadays and one of the main question is if there is sufficient evidence to safely do so?

Risk management as well as the role of the inaccuracies of the whole process, such as delineation and dose calculation errors will be discussed in depth. A further point covered in the debate is whether a potential lack of knowledge of tumour spread could cause increased local relapse rates instead of just reducing toxicity, because parts of our target are missed as a result of the reduced treatment volume.

Chair: P. Scherer (Austria)
Chair: H. McNair (UK)

11:00	>	For the motion *Speaker: M. Leech (Ireland)*	SP-0624
11:15	>	Against the motion *Speaker: M. Kamphuis (The Netherlands)*	SP-0625
11:30	>	For the motion rebuttal *Speaker: M. Leech (Ireland)*	

11:40 > Against the motion rebuttal
Speaker: M. Kamphuis (The Netherlands)

11:50 > Discussion

Debate

MOVING AWAY FROM 2 GRAY: ARE WE READY FOR A PARADIGM SHIFT?

12:00 - 13:00 | ROOM 1

Chair: D. Verellen (Belgium)
Co-chair: P. Poortmans (The Netherlands)

12:00 > For the motion: this house believes that larger fraction sizes will be the standard-of-care for the majority of curative treatments by 2025
Speaker: J.R. Yarnold (UK) SP-0626

12:10 > Against the motion: This house believes that standard fractionation will remain the standard-of-care for the majority of curative treatments by 2025
Speaker: J. Overgaard (Denmark) SP-0627

12:25 > For the motion (rebuttal): It is the small fraction sizes that need special pleading, not the large ones
Speaker: A. Nahum (UK) SP-0628

12:40 > Against the motion
Speaker: I.R. Vogelius (Denmark) SP-0629

12:55 > For the motion rebuttal
Speaker: J.R. Yarnold (UK)

POSTERS AND E-POSTERS

POSTERS

ABS. N°

Poster
CLINICAL TRACK: HEAD AND NECK

> Outcomes of induction chemotherapy for head and neck cancer patients
S.Y. Wu (Chinese Taipei), L. Kuan-Chou, C. Tsung-Ming, L. Fei-Peng PO-0630

> The prognostication of tumour volume and lower neck lymph nodes in laryngeal cancer treated with IMRT
S.H. Huang (Canada), J. Su, J. Waldron, J. Kim, A. Bayley, S. Bratman, J. Cho, A. Hope, M. Giuliani, J. Ringash, A. Hansen, J. De Almeida, L. Tong, W. Xu, B. O'Sullivan PO-0631

> A multivariate model predicting grade ≥ 2 neck fibrosis at 6 months after radio(chemo)therapy
D. Nevens (Belgium), A. Laenen, F. Duprez, J. Daisne, W. De Neve, S. Nuyts PO-0632

> Dissection of submandibular glands increases the risk of xerostomia after postoperative radiotherapy
H.P. Van der Laan (The Netherlands), H.P. Bijl, A. Van der Schaaf, J.G.M. Vemer-van den Hoek, J.A. Langendijk, R.J.H.M. Steenbakkers PO-0633

> Body image in irradiated head and neck cancer patients
H. Chiu (Taiwan), T.M. Hung, J.T.C. Chang PO-0634

> Dose to the masseter muscle and risk of trismus after chemoradiation for advanced head & neck cancer
S. Verheijen (The Netherlands), O. Hamming-Vrieze, M. Jonker, E. Lamers, S.A.C. Kraaijenga, L. Van der Molen, J.B. Van de Kamer, M.W.M. Van den Brekel, W.D. Heemsbergen PO-0635

> Safety profile support efficacy of gingival clonidine tablet to prevent severe oral mucositis in HNC
Y. Tao (France), J. Giralt, J.R. Bensadoun, R.V. Lalla, E.M. Ozsahin, G. Pajkos, R.D. Kortmann, J. Contreras-Martinez, P. Céruse, X. Zasadny, F. Arias de la Vega, B. Vasseur, L. Houdas, M. Henke PO-0636

> RCT pilot study of Therabite vs wooden spatula in amelioration of trismus in H&N cancer patients
R. Lee (UK), S.N. Rogers, A.L. Caress, A. Molassiotis, R. Edwards, D. Ryder, P. Sanghera, C. Lunt, T. Yeo, N. Slevin PO-0637

> Adaptive dose painting by numbers for head and neck cancer: interim analysis of a randomised trial
F. Duprez (Belgium), J. Daisne, D. Berwouts, W. De Gersem, I. Goethals, A. Olteanu, J. Schatteman, T. Vercauteren, W. De Neve PO-0638

> Graves ophthalmopathy: a network meta-analysis of treatments
M.P. Shaikh (USA), F. Alite, M. Wu, J. Welsh, B. Emami, E. Melian, M.M. Harkenrider PO-0639

> Prognostic factors in definitive salvage RT for recurrent Head and Neck cancer
O. Suzuki (Japan), R. Oh, K. Ogawa PO-0640

Poster
CLINICAL TRACK: CNS

> Radiosurgery for intracranial meningioma. A systematic review and meta-analysis
V. Pinzi (Italy), E. Biagioli, A. Roberto, F. Galli, F. Chiappa, I. Floriani, L. Fariselli PO-0641

> Radiosurgery without whole brain radiotherapy in brain metastases from non-small cell lung cancer
P. Anselmo (Italy), L. Chirico, M. Muti, M. Basagni, F. Trippa, R. Rossi, L. Draghini, F. Arcidiacono, M. Italiani, M. Casale, S. Fabiani, C. Giorgi, E. Maranzano PO-0642

> Stereotactic hypofractionation in combination with radiosurgery in the treatment of brain metastases
P. Ivanov (Russian Federation), I. Zubatkina, G. Andreev PO-0643

> Hippocampal sparing brain radiotherapy using VMAT to the primary brain tumour
K.S. Kim (Republic of Korea), C.W. Wee, J.Y. Seok, J. Hong, J.B. Chung, K.Y. Eom, J.S. Kim, I.A. Kim PO-0644

> 18F-FET PET and MRI for treatment planning in glioblastoma
M. Harat (Poland), B. Malkowski, Z. Okońska, R. Makarewicz PO-0645

> Temozolomide during radiotherapy of glioblastoma multiforme: daily administration improves survival
S. Nachbichler (Germany), G. Schupp, H. Ballhausen, M. Niyazi, C. Belka PO-0646

> Subventricular zones: new key targets for glioblastoma treatment
I. Khalifa (France), F. Tensaouti, A. Lusque, B. Plas, J.A. Lotterie, E. Uro-Coste, V. Lubrano, E. Cohen-Jonathan Moyal PO-0647

> Pilot study in the assessment of contouring variability in stereotactic radiosurgery
H. Sandstrom (Sweden), C. Chung, J. Gårding, I. Toma-Dasu PO-0648

> Evaluation of distant brain failure among patients undergoing SRS for lung cancer brain metastases
G. Bhattal (USA), A. Keller, J. Dajac, Z. Pavlovic, R. Ismail, S. Kailas, J. Babb, T. Buntinx-Krieg, T. Do, E. Kim, A. Sarparast, N. Ramakrishna PO-0649

> Prognostic value of minimal time to peak in dynamic 18F-FET-PET for high-grade glioma re-irradiation
D.F. Fleischmann (Germany), M. Unterrainer, P. Bartenstein, C. Belka, N.L. Albert, M. Niyazi PO-0650

> Pattern of failure in glioblastoma patients after FET-PET and MRI-guided chemo-radiotherapy
M. Lundemann Jensen (Denmark), J. Cardoso Costa, I. Law, A. Muhic, S.A. Engelholm, P. Munck af Rosenschöld PO-0651

> SFRT of the resection cavity in patients with one to three brain metastases
A. Bilger (Germany), H. Lorenz, D. Milanovic, O. Oehlke, A.L. Grosu PO-0652

> Surgical interventions after previous SBRT of the spine – increased risk for complications?
J. Roesch (Switzerland), J. Cho, D.K. Fahim, J.C. Flickinger, P.C. Gerszten, I.S. Grills, M.S. Jawad, R. Kersh, D. Letourneau, F. Mantel, A. Sahgal, J.H. Shin, B. Winey, M. Guckenberger PO-0653

> Hypofractionated StereotaticRS for patients with brain metastases Outcome evaluation and toxicity
P. Navarria (Italy), A. Ascolese, G. D'agostino, E. Villa, E. Clerici, A. Tozzi, C. Iftode, F. De Rose, L. Liardo, T. Comito, C. Franzese, D. Franceschini, F. Pessina, M. Riva, L. Bello, G. Reggiori, M. Scorsetti PO-0654

> Targeted therapy and stereotactic radiotherapy in brain metastases from renal cell carcinoma
P. Anselmo (Italy), C. Caserta, M. Casale, F. Trippa, F. Arcidiacono, L. Draghini, F. Roila, E. Maranzano PO-0655

> Radiosurgery in brain metastases: a mono-institutional experience
E. Pelle (Italy), E. Trino, M. Levis, C. Mantovani, U. Ricardi PO-0656

> Does radiomics have prognostic value in glioblastoma?
I. Compter (The Netherlands), R.T.H. Leijenaar, D.B.P. Eekers, J.D. Zindler, A. Hoeben, B. Küsters, J. Beckervordersandforth, L. Ackermans, O.E.M.G. Schijns, M. Anten, A.A. Postma, P. Lambin PO-0657

> Linear accelerator radiosurgery for arteriovenous malformations: a single institution experience
S. Yahya (UK), G. Heyes, P. Nightingale, S. Lamin, G. Cruickshank, I. Geh, D. Spooner, P. Sanghera PO-0658

> Impact of 68Ga-Dotatoc-PET on tumor delineation and outcome in patients with meningioma
H. Fischer (Germany), K. Kessel, T. Pyka, M. Devečka, M. Schwaiger, S.E. Combs PO-0659

> Evaluation of distant brain failure among patients undergoing SRS for melanoma brain metastases
S. Kailas (USA), E. Kim, A. Sarparast, P. Adedoyin, A. Keller, G. Bhattal, R. Ismail, J. Babb, T. Buntinx-Krieg, J. Dajac, T. Do, Z. Pavlovic, N. Ramakrishna PO-0660

> Gliosarcoma: prognostic and therapeutics factors
J. Castelli (France), L. Feuvret, Q. Haoming, J. Biau, E. Jouglar, A. Berger, G. Truc, F. Llama Guttierrez, X. Morandi, F. Thillays, D. Loussouarn, I. Lecouillard, G. Crehange, D. Antoni, E. Vauleon, R. De Crevoisier, G. Noël PO-0661

Poster

CLINICAL TRACK: HAEMATOLOGY

> The multi-institutional retrospective study of radiation therapy for NK/T-cell lymphoma in Japan
M. Oguchi (Japan), Y. Motoko, S. Ritsuro, S. Keisuke, H. Masatoshi, E. Yasuo, S. Toshinori, I. Koichi, I. Michiko, S. Emiko, K. Yasuko, H. Arisa PO-0662

> Treatment result of primary thyroid lymphoma; a single institute experience
N. Yoshikawa (Japan), T. Shimbo, H. Yoshioka, K. Yoshida, Y. Uesugi, Y. Narumi PO-0663

> Outcome of radiotherapy for stage I and II follicular lymphoma in patients staged by 18 FDG PET-CT
I.L. Brady (UK), S.F. Barrington, V. Warbey, N.G. Mikhaeel PO-0664

> Compliance with ILROG guidelines in the treatment of extranodal lymphomas; an internal plans review
C. Furlan (Italy), P. Bulian, M. Michieli, M. Trovo, A. Ermacora, M. Spina, U. Tirelli, F. Franchin PO-0665

> Comparing the efficacy of low-dose radiotherapy in patients with aggressive and indolent lymphomas
C. Furlan (Italy), P. Bulian, M. Michieli, M. Spina, A. Ermacora, M. Trovo, U. Tirelli, G. Franchin PO-0666

> Second malignancies after TBI in AHCT for relapsed follicular lymphoma
S. Tisseverasinghe, R. Samant, M. Sabloff, Y. Xu, C. Bredeson, L. Huebsch, P. Genest, P. Cross (Canada) PO-0667

> Outcome of low and intermediate dose radiotherapy in head and neck MALT lymphoma
F. Rahman (UK), J. Brady, S. Galli, N.G. Mikhaeel PO-0668

> Risk of second malignant neoplasms among long-term survivors of extranodal NK/T-cell lymphoma
B. Chen (China), Y.X. Li, W.H. Wang, J. Jin, S.L. Wang, Y.P. Liu, Y.W. Song, H. Fang, H. Ren, Q.F. Liu, R.Y. Wu, Y. Yang, X.F. Liu, Z.H. Yu PO-0669

> Efficacy of low dose radiotherapy in relapsed or refractory high grade non Hodgkin lymphoma
I.L. Brady (UK), H. Attallah, N.G. Mikhaeel PO-0670

> Risk of cardiac damage after mediastinal radiotherapy for Hodgkin's disease
M. Buglione (Italy), F. Trevisan, L. Baushi, M. Triggiani, N. Pasinetti, A. Alghisi, D. Greco, A. Papa, L. Spiazzi, P. Borghetti, S. Nodari, S. Magrini PO-0671

Poster
CLINICAL TRACK: BREAST

> Ten years experience of breast reconstruction after mastectomy in previously irradiated patients
A. Di Donato (Italy), E. Ippolito, R.M. D'Angelillo, A. Sicilia, E. Molfese, P. Trecca, S. Ramella, L. Trodella, B. Cagli, M. Barone PO-0672

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

> Common European mitochondrial haplogroups in the risk of RT-induced breast fibrosis
L. Deantonio (Italy), S. Terrazzino, S. Cargnin, L. Donis, C. Pisani, L. Masini, G. Gambaro, P. Canonico, A. Genazzani, M. Krengli PO-0673

> Factors influencing patient reported cosmetic outcome: results of the Young Boost Trial
P. Brouwers (The Netherlands), E. Van Werkhoven, J. Van Loon, P. Poortmans, H. Bartelink, L. Boersma PO-0674

> Radical radiotherapy in ologometastatic breast cancer patients
M. Trovo (Italy), C. Furlan, M. Berretta, L. Militello, S. Spazzapan, J. Polesel, A. Del Conte, S. Arcangeli, A. Fiorentino, G. Franchin PO-0675

> Impact of IMN irradiation on the right coronary artery and OAR in right-sided post-mastectomy patients
K. Rock (Canada), A. Barry, M. Rahman, M. Pintilie, C.A. Koch PO-0676

> Comparing detailed cardiac structure dose-volume metrics in supine versus prone breast irradiation
C. Luo (Australia), J. Otton, V. Batumalai, E.M. Pogson, K. Dundas, L. Holloway, W. Xuan, G.P. Delaney, L. Thomas, D.H. Tran, G. Liney, E.S. Koh PO-0677

Poster
CLINICAL TRACK: LUNG

> Do blood-biomarkers enhance clinical models for NSCLC patients treated with radical radiotherapy?
S. Carvalho (The Netherlands), E.G.C. Troost, J. Bons, P. Menheere, P. Lambin, C. Oberije PO-0678

> Comparison of toxicity and outcome in stage III NSCLC patients treated with IMRT or VMAT
R. Wijsman (The Netherlands), F. Dankers, E.G.C. Troost, A.L. Hoffmann, J. Bussink PO-0679

> Predictive models of the extent and CT appearance of radiation induced lung injury for NSCLC
U. Bernchou (Denmark), R. Christiansen, J. Asmussen, T. Schytte, O. Hansen, C. Brink PO-0680

> Randomised phase II study of Erlotinib with radiotherapy in irresectable non small cell lung cancer
E. Martinez (Spain), M. Rico Oses, F. Casas, N. Viñolas, J. Minguez, A. Paredes, A. Pérez Casas, E. Domine PO-0681

> Prognostic factors and patterns of failure after post-op radiotherapy for epithelial thymic tumors
F. Belkhir (France), A. Levy, A. Suissa, N. Grellier-Adedjouma, P. Xu, E. Fadel, C. Le Péchoux PO-0682

> Multiple training interventions improve PET/CT based target volume delineation in NSCLC RTP
T. Konert (The Netherlands), W. Vogel, M. MacManus, S. Everitt, D. Thorwarth, J. Sonke, D. Paez, E. Fidarova, G. Hanna PO-0683

> Does the dose to heart affect survival in NSCLC patient treated with definitive radiotherapy?
T. Schytte (Denmark), T.B. Nielsen, T. Stolberg-Rohr, C. Brink, O. Hansen PO-0684

> Is PET imaging a reliable target for dose painting by numbers in lung cancer?
D. Di Perri (Belgium), J. Lee, A. Bol, S. Differding, G. Janssens, D. Labar, A. Robert, F. Hanin, X. Geets PO-0685

> Locoregional failure in locally advanced non-small cell lung cancer after definitive radiotherapy
E. Jouglar (France), V. Isnardi, D. Goulon, C. Ségura-Ferlay, M. Ayadi, C. Dupuy, M.A. Mahé, L. Claude PO-0686

> Machine learning method for biomarkers identification in lung cancer patients
B.D. Delgado-León (Spain), J. Moreno, J. Cacicedo, M. Perez, A. Moreno, F.J. Núñez, L. Delgado, S. Pérez, J.M. Praena-Fernandez, E. Montero, J.M. Nieto, C. Parra, M.J. Ortiz-Gordillo, J.L. López-Guerra PO-0687

> Patterns of LR for stage III N2 NSCLC patients after chemotherapy and surgery: implications for PORT
C. Billiet (Belgium), D. De Ruysscher, S. Peeters, H. Decaluwé, J. Vansteenkiste, C. Dooms, C.M. Deroose, M. Hendrikx, J. Mebis PO-0688

> Outcome predictors for moderate hypofractionated tomotherapy in malignant pleural mesothelioma
A. Fodor (Italy), S. Broggi, I. Dell'Oca, M. Picchio, C. Fiorino, E. Incerti, M. Pasetti, G. Cattaneo, L. Gianolli, R. Calandrino, N. Di Muzio PO-0689

> Patient weight loss predicts worse overall survival for stage I lung cancer treated with SABR
G. Cook (Canada), Y. Xu, P. Cross, O. Holmes, R. Macrae, J. Pantarotto PO-0690

> SABR for central lung tumors: plan quality and long-term clinical outcomes
H. Tekatli (The Netherlands), S. Senan, M. Dahele, B.J. Slotman, W. Verbakel PO-0691

> A novel endoscopically injected liquid-gel marker for image guided radiotherapy of thoracic tumours
S.R. Mortensen (Denmark), J. Scherman-Rydhög, K.R. Larsen, P.F. Clementsen, G.F. Persson, M. Aznar, M. Josipovic, P.M. Rosenschöld, R.I. Jølck, T.L. Andresen, L. Specht PO-0692

> Primary tumor response of locally advanced NSCLC in PET/CTs during radiochemotherapy
T. Schimek-Jasch (Germany), S. Adebahr, M. Mix, A.L. Grosu, U. Nestle PO-0693

> Lung toxicity modelling in thoracic post-operative RT for NSCLC and pleural mesothelioma
A. Botticella (Belgium), G. Defraene, C. Billiet, C. Draulans, K. Nackaerts, C. Deroose, J. Coolen, P. Nafteux, S. Peeters, D. De Ruysscher PO-0694

> Lobectomy vs stereotactic ablative radiotherapy in NSCLC: a multicentric series in four centers
V. Scotti (Italy), A. Bruni, G. Simontacchi, I.F. Furfaro, M. Loi, D. Scartoni, A. Gonfiotti, D. Viggiano, C. De Luca Cardillo, B. Agresti, L. Poggesi, E. Olmetto, K. Ferrari, M. Perna, P. Bastiani, L. Paoletti, L. Lastrucci, P. Pernici, G. Carta, S. Borghesi, S. Bertocci, P. Giacobazzi, L. Voltolini, L. Livi PO-0695

Poster

CLINICAL TRACK: UPPER GI (OESOPHAGUS, STOMACH, PANCREAS, LIVER)

> Prognostic impact of celiac/supraclavicular node metastasis in locally advanced oesophageal cancer
W.K. Cho (Republic of Korea), D. Oh, Y.C. Ahn, H. Lee, Y.M. Shim, J.I. Zo, J.M. Sun, M.J. Ahn, K. Park PO-0696

> Neoadjuvant vs. adjuvant treatment of gastroesophageal junction cancer: a retrospective analysis
A. Stessin (USA), J. Miccio, O. Oladeru, S. Ryu PO-0697

> Integration of radiotherapy to chemotherapy for abdominal lymph node recurrence in gastric cancer
J. Lee (Republic of Korea), S.Y. Rha, W.J. Hyung, Y.C. Lee, J.S. Lim, H.S. Kim, W.S. Koom PO-0698

> Treatment of metachronous esophageal cancer after head and neck cancer
K.H. Fan (Taiwan), Y.K. Chao, H.M. Wang, C.Y. Lin, T.C. Chang, C.T. Liao, C.H. Hsieh PO-0699

> Salvage radiotherapy in the patients with supraclavicular lymph node metastases after esophagectomy
Z.G. Zhou (China), C.J. Zhen, P. Zhang, X.Y. Qiao, J.L. Liang, W.W. Bai PO-0700

> Dose-response relationship for locoregional control in esophageal cancer treated with curative CRT
H.J. Kim (Republic of Korea), Y.G. Suh, W.S. Koom, Y.B. Kim, C.G. Lee PO-0701

> The use of PET texture analysis to predict lymph node metastases in patients with oesophageal cancer
K. Foley, B. Berthon, C. Marshall, E. Spezi (UK) PO-0702

> Perioperative chemotherapy versus neoadjuvant chemoradiotherapy for esophageal adenocarcinoma
L. Goense (The Netherlands), P.C. Van der Sluis, P.S.N. Van Rossum, S. Van der Horst, M. Van Vulpen, S. Mook, J.P. Ruurda, R. Van Hillegersberg PO-0703

> Patterns of replase in stage III thoracic esophageal squamous cell carcinoma patients after surgery
Y.X. Wang (China), Q. Yang, M. He, J.F. Yao, J. Li, S.C. Zhu, X.Y. Qiao, Z. Qi PO-0704

> Clinical outcomes for inoperable HCC treated with SBRT: results on 71 patients and 102 lesions
T. Comito (Italy), C. Franzese, E. Clerici, F. De Rose, A. Tozzi, G. D'Agostino, P. Navarria, C. Iftode, E. Villa, A.M. Ascolese, D. Franceschini, R.L.E. Liardo, L. Cozzi, A. Foglliata, A. Stravato, F. Zucconi, G. Reggiori, S. Tomatis, M. Scorsetti PO-0705

> Supraclavicular lymphnode disease is not an independent prognostic factor in esophageal cancer
P. Jeene (The Netherlands), M.C.C.M. Hulshof, E. Versteijne, M.I. Van Berge Henegouwen, J.J.G.H.M. Bergmann, E.D. Geijsen, H.W.M. Van Laarhoven PO-0706

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> The impact of dose on survival in adjuvant chemoradiation pancreatic cancer
L. De Filippo (Italy), G.C. Mattiucci, A.G. Morganti, M. Falconi, R.G.P.M. Van Stiphout, S. Alfieri, M. Balducci, F.A. Calvo, J.M. Herman, G. Macchia, B.W. Maidment III, G. Mantini, R.C. Miller, W. Regine, M. Reni, V. Valentini PO-0707

> Advanced age is no contraindication for chemoradiotherapy with curative intent in oesophageal cancer
F. Voncken (The Netherlands), R. Van der Kaaij, K. Sikorska, E. Van Werkhoven, J. Van Dieren, C. Grootscholten, P. Snaebjornsson, J. Van Sandick, B. Aleman PO-0708

> Interobserver variation of CT and FDG-PET based GTV for oesophageal cancer: a Dutch nationwide study
M.E. Nowee (The Netherlands), F.E. Voncken, A.N. Kotte, L. Goense, P.S.N. Van Rossum, A.L.H.M.W. Van Lier, B.M. Aleman, M. Van Vulpen, G.J. Meijer, I.M. Lips PO-0709

> Large interobserver variation of delineated target volumes of pancreatic cancer in the Netherlands
E. Versteijne (The Netherlands), O. Gurney-Champion, A. Van der Horst, E. Lens, M. Kolff, H. Heerkens, G. Paardekooper, M. Berbee, J. Buijsen, P. Vande Putte, K. Neelis, M. Van Herk, A. Bel, G. Van Tienhoven PO-0710

> Relating CT image heterogeneity to patient outcome in the SCOPE 1 oesophageal cancer trial
R. Carrington (UK), E. Spezi, S. Gwynne, J. Staffurth, T. Crosby PO-0711

> Stereotactic body radiotherapy in the treatment of inoperable hepatocellular carcinoma
P. Franco (Italy), A. Guarneri, E. Trino, M. Levis, F. Giglioli, A.R. Filippi, R. Ragona, U. Ricardi PO-0712

> Conformity analysis of target-volume definition for margin-directed boost in pancreatic cancer SBRT
D. Holyoake (UK), M. Robinson, D. Grose, D. McIntosh, D. Sebag-Montefiore, G. Radhakrishna, N. Patel, S. Mukherjee, M. Hawkins PO-0713

> Proposal for the delineation of the clinical target volume in biliary tract cancer radiotherapy
J. Socha (Poland), M. Michalak, G. Wołąkiewicz, L. Kępka PO-0714

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> Chemoradiation with concomitant boost in rectal cancer (T4&recurrences): a phase II study
V. Picardi (Italy), G. Macchia, M. Di Bartolomeo, M. Giordano, M. Nuzzo, L. Caravatta, M.A. Gambacorta, L. Di Lullo, A. Guido, L. Giaccherini, L. Fuccio, R. Golfieri, D. Cuicchi, G. Ugolini, S. Cammelli, G. Frezza, A.G. Morganti, V. Valentini, F. Deodato PO-0715

> Preoperative chemoradiation with VMAT-SIB in rectal cancer: a phase II study (Grace-Rectum-1)
V. Picardi (Italy), G. Macchia, S. Cilla, M. Di Bartolomeo, M. Giordano, F. Rotondi, M.A. Gambacorta, F. Deodato, L. Ronchi, A. Farioli, A. Guido, G. Siepe, G. Compagnone, A. Ardizzoni, S. Cammelli, G. Frezza, V. Valentini, A.G. Morganti PO-0716

> Serum miR-345-5p predicts pathological response to chemoradiotherapy in local advanced rectal cancer
J. Yu (China), N. Li, J. Jin PO-0717

> The significance of postop CEA after preoperative CRT followed by TME in advanced rectal cancer
S. Jeong (Republic of Korea), J.H. Lee, S.H. Kim, H.M. Cho, B.Y. Shim, D.Y. Kim, T.H. Kim, S.Y. Kim, J.Y. Baek, J.H. Oh, T.K. Nam, M.S. Yoon, J.U. Jeong, K. Kim, E.K. Chi, H.S. Jang, J.S. Kim, J.H. Kim, B.K. Jeong PO-0718

> Target delineation of anal cancer based on MR or PET – an inter-observer, inter-modality study
E. Rusten (Norway), B.L. Rekstad, C. Undseth, G. Al-Haidari, B. Hanekamp, E. Hernes, T.P. Hellebust, E. Malinen, M. Guren PO-0719

> High tumour glycine concentration – an adverse prognostic factor in locally advanced rectal cancer
K. Redalen (Norway), B. Sitter, T. Bathen, K. Grøholt, K. Hole, S. Dueland, K. Flatmark, A. Ree, T. Seierstad PO-0720

> Impact of sentinel lymph-node biopsy on staging and treatment in patients with anal cancer
N. Slim (Italy), C. Gumina, P. De Nardi, A. Tamburini, C. Canevari, M. Ronzoni, G. Bordogna, V. Ricci, C. Fiorino, R. Rosati, N. Di Muzio, P. Passoni PO-0721

> Stereotactic ablative radiatiotherapy for lung oligometastatic patients with colorectal cancer
L. Agolli (Italy), V. Maurizio, N. Luca, D.S. Vitaliana, O. Mattia F PO-0722

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> Short time interval between radiation and hyperthermia improves treatment outcome in cervical cancer
C.M. Van Leeuwen (The Netherlands), A.L. Oei, K.W.T.K. Chin, L.J.A. Stalpers, A. Bel, J. Crezee, N.A.P. Franken, H.P. Kok PO-0723

> Adjuvant SIB-VMAT in endometrial cancer: a dose escalation study
G. Macchia (Italy), S. Cilla, F. Deodato, M. Nuzzo, A. Ianiro, M. Marucci, G. Perrella, C. Digesù, V. Valentini, M. Ferioli, F. Bertini, A. Galuppi, M. Perrone, P. De Iaco, S. Cammelli, G. Frezza, A.G. Morganti PO-0724

> Pelvic organ motion during radiotherapy for cervical cancer and impact on target coverage
G. Eminowicz (UK), J. Motlib, S. Khan, C. Perna, M. McCormack PO-0725

> Stereotactic body radiotherapy for mediastinal and sub-diaphragmatic nodal relapse of ovarian cancer
L. Draghini (Italy), F. Trippa, F. Arcidiacono, P. Anselmo, M. Casale, M. Italiani, M. Muti, M.L. Basagni, L. Chirico, R. Rossi, E. Maranzano PO-0726

> Prognostic impact of 18F-FDG PET-CT in patients with locally advanced cervical carcinoma
S. Cima (Switzerland), A. Galuppi, P. De Iaco, M. Perrone, S. Fanti, G. Compagnone, M.C. Valli, A. Richetti, G. Macchia, M. Nuzzo, F. Deodato, G. Ferrandina, F. Bertini, A. Farioli, S. Cammelli, G. Frezza, A.G. Morganti PO-0727

> Stereotactic body radiation therapy for oligometastatic patients with ovarian cancer
A. Tozzi (Italy), C.S. Iftote, T. Comito, C. Franzese, F. De Rose, E. Villa, P. Navarria, A.M. Ascolese, D. Franceschini, R.L.E. Liardo, E. Clerici, G.R. D'Agostino, V. Palumbo, M. Scorsetti PO-0728

> Hematological toxicity of Rth-Chth for cervical cancer: Rth technique and dose given to bone marrow
K. Bialas (Poland), M. Agnieszka Stefanowicz, M. Karolina Osowiecka, P. Katarzyna Pawłów – Pyrka, P. Lucyna Kępka PO-0729

> QoL after postoperative IMRT for cervical cancer: results from matched pair analysis with 3DCRT
S. Chopra (India), S. Mohanty, U. Mahantshetty, S. Kannan, R. Engineer, S. Mechanery, R. Phurailatpam, J. Ghosh, S. Gupta, S. Shrivastava PO-0730

> Quality of life of women after endometrial cancer: the role of the vaginal dilator
R. Foerster (Germany), L. Schnetzke, T. Bruckner, H. Rief, J. Debus, K. Lindel PO-0731

> Predictive factors for inter-fraction uterine motion in definitive radiotherapy for cervical cancer
H. Maemoto (Japan), T.T. Takafumi Toita, S.H. Seiji Hashimoto, T.A. Takuro Ariga, Y.K. Yasumasa Kakinohana, J.H. Joichi Heianna, S.M. Sadayuki Murayama PO-0732

> Treatment response evaluation with ADCmean in cervical cancer patient treated with chemoradiotherapy
C. Onal (Turkey), G. Erbay, O.C. Guler PO-0733

> Just in the prevention of radio-induced vaginal mucositis
F. Piccolo (Italy), A. Romano, A. Rese, E. D'Ippolito, F. Pastore, P. Romanelli, L. Faraci, E. Toska, V. De Chiara, A. Farella, R. Solla, M. Conson, R. Liuzzi, L. Cella, R. Pacelli PO-0734

> Prognostic value of microRNA-205 in endometrial cancer patients treated with adjuvant radiotherapy
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> Tumour staging using MRI in prostate cancer: improvement of treatment decisions for radiotherapy
F. Couñago (Spain), E. Del Cerro, A.A. Díaz-Gavela, F.J. Marcos, M. Recio, D. Sanz-Rosa, I. Thuissard, K. Olaciregui, J. Castro-Novais, J. Carrascoso, C. Hayoun, R. Murillo, J.M. Rodriguez-Luna, C. Bueno, J. Hornedo, R. Perez-Carrion, V. Martinez de Vega, M. Mateo PO-0736

> Predictors of PSA relapse in patients with intermediate risk prostate cancer treated with SBRT
T. Kole (USA), S. Guleria, H. Koneru, O. Obayomi-Davies, T. Yung, S. Lei, B. Collins, S. Suy, A. Dritschilo, S. Collins PO-0737

> Hydrogel injection prevents long-term rectal toxicity after radiotherapy for prostate cancer
M. Pinkawa (Germany), V. Schmitt, V. Djukic, J. Klotz, L. König, D. Frank, B. Krenkel, M. Eble PO-0738

> IMRT versus 3D conformal radiotherapy when used in combination with I-125 prostate brachytherapy
A. Yorozu (Japan), T. Tanaka, R. Kota, Y. Takagawa, Y. Shiraishi, K. Toya, S. Saito PO-0739

> Nodal clearance rate and efficacy of individualised SN-based pelvic IMRT for prostate cancer
A. Müller (Germany), F. Eckert, F. Paulsen, D. Zips, A. Stenzl, D. Schilling, M. Alber, R. Bares, P. Martus, D. Weckermann, C. Belka, U. Ganswindt PO-0740

> Even high-dose radiotherapy requires long-term androgen ablation for high-risk prostate cancer
T.K. Nam (Republic of Korea), D.D. Kwon, J.W. Jeong, Y.H. Kim, M.S. Yoon, J.Y. Song, S.J. Ahn, W.K. Chung PO-0741

> Image-guided IMRT reduces late toxicity compared to 3D-CRT for prostate cancer
R. Wortel (The Netherlands), L. Incrocci, F. Pos, U. Van der Heide, J. Lebesque, S. Aluwini, M. Witte, W. Heemsbergen PO-0742

> Stereotactic body radiotherapy in recurrent lymph nodes metastases from prostate cancer
F. Trippa (Italy), E. Maranzano, E. Ponti, A. Carosi, F. Arcidiacono, L. Draghini, L. Di Murro, A. Lancia, P. Anselmo, R. Santoni, G. Ingrosso PO-0743

> Effects of IMRT or radical prostatectomy (RP) on serum testosterone in patients with prostate cancer
A. Giraldo Marin (Spain), X. Maldonado, J. Planas, M. Hermida, M.J. Mañas, S. Mico, J. Morote, J. Giralt PO-0744

> Significant correlation between prostate volume and obstructive voiding symptom in hypofractionation
S. Pérez Echagüen (Spain), C.J. Sanz Freire, G.A. Ossola Lentati PO-0745

> Spanish validation of Charlson Index applied to prostate cancer
F. Casas i Duran (Spain), F. Ferrer, A. Herreros, J. Saez, C. Camacho PO-0746

> Revisiting guidelines for target definition after prostatectomy when taking MRI study into account
G. Sancho Pardo (Spain), D. Hernandez, D. Gimenez, N. Jornet, M. Menso, E. Umbrarescu, F. Benítez, G. Gómez de Segura, J. Craven-Bartle PO-0747

> Escalated-dose IMRT for prostate cancer: long-term toxicity and biochemical outcomes
H. Bettina (Germany), D. Strauß PO-0748

> Factors predicting late severe urinary incontinence after postprostatectomy RT: a longitudinal study
B. Noris Chiorda (Italy), C. Sini, C. Fiorino, F. Badenchini, A. Briganti, A. Chiara, C.L. Deantoni, N. Slim, N. Suardi, F. Montorsi, N. Di Muzio, C. Cozzarini PO-0749

> Conventionally-fractionated VMAT vs. SBRT in prostate cancer: PSA kinetics, toxicity, quality of life
M. Tambas (Turkey), F. Agaoglu, A. Iribas, M. Guveli, Y. Dizdar, M. Okutan, D. Ozkan, N. Tenekeci, E. Darendeliler PO-0750

> Predicting recurrence after 3DC radiotherapy for prostate cancer: proposal for a new classifier
P. Gabriele (Italy), B. Jereczek-Fossa, M. Krengli, E. Garibaldi, M. Tessa, G. Moro, G. Girelli, C. Bona, V. Balcet, P. Ferrazza, D. Gabriele PO-0751

> Outcome of prostate cancer patients treated with 3DCRT: impact of rectal/bladder preparation
A. Maggio (Italy), E. Garibaldi, D. Gabriele, S. Bresciani, E. Delmastro, A. Di Dia, A. Miranti, M. Poli, P. Gabriele, M. Stasi PO-0752

> Prospective evaluation of urinary function in patients with prostate cancer treated with RT
F. Badenchini (Italy), C. Cozzarini, B. Avuzzi, C. Sini, A. Fodor, T. Rancati, R. Valdagni, N. Di Muzio, C. Fiorino PO-0753

> Whole body Integral dose is associated with radiotherapy related fatigue in prostate cancer
N. Joseph (UK), A. McWilliam, J. Chang-Claude, S. Davidson, K. Johnson, T. Rancati, C. Talbot, A. Webb, C. West, A. Choudhury PO-0754

> Intestinal toxicity from WPRT delivered with IMRT is negligible. A multicentric observational trial
C. Sini (Italy), E. Garibaldi, A. Maggio, L. Perna, A. Prisco, E. Moretti, M. Gaetano, V. Carillo, B. Avuzzi, T. Giandini, D. Cante, E. Petrucci, B. Saracino, V. Landoni, E. Della Bosca, P. Salmoiraghi, C. Bianconi, F. Badenchini, C. Fiorino, C. Cozzarini PO-0755

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> Choline PET/CT and stereotactic body radiotherapy in oligometastatic prostate cancer patients
F. Pasqualetti (Italy), M. Panichi, A. Sainato, F. Matteucci, L. Derosa, P. Cocuzza, G. Coraggio, P. Ferrazza, S. Montrone, M. Cantarella, D. Delishaj, A. Cristaudo, M. Fabrini, C. Greco, P. Erba PO-0756

> SBRT for prostate cancer using tomotherapy: interim analysis of a prospective trial in 82 patients
V. Macias Hernandez (Spain), M. Blanco Villar, M.J. Fernandez Gomez, S. Garcia Repiso, P. Soria Carreras, A. Nieto Palacios, A.I. Rodriguez Gutierrez, O. Alonso Rodriguez, C. Cigarral Garcia, S. Rodriguez Garcia, C. Gil Restrepo, A. Matias Perez, F. Gomez Veiga, M. Martin Izquierdo, L.A. Perez Romasanta PO-0757

> Adjuvant or Salvage? 10-y results of the AIRO Group on prostate cancer multicentre prospective trial
F. Maurizi (Italy), P. Antognoni, S. Barra, F. Bertoni, A. Bonetta, G. Bortolus, A. Colombo, G. Frezza, O. Gabriele, C. Iotti, F. Mattana, S. Meregalli, G. Moro, M. Signor, G. Malinverni PO-0758

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> Results of radical radiotherapy with a tumour boost for bladder cancer in patients unfit for surgery
L.J. Lutkenhaus (The Netherlands), R.M. Van Os, A. Bel, M.C.C.M. Hulshof PO-0759

> 3D radiotherapy with concurrent weekly Gemcitabine and Cisplatin for bladder carcinoma
A. Varveris (Greece), J. Stratakis, M. Mazonakis, A. Spanakis, C. Varveris PO-0760

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> Radiation therapy for angiosarcoma of the scalp: total scalp irradiation with X-rays and electrons
M. Hata (Japan), H. Wada, I. Ogino, M. Omura, I. Koike, Y. Tayama, K. Odagiri, T. Kasuya, M. Aihara, T. Inoue PO-0761

> Dose-volume predictors of radio-induced effects after SRS for uveal melanoma
C.R. Gigliotti, M. Di Nicola, L.A. Perna, C. Fiorino, G. Modorati, P. Mortini, A. Franzin, A. Bolognesi, A. Del Vecchio (Italy), R. Calandrino PO-0762

> Ruthenium-106 brachytherapy for choroidal melanoma: high efficacy with improved visual outcome
F.P. Peters (The Netherlands), M. Marinkovic, N. Horeweg, L. Sommers, M. Fiocco, J.C. Bleeker, M. Ketelaars, G.P.M. Luyten, C.L. Creutzberg PO-0763

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> Perioperative brachiterapy boost in high grade soft tissue sarcomas
A. Cortesi (Italy), A. Galuppi, E. Shukulli, G. Bianchi, D.M. Donati, S. Cima, C. Digesù, M. Nuzzo, G. Macchia, F. Deodato, G. Frezza, S. Cammelli, A.G. Morganti PO-0764

> Management of primary cardiac and great vessel sarcomas, The RMH experience 2000-2015
R. Rieu, C. Benson, A. Dunlop, K. Khabra, O. Al-Muderis, R. Jones, W. Van der Graaf, C. Fisher, K. Thway, C. Messiou, I. Judson, A. Miah, S. Zaidi (UK) PO-0765

> Is dose de-escalation possible in sarcoma patients treated with extended limb sparing resection?
A. Levy (France), S. Bonvalot, P. Terrier, A. Le Cesne, C. Le Péchoux PO-0766

> Does fluid collection have an impact on radiotherapy outcomes after excision of soft tissue sarcoma?
N. Choi (Republic of Korea), J.Y. Kim, T. Yu, H.S. Kim, H.J. Kim, I.H. Kim PO-0767

> Evaluation of RT practice for limb soft tissue sarcomas and its impact on prognosis and toxicity
C. Llacer-Moscardo (France), C. Le Pechoux, M.P. Sunyach, S. Thezenas, A. Ducassou, M. Delannes, G. Noel, J. Thariat, G. Vogin, J. Fourquet, F. Vilotte, P. Sargos, G. Kantor, S. Chapet, L. Moureau-Zabotto PO-0768

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> Survival benefit for patients with diffuse intrinsic pontine glioma (DIPG) undergoing re-irradiation
G.O.R.J. Janssens (The Netherlands), S. Bolle, H. Mandeville, M. Ramos-Albiac, K. Van Beek, H. Benghiat, B. Hoeben, A. Morales la Madrid, M. Peters, R. Kortmann, A.O. Von Bueren, D. Van Vuurden, C.M. Kramm PO-0769

> Subsequent colorectal adenomas in childhood cancer survivors: a DCOG LATER record linkage study
J. Teepen (The Netherlands), J. Kok, F. Van Leeuwen, W. Tissing, W. Dolsma, H. Van der Pal, E. Van Dulmen-den Broeder, M. Van den Heuvel-Eibrink, J. Loonen, D. Bresters, A. Versluys, S. Neggers, A. De Vries, M. Jaspers, M. Van den Berg, H. Caron, M. Van der Heiden-van der Loo, N. Hollema, DCOG LATER Study Group, F. Oldenburger, O. Visser, L. Overbeek, L. Kremer, C. Ronckers PO-0770

> Temporal changes in pediatric radiation oncology: DCOG LATER childhood cancer survivor study
J. Kok (The Netherlands), W. Dolsma, E. Van Dulmen-den Broeder, M. Van den Heuvel-Eibrink, J. Loonen, W. Tissing, D. Bresters, B. Versluys, H. Van der Pal, S. Neggers, N. Hollema, M. Van der Heiden-van der Loo, F. Van Leeuwen, F. Oldenburger, B. Aleman, G. Janssens, J. Maduro, R. Tersteeg, C. Van Rij, L. Daniels, C. Haasbeek, H. Caron, The DCOG LATER Study Group, L. Kremer, C. Ronckers PO-0771

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> Adequacy of dose volume constraints in stereotactic radiotherapy and radiosurgery of abdominal area
S. Cilla (Italy), G. Macchia, A. Ianiro, V. Picardi, C. Digesù, M. Ferro, F. Labropoulos, G. Torre, M. Nuzzo, F. Deodato, A. Guido, L. Giaccherini, L. Manuzzi, A. Arcelli, D. Balestrini, G. Compagnone, S. Cammelli, M. Campitelli, G. Frezza, A.G. Morganti PO-0772

> Reirradiation by extracranial stereotactic treatment: preliminary results of a dose escalation study
F. Deodato (Italy), S. Cilla, G. Macchia, M. Nuzzo, C. Annese, M. Ferro, F. Labropoulos, G. Torre, V. Picardi, A. Ianiro, S. Ciabatti, G.C. Mattiucci, D. Smaniotto, S. Luzi, G. Siepe, E. Shukulli, F. Romani, L. Caravatta, A. Farioli, S. Cammelli, G. Frezza, A.G. Morganti PO-0773

> Extra-cranial radiosurgery in oligometastatic disease: a dose escalation study (Destroy-2).
F. Deodato (Italy), G. Macchia, M. Nuzzo, C. Annese, M. Ferro, F. Labropoulos, G. Torre, V. Picardi, S. Mignogna, A. Ianiro, R. Autorino, A. Petrone, A. Arcelli, I. Mascia, E. Farina, F. Bertini, G. Compagnone, S. Pini, S. Cammelli, G. Frezza, V. Valentini, A.G. Morganti, S. Cilla PO-0774

> Risk stratification of vertebral compression fracture after palliative RT for spinal metastases
T. Yu (Republic of Korea), J.H. Kim, K. Kim, K. Hak Jae, E.K. Chie, K.H. Shin, H.G. Wu, I.H. Kim PO-0775

> Radiotherapy for painful bone metastases: clinical predictors of efficacy
N. Bychkova (Russian Federation), E. Khmelevsky, A. Kaprin PO-0776

> Evaluation of spinal stability in relation to pain response after radiotherapy for spinal metastases
A.S. Gerlich, J.M. Van der Velden (The Netherlands), A.L. Versteeg, H.M. Verkooijen, C.G. Fisher, F.C. Oner, M. Van Vulpen, L. Weir, J.J. Verlaan PO-0777

> Limited short-term effect of radiotherapy on bone density in metastatic femoral bone
F. Eggermont (The Netherlands), L.C. Derikx, N. Verdonschot, G. Hannink, R.S.J.P. Kaatee, E. Tanck, Y.M. Van der Linden PO-0778

> Multicenter study of palliative pelvic radiation for symptomatic primary and recurrent rectal cancer
M. Cameron (Norway), C. Kersten, I. Vistad, R. Van Helvoirt, K. Weyde, C. Undseth, I. Mjaaland, E. Skovlund, S. Fossâ, M. Guren PO-0779

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> An analysis of elderly patients compliance and disease distribution treated with radiation therapy
S.H. Lee (Republic of Korea), L. Seung Heon, S. KiHoon, C. Young Eun, L. Kyu Chan, K. Kwang Pil PO-0780

> Hypofractionated or conventional radiotherapy for early glottis cancer. Does age influence?
L. Gutierrez Bayard (Spain), M. Salas Buzón, E. Porras Alonso, L. De Ingunza Barón, S. Garduño Sánchez, I. Villanego Beltrán, V. Díaz Díaz, E. González Calvo, L. Díaz Gómez PO-0781

> Stereotactic body radiation therapy for primary lung cancer in the elderly
L. Larrea (Spain), E. López, P. Antonini, V. González, M. Baños, J. Bea PO-0782

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> Implementation of a trial outpatient clinic to improve participation and data collection in trials
J. Paulissen (The Netherlands), C. Offermann, R. Houben, E. Van Erp, M. Brouns, H. Backes, L. Boersma, G. Vreuls, R. Lemmen, A. Dekker, P. Lambin, M. Jacobs, K. Smits PO-0783

> Targeting general practitioners: prospective outcomes of a nationwide GP education programme
L. Morris (Australia), S. Turner, P. Gorayski PO-0784

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N.R. Datta (Switzerland), M. Heuser, M. Samiei, S. Bodis PO-0786

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> Predicted patient demand for MRI Linac
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A. Farioli (Italy), L. Ronchi, M. Ferioli, F. Busi, G. Compagnone, S. Cammelli, M. Ferro, F. Labropoulos, M. Nuzzo, G. Macchia, F. Deodato, G. Frezza, A.G. Morganti, F.S. Violante PO-0790

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> The Advanced Markus ionization chamber is useable for measurements at ultra high dose rates
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> First proton irradiation experiments with a deformable radiochromic 3D dosimeter
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> Dose verification of fast and continuous scanning in proton therapy
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> Dose rate dependence of the PTW 60019 microDiamond detector in high dose-per-pulse pulsed beams
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E. Mastella (Italy), S. Vigorito, E. Rondi, G. Piperno, A. Ferrari, E. Strata, D. Rozza, B.A. Jereczek-Fossa, F. Cattani PO-0803

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A. Fogliata (Italy), J. Fleckenstein, F. Schneider, M. Pachoud, S. Ghandour, H. Krauss, G. Reggiori, A. Stravato, F. Lohr, M. Scorsetti, L. Cozzi PO-0809

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A. Willett, D. Kelly, M. Gilmore, C. Rowbottom (UK) PO-0816

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M. Pasquino (Italy), S. Russo, P. Mancosu, E. Villaggi, G. Loi, R. Miceli, G.H. Raza, A. Vaiano, M.D. Falco, E. Moretti, F.R. Giglioli, R. Nigro, C. Talamonti, G. Pastore, E. Menghi, F. Palleri, S. Clemente, C. Marino, G. Borzì, V. Ardu, S. Linsalata, A. Mameli, V. D'Alesio, F. Vittorini, M. Stasi PO-0818

> Analysis of liquid embolic agents on flattening filter free dose deposition with Monte Carlo method
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> A comparison between different patient QA devices for IMRT treatments on VERO system
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> Tumor margin estimation by multiple Bragg peak detection in carbon ion therapy
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> Five-year results of treatment quality assurance using in vivo dosimetry in ocular proton therapy
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> Treatment couch modeling in Elekta Monaco treatment planning system
C. Huertas (Spain), C. Ferrer, C. Huerga, I. Mas, A. Serrada PO-0824

> Characterisation of a commercial EPID 3d software for in vivo dosimetry
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> Benchmarking computed IDD curves for four proton treatment planning systems against measured data
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> Principal component analysis for deviation detection in 3D in vivo EPID dosimetry
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> Dosimetric assessment of a second generation multi-leaf collimator for robotic radiotherapy
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> Determining the mechanical properties of a radiochromic deformable silicone-based 3D dosimeter
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> Correlation of MLC positions detected using log-files with MLC positions detected using the EPID
W. Lechner (Austria), A. Moser, A. Altendorfer, D. Georg PO-0830

> Does a single MLC characterisation guarantee a high accuracy of RapidArc delivered dose?
A. Scaggion (Italy), N. Pivato, A. Roggio, M. Paiusco PO-0831

> Preliminary scanning water phantom data for beam characterisation of a hybrid MRI-Linac
S. Woodings (The Netherlands), H. Van Zijp, T. Van Soest, P. Woodhead, M. Duglio, N. Marinos, S. Pencea, D.A. Roberts, J. Kok, J.W.H. Wolthaus, B.W. Raaymakers PO-0832

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> Measured neutron spectra & dose: craniospinal irradiation on single-room passively scattered proton
R. Howell (USA), E.A. Burgett, D. Isaccs, S.G. Price Hedrick, M.P. Reilly, L.J. Rankine, K.K. Grantham, S. Perkins, E.E. Klein PO-0833

> Calibrating absolute malignant induction probabilities into life-time attributable risk
A. Madkhali (UK), C. Timlin, M. Partridge PO-0834

> A system for measuring and calculating neutron doses in paediatric proton patients
R. Schulte (USA), S.D. Clarke, E. Pryser, B.M. Wieger, M. Norsworthy, S.A. Pozzi, R. Hälg, A. Lomax, V. Smyth, A. Ottolenghi PO-0835

> Low dose out-of-field radiation: calculation, measurement and radiobiological impact on cells
M. Kruszyna (Poland), S. Adamczyk, A. Skrobala, M. Skorska, W. Suchorska, K. Zaleska, A. Konefal, A. Kowalik, W. Jackowiak, J. Malicki PO-0836

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> Automatic treatment planning improves clinical quality of head and neck cancer treatments
C.R. Hansen (Denmark), I. Hazell, A. Bertelsen, R. Zukauskaite, N. Gyldenkerne, J. Johansen, J.G. Eriksen, C. Brink PO-0837

> Impact of dosimetric outliers on the performance of a knowledge-based planning system
A. Delaney (The Netherlands), J. Tol, M. Dahele, J. Cuijpers, B. Slotman, W. Verbakel PO-0838

> Clinical simulation of nodal boosting in cervix cancer using reduced margin and coverage probability
A. Ramlov (Denmark), M.S. Assenholt, M.F. Jensen, C. Grønborg, R. Nout, L. Fokdal, M. Alber, K. Tanderup, J.C. Lindegaard PO-0839

> Voxel-based ΔTCP distribution:a tool to study the impact of dose distributions in tumour outcome
D. Fabri (Chile), B. Sánchez-Nieto, A. Gago, I. Espinoza, A. López-Medina PO-0840

> Cranial stereotactic trajectory optimisation via patient-specific overlap ATLAS
L. MacDonald (Canada), J.L. Robar, C. Thomas PO-0841

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> Non-coplanar volumetric-modulated arc therapy for craniopharyngiomas reduces doses to hippocampus
M. Uto (Japan), T. Mizowaki, K. Ogura, M. Hiraoka PO-0842

> Dosimetric evaluation of 10 years of treatment planning improvements in head and neck cancer
J. Tol (The Netherlands), P. Doornaert, M. Dahele, B. Slotman, W. Verbakel PO-0843

> Dosimetrical advantages of 4D mid-vent: should every LA NSCLC patient be treated this way?
S. Philippi (Belgium), N. Barthelemy, M. Devillers, P. Nguyen, P. Coucke, A. Gulyban PO-0844

> Evaluating dosimetric indices in lung SBRT for establishing treatment plan quality guidelines
R. Yaparpalvi (USA), M. Garg, J. Shen, W. Bodner, D. Mynamapati, H.C. Kuo, P.G. Scripes, A. Basavatia, N. Ohri, W.A. Tome, S. Kalnicki PO-0845

> The impact of anatomical changes on the accumulated carbon ion dose in pancreatic cancer patients
A.C. Houweling (The Netherlands), K. Fukata, Y. Kubota, H. Shimada, C.R.N. Rasch, T. Ohno, A. Bel, A. Van der Horst PO-0846

> Implementing the new ESTRO guideline for elective breast radiotherapy with the humeral head as PRV
K. Surmann (The Netherlands), J. Van der Leer, T. Branje, M. Van der Sangen, M. Van Lieshout, C.W. Hurkmans PO-0847

> Simultaneous integrated protection (SIP): a new concept for high precision radiation therapy
T. Brunner (Germany), S. Adebahr, E. Gkika, A. Zipfel, R. Wiehle, U. Nestle, A. Grosu PO-0848

> Heart structures sparing through volumetric modulated arc therapy in mediastinal Hodgkin lymphoma
A.R. Filippi (Italy), M. Levis, A. Girardi, C. Fiandra, F. Cadoni, V. Papurello, C. Piva, I. Donegani, R. Ragona, U. Ricardi PO-0849

> Interplay effect quantification of PBS lung tumour proton therapy with various fractionation schemes
Y. Zhang (Switzerland), I. Huth, M. Wegner, D. Weber, A. Lomax PO-0850

> Development of a postoperative image-based treatment planning system for breast IOERT
H.R. Baghani (Ireland), M.E. Akbar, S.R. Mahdavi, S.M.R. Aghamiri, H.R. Mirzaei, M. Robatjazi, N. Naffisi PO-0851

> The dose in marrow of iliac plates during radiotherapy of cervical and endometrial cancer
A. Jodda (Poland), T. Piotrowski, B. Urbański, A. Roszak, J. Malicki PO-0852

> Impact of CT modality used for treatment planning of lung SBRT
A. Vicedo-Gonzalez (Spain), T. Garcia-Hernandez, L. Brualla-González, A. Hernandez-Machancoses, D. Granero-Cabañero, J. Roselló-Ferrando PO-0853

> Evaluation of a dedicated brain metastases treatment planning optimisation for radiosurgery
T. Gevaert (Belgium), F. Steenbeke, L. Pellegri, B. Engels, N. Christian, M.T. Hoornaert, C. Mitine, D. Verellen, M. De Ridder PO-0854

> Flattening Filter Free VMAT for extreme hypofractionation of prostate cancer
M. Ahlström, H. Benedek (Sweden), P. Nilsson, T. Knöös, C. Ceberg PO-0855

> Clinical and dosimetric issues of VMAT craniospinal irradiation for paediatric medulloblastoma
S. Meroni (Italy), T. Giandini, B. Diletto, E. Pecori, C. Chiruzzi, V. Biassoni, E. Schiavello, F. Sreafico, M. Massimino, E. Pignoli, L. Gandola PO-0856

> GTV-based prescription and Monte Carlo treatment planning in Cyberknife treatments for lung lesions
A. Vai (Italy), P. Bonfanti, M. Invernizzi, A. Martinotti, I. Redaelli, F. Ria, R. Beltramo, L.C. Bianchi, I. Bossi Zanetti, A. Bergantin PO-0857

> Development of dysphagia optimised IMRT for head and neck cancer treatment in the DARS trial
J. Tyler (UK), D. Bernstein, K. Rooney, C. Nutting PO-0858

> Quantifying and categorising plan rejections as a part of the clinical process improvement
C. Speirs (USA), J. LaBrash, S. Mutic, Y. Rao, S. Rehman, M.C. Roach, J.M. Michalski, S.M. Perkins PO-0859

> Is there a "best technique" available for reducing acute toxicities in craniospinal irradiation?
M. Devecka (Germany), M.N. Duma, S. Kampfer, C. Hugo, K.M. Hofmann, B.S. Müller, C. Heinrich, J.J. Wilkens, S.E. Combs PO-0860

> Whole lung irradiation using VMAT – dosimetric and NTCP benefits vs. second cancer risks
P. Clarke (UK), S. Padmanaban, M. Partridge, T. Foord, D. Cutter PO-0861

> Comparison of Monte-Carlo computed 50 kV X-rays radiation therapy and EBRT for rectal cancer
M. Vidal (France), M. Gautier, O. Croce, J.P. Gerard, K. Benezery PO-0862

> Localising the benefit of a hydrogel rectum spacer for prostate IMRT within the ano-rectal wall
B.G.L. Vanneste (The Netherlands), F. Buettner, M. Pinkawa, P. Lambin, A.L. Hoffmann PO-0863

> A planning study investigating different planning techniques for SBRT of NSCLC
C. Moustakis (Germany), I. Ernst, F. Ebrahimi Tazeh Mahalleh, U. Haverkamp, H.T. Eich, M. Guckenberger PO-0864

> Developing sciatic nerve-sparing stereotactic radiotherapy for re-irradiating the pelvic sidewall
M. Llewelyn (UK), E. Wells, A. Taylor PO-0865

> Evaluation of three planning RT techniques for boost phase in pediatric medulloblastomas
A.R. Figueira, A.R. Lago, A. Monteiro, D. Monteiro, D. Inácio, L. Osório, M.J. Fontes, P. Varzim, G. Pinto, P. Meireles (Portugal) PO-0866

> Treatment planning study for spatially fractionated mini-beam radiotherapy
A. Alexander (Canada), C. Crewson, W. Davis, M. Mayer, G. Cranmer-Sargison, V. Kundapur PO-0867

> A method to define isodose-based structures in dose painting treatment of GBM in Tomotherapy
M. Orlandi (Italy), A. Botti, E. Cagni, L. Orsingher, R. Sghedoni, P. Ciammella, C. Iotti, M. Iori PO-0868

> Comparing Varian EDGE and Gamma Knife for brain metastases radiosurgery. Preliminary results
S. Tomatis (Italy), P. Navarria, D. Franceschini, L. Cozzi, P. Mancosu, F. Lobefalo, G. Reggiori, A.M. Ascolese, A. Stravato, F. Zucconi, G. Maggi, M. Scorsetti PO-0869

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> Fitting data of relapse-free survival after post-prostatectomy RT with a comprehensive TCP model
C. Fiorino (Italy), S. Broggi, N. Fossati, C. Cozzarini, G. Goldner, T. Wiegel, W. Hinkelbein, J.R. Karnes, S.A. Boorjian, K. Haustermans, S. Joniau, S. Shariat, F. Montorsi, H. Van Poppel, N.G. Di Muzio, R. Calandrino, A. Briganti PO-0870

> Radiation-induced lung damage: beyond dose-volume histogram analysis
S. Monti, G. Palma, V. D'Avino, M. Conson, R. Liuzzi, M.C. Pressello, V. Donato, J.O. Deasy, R. Pacelli (Italy), L. Cella PO-0871

> The variability of the RBE in proton therapy: can we base it on empirical clinical data?
A. Lühr (Germany), C. Von Neubeck, M. Baumann, M. Krause PO-0872

> Modelling severe late rectal bleeding in a large pooled population of prostate cancer patients
A. Cicchetti (Italy), T. Rancati, M. Ebert, C. Fiorino, A. Kennedy, D.J. Joseph, J.W. Denham, V. Vavassori, G. Fellin, R. Valdagni PO-0873

> Dose prescription in carbon ion radiotherapy: how to compare different RBE-weighted dose systems
S. Molinelli (Italy), G. Magro, A. Mairani, A. Mirandola, N. Matsufuji, N. Kanematsu, A. Hasegawa, S. Yamada, T. Kamada, H. Tsujii, F. Valvo, M. Ciocca, P. Fossati, R. Orecchia PO-0874

> Multivariable models for urinary symptoms at 6-24 months after radical RT of prostate cancer
F. Palorini (Italy), T. Rancati, A. Cicchetti, I. Improta, C. Cozzarini, V. Casanova Borca, C. Degli Esposti, P. Franco, E. Garibaldi, G. Girelli, A. Maggio, R. Micera, M. Palombarini, A. Pierelli, E. Pignoli, N. Simoni, V. Vavassori, S. Villa, R. Valdagni, C. Fiorino PO-0875

> Voxel-by-voxel NTCP model for lung density changes after IMRT
M. Avanzo (Italy), S. Barbiero, M. Trovo, J. Stancanello, C. Furlan, C. Cappelletto, E. Capra PO-0876

> Baseline CT image and isodose shape features improve prognostic models for dyspnea after RT in NSCLC
G. Defraene (Belgium), W. Van Elmpt, D. De Ruysscher PO-0877

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PHYSICS TRACK: INTRA-FRACTION MOTION MANAGEMENT

> The effect of rectal retractor on intra-fraction motion of prostate
A. Vanhanen (Finland), M. Kapanen PO-0878

> Real-time prostate tracking in prostate cancer radiotherapy using autoscan transperineal ultrasound
X. Qi (China), X.S. Gao, H. Yu, S.B. Qin, H.Z. Li PO-0879

> Clinical implementation of 5DCT workflow
D. Low (USA), D. Thomas, T. Dou, P. Lee, J. Lewis, D. O'Connell PO-0880

> Patient selection for DIBH technique for left sided breast cancers: impact of chest wall shape
S. Chilukuri (India), D. Adulkar, S. Subramaniam, N. Mohammed, A. Gandhi, M. Kathirvel, T. Swamy, K. Kiran Kumar, N. Yadala PO-0881

> Abdominal organ motion during breath-hold measured in volunteers on MRI: inhale and exhale compared
E. Lens (The Netherlands), O.J. Gurney-Champion, A. Van der Horst, D.R. Tekelenburg, Z. Van Kesteren, M.J. Parkes, G. Van Tienhoven, A.J. Nederveen, A. Bel PO-0882

> Quantification of Duodenum motion: analysis from respiratory phase guided radiotherapy planning scan
T. Basu (India), T. Kataria, D. Gupta, S.S. Bisht, A. Abhishek, S. Goyal, S. Krishnan, K. KP, K. Narang, S. Sambasivam, S. Banerjee PO-0883

> Respiratory motion models from Cone-Beam CT for lung tumour tracking
A. Fassi (Italy), E. Tagliabue, M. Tirindelli, D. Sarrut, M. Riboldi, G. Baroni PO-0884

> Brain motion induced artefacts in microbeam radiation therapy: a Monte Carlo study
M. Donzelli (France), E. Braeuer-Krisch, U. Oelfke PO-0885

> Does lung capacity influence the geometrical reproducibility in DIBH radiotherapy of NSCLC patients?
P. Sibolt (Denmark), W. Ottosson, C.F. Behrens, D. Sjöström PO-0886

> Latency characterisation of gated radiotherapy treatment beams using a PIN Diode circuit
M. Lempart (Sweden), M. Kügele, F. Nordström, L. Ambolt, B. Blad PO-0887

> The influence of breathing motion on the precision of delivered dose to breast cancer patients
S. Agergaard (Denmark), A. Bertelsen, E.L. Lorenzen, K.L. Gottlieb, C. Brink PO-0888

> Intra-fraction re-setup with Triggered Imaging allows for margin reduction in prostate treatments
L. Van der Weide (The Netherlands), M.A. Admiraal, T.S. Rosario PO-0889

> Homogeneous versus inhomogeneous dose prescription in liver SBRT: effect on delivered CTV-dose
A.T. Hansen (Denmark), P.R. Poulsen, E.S. Worm, M. Hoyer PO-0890

> Clinical implementation and experience with real-time anatomy tracking and gating during MR-IGRT
O. Green (USA), L. Rankine, L. Santanam, R. Kashani, C. Robinson, P. Parikh, J. Bradley, J. Olsen, S. Mutic PO-0891

> Assessment of respiratory and cardiac motion to supplement MRI based tracking of hilar lymph nodes
L.P.W. Canjels, M.E.P. Philippens, T. Bruijnen, B. Stemkens, D.C.P. Cobben, S. Sharouni, J.J.W. Lagendijk, A.L.H.M.W. Van Lier, R.H.N. Tijssen (The Netherlands) PO-0892

> Direct comparison of electromagnetic guided couch and MLC tracking on a TrueBeam accelerator
R. Hansen (Denmark), T. Ravkilde, E.S. Worm, J. Toftegaard, C. Grau, K. Macek, P.R. Poulsen PO-0893

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> Evaluation of daily setup errors in VMAT for craniospinal irradiation of paediatric patients
C. Constantinescu (Saudi Arabia), Y. Bahadur, R. Al-Wassia, M. Hussain, V. Josephjohn PO-0894

> Intraprostatic calcifications as IGRT fiducial markers: analysis of 646 CBCT images in 35 patients
P. Antognoni (Italy), D.P. Doino, L. Pozzi, S. Gottardo, P. Stucchi, C. Bianchi, M. Monciardini, L. Cerizza, M. Molteni, R. Novario PO-0895

> The effect of bladder volume on bowel dose in the treatment of anal cancer using IMRT
K. McDonald (UK), L. Wells, H. Phillips, C. McLean, L. Carruthers, W. Nailon PO-0896

> Comparison of hippocampus sparing extent according to the tilt of a patient head during WBRT
S. Moon (Republic of Korea), M. Yoon, M. Chung, W. Chung, D. Kim PO-0897

> Inter-fraction position of the tongue in postoperative radiotherapy of tongue cancer
E. Dale (Norway), C. Salamonsen, K. Angelvik, S. Gjølme, B. Bø PO-0898

> Robustness of fractionated photon RT for pancreatic cancer: dosimetric effects of anatomical changes
A. Van der Horst (The Netherlands), A.C. Houweling, J. Visser, G. Van Tienhoven, A. Bel PO-0899

> Dosimetric analysis of organ deformation during prostate IMAT with cone beam CT imaging
D. Foley (Ireland), B. McClean, P. McBride PO-0900

> Investigation of a fast CBCT protocol for supine accelerated whole breast irradiation
E. Bogaert (Belgium), C. Monten, C. De Wagter, W. De Neve PO-0901

> Improving frameless intracranial stereotactic setup with 6DOF couch using two pre-treatment CBCTs
I. Gagne (Canada), A. Mestrovic, S. Zavgorodni PO-0902

> IGRT for a highly conformal VMAT-technique for simultaneous treatment of the breast and lymph nodes
B. Houben-Haring (The Netherlands), M. Admiraal PO-0903

> Bladder changes assessment using daily cone-beam computed tomography
O. Casares-Magaz (Denmark), V. Moiseenko, A. Hopper, N. Pettersson, M. Thor, L. Cerviño, R. Knopp, M. Cornell, J.O. Deasy, L.P. Muren, J. Einck PO-0904

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I.H. Kiekebosch (The Netherlands), E.N. De Groot, C.N. Nomden, G.H. Bol, B. Van Asselen, G.G. Sikkes, L.T.C. Meijers, A.N.T.J. Kotte, B.W. Raaymakers PO-0905

> NTCP differences between planned and delivered dose in treatment for head and neck cancer
J. Heukelom (The Netherlands), C. Fuller, M. Kantor, K. Kauweloa, C. Rasch, J.J. Sonke PO-0906

> Effect of weight loss in head and neck patients in the presence of a magnetic field
A. McWilliam (UK), M. Culley, M. Van Herk PO-0907

> Inter-fraction OAR dose variation in pancreatic SBRT using contrast-enhanced in-room diagnostic CT
C. Papalazarou (The Netherlands), M.S. Hoogeman, V. Gupta, B.J.M. Heijmen, J.J.M.E. Nuyttens PO-0908

> Merging proton radiographies with treatment planning CT for adaptive radiation therapy
C. Gianoli (Germany), G. Dedes, S. Meyer, L. Magallanes, G. Landry, R. Nijhuis, U. Ganswindt, C. Thieke, C. Belka, K. Parodi PO-0909

> Potential increase in dose delivered on a fraction by fraction basis by adapting to daily OAR DVCs
D. Foley (Ireland), B. McClean, P. McBride PO-0910

> Optimal adaptive radiotherapy strategy in head and neck to spare the parotid glands
I. Castelli (France), P. Zhang, A. Simon, B. Rigaud, J.D. Ospina Arango, M. Nassef, C. Lafond, O. Henry, P. Haigron, B. Li, H. Shu, R. De crevoisier PO-0911

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I. Korhonen (Finland), L. Koivula, T. Seppälä, M. Kapanen, M. Tenhunen PO-0912

> Clinically applicable T2-weighted 4D Magnetic Resonance Imaging with good abdominal contrast
D. Tekelenburg (The Netherlands), O. Gurney-Champion, E. Lens, A. Van der Horst, A. Nederveen, A.K. Biegun, A. Bel, Z. Van Kesteren PO-0913

> Adjustment of CT calibration in presence of titanium implants by pencil beam proton radiography
R. Righetto (Italy), A. Meijers, F. Vander Stappen, P. Farace PO-0914

> Evaluation of a metal artifact reduction algorithm for radiotherapy CT scans
L. Rechner (Denmark), D. Kovacs, A. Bangsgaard, A. Berthelsen, M. Aznar PO-0915

> MR-based treatment planning for intracranial glioma patients
M.A. Palacios (The Netherlands), M. Bennis PO-0916

> The impact of irregular respiratory patterns on tumour volumes in 4DCT
E. Huizing, E.B. Van Dieren (The Netherlands), R. Bruggink, D. Woutersen, C.H. Slump PO-0917

> Validation of freeware-based mid-ventilation CT calculation for upper abdominal cancer patients
S. Vieira (Portugal), J. Stroom, K. Anderle, B. Salas, N. Pimentel, C. Greco PO-0918

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> Early prediction of individual response in neo-adjuvant adaptive radiochemotherapy for rectal cancer
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> Free-breathing dynamic contrast enhanced MRI of lung cancer
S. Kumar (Australia), G. Liney, R. Rai, D. Moses, C. Choong, L. Holloway, S. Vinod PO-0921

> Are planning CT radiomics and cone-beam CT radiomics interchangeable?
J.E. Van Timmeren (The Netherlands), R.T.H. Leijenaar, W. Van Elmpt, P. Lambin PO-0922

> Comparing FMISO and FDG positive tumour sub-volumes for PET-based dose escalation in SCCHN
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> Histogram analysis of ADCs from DWMRI predicts tumour response and survival for rectal cancer
K. Bakke (Norway), T. Seierstad, K.H. Hole, S. Dueland, K. Flatmark, A. Hansen Ree, K. Røe Redalen PO-0924

> Simulation of FMISO diffusion-retention in a three-dimensional tumor model
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> Voxel-based PSMA-PET/histopathology analysis in patients with primary prostate cancer
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> Bone texture analysis as predictive of bone radiation damage in patients undergoing pelvic RT
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> Impact of fuzzy-thresholding of 18F-FDG PET images for cervical cancer recurrence prediction
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> Onset and recovery of neuronal injury following proton radiotherapy
C.L. Teng (USA), M. Mix, B.K.K. Kevin, C. Ainsley, W. Sumei, K. Manoj, H. Poptani, R. Wolf, L. Sloan, T. Brown, N. Thorne, S. Avery, Z. Tochner, C. Hill-Keyser, S. Mohan, T. Solberg, C. Armstrong, M. Alonson-Basanta PO-0931

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> Towards standardisation of PET auto-segmentation with the ATLAAS machine learning algorithm
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> Cardio-respiratory motion compensation for 5D thoracic CBCT in IGRT
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> Evolved Grow-cut: A PET based segmentation algorithm for heterogeneous tumors
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> Sound speed reconstruction in full wave ultrasound computer tomography for breast cancer detection
M. Perez-Liva (Spain), J.L. Herraiz, E. Miller, B.T. Cox, B.E. Treeby, J.M. Udías PO-0937

> Estimation of system-related geometric distortion in 7T MRI using a 3D anthropomorphic head phantom
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> The dosimetric consequences of delineation variation for cervical external beam radiotherapy
G. Eminowicz (UK), V. Rompokos, C. Stacey, M. McCormack PO-0939

> The problems found within the on-site dosimetry audits of radiotherapy centres in the Czech Republic
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> 3D printed bolus for chestwall radiation therapy
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> VMAT planning and treatment preparation process adapted for failure mode and effect analysis
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> Dutch national head and neck plan comparison significantly improved treatment planning quality
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> Stability in leaf position of 3 generations of optical digitally controlled multi leaf collimators
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> Modeling and simulation of simultaneous using of two superficial hyperthermia antennas
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> Automated approval of a pre trial benchmark RTTQA case
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> QA and dummy-run results of the TRENDY randomized trial on SBRT vs. chemoembolization for HCC
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> Activation of immune cells and enhanced efficacy of radiotherapy by anti-TIP1 antibodies in cancer
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> Therapeutic potential of the YB-1/Notch-3 interaction in prostate cancer
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> Nanoparticle mediated tumor vascular disruption: a novel strategy in radiation therapy
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> Combined inhibition of Chk1 and Wee1 kinases for cancer treatment
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> Anti-GRP 78 antibodies bind specifically to cancers enhance efficacy of radiotherapy in cancer
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> Hypoxic and perfusion effects of Trastuzumab in a HER2+ oesophageal adenocarcinoma xenograft model
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> p53 and in vitro radiation response of fibroblasts from RT-sensitive and -resistant patients
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> Distinct radiation responses after mtDNA depletion are potentially related to oxidative stress
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> Interferon response genes in breast cancer resistance to endocrine treatment and radiotherapy
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> The Robo1-receptor is involved in the migration of irradiated glioblastoma cells
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> A comparison of outcomes using VMAT and 3DCRT in treatment of esophageal cancer
E. Jimenez-Jimenez (Spain), J. Font, P. Mateos, F. Romero, J. Pardo, N. Aymar, I. Ortiz, M. Vidal, S. Sabater PO-1002

> Does level of DIBH amplitude correlate to reduction in cardiac dose in left breast cancer patients?
D. Ledsom (UK), A. Reilly, H. Probst PO-1003

> Optimising breast dosimetry: improving homogeneity through the application of angled IMRT fields
M. Squires (Australia), S. Cheers PO-1004

> Dosimetric effect of US versus CT delineation on postplanning I-125 treatment
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> A breath-hold friendly, hybrid 3DCRT/IMRT technique for locoregional breast irradiation
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> Phase I trial of a novel metalloporphyrin radiosensitiser (MTL005) in head and neck cancer
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> Prognostic value of pretreatment FDG-PET features in laryngeal cancer patients treated with RT
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V.M. Sotnikov (Russian Federation), V.A. Solodkiy, V.M. Kcharchenko, G.A. Panshin, V.D. Chhikvadze, S.D. Trocenko, A.A. Morgunov EP-1220

> Accelerated hypofractionated three-dimensional conformal radiation therapy (AHRT) for NSCLC
N. Rodriguez de Dios (Spain), X. Sanz, P. Foro, A. Reig, I. Membrive, A. Ortiz, J. Quera, E. Fernández-Velilla, O. Pera, M. Algara EP-1221

> Lung SBRT with Dynamic Tracking (DT) on the VERO (Brainlab-Mitsubishi) system
G. Jimenez (France), O. Gallocher, C. Chevelle, P. Dudouet, D. Franck, I. Latorzeff, M. Ducassou, D. Marre, N. Mathy, J. Mazurier, P. Navarro, D. Zarate EP-1222

> Local failure after radical radiotherapy of NSCLC in relation to the pre-therapeutic PET/CT
M. Kandi (Denmark), L. Hoffmann, J. Fledelius, K.P. Farr, D.S. Moeller, M.M. Knap, A.A. Khalil EP-1223

> An Australian radiotherapy decision support system with contextual justification
M. Barakat (Australia), M. Field, D. Stirling, L. Holloway, A. Ghose, M. Bailey, M. Carolan, A. Dekker, G. Delaney, G. Goozee, J. Lehmann, T. Lustberg, J. Van Soest, J. Sykes, S. Walsh, S. Vinod, D. Thwaites EP-1224

> MRI-defined GTV change during SBRT for unresectable or oligometastatic disease of the central thorax
L. Henke (USA), D. Przybysz, R. Kashani, O. Green, C. Robinson, J. Bradley EP-1225

> Quality of life in locally-advanced non-small cell lung cancer patients: a systematic review
L. Van der Weijst (Belgium), W. Schrauwen, V. Surmont, Y. Lievens EP-1226

> Salvage radiotherapy for regional lymph node recurrence after surgery of non-small cell lung cancer
K.H. Seol (Republic of Korea), J.E. Lee, M.K. Kang, J.C. Kim, I.K. Park EP-1227

> Pulmonary toxicity after 3D-CRT or VMAT-based stereotactic radiotherapy for early stage lung cancer
A.R. Filippi (Italy), S. Badellino, R. Ragona, C. De Colle, A. Guarneri, U. Ricardi EP-1228

> Non-small cell lung cancer: marked difference in first failure site depending on histology
L. Nygaard (Denmark), I. Vogelius, K. Håkansson, S. Langer, G. Persson, S. Bentzen EP-1229

> Clinical outcomes of stereotactic ablative radiotherapy in pulmonary oligometastases
B.S. Jang (Republic of Korea), H.J. Kim, B.H. Kim, D.W. Kim, Y.T. Kim, Y.W. Kim, H.G. Wu EP-1230

> Proton and Carbon ion for stage I non-small cell lung cancer: a meta analysis
J. Tian, Q. Zhang, X. Wang (China) EP-1231

> Interim 18F-FDG-PET/CT for early outcome prediction during chemoradiotherapy of thorax malignancies
M. Cremonesi, L. Gilardi (Italy), C. Garibaldi, L. Travaini, M. Ferrari, S. Ronchi, D. Ciardo, F. Botta, G. Baroni, C. Grana, B.A. Jereczek-Fossa, R. Orecchia EP-1232

> Carbon ion radiotherapy for stage I non-small cell lung cancer: A Meta-analysis of 369 patients
Q. Zhang (China), J. Tian, X. Wang EP-1233

> VMAT based lung ablative radiotherapy: primary lesions and metastases
D. Farga (Spain), J.A. Burgos, F.J. Celada, F.J. Martínez, M.D. Badal, J. Bonaque, J. Gimeno, R. Chicas, M.J. Pérez, E. Cuervo, J. Pérez, A. Tormo EP-1234

> Necrosis / Fistulae occurring in temporal association with chest irradiation
S. Adebahr (Germany), S. Braasch, T. Schimek-Jasch, A.L. Grosu, U. Nestle EP-1235

> Does a localized NSCLC treated with SBRT affect the survival in COPD patients?
S. Jeppesen (Denmark), N.C.G. Hansen, T. Schytte, M. Nielsen, O. Hansen EP-1236

> Cyberknife Radiosurgery for spinal metastasis from lung cancer
I. JUNG (Republic of Korea), S.Y. Song, S.D. Ahn, J.H. Kim, S.W. Lee, S.M. Yoon, Y.S. Kim, J.H. Park, S.S. Kim, E.K. Choi EP-1237

> Thoracic re-irradiation following curative intent radiotherapy for non-small cell lung cancer
S. Scobie (UK), G.G. Hanna, K. Franks, J. McAleese, S. Harrow EP-1238

> Clinical outcome of SBRT of central, apical or paracostal tumors in the lung, a retrospective study
C. Kristiansen (Denmark), S.S. Jeppesen, M. Nielsen, T.B. Nielsen, T. Schytte, O. Hansen EP-1239

> Normal tissue exposure in SBRT: Retrospective QA on a prospective cohort - what have we learned?
S. Adebahr (Germany), J. Hinck, R. Wiehle, T. Schimek-Jasch, E. Gkika, A.L. Grosu, U. Nestle EP-1240

> Relationship of dosimetric findings and toxicity following SABR for lung cancer
K. Johnson (UK), A. Morenc, T. Sridhar, L. Aznar-Garcia EP-1241

> stereotactic body radiation therapy for early stage NSCLC: clinical outcomes
A. Iurato (Italy), A. Carnevale, E. Ippolito, M. Fiore, C. Greco, L.E. Trodella, A. Di Donato, S. Ramella, R.M. D'Angelillo, L. Trodella EP-1242

> A multicentre clinical trial using 3DCRT to reduce toxicity of palliative radiation for lung cancer
R. McDermott (Ireland) EP-1243

> Radiotherapy for loco-regional recurrence of non-small-cell lung cancer after complete resection
K. Terashima (Japan), M. Inamori, A. Matsunobu, H. Hirata, K. Sakamoato, K. Okabayashi, A. Furuya, M. Hirakawa EP-1244

> BED <100Gy and ITV ≥20cc predict local relapse after stereotactic radiation therapy for lung cancer
A. Suissa (France), A. Levy, F. Belkhir, N. Grellier-Adedjouma, P. Xu, F. Martinetti, C. Le Péchoux EP-1245

> Is there a different dose-effect relation between the tumour and involved lymph nodes in NSCLC?
L. Van den Bosch (Belgium), G. Defraene, S. Peeters, C. Dooms, W. De Wever, C. Deroose, D. De Ruysscher EP-1246

> Is CC Chemokine Ligand 18 a biomarker for the prediction of radiation induced lung disease?
E. Gkika (Germany), S. Adebahr, T. Schimek-Jasch, A. Brenner, T. Brunner, A. Prasse, G. Ziessel, A.L. Grosu, U. Nestle EP-1247

> Lung re-irradiation with stereotactic body radiation therapy (SBRT)
P. Bonome (Italy), C. Scaringi, M. Valeriani, V. De Sanctis, G. Minniti, M.F. Osti EP-1248

> Neoadjuvant chemoradiation in Locally Advanced NSCLC: impact of histology and drugs on results.
B. Floreno (Italy), R.M. D'Angelillo, M. Fiore, C. Greco, E. Molfese, C.G. Rinaldi, L.E. Trodella, A. Iurato, L. Trodella, S. Ramella EP-1249

> Outcome after stereotactic radiotherapy for brain metastasis of lung cancer: a retrospective study
N. Grellier Adedjouma (France), A. Levy, A. Suissa, F. Belkhir, P. Xu, F. Martinetti, D. Planchard, B. Besse, C. Le Péchoux EP-1250

> Stereotactic Body Radiation Therapy (SBRT) for recurrent lung cancer following prior radiation
I. Wurzer (USA), M. Mackowsky EP-1251

> Oligometastatic NSCLC: long-term results show efficiency of radical approaches in selected patients
A. Bunea (Germany), D. Schiebahn, D. Schanne, T. Schimek-Jasch, E. Gkika, S. Wiesemann, J. Rawluk, C. Waller, A.L. Grosu, U. Nestle EP-1252

> Local control and toxicity for centrally located NSCLC: SABR in no fly zone
C. Menichelli (Italy), G. Pastore, A. Fanelli, S. Grespi, P. Ferrazza, A. Chella, I. Petrini, F. Casamassima EP-1253

> Updated outcomes for patients treated with SABR for lung cancer at the Leeds Cancer Centre
P. Murray (UK), K. Spencer, P. Dickinson, M. Snee, P. Jain, K. Clarke, K. Franks EP-1254

> SABR and FDG-PET in lung cancer: a SUV cut-off value before treatment to predict local control.
S. Vagge (Italy), M. Marcenaro, G. Timon, G. Siffredi, R. Corvò EP-1255

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CLINICAL TRACK: UPPER GI (OESOPHAGUS, STOMACH, PANCREAS, LIVER)

> Stereotactic body radiation therapy for liver metastases using RapidArc technique
E. Del Cerro (Spain), A.A. Diaz Gavela, F. Couñago Lorenzo, F. Marcos Jimenez, E. Pardo Perez, Y. Molina Lopez EP-1256

> Stereotactic radiotherapy for recurrent pancreatic adnocarcinoma at stump or abdominal lymph nodes
H.H. Wang (China), H.H. Wang, M.B. Meng, Z.Q. Wu, Y.C. Song, H.Q. Zhuang, D. Qian, L.J. Zhao, Z.Y. Yuan EP-1257

> Concurrent high-dose (60-70 Gy) radiation and chemotherapy for esophageal cancer: long-term results
T. Kondo (Japan), Y. Shibamoto, A. Hayashi, A. Miyakawa, T. Murai, T. Yanagi, C. Sugie, Y. Ogawa EP-1258

> Clinical significance of lymphocyte count before chemoradiotherapy in resected pancreatic cancer
J. Heo (Republic of Korea), O.K. Noh, H.W. Lee, M. Chun, Y.T. Oh, J. Kim EP-1259

> Prognostic factors in hepatoma patients treated with radiotherapy for lymph node metastasis
C.W. Wee (Republic of Korea), K. Kim, E.K. Chie, S.J. Yu, Y.J. Kim, J.H. Yoon EP-1260

> Impact of sarcopenia on adverse effects in trimodality therapy for esophageal carcinoma
C. Panje (Switzerland), L. Höng, G. Henke, T. Ruhstaller, M. Guckenberger, V. Baracos, L. Plasswilm EP-1261

> Survival and symptom relief after salvage radio(chemo)therapy for recurrent esophageal cancer
P.G. Kup, A. Gitt, H. Bühler, I.A. Adamietz, K. Fakhrian (Germany) EP-1262

> Survival and symptom relief after palliative radiotherapy for esophageal cancer
P.G. Kup, J. Welsch, H. Bühler, H. Hermani, I.A. Adamietz, K. Fakhrian (Germany) EP-1263

> Patterns of recurrence in stage pT3N0M0 thoracic ESCC patients after two-field esophagectomy
Y.X. Wang (China), L.L. Wang, Z.S. Li, M. He, Q. Yang, J. Li, Z. Qi, S.C. Zhu, X.Y. Qiao EP-1264

> Salvage chemoradiation for locoregional recurrences of esophageal cancer after curative treatment
P.M. Jeene (The Netherlands), E. Versteijne, E.D. Geijsen, M.I. Van Berge Henegouwen, J.J.G.H.M. Bergmann, K. Muller, H.W.M. Van Laarhoven, M.C.C.M. Hulshof EP-1265

> Acute health-related quality of life changes after liver stereotactic ablative radiotherapy
H. Chung (Canada), J. Helou, I. Thibault, W. Chu, D. Erler, K. Chan, E. Chow, R. Korol, M. Davidson, L. Zhang EP-1266

> Induction chemotherapy followed by chemoradiotherapy in locally advanced pancreatic adenocarcinoma
J. Reure (France), J. Doyen, A. Falk, D. Lam Cham Kee, L. Evesque, P. Follana, E. François, K. Benezery EP-1267

> Dosimetric parameters predict toxicity in chemoradiotherapy with nelfinavir for pancreatic cancer
D. Holyoake (UK), J. Wilson, M. Partridge, T. Brunner, S. Mukherjee, M. Hawkins EP-1268

> Dose tolerance of small bowel in patients treated with radiochemotherapy for pancreatic cancer
L. De Filippo (Italy), G.C. Mattiucci, N. Dinapoli, M. Boccardi, V. Pollutri, M. Bianchi, R. Canna, S. Chiesa, G. Macchia, A. Morganti, V. Valentini EP-1269

> SBRT for liver metastases from low grade neuroendocrine tumors
M. Bignardi (Italy), A. Huscher, M. Centurioni, M.M. Colangione, D. Barbieri, M. Galelli, A. Zaniboni EP-1270

> Stereotactic body radiation therapy for malignant tumours of the pancreas
X. Chen (Spain), E. Sanchez, A. Montero, O. Hernando, M. Lopez, J. Garcia, J.M. Perez, R. Ciervide, J. Valero, M. Garcia-Aranda, R. Alonso, D. Zucca, M.A. De la Casa, B. Alvarez, S. Payano, J. Marti, L. Alonso, P. Fernandez-Leton, C. Rubio EP-1271

> Stereotactic radiotherapy in pancreatic cancer. Review of two different treatment approaches.
E. Gkika (Germany), S. Kirste, S. Adebahr, T. Schimek-Jasch, R. Wiehle, K. Zirlik, U. Wittel, U. Nestle, A.L. Grosu, T. Brunner EP-1272

> Clinical results of stereotactic ablative radiotherapy in the treatment of liver metastases
M. Fiore (Italy), P. Trecca, L. Trodella, C. Rinaldi, P. Matteucci, S. Silipigni, A. Iurato, S. Ramella, R. D'Angelillo, L. Trodella EP-1273

> Prognostic factors of gastric cancer treated with adjuvant radiochemotherapy
M. Martin Sanchez (Spain), M.A. Perez Escutia, M.C. Peña Sanchez, D. Lora Pablos, S. Guardado Gonzalez, S. Pedraza Fernandez, T.C. Chavez Jimenez, A. Moreno Hurtado, M. Casado Jimenez, J.P. Perez-Regadera Gomez EP-1274

> Influence of pretreatment blood parameters on the outcome of gastric cancer patients.
A. Namysl-Kaletka (Poland), J. Wydmanski, A. Tukiendorf, E. Wolny- Rokicka, I. Wzietek, D. Gabrys EP-1275

> Stereotactic robotic body radiotherapy for patients with unresectable hepatic oligometastases.
P. Berkovic (Belgium), P. Viet Nguyen, A. Gulyban, D. Dechambre, P. Martinive, N. Jansen, P.A. Coucke EP-1276

> Adyuvant chemoradiation for resected gallbladder cancer: single center 25-year experience
C. Solé (Chile), V. Solé EP-1277

> CCRT with or without Surgery using Helical Tomotherapy or IMRT for Esophageal cancer patients
P.Y. Hou (Taiwan), W. Le-Jung, H. Chen-Hsi, S. Pei-Wei EP-1278

> SABR in inoperable liver oligometastatic patients and radioresistant primary tumors.
E. Clerici (Italy), T. Comito, L. Cozzi, A. Fogliata, A. Tozzi, C. Iftode, C. Franzese, P. Navarria, G.R. D'Agostino, P. Mancosu, F. Lobefalo, S. Tomatis, M. Scorsetti EP-1279

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CLINICAL TRACK: LOWER GI (COLON, RECTUM, ANUS)

> Preoperative short vs. long course chemoradiation with delayed surgery for rectal cancer patients
M.J. Chung (Republic of Korea), W.K. Chung, D.W. Kim, S.H. Lee, S.K. Jeong, J.K. Hwang, C.S. Jeong EP-1280

> DVH relationships in rectal cancer: effects of contouring methods and patient positioning
N. Bennion (USA), Y. Lei, V. Verma, A. Bhirud, G. Blessie, C. Lin EP-1281

> Does blood glucose level normalisation improve PET-based response prediction in rectal cancer?
I. Joye (Belgium), A. Debucquoy, A. Wolthuis, A. D'Hoore, E. Van Cutsem, V. Vandecaveye, X. Sagaert, C. Deroose, K. Haustermans EP-1282

> Outcomes and toxicities in advanced anal cancer treated with radical VMAT chemoradiotherapy
E. Jiad (UK), D. Woolf, N. Pasha, S. Ball, S. Raouf EP-1283

> Predictive factors of tumour response after neoadjuvant chemoradiation for rectal cancer
F. Lopez Campos (Spain), A. Hervas, C. De la Pinta, J.A. Dominguez, E. Fernández, M. Martin EP-1284

> Is watch and wait policy after chemoradiotherapy for rectal cancer detrimental to outcome?
N. Pasha (UK), D. Woolf, E. Jiad, S. Ball, S. Raouf EP-1285

> Does dose-escalated neo-adjuvant radiotherapy improve pathological response in rectal cancers?
N. Pasha (UK), D. Woolf, M. Martinou, K. Williams, S. Ball, S. Raouf EP-1286

> Radiation-induced rectal toxicity in prostate cancer: a proctoscopy evaluation
E. Ippolito (Italy), M. Nuzzo, G. Macchia, F. Deodato, S. Cilla, M. Ingrosso, L. Fuccio, A. Farioli, G. Mantini, V. Valentini, G.C. Mattiucci, G. Siepe, M. Ntreta, S. Cammelli, A. Guido, M. Pieri, A. Arcelli, F. Bertini, L. Ronchi, A.G. Morganti EP-1287

> Sphincter function and dose of radiation in rectal cancer. A Single-Institutional study
F. Arias (Spain), C. Eito, G. Asín, I. Mora, K. Cambra, F. Mañeru, B. Ibáñez, L. Arbea, M. Errasti, M. Barrado, M. Campo, I. Visus, J. García-Escobedo, C. Torres, M. Ciga EP-1288

> Anal squamous cell carcinoma; a retrospective case series
O. Houlihan (Ireland), S. O'Sullivan, M. Dunne, O. Salib, C. Gillham, G. McVey, C. Faul, M. Cunningham, J. Armstrong, D. McNamara, B. O'Neill EP-1289

> A review of grade 3 bowel toxicity in patients treated with chemoradiotherapy for rectal cancer
J.A. King, L. Davidson, N. Alam, C. Arthur, C. McBain, A. Mirza, M. Saunders, V. Misra (UK) EP-1290

> Can mucosal criteria estimate response in rectal cancer treated with neoadjuvant chemoradiotherapy?
A. Garant (Canada), T. Niazi, A. Gologan, A. Spatz, J. Faria, N. Morin, C. Vasilevsky, M. Boutros, T. Vuong EP-1291

> Association between obesity and local control of rectal cancer after surgery and radiotherapy
Y.S. Choi (Republic of Korea) EP-1292

> Intensified neo-adjuvant chemoradiotherapy in locally advanced rectal cancer: long-term follow-up
F. De Felice (Italy), D. Musio, A.L. Magnante, N. Bulzonetti, I. Benevento, R. Caiazzo, V. Tombolini EP-1293

> Total mesorectal excision vs. local excision following preoperative RT for "early" cT3 rectal cancer
Y. Shin (Republic of Korea), J.H. Park, J.C. Kim, C.S. Yu, T.W. Kim, J.H. Kim EP-1294

> Anal cancer as a second human papillomavirus-related presentation after cervical dysplasia/neoplasia
A. Yates (Australia), S. Pendlebury, E. Segelov EP-1295

> A correlation between PTV dosimetric criteria and pathological response in rectal cancer patients
A. Franzetti Pellanda (Switzerland), P. Urso, S. Gianolini, B. De Bari, G. Ballerini, L. Negretti, C. Vite, N. Corradini EP-1296

> Impact of 18F-FDG-PET/CT in evaluating the response to neadjuvant chemoradiotherapy in rectal cancer
S. Pedraza Fernández (Spain), M. Pérez-Escutia, D. Sánchez-Fuentes, P. Nenclares, S. Ruiz-Solís, M. Peña, D. Lora, J. Pérez-Regadera EP-1297

> Stereotactic radiotherapy in oligometastatic patients with lung metastasis from colon-rectal cancer
S. Montrone (Italy), C. Vivaldi, G. Coraggio, M. Cantarella, B. Manfredi, C. Laliscia, G. Masi, F. Loupakis, A. Falcone, M.G. Fabrini, A. Sainato, F. Pasqualetti EP-1298

> Tomotherapy for anal cancer: analysis of toxicity and response in a dual institution experience
P. Bonomo (Italy), B. Meduri, E. D'Angelo, A. Galardi, C. Delli Paoli, C. Tata, G. De Marco, I. Desideri, F. Bertoni, L. Livi EP-1299

> Preoperative, Adaptive Radiotherapy with Tomotherapy concomitant with chemotherapy in rectal cancer
P. Passoni (Italy), N. Slim, C. Fiorino, C. Gumina, M. Ronzoni, F. De Cobelli, A. Palmisano, V. Ricci, A. Fasolo, A. Tamburini, P. De Nardi, S. Di Palo, C. Staudacher, R. Rosati, R. Calandrino, N. Di Muzio **EP-1300**

> Neoadjuvant treatment intensification in cT4NXM0 rectal cancer: long-term outcome analysis.
F. Calvo (Spain), E. Sagarra, J. Garcia-Sabrido, E. Del Valle, M. Rodriguez, E. Alvarado Vasquez, C. Sole, M. Gomez-Espi, M. Lozano, R. Obregon **EP-1301**

> The utility of Squamous Cell Carcinoma SCCAg as a marker for treatment response or relapse
L. Pietrzak (Poland), K. Bujko **EP-1302**

> Radiotherapy dose-escalation in rectal cancer: preliminary results of a pooled analysis.
M. Lupattelli (Italy), V. Picardi, F. Navarria, M.A. Gambacorta, M. Osti, G. Macchia, E. Palazzari, A.M. Podlesko, A. Re, L. Nicosia, A. De Paoli **EP-1303**

> Image guided intensity modulated radiotherapy for anal cancer: a multi institutional study
B. De Bari (Switzerland), L. Lestrade, A. Franzetti Pellanda, R. Jumeau, M. Kountouri, O. Matzinger, N. Corradini, M. Biggiogero, G. Ballerini, J. Bourhis, R. Miralbell, M. Ozsahin, T. Zilli **EP-1304**

> Impact of time from neoadjuvant treatment and surgery in rectal cancer: a monoinstitutional report
L. Belgioia (Italy), A. Bacigalupo, I. Chiola, G. Blandino, G. Lamanna, S. Vagge, S. Scabini, E. Romairone, R. Murialdo, A. Ballestrero, R. Corvò **EP-1305**

> Helical Tomotherapy with daily image guided radiotherapy for neoadjuvant treatment of rectal cancer
B. De Bari (Switzerland), A. Franzetti Pellanda, A. Saidi, G. Ballerini, M. Biggiogero, L. Negretti, A. Durham, J. Bourhis, M. Ozsahin **EP-1306**

> Chemoradiation in anal cancer with using VMAT: toxicity and early outcome.
D. Russo (Italy), E. Donno, A. Papaleo, E. Cavalera, C. Capomolla, D. De Luca, G. Di Paola, F.P. Ricci, M. Santantonio **EP-1307**

> Effect of prone and supine positions on setup and organ-at-risk sparing using VMAT for rectal cancer
A. Kim, A. Karotki, J. Foster, K. Yip, J. Presutti, S. Wong, W. Chu (Canada) **EP-1308**

> Predictive value of FDG-PET in rectal cancer: correlation with tumour characteristics and response.
L. Turri (Italy), F. Apicella, A. Caroli, R. Grasso, S. Torrente, E. Puta, D. Ferrante, G.M. Sacchetti, M. Brambilla, M. Krengli EP-1309

> PV of FDG-PET SUV in rectal cancer pts: correlation with tumor characteristics/response to neoadj RT
L. Turri (Italy), F. Apicella, A. Caroli, R. Grasso, S. Torrente, E. Puta, D. Ferrante, G. Sacchetti, M. Brambilla, M. Krengli EP-1310

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CLINICAL TRACK: GYNAECOLOGICAL (ENDOMETRIUM, CERVIX, VAGINA, VULVA)

> Chemoradiotherapy followed by surgery in patients with locally advanced cervical carcinoma
J. Anchuelo Latorre (Spain), A. Kannemann, A.S. Garcia Blanco, M. Ferri Molina, P. Galdos Barroso, A. Muniz Garcia, J.C. Menendez Garcia, J. Cardenal Carro, R. Fabregat Borras, H. Vidal Trueba, R. Jimeno Mate, S. Hermana Ramirez, J. Estevez Tesouro, P. Prada Gomez EP-1311

> Measurement of GTV delineation uncertainty for centrally recurrent gynaecological cancers
D. Bernstein (UK), M. Llewelyn, A. Taylor, S. Nill, U. Oelfke EP-1312

> Short course post operative IMRT on vaginal vault of endometrial tumor at low-risk of recurrence
G. Macchia (Italy), S. Cilla, F. Deodato, M. Nuzzo, A. Ianiro, D. Catani, V. Valentini, G. Ferrandina, A. Galuppi, M. Ferioli, S. Cammelli, L. Ronchi, S. Cima, M. Perrone, P. De Iaco, F. Romani, G. Frezza, A.G. Morganti EP-1313

> External beam boost for cancer of the cervix in patients unable to receive brachytherapy
H. Kim (Republic of Korea), Y.S. Kim, K.Y. Eom, W. Park, J.H. Kim, J.H. Lee, Y.S. Kim, S.H. Lee, K. Ahn, Y.B. Kim, M.Y. Lee, S.K. Chang EP-1314

> Abdominopelvic Radiotherapy for advanced endometrial cancer after surgery and chemotherapy: results
V. Rodriguez Gonzalez (Spain), J. Perez-Regadera, D. Lora, A. Campos, C. Chavez, B. Gil, R. Prados, M. Colmenero EP-1315

> Value of imaging modalities in predicting pelvic lymph node metastases for uterine cervical cancer
W.K. Jung (Republic of Korea), K.J. Lee, J.H. Lee, Y.J. Kim, J.Y. Kim, H.J. Yoon, B.C. Kang, S.C. Kim, H.S. Moon, W. Ju, Y.H. Kim, K.R. Park EP-1316

> Prognostic and predictive factors in endometrial cancer
K. Boudaoud (Algeria), S. Taleb, A. Brihmat, L. Beddar, H. Boudaoud, R. Aissani, S. Boussouf, A. Boukaaba, T. Filali, A. Djemaa EP-1317

> Presence of lymph nodes and survival in cancer cervix: audit from tertiary care hospital in India
S. Singh (India), J. Lamin, D. Kapoor, A. Rani, N. Rastogi, S. Kumar EP-1318

> Clinicopathological characteristics of patients with synchronous ovarian & endometrial cancers
S. Chaudry, T. Sadaf (Pakistan), S. Butt, A.A. Syed, N. Siddique, A. Jamshed, A. Kazmi EP-1319

> Postoperative radiotherapy results of serous endometrial carcinoma: 34 cases during 2003-2014
K. Holub (Spain), A. Rovirosa, G. Oses, L. Castilla, J. Mansilla, R. Llorente, K. Cortes, J. Garcia, S. Garrido, A. Huguet, C. Castro, J. Sola, J. Ordi, J. Pahisa, A. Biete EP-1320

> Postoperative treatment results of clear-cell endometrial carcinoma: 20 cases from 2005 to 2014
G. Oses (Spain), K. Holub, A. Rovirosa, L. Castilla, J. Mansilla, R. Llorente, K. Cortes, J. Ordi, J. Pahisa, M. Arenas, S. Sabater, A. Biete EP-1321

> Effects of upfront radiotherapy on isolated para-aortic lymph node metastasis in cervical cancer
J.H. Kim (Republic of Korea), K.Y. Eom, I.A. Kim, H.G. Wu, H.J. Kim EP-1322

> Clinical audit of cervical cancer records from Kidwai Memorial Institute of Oncology, South India
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> Quantitative estimation of gamma passing rates from characteristics of respiratory motion
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> Application of virtual reality guide hypnosis in the control of respiration motion for radiotherapy
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> Real-time 4D ultrasound tracking of liver and kidney targets for external-beam radiotherapy
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> Monitoring of intra-fraction prostate motion with a new 4D ultrasound device
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> Correlation and directional stability of principal component of respiratory motion in the lung
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> Assessment of motion mitigation and setup monitoring in gating treatments with accelerated particles
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> Impact of physiological breathing motion for breast cancer radiotherapy proton beam scanning
A.M. Flejmer (Sweden), B. Chehrazi, D. Josefsson, I. Toma-Dasu, A. Dasu EP-1762

> Experimental analysis of interplay effects in flattening filter free VMAT treatment techniques
T. Gauer (Germany), T. Sothmann, R. Werner EP-1763

> Development and validation of a tool to evaluate prostate motion due to patient's breathing
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> Monitoring of intra-fraction eye motion during proton radiotherapy of intraocular tumors
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> Factors Influencing ONIntrafraction Variation in Lung Stereotactic Body Radiation Therapy
M. Rico Oses (Spain), E. Martinez, B. Bermejo, E. Villafranca, P. Navarrete, M. Errasti, M. Barrado, M. Campo, I. Visus, S. Flamarique, L. Bragado, A. Manterola, A. Sola, S. Pellejero, G. Asin, M.A. Dominguez, F. Mañeru, F. Arias EP-1766

> Deep Inspiration Breath Hold – a promising technique in patients with left-sided breast cancer.
P. Mezenski, J. Gałecki, M. Spałek (Poland), A. Zawadzka, P. Kukołowicz EP-1767

> The impact of interplay effect in SBRT lung treatments for 6MV and 6MV-FFF beams using EBT3 film.
D. Elezaj (Denmark), W. Ottosson, M. Sjölin EP-1768

> Evaluation of the intra-fraction patient movement for SBRT treatments in our institution
D. Martínez (Spain), F. Candela, A. Camara, M.T. Garcia-Martinez EP-1769

> Predictive modeling of respiratory lung motion using single-phase CT and finite-element analysis
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> Biological consequences of dynamic dose interplay in VMAT SBRT lung treatments
M. Sjölin (Denmark), D. Elezaj, W. Ottosson, J.M. Edmund EP-1771

> Comparison of dynamic 2D MRI with 4DCT lung tumor volumes for accurate real time imaging on linac-MR
S. Baker (Canada), E. Yip, J. Yun, K. Wachowicz, Z. Gabos, G. Fallone EP-1772

> Dosimetric benefits and reproducibility of dibh tecnique guided by an optical system
F. Rossi, S. Russo (Italy), R. Barca, S. Fondelli, L. Paoletti, P. Alpi, B. Grilli Leonulli, M. Esposito, A. Ghirelli, S. Pini, P. Bastiani EP-1773

> A novel phantom for dosimetric verification of gated SIB radiotherapy treatment plans
D. Soultan (USA), A. Yock, M. Cornell, J. Murphy, B. Gill, W. Song, V. Moiseenko, L. Cerviño EP-1774

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> CBCT based prostate IGRT accuracy and PTV margins
C. Blay (France), A. Simon, E. Dardelet, R. Viard, D. Gibon, O. Acosta, P. Haigron, B. Dubray, R. De Crevoisier EP-1775

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> Assessment of setup uncertainties in modulated treatments for various tumour sites
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> MRT investigation of prostate and lymph nodes movements: implications on planning target volume?
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> On the feasibility of performing a 3D-scan with your own smartphone
J. Pérez-Alija (Spain), P. Franco, E. Ambroa, S. Olivares, S. Loscos, A. Pedro EP-1778

> Margins to compensate for deformity of the prostate/seminal vesicle in IGRT using fiducial-markers
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> Dosimetric impact of isocenter accuracy in CBCT-guided SRS treatment of vestibular schwannomas
J. Casals-Farran (Spain), J.F. Calvo-Ortega, S. Moragues-Femenia, M. Pozo-Massó, J. Fernández-Ibiza, E. Puertas-Calvo, C. Arias-Quiroz EP-1780

> Dosimetric impact of CBCT isocenter misaligment on target dose coverage in cranial SRS
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> Effect of daily variation in rectal and bladder filling: an analysis of planned versus actual dose
A. Abhishek (India), T. Kataria, D. Gupta, T. Ghosh, T. Basu, S. Bisht, S. Goyal, M. Tayal, M. Ramu EP-1782

> Translational and rotational set-up uncertainties in Head and Neck cancer treatments using CBCT
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> Effect of body mass index on setup errors in patients treated with pelvic image guided radiotherapy
O. Ozdemir (Turkey), Z. Alicikus, T. Yagibasan, I.B. Gorken EP-1784

> Comparison of setup errors and comfort levels of two immobilisation systems for head and neck cancer
P. Damodara Kumaran (India), S. John, R. Isiah, S. Das EP-1785

> Rectal distension impact on prostate CBCT-based positioning assessed with 6 degrees of freedom couch
J. Charret (France), J. Salleron, M. Quivrin, F. Mazoyer, E. Martin, D. Peiffert, G. Créhange EP-1786

> View of interest of automatic registration for CBCT localisation of head and neck cancer
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> Accurate and stable immobilisation with Lorca Marin masks for head and neck IMRT verified by IGRT
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> Immobilization and dosimetric performance of a MRI compatible frame for Head & Neck patients
A. Perez-Rozos (Spain), I. Jerez Sainz, M. Toledo, M. Lobato Muñoz, J. Medina Carmona EP-1789

> Assessment of Uterine Fundus Coverage with IGRT using daily CBCT in cervical cancer
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> Improving patient posture reproducibility by using the predicted couch position and tight tolerances
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> Pre-fraction shift and intra-fraction drift of the prostate due to perineal ultrasound probe pressure
H. Ballhausen (Germany), F. Manapov, A. Kolberg, P.D. Thum, U. Ganswindt, C. Belka, M. Li EP-1792

> Analysis of setup error in patients affected by oropharyngeal cancer treated with tomotherapy
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> Quantification of stomach movement using CBCT images
R. Carrington (UK), E. Spezi, B. Thomas, S. Gwynne, T. Crosby, J. Staffurth EP-1794

> Evaluation of CBCT protocols in craniospinal RT for pediatric medulloblastoma:a preliminary study
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> Definition of thresholds to detect anatomy changes using Delivery Analysis software for Tomotherapy.
C. Dejean (France), M. Gautier, J. Feuillade, A. Mana EP-1796

> Pelvic lymph node PTV margins in prostate IMRT
L. Duvergé (France), J. Castelli, S. Cadet, A. Simon, N. Jaksic, C. Lafond, P. Haigron, R. De Crevoisier EP-1797

> Is there a true dosimetric improvement in lung SBRT using a 6-Degree of Freedom couch in IGRT era?
S. Menna (Italy), S. Chiesa, A.R. Alitto, L. Azario, G.C. Mattiucci, S. Teodoli, N. Dinapoli, L. De Filippo, M. Balducci, V. Valentini EP-1798

> 3, 5 or 7 fractions with no image guidance in moderately hypofractionated prostate treatments
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> Setup verification for breast cancer RT: manual and automatic match of EPID images compared to CBCT
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> Management of inter-fraction patient movement for SBRT treatments without an on-site 3D imaging
F. Candela-Rodriguez (Spain), D. Martinez-Rodriguez, A. Camara-Turbi, M.T. Garcia-Martinez EP-1801

> Mechanical sag patterns of the cone-beam CT imaging system of Elekta linear accelerators
S.J. Zimmermann (Denmark), P. Rowshanfarzad, M.A. Ebert, H.L. Riis EP-1802

> An immobilization device-based procedure to predict couch coordinates and set-up tolerance levels
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> A comparative analyse of prostate positioning guided by transperineal 3D ultrasound and cone beam CT
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> A novel predictive approach to quantify parotids warping using SIS epidemic model
N. Maffei (Italy), G. Guidi, C. Vecchi, A. Ciarmatori, G. Mistretta, P. Ceroni, B. Meduri, P. Giacobazzi, T. Costi EP-1806

> Replanning effects in Tomotherapy treatment using dose accumulation and dose deformation strategies
A. Ciarmatori (Italy), G. Gabriele, N. Maffei, C. Vecchi, M.G. Mistretta, P. Ceroni, B. Meduri, P. Giacobazzi, T. Costi EP-1807

> A biological modeling based comparison of two strategies for adaptive radiotherapy of bladder cancer
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> Intrafractional patient movement during an online adaptive replanning procedure for cranial SRS
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> Dose uncertainties due to inter-fractional anatomical changes for carbon ion therapy
D. Panizza (Italy), S. Molinelli, A. Mirandola, G. Magro, S. Russo, E. Mastella, A. Mairani, P. Fossati, F. Valvo, R. Orecchia, M. Ciocca EP-1810

> Accuracy of dose calculations on CBCT scans of lung cancer patients using a vendor-specific approach
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> Adaptive VMAT for cT1-2aN0M0 laryngeal cancer: potential risk of target volume over dosage
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> Clinical implementation of an adaptive planning technique for lung VMAT radiotherapy
M. Naisbit (UK), G. Ward, J. Lilley EP-1813

> Fractionated stereotactic radiotherapy using Gamma Knife Icon with adaptive re-planning (a-gkFSRT)
F. Stieler (Germany), F. Wenz, Y. Abo-Madyan, S. Mai EP-1814

> Towards adaptive Tomotherapy: planning CT to MVCT deformable image registration for dose calculation
M. Branchini (Italy), S. Broggi, M.L. Belli, C. Fiorino, G.M. Cattaneo, L. Perna, R. Calandrino EP-1815

> A hybrid approach for head-neck cancer using on-line image guidance and off-line adaptive planning
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> Dosimetric evaluation of new method for patient specific CBCT scan calibration
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> Plan of the day is the optimal approach to address organ motion for cervical cancer IMRT
R. Jadon, E. Spezi (UK), L. Hanna, N. Palaniappan, M. Evans, E. Hudson, J. Staffurth EP-1819

> On the use of deformable image registration to evaluate the need to perform ART in head and neck cancer
P. Delgado-Tapia (Spain), M. Lizondo, A. Latorre-Musoll, N. Jornet, T. Eudaldo, P. Carrasco, A. Ruiz-Martinez, C. Cases, M. Ribas EP-1820

> Adaptive external radiation therapy of cervical cancer with different uterine fundus positions
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> limits and potentialities of the use of CBCT for dose calculation in adaptive radiotherapy
S. Meroni (Italy), V. Mongioj, T. Giandini, F. Bonfantini, A. Cavallo, M. Carrara, C. Stucchi, C. Cavatorta, E. Pignoli EP-1822

> Characterization of kV- and MV-CBCT for personalized adaptive treatment therapy on RayStation TPS
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> A new strategy approach for dose tracking and novel radiobiological models for adaptive radiotherapy
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> Delivered dose determination in large organ deformations: pre-requirement for adaptive RT for LACC.
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> Dual energy computed Tomography based tissue characterisation for radiotherapy treatment planning
N. Tomic (Canada), H. Bekerat, F. DeBlois, J. Seuntjens, R. Forghani, S. Devic EP-1827

> Liver SBRT: benefits from breath-triggered MRI in treatment position for accurate lesion contouring
L. Parent (France), A. Tournier, M. Rives, F. Izar, R. Aziza, Y. Sekkal, N. Morel, S. Ken EP-1828

> Evaluation of metal artifact reduction (MAR) algorithm for patients with a bilateral hip implant
A. Morel (France), J. Molinier, L. Bedos, N. Aillères, D. Azria, P. Fenoglietto EP-1829

> Comparison of the MRI sequences in ideal fiducial maker-based radiotherapy for prostate cancer
O. Tanaka (Japan), M. Hattori, S. Hirose, T. Iida, T. Watanabe EP-1830

> Inter-physician variability in delineation of clinical target volume of uterine cervical carcinoma
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> Improved 4DCT quality using true phase based triggers
P. Freislederer (Germany), H. Von Zimmermann, C. Heinz, K. Parodi, C. Belka EP-1832

> Improved proton stopping power ratio estimation for a deformable 3D dosimeter using Dual Energy CT
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> Towards MRI-only radiotherapy planning: "patch-based method" for generation of brain pseudo-CT
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> Dosimetric effect of metal artifact reduction function by three calculation algorithms for H&N
J. Park (Republic of Korea), S. Ju, J. Kim, J. Kim, C. Hong, D. Kim EP-1835

> HU to electron density conversion with virtual monochromatic images generated by dual-energy CT
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> Impact on patient positioning using four CT datasets for image registration with CBCTs in lung SBRT
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> Proton therapy planning for brain tumors using MRI-generated PseudoCT
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> Dose comparison study for CT and MR-only prostate IMRT treatment planning
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> A dosimetric analysis of MRI only treatment planning of the brain
E. Goodwin (UK), D. Bird, J. Lilley, R. Speight EP-1842

> Synthetic CT calculation from low-field MRI: feasibility of an MRI-only workflow for glioblastoma RT
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> Feasibility of generating mid-position CT from 4DCT using commercial deformable registration systems
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> Integration of 7T MRI into image-guided radiotherapy of glioblastoma: a feasibility study
I. Compter (The Netherlands), J. Peerlings, D.B.P. Eekers, A.A. Postma, D. Ivanov, C.J. Wiggins, P. Kubben, B. Küsters, P. Wesseling, L. Ackermans, O.E.M.G. Schijns, P. Lambin, A.L. Hoffmann EP-1845

> Pseudo-CT generation from T1 and T2-weighted brain MRI based on a localised correlation approach
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> Comparison of stopping power estimators from dual-energy computed tomography for protontherapy
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> Dual-energy CT for range prediction in proton and ion therapy
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> Validation of Synthetic CTs for MR-only planning of brain cancer
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> The earlier evaluation of response to neoadjuvant chemoradiation therapy in sarcoma using DCE-MRI
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> Quantitative assessment of glucose metabolic rate within NSCLC histologies using dynamic 18F-FDG PET
T. Meijer (The Netherlands), D. Vriens, M. Looijen-Salamon, E. Visser, L.F. De Geus-Oei, J. Bussink EP-1851

> Predictive role of FDG-PET/CT image-derived parameters in locally advanced oropharyngeal cancer
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> Correlation between biomarkers derived from PET/CT and diffusion-weighted MRI in esophageal cancer
L. Goense (The Netherlands), P.S.N. Van Rossum, I.M. Lips, S.E. Heethuis, A.H.M.W. Van lier, M.G.E.H. Lam, A.N. Kotte, M. Van Vulpen, R. Van Hillegersberg, J.P. Ruurda, G.J. Meijer EP-1853

> Mammographic texture features for determination breast cancer molecular subtype
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> Computed Tomography lung texture changes due to radiotherapy for non-small cell lung cancer
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> Predictive factors based on textural features – reliability of patient classification
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> Multi-parametric MRI at 3.0 Tesla for the prediction of treatment response in rectal cancer
T. Pham (Australia), G. Liney, K. Wong, D. Roach, D. Moses, C. Henderson, M. Lee, R. Rai, M. Barton EP-1857

> Variation of apparent diffusion coefficient in penile bulb after radiotherapy
P. Volonghi (Italy), E. Scalco, T. Rancati, A. Messina, E. Pignoli, A. Cicchetti, B. Avuzzi, D. Bosetti, R. Valdagni, G. Rizzo EP-1858

> Tumor control assessment on cervical lymph nodes using texture analysis on CT and T2w-MRI images
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> Impact of 4DPET/CT on normal tissue sparing for SBRT of central lung tumors
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> Radiomics in the CT perfusion maps – robustness study
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> A 18FDG-PET texture analysis study on early stage Hodgkin lymphoma patient outcome prediction
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> DCE-CT lung tumour and aorta enhancement: is it an appropriate input vessel for kinetic modelling?
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> Traceable calibration chain of PET/CT scanners for I-124
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> Dosimetric comparison between jaw tracking and static jaw modes in volumetric-modulated arc therapy
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> Standardization of amino-acid PET windowing for GTV definition in recurrent glioblastoma
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> Metabolic response between primary tumor and lymph nodes in NSCLC patients during treatment course
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> Improving tumor response assessment using DWMRI corrected by reversed gradient method and DCEMRI
A. Lopez Medina (Spain), S. Reigosa, J. Del Olmo, D. Aramburu Nunez, F. Salvador, I. Landesa, J. Alba, M. Salgado, I. Nieto, V. Ochagavia, V. Muñoz EP-1870

> Optimization of gross tumour volume definition in lung-sparing VMAT for pleural mesothelioma
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> Benchmarking texture analysis for PET in oesophageal cancer
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> Multimodality functional imaging for characterizing tumour volume
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> Effective radiosensitivity maps of early tumour responsiveness based on repeated FDG PET scans
M. Lazzeroni (Sweden), J. Uhrdin, J.J. Sonke, O. Hamming-Vrieze, A. Dasu, I. Toma-Dasu EP-1874

> Correlation between MRI-based hyper-perfused areas and tumor recurrence in high-grade gliomas
I. Chabert (France), I. Belladjou, F. Poisson, F. Dhermain, V. Martin, S. Ammari, S. Vauclin, P. Pineau, I. Buvat, E. Deutsch, C. Robert EP-1875

> An image-based method to quantify biomechanical properties of the rectum in RT of prostate cancer
O. Casares-Magaz (Denmark), M. Thor, L. Donghua, J.B. Frøkjær, P. Kræmer, K. Krogh, A.M. Drewes, H. Gregersen, V. Moiseenko, M. Høyer, L.P. Muren EP-1876

> Lung cancer textural analysis: to contrast or not to contrast?
A. Farchione, N. Dinapoli (Italy), R. Gatta, A.R. Larici, C. Masciocchi, A. Damiani, P. Franchi, A. Castelluccia, G. Mantini, L. Bonomo, V. Valentini EP-1877

> Feasibility of gel phantoms in MRI for the assessment of kurtosis for prostate brachytherapy
Z.G. Portakal (Turkey), J.W. Phillips, C.E. Richards, E. Spezi, T. Perrett, D.G. Lewis, Z. Yegingil EP-1878

> Difference between PET and RMI fusion on delineation variability for liver metastases
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> Validation of the use of digital camera for the prediction of skin toxicity in breast radiotherapy
M. Poli (Italy), S. Bresciani, A. Miranti, A. Di Dia, A. Maggio, M. Gatti, P. Gabriele, M. Stasi EP-1880

> Diffusion MRI predicts radiotherapy response in brain metastases
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> Brain connectivity changes in the presence of a glioblastoma
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> Functional brain connectivity in glioblastoma patients pre- and post-radiotherapy
N. Tuovinen (Italy), F. De Pasquale, C. Falletta Caravasso, E. Giudice, R. Miceli, G. Ingrosso, R. Santoni, A. Laprie, U. Sabatini EP-1883

> Voxel based topological PET SUV changes of bone marrow for LACC RT effect on hematological toxicity
A. Gulyban (Belgium), P.V. Nguyen, J. Hermesse, P.A. Coucke, F. Lakosi EP-1884

> Novel algorithm for IVIM MRI in cancer patients: comparison to pCASL MRI
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> Automated 3D MRI pancreas segmentation
K. Sheng (USA), S. Gou, P. Hu EP-1887

> Accuracy and limitations of deformable image registration with SmartAdapt® in the thorax region
S. Sarudis (Sweden), A. Karlsson Hauer, D. Bibac, A. Bäck EP-1888

> Quality assurance of image registration algorithms using synthetic CT/MRI/PET datasets
A. Perez-Rozos (Spain), M. Lobato Muñoz, I. Jerez Sainz, J. Medina Carmona EP-1889

> Accurate organs at risk contour propagation in head and neck adaptive radiotherapy
T.T. Zhai (China), H.P. Bijl, J.A. Langendijk, R.J. Steenbakkers, C.L. Brouwer, H.J. Van der Laan-Boomsma, N.M. Sijtsema, R.G. Kierkels EP-1890

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S. Weiss (Germany), M. Helle, S. Renisch EP-1891

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R. Chuter (UK), R. Prestwich, A. Scarsbrook, J. Sykes, D. Wilson, R. Speight EP-1892

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X. Cai (UK), C.B. Schönlieb, J. Lee, J. Scaife, H. Karl, M. Sutcliffe, M. Parker, N. Burnet EP-1893

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W. Beasley (UK), A. McWilliam, N. Slevin, R. Mackay, M. Van Herk EP-1898

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M.A. Schmidt (UK), E. Wells, K. Davison, A. Riddell, L. Welsh, F. Saran EP-1900

> Patient-specific deformable image registration quality assurance based on feature points
P.C. Park (USA), E. Koay, J. Yang, Y. Suh, P. Das, C. Crane, S. Beddar EP-1901

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G. Loi (Italy), C. Fiandra, E. Lanzi, M. Fusella, L. Orlandini, F. Lucio, S. Strolin, L. Radici, E. Mezzenga, A. Roggio, L. Tana, E. Cagni, A. Savini, C. Garibaldi EP-1902

> Application of the enhanced ChainMail algorithm with inter-element rotation in adaptive radiotherapy
K. Bartelheimer (Germany), J. Merz, H. Teske, R. Bendl, K. Giske EP-1903

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F.R. Cassetta Junior (Italy), D. Ciardo, G. Fattori, M. Riboldi, R. Orecchia, B.A. Jereczek-Fossa, G. Baroni EP-1904

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G.G. Sikkes (The Netherlands), L.T.C. Meijers, C.N. Nomden, A.N.T.J. Kotte, G.H. Bol, B. Van Asselen, E.N. De Groot, I.H. Kiekebosch, B.W. Raaymakers EP-1905

> Importance of true cord delineation in spine SBRT and rigid vs. deformable MRI-to-CT registration
L. Goddard, P. Brodin, A. Lee, K. Mani, W. Bodner, M. Garg, W.A. Tomé (USA) EP-1906

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C. Hvid (Denmark), U. Elstrøm, K. Jensen, C. Grau EP-1907

> An image processing technique for simulating CT image sets for IGRT quality assurance
R. Franich (Australia), J.R. Supple, S. Siva, M.L. Taylor, T. Kron EP-1908

> Quantitative and qualitative assessment of thoracic CBCT image quality for multiple imaging systems
M. Williams (UK), L. Davies, S. Hall, P. Wheeler EP-1909

> Evaluation of diffusion-weighted imaging properties of a RT-specific positioning solution for PET/MR
R. Winter (Germany), S. Leibfarth, H. Schmidt, N. Schwenzer, D. Zips, D. Thorwarth EP-1910

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PHYSICS TRACK: IMPLEMENTATION OF NEW TECHNOLOGY, TECHNIQUES, CLINICAL PROTOCOLS OR TRIALS (INCLUDING QA & AUDIT)

> Evaluating the effect of Zinc Oxide nanoparticles doped with Gadolinium on dose enhancement factor
N. Banaee (Iran), H.A. Nedaie, A. Shirazi, A. Zirak, S. Sadjadi EP-1911

> The mechanism research of radio-dynamic treatment
Q.S. Zhang (China), Q.Y. Sun, G.P. Xiao, J. Zeng, L. Wang, L.L. Chen, C.M.C. Ma EP-1912

> National automated collection of standardised and population-based radiation therapy data in Sweden
T. Nyholm (Sweden), C. Olsson, T. Björk-Eriksson, G. Gagliardi, A. Gunnlaugsson, I. Kristensen, P. Nilsson, B. Zackrisson, A. Montelius EP-1913

> Nationwide audit of small fields output calculations in Poland
W. Bulski (Poland), K. Chelminski EP-1914

> Development of video based quality assurance system for the medical linear accelerator
I.S. Shin (Republic of Korea), Y. Han, E. Shin, H.C. Park, D.H. Choi, D.H. Lim EP-1915

> The IROC Houston QA Center's international activities outside North America
D. Followill (USA), S. Kry, A. Molineu, J. Lowenstein, P. Alvarez, P. Taylor, H. Nguyen, N. Hernandez, T. Nguyen, C. Lujano, T. Keith EP-1916

> Measurements of reactive oxygen species production induced by gold nanoparticles in radiotherapy
P. Cerello, L. Bocchini (Italy), A. Gobbato, A. Attili, C. Cutaia, V. Ferrero, C. Pontremoli, L. Radici, M. Stasi, S. Visentin EP-1917

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N. Abbott (UK), G.W. Jones, P. Parsons, D.G. Lewis, E. Spezi, M. Kaur, L. Magill, R. Gray, S.P. Bach, D. Sebag-Montefiore EP-1918

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A. Wopereis (The Netherlands), K. Ishakoglu, E. Seravalli, J. Wolthaus EP-1919

> Harmonising the clinical trials QA group reports on phantom measurements around the globe
C. Clark (UK), C. Field, D. Followill, A. Haworth, S. Ishikura, J. Izewska, C. Hurkmans EP-1920

> Novalis certification of stereotactic radiation therapy programs: methodology and current status
J. Robar (Canada), T. Gevaert, M. Todorovic, T. Solberg EP-1921

> Comparing MLC positioning errors in Clinac and Truebeam Linacs by analysing log files
J. Olasolo Alonso (Spain), P. Gago, A. Vazquez, S. Pellejero, C. Eito, M. Aylas, P. Ensunza EP-1922

> Regular assessment of isocentre and positioning accuracy in image guided stereotactic radiotherapy
C. Heinz (Germany), S. Neppl, W. Haimerl, C. Belka, M. Reiner EP-1923

INTERDISCIPLINARY RADIOBIOLOGY CLINICAL BRACHYTHERAPY PHYSICS RTT YOUNG

> Implementation of a safety checklist to improve quality and safety of physician plan review process
L. Fong de los Santos (USA), S. Park, K. Olivier EP-1924

> Online open source software to assess adverse events of patients undergoing radiochemotherapy
A.H. Thieme (Germany), D. Kaul, C. Stromberger, P. Ghadjar, V. Budach EP-1925

> Hybrid of cloud computing and workstations for radiotherapy planning
L. Zou (China), Z. Xie, W. Zhang, Y. Xie, L. Xing EP-1926

> Practical dosimetry solutions to enhance cell biology studies
E. Claridge Mackonis, L. Hammond, N. Suchowerska (Australia) EP-1927

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M. Molla Armada (Spain), D. Garcia, M. Beltran, R. Verges, C. Pacheco, R. Angles, X. Fa, J. Saez, J.M. Lobo, C. Montiel, M.T. Bordas, J. Giralt EP-1934

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R. Rangarajan (India), S. Saravanan EP-1963

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S.R. Bellia (Italy), P. Blanchard, L. Calmels, M. Edouard, P. Maroun, P. Chaurin, A. Bossi EP-2009

> Audit OAR comparing nationally-adopted prostate seed technique with GEC-ESTRO and ABS guidelines.
C. Sims (Ireland), P. Kelly EP-2010

> High-dose-rate brachytherapy combined with external beam radiotherapy for high-risk prostate cancer
S. Kariya (Japan), K. Kobayashi, I. Yamasaki, S. Ashida, K. Tamura, K. Inoue, T. Shuin, T. Yamagami EP-2011

> Are there differences in quality prostate indicators among 9-Gy vs 15-Gy HDR brachytherapy boost?
R. Tortosa, P. Soler (Spain), N. Chinillach, C. Ruiz, M. Vila, M. Sanchez EP-2012

> Single fraction HDR BT boost using ultrasound plng for prostate cancer: dosimetrics and toxicity
M. Barkati (Canada), O. Lauche, D. Taussky, C. Ménard, G. Delouya EP-2013

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BRACHYTHERAPY TRACK: ANORECTAL

> Retrospective analysis of interstitial brachytherapy in gynecological and digestive tumours
C. De la Pinta Alonso (Spain), E. Fernandez-Lizarbe, A. Montero Luis, A. Polo Rubio EP-2014

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BRACHYTHERAPY TRACK: MISCELLANEOUS

> Acute toxicity in HDR BT of skin cancer with very high viscosity addition silicone custom made molds
C. Sanz Freire (Spain), S. Pérez Echagüen, G.A. Ossola Lentati EP-2015

> A method to transform 2D LDR brachytherapy plans into contemporary 3D PDR dose distributions
E. Rodenburg (The Netherlands), J. Wilkes, J. Wiersma, R. Ordoñez Marmolejo, R. Dávila Fajardo, A. Bel, B. Pieters EP-2016

> High dose-rate endoluminal brachytherapy as a treatment of primary and recurrent esophageal cancer
N.H. Nicolay (Germany), J. Wagner, J. Oelmann-Avendano, J. Debus, P.E. Huber, K. Lindel EP-2017

> Treatment with high dose rate plesiotherapy and custom moulds in skin cancer. Long term results
I. Membrive (Spain), A. Reig, P. Foro, N. Rodriguez, J. Sanz, A. Ortiz, J. Quera, E. Fernandez-Velilla, O. Pera, R. Jimenez, N. Becerra, J. Flores, M. Algara EP-2018

> The safety and efficacy of external beam radiotherapy combined yttrium 90 SIRT
T.H. Wang (Taiwan), R.C. Lee, Y.W. Hu, P.I. Huang, C.S. Liu EP-2019

> Vertical type surface brachytherapy applicator improvement with a 3d printed dose compensation body
K. Buchauer (Switzerland), G. Henke, L. Plasswilm, J. Schiefer EP-2020

> Cosmesis and acute toxicity outcomes in skin lesions treated with High-Dose-Rate Brachytherapy.
H. Pérez-Montero (Spain), A. Campos, M.P. Crespo, B. Gil, A.M. Cabezas, T.C. Chávez, V. Rodríguez, N. Gascón, J.F. Pérez-Regadera EP-2021

> Compare EBRT and brachytherapy in the treatment children's vaginal rhabdomyosarcoma.
O. Kozlov (Russian Federation), I. Nechushkina, M. Nechushkin EP-2022

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RADIOBIOLOGY TRACK: MOLECULAR TARGETED AGENTS AND RADIOTHERAPY

> Radiation resistance induced immunity evasion by evoking PD-L1 expression
X. Gong (China), C. Zhou, X. Li, C. Zhao EP-2023

> Optimising hyperthermia induced radiosensitisaion for treating HPV+ cervical tumours
A.L. Oei (The Netherlands), C.M. Van Leeuwen, R. Ten Cate, H.M. Rodermond, M.R. Buist, L.J.A. Stalpers, J. Crezee, H.P. Kok, J.P. Medema, N.A.P. Franken EP-2024

> The potential role of gold nanoparticles in proton beam radiosurgery for arteriovenous malformations
A. Nor (Ireland), M. Morris, F. Vernimmen, M. Shmatov EP-2025

> Effect of PARP-1 inhibition on human soft tissue sarcoma cells radiosensitivity
M. Mangoni (Italy), M. Sottili, C. Gerini, I. Meattini, I. Desideri, P. Bonomo, D. Greto, M. Loi, R. Capanna, G. Beltrami, D. Campanacci, L. Livi EP-2026

> Fractionated radiotherapy plus anti-angiogenic therapy in an orthotopic glioma transplantation model
V. Albrecht, J. Schuster, M. Proescholdt, D. Piehlmaier, K. Unger, C. Belka, M. Niyazi, K. Lauber (Germany) EP-2027

> Dependence of dose enhancement on the cluster morphology of Gold Nano Particle in radiation therapy
A. Sang Hee Ahn (Republic of Korea), C. Kwangzoo Chung, H. Youngyih Han, P. Hee Chul Park, C. Doo Ho Choi EP-2028

> Feasibility study of Fe3O4/TaOx nano particles as a radiosensitiser for radiation therapy
A. Sang Hee Ahn (Republic of Korea), L. Nohyun Lee, S. Sung Won Shin, C. Chang hoon Choi, H. Youngyih Han, P. Hee Chul Park, C. Doo Ho Choi EP-2029

> Gadolinium enhanced x-rays radiotherapy of murine adenocarcinoma Ca755
A. Lipengolts (Russian Federation), A. Cherepanov, V. Kulakov, I. Sheino, E. Grigorieva, V. Klimanov EP-2030

> Research on p53 and endostatin gene-radiotherapy induced by EGFR-targeted adenovirus vector in NSCLC
N. Wu, D. Han, G. Cheng (China), M. He EP-2031

> Radiotherapy gets improved by a nanotechnology based enzyme therapy in glioblastoma primary cultures
L. Fernández Fornos (Spain), V. Barberá, M. Saceda, P. García-Morales, J. Sanz, M. Fuentes, M. Ventero, P. Lucero-Calabuig, P. Dorado Rodríguez, D. Espósito, S. Miranda Labajos, A. Pomares Arias, M. Ruiz Sánchez, E. García Miragall EP-2032

> Combining Hedgehog inhibition with metformin to induce radiosensitization in prostate cancer cells
S. Isebaert (Belgium), A. Gonnissen, C. McKee, R. Muschel, K. Haustermans EP-2033

> Targeting hypoxic cancer cells by inhibition of checkpoint kinases ATR and CHK1
M. JOEL (Norway), G. Hasvold, R.G. Syljuåsen EP-2034

> Internalization of iron nanoparticles by macrophages for the improvement of glioma treatment
S. Reymond (France), P. Gimenez, R. Serduc, J. Arnaud, J.P. Kleman, V. Djonov, W. Graber, J.A. Laissue, J.K. Kim, S.J. Seo, J.L. Ravanat, H. Elleaume EP-2035

> A flow cytometry-based screen for compounds that increase S-phase damage after Wee1 inhibition
C. Naucke (Norway), P. Juzenas, S. Hauge, T. Stokke, R.G. Syljuåsen EP-2036

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RADIOBIOLOGY TRACK: TUMOUR BIOLOGY AND MICROENVIRONMENT

> Radiation-induced abscopal effect in normoxic and hypoxic conditions in lung adenocarcinoma
S. Tubin (Austria), M.A. Mansoor, S. Gupta EP-2037

> Manipulation of radiation-induced bystander effect in prostate adenocarcinoma
S. Tubin (Austria), M. Valeriani, M.F. Osti, G. Minniti, S. Bracci, S. Gerardo EP-2038

> The impact of surgical wound fluids after IORT on the breast cancer stem cell phenotype
W.M. Suchorska (Poland), K. Kulcenty, D. Murawa EP-2039

> Can pimonidazole be used to detect cycling hypoxia in tumours?
S. Böke (Germany), A. Yaromina, L. Koi, M. Baumann, D. Zips EP-2040

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RADIOBIOLOGY TRACK: NORMAL TISSUE EFFECTS: PATHOGENESIS AND TREATMENT

> Vitamin D protects HUVEC from RT-induced senescence and apoptosis by modulating MAPK/SirT1 axis
F. Marampon (Italy), G. Gravina, C. Festuccia, A. Colapietro, E. Di Cesare, V. Tombolini EP-2041

> Meta-analysis: can amifostine reduce chemoradiotherapy and radiotherapy toxicity in advanced NSCLC?
A. Devine (Ireland), L. Marignol EP-2042

> The ANDANTE project: a re-evaluation of the risk from scattered neutrons during proton therapy
A. Ottolenghi (Italy), V. Smyth, K. Trott EP-2043

> Radiation-induced lung fibrosis is associated with M2 interstitial and hybrid alveolar macrophages
L. Meziani (France), M. Mondini, B. Petit, M.C. Vozenin, E. Deutsch EP-2044

> In vivo monitoring of skin collagen state by multiphoton microscopy in the course of irradiation
N.D. Gladkova, V.V. Dudenkova, V.V. Elagin, K.V. Babak, A.V. Maslennikova (Russian Federation) EP-2045

> Modulation of radiation-induced oral mucositis (mouse) by dermatan sulfate
S. Gruber (Austria), E. Bozsaky, K. Frings, M. Arnold, V. Gernedl, S. Hetzendorfer, J. Mayer, S. Morava, S. Pfaffinger, P. Kuess, W. Dörr EP-2046

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RADIOBIOLOGY TRACK: BIOMARKERS AND BIOLOGICAL IMAGING

> 1H NMR based metabolomic approach to monitoring of the head and neck cancer treatment toxicity
L. Boguszewicz (Poland), A. Hajduk, J. Mrochem-Kwarciak, A. Skorupa, M. Ciszek, A. Heyda, M. Sokol, K. Skladowski EP-2047

> Serum cytokines as a predictive factor in hepatoma patients treated with radiotherapy
J. Seong (Republic of Korea), H. Cha, E.J. Lee EP-2048

> Diffusion MRI for following tumor modifications after neoadjuvant radiotherapy
F. Lallemand, N. Leroi, M. Bahri, E. Balteau, A. Noel, P. Coucke, P. Martinive (Belgium), A. Plenevaux EP-2049

> The assessment of fractal dimension with Dual Energy CT gives information on lung cancer biomarkers
V. González-Pérez (Spain), E. Arana, A. Bartrés, S. Oliver, B. Pellicer, J. Cruz, M. Barrios, L.A. Rubio EP-2050

> Hsp70 as a tumor specific biomarker in primary glioblastoma multiforme patients
F. Laemmer (Germany), C. Delbridge, K.A. Kessel, S. Stangl, J. Hesse, B. Meyer, J. Schlegel, D. Schilling, G. Multhoff, T.E. Schmid, S.E. Combs EP-2051

> Expression of molecular biomarkers in wound drainage fluids: a pilot study in head and neck cancer
M. Sottili (Italy), M. Mangoni, P. Bonomo, A. Deganello, A. Javarone, T. Gualtieri, I. Desideri, M. Loi, I. Meattini, F. Paiar, L. Livi EP-2052

> In-vivo imaging of rat leukocytes redistribution after pelvic irradiation
F. Benigni (Italy), C. Cozzarini, C. Sini, A. Spinelli, M. Venturini, L. Perani, V. Sacco, A. Viale, A. Capelli, A. Mondino, A. Briganti, M. Bellone, C. Fiorino, R. Calandrino, N. Di Muzio EP-2053

> Expression of DNA-PK in squamous cell lung cancer has gender differences and depends on smoking
J. Jaal, L. Mägi, T. Jõgi, M. Kase, A. Minajeva, V. Markus, T. Vooder, R. Roosipuu, I. Jaal (Estonia) EP-2054

> Fibro-inflammatory circulating proteins as biomarkers for response in locally advanced rectal cancer
P. Bulens (Belgium), A. Debucquoy, I. Joye, O. De Wever, A. Wolthuis, A. D'Hoore, E. Van Cutsem, V. Vandecaveye, X. Sagaert, C. Deroose, O. Gevaert, K. Haustermans EP-2055

> Preclinical investigation of hypoxia induced genes in different prostate cancer cell lines.
T. Wittenborn (Denmark), S. Nielsen, M. Busk, M.R. Horsman, J. Overgaard, J. Alsner, B.S. Sørensen EP-2056

> Radiotoxicity prediction by gene expression profiling when simulating therapy in matched fibroblasts
M.A. Schirmer (Germany), C.P.N. Mergler, L.H. Droege, M. Guhlich, J. Gaedcke, M. Ghadimi, M. Rave-Fränk EP-2057

> A novel multi-SNP model predictive of erectile dysfunction following radiotherapy in prostate cancer
J.H. Oh (USA), S. Kerns, H. Ostrer, B. Rosenstein, J.O. Deasy EP-2058

> Changes in hypoxia in serial F-MISO/PET-CT during chemoradiation in HNSCC
H. Kerti (Germany), A. Bunea, L. Majerus, M. Mix, C. Stoykow, N. Wiedenmann, P.T. Meyer, A.L. Grosu EP-2059

> Correlation of imaging data with known predictive/prognostic factors in Oropharyngeal cancer
J. Lynch (UK), M. Zhao, J. Scuffham, P. Evans, C. Clark, K. Wood, S. Whitaker, A. Nisbet EP-2060

> Over-expression of EGFR and/or cox-2 in locally advanced squamous cervical cancer (LASC)
M. Aylas (Spain), J. Pérez -Regadera Gómez EP-2061

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> c-Myc silencing impairs oncophenotype and radioresistance of Embrional Rhabdomyosarcoma Cell Lines.
F. Marampon (Italy), G. Gravina, C. Festuccia, C. Alessandro, E. Di Cesare, V. Tombolini EP-2062

> Apoptotic pathway activation in prostate neoplastic cells after 12 Gy-IORT
C. Pisani (Italy), N. Domagala, F. Copes, F. Mercalli, A. Volpe, D. Beldì, F. Boccafoschi, R. Boldorini, M. Krengli EP-2063

> Radiation induces metabolic switch to lactate production to support tumour cell survival
K. Dittmann (Germany), C. Mayer, H.P. Rodemann EP-2064

> Effects of spontaneous γH2AX level on radiation-induced response in human somatic cells
S. Vasilyev (Russian Federation), A.I. Velichevskaya, T.V. Vishnevskaya, A.A. Skryabin, A.A. Belenko, A.A. Sleptsov, O.V. Gribova, Z.A. Startseva, I.N. Lebedev EP-2065

> Phospholipase Cε as a biomarker of prostate cancer radioresistance
A. Tyutyunnykova (Germany), G. Telegeev, A. Dubrovska EP-2066

> The adhesion of tumor cells to endothelial cells is increased by photon irradiation
H. Bühler, P. Nguemgo-Kouam (Germany), A. Kochanneck, B. Priesch, H. Hermani, K. Fakhrian, I.A. Adamietz EP-2067

> Effect of a 0.2 T magnetic field during radiation on DNA damage and repair in prostate cancer cells
S. Baker (Canada), Z. Jin, A. Ghila, B. Warkentin, M. Hendzel, G. Fallone, R. Pearcey EP-2068

> CDC73 deficiency: a syndrome with multiple tumours is predicted to show excessive radiosensitivity
R. Lewis (UK), E.C. Bourton, C.N. Parris, P.N. Plowman EP-2069

> Cell cycle analysis of γ-H2AX in irradiated normal or DNA-defective cells with image flow cytometry
R. Lewis (UK), P.N. Plowman, C.N. Parris EP-2070

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RADIOBIOLOGY TRACK: RADIOBIOLOGY OF PROTONS AND HEAVY IONS

> Mitophagy and Apoptosis: mitochondrial responses to carbon ion radiation in tumor cells
X. Jin (China), X. Zheng, F. Li, Q. Li EP-2071

> Spatiotemporal dynamics of DNA damage in cells exposed to mixed beams of ionising radiation
B. Brzozowska (Sweden), A. Sollazzo, L. Cheng, L. Lundholm, A. Wojcik EP-2072

> Angio/lymphangiogenic, inflammatory and immune responses in head and neck cancer: proton vs photon
A. Claren (France), M. Plesu, J. Doyen, J. Feuillade, M. Dufies, S. Giulano, J. Hérault, G. Pagès EP-2073

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> The comparison of properties for radiotherapy with flattening filter-free and flattening filter beam
J.H. Gu (Republic of Korea), H.S. Won, J.W. Hong, N.J. Chang, J.H. Park EP-2074

> Evaluation of conventional versus IMRT based Prophylactic Cranial Irradiation treatment planning
E.H. Thøgersen (Denmark), A.I.S. Holm EP-2075

> Stereotactic body radiation therapy using Tomotherapy for refractory metastatic bone pain: case study
B. Bosco (Australia), A. Fong EP-2076

> A decision protocol to propose proton versus photon radiotherapy: in silico comparison
A. Chaikh (France), J. Balosso EP-2077

> PROSPECT: Phase 2 rescanning of seromas in patients to evaluate CTV reduction in breast cancer
G. Smith (UK), P. Robson, H. Probst EP-2078

> IMRT vs. dynamic conformal arc radiation therapy for stereotactic spinal radiotherapy
V. Santos (Portugal) EP-2079

> Redefining the possible: planning multiple complex head lesions using non-coplanar VMAT arcs
V. Guy (New Zealand), R. Sims, A. Falkov EP-2080

> Impact of baseline shifts on 4D cone-beam CT images using a 4D phantom driven by lung tumor motions
H. Moriwaki (Japan), K. Shiraishi, A. Sakumi, T. Ikeda, W. Shimizu, K. Yoda EP-2081

> Static beam tomotherapy (TD) as an optimisation method in whole breast radiation therapy (WBRT)
M. Squires (Australia), S. Cheers, A. Fong, B. Archibald-Heeren, Y. Hu, A.Y.M. Teh EP-2082

> Utilising flattening filter free (FFF) beams to reduce treatment delivery times for breast patients
M. Le Mottee, A. Michalski, R. David, C. Lee, A. Windsor, B. Done (Australia) EP-2083

> Risk assessment of secondary cancer after craniospinal radiotherapy in childhood medulloblastoma
F.M. Giugliano (Italy), M. Mascarin, L. Iadanza, E. Coassin, A. Drigo, M.G. Trovò EP-2084

> Breast irradiation: Is the Isocenter fix? Results of a quality control study.
I. Lvovich (Israel), S. Daniel, A. Dror-Bakalo, R. Ben Yosef, E. Sabah, I. Atnilov EP-2085

> Advantages of deep inspiration breath-hold (DIBH) in left sided breast cancer using 3D-CRT
A. Kalmár (Hungary), N. Mészáros, G. Stelczer, C. Polgár EP-2086

> Simultaneous integrated boost bilateral breast cancer RT with helical IMRT: how to manage it?
J.L. Soares Rodrigues (Switzerland) EP-2087

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RTT TRACK: ADDITIONAL TOOLS FOR CONTOURING

> CT and MRI fusion to minimize contouring uncertainties in Stereotactic Radiosurgery (SRS) planning
I. Payanova (Bulgaria), R. Georgiev, R. Lazarov, Z. Spasova, V. Ivanov, L. Iliev, P. Tsenov, A. Antonova, T. Georgieva, S. Georgieva, D. Avgerinova EP-2088

> Comparison of target volumes for lower gastro-intestinal tumours using PET-CT and PET-MR images
J. Heywood (UK), M. Chiu, I. Kayani, L. Allington, R. Bodey, G. Blackman EP-2089

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RTT TRACK: HEAD AND NECK REDUCTION OF MARGINS AND SIDE EFFECT

> Accurate and stable immobilisation with Lorca Marin masks for head and neck IMRT treatment
A. Ilundain (Spain), I. Prieto, E. Márquez, D. Esteban, W. Vásquez, A. Pérez EP-2090

> Establishment of dose reference levels (DRLs) for CT of the head and neck in radiation therapy
C. Clerkin (Ireland), S. Brennan, L. Mullaney EP-2091

> Impact of treatment volumes in loco-regional failure of oral cancer in patients treated with IMRT
D. Delishaj (Italy), S. Ursino, E. Lombardo, L.R. Fatigante, M. Cantarella, G. Coraggio, F. Matteucci, S. Montrone, M.G. Fabrini EP-2092

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RTT TRACK: ADAPTIVE TREATMENTS IN THE PELVIC REGION

> Drinking instructions does not significantly influence inter-fraction bladder volume stability
M. Berg (Denmark), K. Thellesen, H. Jensen, L.M. Nielsen, H. Wasilevska, L. Wee EP-2093

> Can Radiation Oncologist delegate to Therapist the kV setup control in patients with pelvic cancers?
V. Frascino, M. Ferro (Italy), A. Alitto, A. Castelluccia, A. Petrone, G. Nicolini, S. Teodoli, G. Mattiucci, G. Mantini, M. Gambacorta, S. Chiesa, F. Deodato, L. Azario, S. Luzi, V. Valentini, M. Balducci EP-2094

> A retrospective evaluation of the feasibility of automatic prostate matching in IGRT
Z. Campbell (Ireland), B. O'Neill, L. O'Sullivan, M. Keaveney, L. Mullaney EP-2095

> Risk of rectal bleeding in patients with prostate cancer treated with RT on anticoagulant therapy
B. Shima (Italy), M.T. Martinetti, M. Carnevale, D. Musio, R. Lisi, V. Tombolini EP-2096

> Patient friendly compression-belt settings in liver stereotactic radiotherapy
A.S. Bouwhuis-Scholten (The Netherlands), E.B. Van Dieren, S. Koch, H. Piersma, D. Woutersen EP-2097

> Use of a bladder minimum contour for prostate treatment planning to increase comfort and efficiency
C. Evans (UK), E. Crees, G. Kidane, M. Brown, M. Campbell, S. Gibbs, K. Tarver EP-2098

> Influence of anxiety on reproducibility of cancer patients (pts) repositioning during pelvic RT
E. Sierko (Poland), R. Maksim, J. Czauderna, T. Filipowski, M. Wojtukjiewicz EP-2099

> Effectiveness of the manual correction during positioning patients with prostate cancer.
T. Piotrowski (Poland), K. Kaczmarek, A. Jodda, B. Bąk, A. Ryczkowski EP-2100

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RTT TRACK: OTHER TOPICS FOR RTTS

> Inverting a teaching practice
D. Montgomerie (New Zealand), B. Mudie EP-2101

> "We are all here for the patient" exploring the process of interprofessional learning
K. Coleman (New Zealand), B. Darlow, E. McKinlay, L. Beckingsale, S. Donovan, P. Gallagher, B. Gray, H. Neser, M. Perry, S. Pullon EP-2102

> Margin assessment for feline and canine radiotherapy using a custom cranial immobilisation device
J. Sharpe (Switzerland), A. Tini, I. Minneken, C. Winter, V. Meier, C. Rohrer Bley EP-2103

> Waiting times for IMRT as a quality indicator: a study from a tertiary hospital in Saudi Arabia
Z. Mulla (Saudi Arabia), M.E. El Sayed, S.M. Soaida, A. AlHebshi, M. Bayoumy, A.H. Mohammed Khasim EP-2104

> The helpful rays a children's book about cancer and radiotherapy explained in a non-intimidating way
K. Farstad (Norway) EP-2105

> Structuring a database to evaluate haematological toxcicity in post-prostatectomy IMRT patients
V. Sacco (Italy), G. Salvadori, A. Sbalchiero, A. Viale, A. Soccio, M. Martulano, R. Bin, S. Selli, A. De Leonardis, D. Parutto, A. Capelli, A. Tavilla, L. Longoni, L. Palumbo, F. Baratto, N. Barricella, C. Fiordelisi, C. Cozzarini, N. Di Muzio EP-2106

> Work satisfaction and motivation of radiation therapists. A qualitative study
P.G. Kup, J.A. Rubin, I.A. Adamietz, K. Fakhrian (Germany) EP-2107

> Gaps in Radiotherapy: What can we do to improve it?
R. Jimenez, N. Becerra, N. Rodriguez, M. Algara (Spain) EP-2108

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> Novel verification technique for craniospinal irradiation with an image plate in the supine position
S.K. Ahn (Republic of Korea), S.K. Lee, J.H. Cho, C.O. Suh EP-2109

> A study of prostatic calculi: in patients receiving radical radiotherapy for prostate cancer
A. O'Neill (UK), C.A. Lyons, S. Jain, A.R. Hounsell, J.M. O'Sullivan EP-2110

> Inter-observer variability in stereotactic IGRT with CBCT: is a CTV-PTV margin needed?
M. Massaccesi (Italy), V. Masiello, M. Ferro, V. Frascino, S. Manfrida, M. Antonelli, S. Chiesa, A. Martino, F. Greco, B. Fionda, A. Fidanzio, G. Mattiucci, L. Azario, S. Luzi, V. Valentini, M. Balducci EP-2111

> Intrafraction setup errors in single fraction stereotactic radiosurgery with Elekta Fraxion system
W. Vásquez Rivas (Spain), J. Luna Tirado, M. Rincón Pérez, D. Esteban Moreno, A. Ilundain Idoate, A. Pérez Casas, M. García-Castejón, J. Olivera Vegas, I. Prieto Muñoz, J. Vara Santos EP-2112

> Clinical implementation of an optical surface monitoring system(OSMS®, Varian) in breast irradiation
A. Tini (Switzerland), I. Pytko, S. Lang, C. Winter, M. Guckenberger, C. Linsenmeier EP-2113

> 3D-Transabdominal Ultrasound and ConeBeam-CT: comparison of prostate positioning
A. Boschetti (Italy), S. Bartoncini, C. Fiandra, A. Guarneri, C. Cavallin, F. Arcadipane, E. Trino, M. Levis, R. Ragona, U. Ricardi EP-2114

> Breast radiotherapy: comparation of set up error using All In One system and dedicated breast board
V. Manestar (Croatia), V. Karadza EP-2115

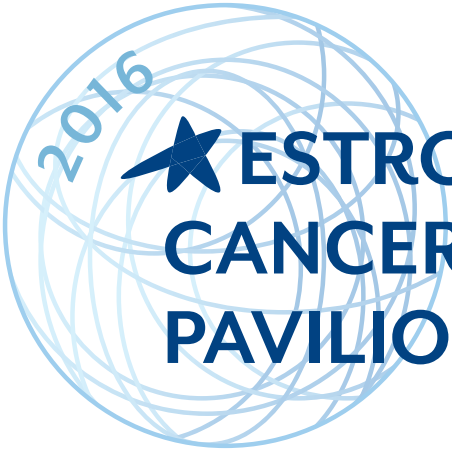
> Optimization of whole breast irradiation setup: comparison between two different positioning systems
E. Sanfilippo, C. Galeotti, P. Cornacchione, Y. Wandael, A. Nacca, M. Morroni, B. Onorati, D. Greto, P. Bonomo, N. Groccia, R. D'Angelillo, S. Ramella, I. Meattini (Italy), L. Livi EP-2116

> Is rotational shifts necessary in SBRT? A geometric analysis using a 6-degree of freedom(6-DoF)couch.
A.R. Alitto (Italy), S. Chiesa, S. Menna, L. Azario, M. Massaccesi, F. Greco, M. Ferro, V. Frascino, M. Balducci, V. Valentini EP-2117

> CBCT in stereotactic body radiation therapy for lung tumors: manual matching versus auto-matching
M. Orlando, Y. Wandael, P. Bonomo, C. Galeotti, F. Cascino, L. Cecconi, D. Greto, I. Meattini (Italy), S. Pallotta, L. Livi EP-2118

> A clinical investigation of optimal CBCT image matching for non-SABR radical lung cancer patients
L. Malaspina (UK), A. Baker, C. Baker, A. Pope, M. Warren EP-2119

ESTRO CANCER CENTRES PAVILION



ESTRO CANCER CENTRES PAVILION

ESTRO CANCER PAVILION

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Entrance to the ESTRO Cancer Centres Pavilion is free to all the ESTRO 35 participants. No pre-registration is needed.

Opening hours :
Every day, from 29 April 19:30 at the welcome reception to 2 May included
From 9:30 to 17:00 (Exhibition opening times)

EXHIBITING INSTITUTES

Institutes	Booth nb
VU Medical Center	6700-1
Greater Poland Cancer Centre (Wielkopolskie Centrum Onkologii)	6700-4
University Medical Center Utrecht	6700-5
Istituto del Radio - University of Brescia	6700-9
Affidea BV	6700-2
Medical University of Vienna/AKH Vienna	6700-11
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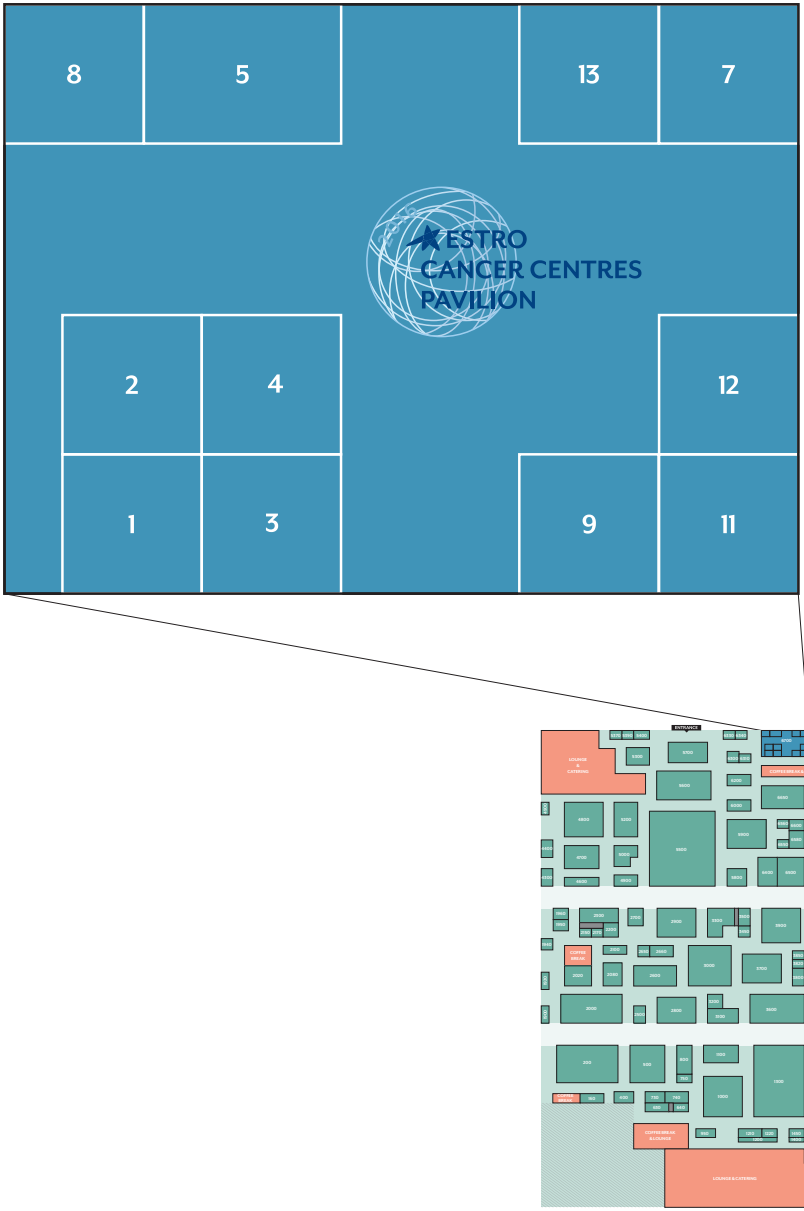
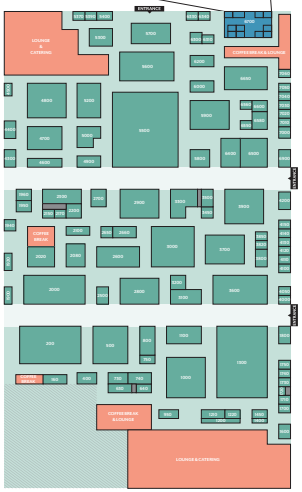
FLOORPLAN (AREA 6700)





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1081 HZ Amsterdam
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Veenendaal. A.
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COMPANY AWARDS

COMPANY AWARDS OVERVIEW

★ GEC-ESTRO BEST JUNIOR PRESENTATION - SPONSORED BY ELEKTA BRACHYTHERAPY

Adaptive cone-beam CT planning improves progression-free survival for I-125 prostate brachytherapy
Daan Smit Duijzentkunst (The Netherlands)
Saturday 30 April 2016 from 11:35-11:45

★ ESTRO- ELEKTA BRACHYTHERAPY AWARD

Electromagnetic tracking for error detection in interstitial brachytherapy
Christoph Bert (Germany)
Sunday 1 May 2016 from 10:45-10:55

★ ESTRO-VARIAN AWARD

Perfusion SPECT can quantify radiation-induced changes in the lung after IMRT for NSCLC
Katherina Farr (Denmark)
Sunday 1 May 2016 from 17:40-17:50

★ ESTRO-ACCURAY AWARD

A novel concept to tumor targeting: Inverse dose-painting or targeting the "Low uptake drug volume"
Ala Yaromina (The Netherlands)
Sunday 1 May 2016 from 17:50-18:00

GEC-ESTRO BEST JUNIOR PRESENTATION SPONSORED BY ELEKTA BRACHYTHERAPY

Daan Smit Duijzentkunst

★ **DAAN SMIT DUIJZENTKUNST**

University Medical Center Utrecht
Utrecht, The Netherlands

Son of an occupational doctor and a nursing home doctor, Daan Smit Duijzentkunst studied Medicine at Utrecht University. For his final rotation, he obtained a research internship at the department of Radiotherapy of the University Medical Center Utrecht. Under the auspices of and in collaboration with Max Peters, MD PhD, the focus of his work was on prostate cancer treatment, both in the primary and salvage setting. After graduation, he started working as a PhD student at the department of Nuclear Medicine at the Erasmus Medical Center Rotterdam. His current research is on the treatment of neuroendocrine tumours using Peptide Receptor Radionuclide Therapy. This treatment, using 177-Lutetium labeled peptides, may break grounds for the prostate-specific membrane antigen (PSMA) based treatment of prostate cancer.

ESTRO- ELEKTA BRACHYTHERAPY AWARD

Christoph Bert

★ CHRISTOPH BERT

University Clinic Erlangen and Friedrich-Alexander-University Erlangen-Nürnberg, Germany

Prof Dr Christoph Bert (*1976) studied physics at the Friedrich-Alexander University Erlangen-Nürnberg (FAU) and at the Imperial College in London. After graduation in 2002 he joined the group of Prof Kraft at the GSI Helmholtz Centre for Heavy Ion Research for his PhD-thesis. During the thesis he also stayed at Massachusetts General Hospital in Boston, USA, funded by a stipend from the German academic exchange programme. He received the PhD from Technische Universität (TU) Darmstadt in 2006, for a dissertation on 4D treatment planning for scanned ion beam therapy. This topic was also the focus of his Postdoc at GSI and briefly at the National Institute of Radiological Science (NIRS) in Chiba, Japan. In 2009 Dr Bert obtained the postdoctoral lecture qualification (Habilitation) in medical physics at the Ruprecht-Karls-Universität of Heidelberg.

Since October 2012, Dr Bert is Professor of Medical Radiation Physics at the FAU Erlangen-Nürnberg, and head of medical physics at the Department of Radiation Oncology of the University Clinic Erlangen. His research focus aims at improving therapy techniques and their quality assurance. Current focus topics are the management of organ motion by tracking and error detection in interstitial brachytherapy.

ESTRO-VARIAN AWARD

Katherina Farr

★ KATHERINA FARR

Department of Oncology, Aarhus University Hospital
Aarhus, Denmark

Dr Katherina P. Farr received her MD from Aarhus University, Denmark, in 2006. After completing surgery, general and internal medicine rotation in 2006-2007, she is currently enrolled in a specialist training (residency) programme in clinical oncology, comprising medical and radiation oncology, at Aarhus University Hospital.

Besides the clinical practice, she has conducted a PhD research project concerning perfusion single-photon emission computed tomography (SPECT) imaging and radiotherapy-induced injury in the lung after curative radiotherapy for non-small cell lung cancer. The project was conducted at the Department of Oncology in close collaboration with the Department of Nuclear Medicine and Positron Emission Tomography (PET) Centre at Aarhus University Hospital. The PhD project was guided by Prof C. Grau, Dr A. Khalil and Ass. Prof A. Morsing. Katherina defended her PhD thesis in November 2015.

The primary focus of her research is on non-small cell lung cancer patients undergoing curative radiotherapy with specific interest in radiation side effects in the lungs, and measures to reduce them. Her clinical research focuses on implementation of functional imaging in radiotherapy planning. Katherina is currently working on how to optimise radiotherapy planning according to functional distribution.

NOTES

ESTRO-ACCURAY AWARD

Ala Yaromina

★ ALA YAROMINA

Dept. of Radiation Oncology (Maastro Lab), Grow - School for Oncology and Developmental Biology, Maastricht University Medical Centre Maastricht, The Netherlands

Ala Yaromina, a native of Belarus, studied environmental science at the International Sakharov Environmental University in Minsk. In 2003 she graduated from University College London having attained the European M.Sc in Radiation Biology under the directorship of Prof Klaus Trott. She studied for her PhD research at the Technische Universität Dresden, Medical Faculty, Department of Radiation Oncology, Germany, under the supervision of Prof Michael Baumann and Prof Daniel Zips. She investigated the impact of various pre-treatment parameters of tumour microenvironment on radiation response in pre-clinical models of cancer. After her PhD she continued working at the OncoRay Center for Radiation Research in Oncology, Dresden, focusing on radiation-induced changes in tumour microenvironment and their association with radiotherapy outcome as well as on predictive biomarkers.

In 2012 she joined the group of Prof Philippe Lambin at the Department of Radiation Oncology (MAASTRO), Maastricht University, The Netherlands, focusing on targeting of Carbonic Anhydrase IX in tumours using novel drugs. Her latest research project includes one of a kind pre-clinical studies testing positron emission tomography (PET) based dose-painting approaches, using state-of-the-art clinical imaging and radiotherapy platforms.

SATELLITE SYMPOSIA

ACCURAY

Saturday 30 April 2016
Room 3
13:25 – 14:25

INNOVATIVE PATIENT CARE: PRESENT AND FUTURE

Chairman: Prof Jean Bourhis, Head of the Radiation Oncology Department, CHUV

13:25 – 13:30
Welcome
Dr Lionel Hadjadjeba, M.D., Senior Vice President, President Worldwide Commercial Operations, Accuray

13:30 – 13:45
Adopting new technologies in frontier market countries
Dr B. S. Ajaikumar, Chairman & CEO, HealthCare Global Enterprises, Bangalore

13:45 – 14:00
InCise™ MLC: adding a new dimension to the CyberKnife® platform
Dr Alexandra D. Jensen, Consultant Radiation Oncologist and Section Leader High-Precision Radiotherapy, Inselspital, Bern

14:00 – 14:15
Late-breaking news
Birgit Fleurent, VP Worldwide Marketing, Patient Access and Customer Loyalty, Accuray and Calvin Maurer, Vice President & Chief Technology Officer, Accuray

14:15 – 14:25
Concluding remarks
Prof Jean Bourhis, Head of the Radiation Oncology Department, CHUV

Visit ACCURAY at booth # 1300 for more information.

ELEKTA

Saturday 30 April 2016
Room 2
13:25 – 14:25
(Lunch boxes provided)

CLINICAL ADVANCEMENTS IN RADIATION MEDICINE. TOGETHER WE GO BEYOND.

Chair: Prof Joel Goldwein, Senior Vice President Medical Affairs, Elekta

Session 1 **Increasing importance of radiosurgery in a clinic**

Clinical experience of Leksell GammaKnife® Icon™ implementation in a comprehensive clinical practice
Dr Alison Cameron, Consultant Clinical Oncologist and Lead Clinician for the Bristol Gamma Knife Centre, University Hospitals Bristol NHS, UK

Lung Stereotactic Ablative Radiotherapy with Versa HD™ - an evolution of clinical practice at the Leeds Cancer Centre
Kevin Franks Consultant in Clinical Oncology, St James's Institute of Oncology, Leeds Cancer Centre, Honorary Clinical Associate Professor, University of Leeds, Leeds Teaching Hospitals NHS Trust, UK

Session 2 **Innovations in Cervical Cancer Treatment: improving patient outcomes**
Richard Pötter, MD, PhD – Professor and Chairman, Department of Radiotherapy, Medical University of Vienna / Vienna General Hospital (AKH), Austria

Questions & Answers
Prof Joel Goldwein, Senior Vice President Medical Affairs, Elekta

Visit ELEKTA at booth # 200 for more information.

IBA

Saturday 30 April 2016
Room Londra
13:25-14:25
(Lunch boxes provided)

PROTON THERAPY TODAY AND TOMORROW

13:25 Proton Therapy treatment of lung cancers
Insights from a clinical focus group

13:45 The biggest challenges in Proton Therapy

14:05 Building the future of Proton Therapy

Visit IBA at booth # 4800 for more information.

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RAYSEARCH LABORATORIES

Saturday 30 April 2016
Room 4
13:25 - 14:25
(Lunch boxes provided)

ADVANCING RADIATION THERAPY THROUGH SOFTWARE INNOVATION

Moderator: Oliver Jäkel, Head of Medical Physics in Radiation Oncology Department, German Cancer Research Center and Medical Physics Director of the Ion Beam Therapy Center, University Hospital Heidelberg, Germany.

13:25 - 13:40
RayStation as a planning tool for proton therapy in clinical practice
Marco Schwarz, Head of Medical Physics, Protontherapy Department, Trento Hospital.

Q&A (5 min)

13:45 - 14:00
Using RayStation as a unified treatment planning system for precision medicine
Olivier Morin, Assistant Professor, Division of Physics, Department of Radiation Oncology, University of California San Francisco, USA.

Q&A (5 min)

14:05 - 14:20
Advancing radiation therapy through software innovation
Johan Löf, Founder & CEO, RaySearch Laboratories AB, Stockholm, Sweden

Q&A (5 min)

Visit RAYSEARCH LABORATORIES at booth # 2000 for more information.

SIEMENS HEALTHCARE GMBH

Saturday 30 April 2016
Room 500
13:25 – 14:25
(Lunch boxes provided)

EMPOWER RADIATION THERAPY WITH MULTIMODALITY IMAGING

"The use of multimodality imaging for treatment individualization: Current trends and future outlook"
Prof Dr Esther Troost, OncoRay – National Center for Radiation Research in Oncology Dresden, Germany

"Evolving role of MRI in Radiotherapy"
Dr Gary Liney, Ingham Institute for Applied Medical Research & Radiation Oncology, Liverpool Hospital, Australia

"What can imaging do for you today? Exploring the untapped potential of imaging in RT"
Elena Nioutsikou, Siemens Healthcare GmbH, Radiation Oncology, Germany

Visit SIEMENS at booth # 5600 for more information.

BRAINLAB

Sunday 1 May 2016
Room 4
13:10 – 14:10
(Lunch boxes provided)

NOVALIS CIRCLE SYMPOSIUM
STEREOTACTIC RADIOSURGERY FOR PRIMARY BRAIN TUMORS

Radiosurgery Planning Requirements for Primary Brain Tumors
Giuseppe Minniti, MD, Azienda Ospedaliera Sant'Andrea, Rome, Italy

Trajectory-based Treatment Planning and Delivery for Cranial Radiosurgery
James Robar, PhD, Queen Elizabeth II Health Science Centre, Halifax, Canada

Frameless IGRS Requirements: ExacTrac 6D Positioning and Monitoring
Linda Carruthers, Western General Hospital, Edinburgh, UK

Cranial SRS Element Overview
Claus Promberger, Brainlab, Munich, Germany

Visit BRAINLAB at booth # 3600 for more information.

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NOVALIS

CARL ZEISS MEDITEC AG

Sunday 1 May 2016
Room 2
13:10 – 14:10
(Lunch boxes provided)

ZEISS INTRABEAM SYSTEM: A CANCER RADIATION PLATFORM. MORE THAN 10 YEARS OF TARGETED INTRAOPERATIVE RADIOTHERAPY EXPERIENCE

Chairs : Prof Ferran Guedea (Institut Català d'Oncologia, Barcelona) and Prof Roberto Orecchia (IEO Istituto di Oncologia Milano, Italy)

IORT with INTRABEAM in breast cancer at Catalan Institut of Oncology
Prof Ferran Guedea – Institut Català d'Oncologia, Barcelona

Multidisciplinary Management in Spine Metastasis
Prof Roberto Orecchia – IEO Istituto di Oncologia Milano, Italy

INTRAGO – Intraoperative Radiotherapy for newly diagnosed glioblastoma multiforme: results of a phase I/II trial and progress toward a phase III
Dr Frank Giordano – University Medical Center Mannheim, Germany

Targeting the wound healing response to restrain local recurrence in early breast cancer: a lesson learned by IORT
Dr Gustavo Baldassarre – CRO National Cancer Institute Aviano, Italy

Visit CARL ZEISS MEDITEC AG at booth # 4900 for more information.

PHILIPS

Sunday 1 May 2016
Room 500
13:10 – 14:10
(Lunch boxes provided)

INNOVATIONS IN THERAPY GUIDANCE

Challenging conventional practices in treatment planning
Prof Lorenzo Livi, MD, PhD, Director of Radiation Oncology Unit
University of Florence, Italy

A clinical perspective on the expanding role of MRI
Prof Marco van Vulpen, MD, PhD, Chair of the department of Radiation Oncology,
UMC Utrecht, The Netherlands

Enabling comprehensive oncology solution with genomics and radiotherapy planning
Nevenka Dimitrova, PhD CTO Genomics, Philips Healthcare IT

Visit PHILIPS at booth # 2800 for more information.

SCANDIDOS

Sunday 1 May 2016
Room Londra
13:10 – 14:10
(Lunch boxes provided)

PATIENT DOSE VERIFICATION IN MODERN RADIATION THERAPY

Development and testing of a new MR compatible Delta4 Phantom
Wilfred deVries, Physicist Assistant, Dep. Radiotherapy, UMC Utrecht

Acceptance criteria for patient QA plans world-wide
Denis Breugnot, Application Specialist, ScandiDos SAS France

Clinical Evaluation of Delta4 Discover a ScandiDos Transmission Detector

Clinical Evaluation of Delta4 Phantom+

Delta4DVH Anatomy version 2.0 – QA in the patient anatomy

Visit SCANDIDOS at booth # 6400 for more information.

SUN NUCLEAR CORPORATION

Sunday 1 May 2016
Room 3
13:10 – 14:10
(Lunch boxes provided)

INNOVATIVE QA SOLUTIONS TO IMPROVE PATIENT SAFETY

13:10 Implementing an Automated TG-142 Imaging and Mechanical QA Solutions
Nicola Mullins, MS, Lincoln County Hospital, Lincoln, UK

13:30 Transit 3D Dosimetry with EPID – an Automated QA Solution
Karsten Eilertsen, PhD, Oslo University Hospital, Oslo, Norway

13:50 Assess and Improve Planning Quality
Ahmad Nobah, MS, King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia

Visit SUN NUCLEAR CORPORATION at booth # 1000 for more information.

VARIAN MEDICAL SYSTEMS

Sunday 1 May 2016
Room 1
13:10 – 14:10
(Lunch boxes provided)

MOVING RADIOTHERAPY TOWARDS THE HORIZON

Where we are now: Today's Challenges in Technology, Resource and Access
Dr Clive Peedell, South Tees Hospitals, Middlesbrough, UK

Advances in technology: To what end
Dr Max Dahele, VU University Medical Center, Amsterdam, Netherlands

Conversation and discussion
Dr Patrick Kupelian, Varian Medical Systems, Palo Alto, USA

Visit VARIAN MEDICAL SYSTEMS at booth # 5500 for more information.

VIEWRAY, INC.

Monday 2 May 2016
Room 2
13:25 – 14:25
(Lunch boxes provided)

ADAPTIVE THERAPY AND BEYOND: MULTI-CENTER EXPERIENCE WITH MRI-GUIDED RADIATION THERAPY

Come hear first-hand clinical experience with MRIdian®, the world's only MRI-guided radiation therapy system. Presenters from four institutions will discuss everything from implementation and quality assurance to SBRT delivery and on-table adaptive therapy using real-time MRI-guidance.
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- VU University Medical Center, Amsterdam
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- University of California, Los Angeles, Jonsson Comprehensive Cancer Center
- Siteman Cancer Center, Barnes-Jewish Hospital and Washington University School of Medicine, St. Louis, Missouri

Moderator by Professor Vincenzo Valentini, Chairman of the Radiation Oncology Department at Gemelli-ART, Università Cattolica S.Cuore, Rome.

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Monday, 2 May 2016, 13:25 – 14:25
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PROGRAMME:

The Need for Integrated Compact Proton Therapy Systems

Jean Bourhis, MD, PhD, Chairman Radiation Oncology
Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland

Deployment of Compact Proton Therapy Centers:
An Architectural and Project Management Perspective

Stephen Courtney, Principal, *SCI-X Science Studio, Boston, USA*

Three Years In: Best Practices from the First Compact Proton Therapy Installation in the United States

Sasa Mutic, PhD, Director of Medical Physics
Washington University, St. Louis, USA

Lunch will be provided, please pre-register by emailing **ESTRO35@mevion.com.**

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MEVION MEDICAL SYSTEMS

Monday 2 May 2016
Room Londra
13:25 – 14:25
(Lunch boxes provided)

STRATEGIES FOR MAKING PROTON THERAPY A CLINICAL REALITY AND BUSINESS SUCCESS

The Need for Integrated Compact Proton Therapy Systems
Jean Bourhis, MD, Ph.D, Chairman Radiation Oncology Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland

Deployment of Compact Proton Therapy Centers: An Architectural and Project Management Perspective
Stephen Courtney, Principal, SCI-X Science Studio, Boston, USA

Three Years In : Best Practices from the First Compact Proton Therapy Installation in the United States
Sasa Mutic, Ph.D, Director of Medical Physics Washington University, St. Louis, USA

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EXHIBITION

ACKNOWLEDGEMENTS

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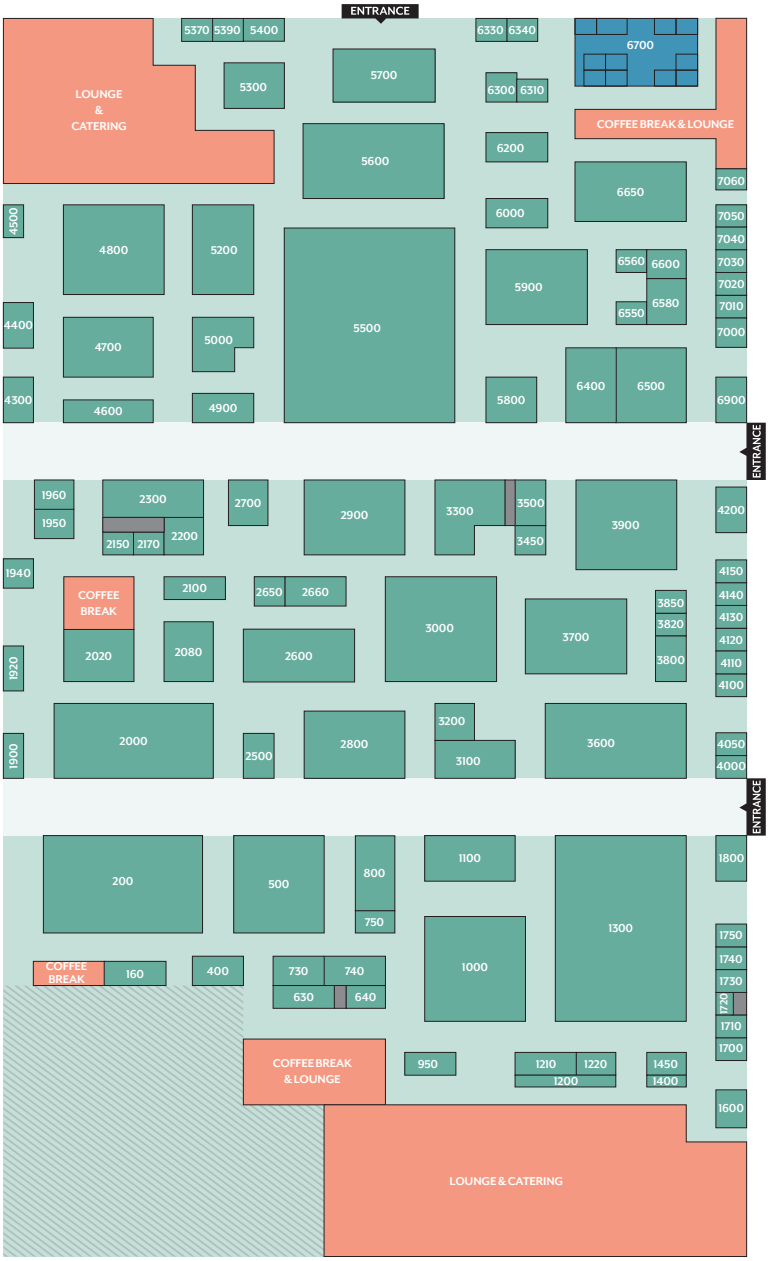
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ECCO is a not-for-profit federation that exists to uphold the right of all European cancer patients to the best possible treatment and care, promoting interaction between all organisations involved in cancer at European level. Through its 23 Members Societies – representing over 80 000 professionals – ECCO is the only multidisciplinary organisation that connects and responds to all stakeholders in oncology Europe-wide.

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Elekta is a human care company pioneering significant innovations and clinical solutions for treating cancer and brain disorders. The company develops advanced tools and treatment planning systems for radiation therapy, radiosurgery and brachytherapy, as well as workflow enhancing software systems across the cancer care spectrum. Through its products and services, Elekta aims to improve, prolong and save patient lives. Elekta solutions in oncology and neurosurgery are used in over 6,000 hospitals globally. Elekta, with corporate headquarters in Stockholm, Sweden, employs approximately 3,000 people globally.

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Founded in 1980, the European SocieTy for Radiotherapy and Oncology, ESTRO, is a non-profit and scientific organisation that advances all aspects of radiation oncology in order to improve patients' care in the multimodality treatment of cancer.
With over 6,500 members in and outside Europe, ESTRO supports all the radiation oncology professionals in their daily practice: radiation oncologists, medical physicists, radiobiologists, RTT (radiation therapists) and the wider oncology community. In order to achieve this, the Society promotes education, science dissemination and access to radiotherapy through its courses and workshops, conferences, publications and public affairs activities.

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gKteso specializes in the development of patient platforms with 6D control for radiotherapy with linear accelerators, among other areas. With its RPS base and RPS extended models gKteso is now entering the international medical technology market. About 25 years ago, mechanical engineer Guido Kübler, founder and Managing Director of the company, started with the development and production of 6D-controlled patient platforms for hospitals and specialist practices. As a classic OEM, the company distributes these products to distinguished international partners. The patient platform RPS extended by gKteso convinces clinics and medical centers with numerous features making radiotherapy with linear accelerator both more efficient and more comfortable for the patient. The accurate, reproducible positioning as well as the patient fixation is an essential aspect. The efficiency of the innovative system represents another important advantage, as with RPS extended up to three patients may be simultaneously prepared for radiotherapy with a linear accelerator by means of a specific satellite system.

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Mevion Medical Systems, Inc. is a leading provider of proton therapy systems for use in radiation treatment for cancer patients. Mevion's flagship product, the MEVION S250 proton therapy platform, is the only modular, single room proton therapy system currently on the market. The MEVION S250 integrates with standard radiation therapy workflow and provides a proton therapy treatment environment at a fraction of the cost, footprint and operational complexity of conventional systems.
Mevion is privately held and based in Littleton, Massachusetts, with international offices in the United Kingdom and Japan. For more information, please visit www.mevion.com.

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Mobius Medical Systems was founded by Nathan Childress, PhD, who spent six years in the clinic after graduating from MD Anderson's program. It was Dr. Childress's clinical experience that revealed areas in quality assurance that were incredibly inefficient and lacking in accuracy. Realizing that he had an opportunity to give back to his profession he developed both DoseLab software for performing important machine QA and Mobius3D for essential plan and delivery QA. Our software team is made up of an all-star group of developers, scientists, and testing engineers with experience from companies like Cisco, Yahoo! and other well-known high-tech companies. This has allowed Mobius Medical Systems to create QA software that provides levels of accuracy, efficiency and safety not found in any other offerings or methods.

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RaySearch is a world leader in the field of advanced software for radiation therapy. Our solutions are used successfully in over 2,500 clinics in more than 65 countries. Our expertise is on the cutting edge in the fight against cancer. RaySearch's vision is to improve chances of survival and quality of life for cancer patients by providing innovative software to clinics for more effective radiation therapy of cancer.
RaySearch was founded in 2000 as a spin-off from Karolinska Institute in Stockholm, Sweden. In less than fifteen years, the company has established a world-

leading position in the field of advanced software for radiation therapy.
RaySearch markets the RayStation® treatment planning system in use in more than 240 cancer centers worldwide. In addition, RaySearch's products are distributed through licensing agreements with leading medical technology companies.
RaySearch's software solutions are used by over 2,500 clinics in more than 65 countries. This means that hundreds of thousands of cancer treatments are delivered each year utilizing RaySearch's algorithms and software products.

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RTsafe is a medical technology company that has developed a new approach to quality assurance that significantly enhances the safety and accuracy of radiotherapy for cancer and other medical conditions.
We combine proven expertise in medical physics with highly accurate 3-D printing technology to create patient-specific pre-treatment phantoms.
These anatomically accurate effigies enable medical professionals to plan more precise treatment interventions and help radiotherapy technology innovators to fine-tune their products.
Our initial systems are focused on the treatment of brain tumours and head and neck cancers but we are actively pursuing application of the principle to other parts of the body.
Our co-founders and team comprise Medical Physicists, Biomedical Engineers, Software Engineers and Radiation Oncologists.
RTsafe innovating patient-specific QA solutions are Patent Pending (PCT/US2014/054838).

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Siemens Healthcare is one of the world's largest suppliers of technology to the healthcare industry and a leader in medical imaging, laboratory diagnostics and healthcare IT. All supported by a comprehensive portfolio of clinical consulting, training, and services available across the globe and tailored to customers' needs.
In fiscal 2014, Siemens Healthcare had around 43,000 employees worldwide and posted a revenue worth 11.7 billion euros, and profits of more than 2 billion euros. Further information is available on the Internet at http://www.healthcare.siemens.com

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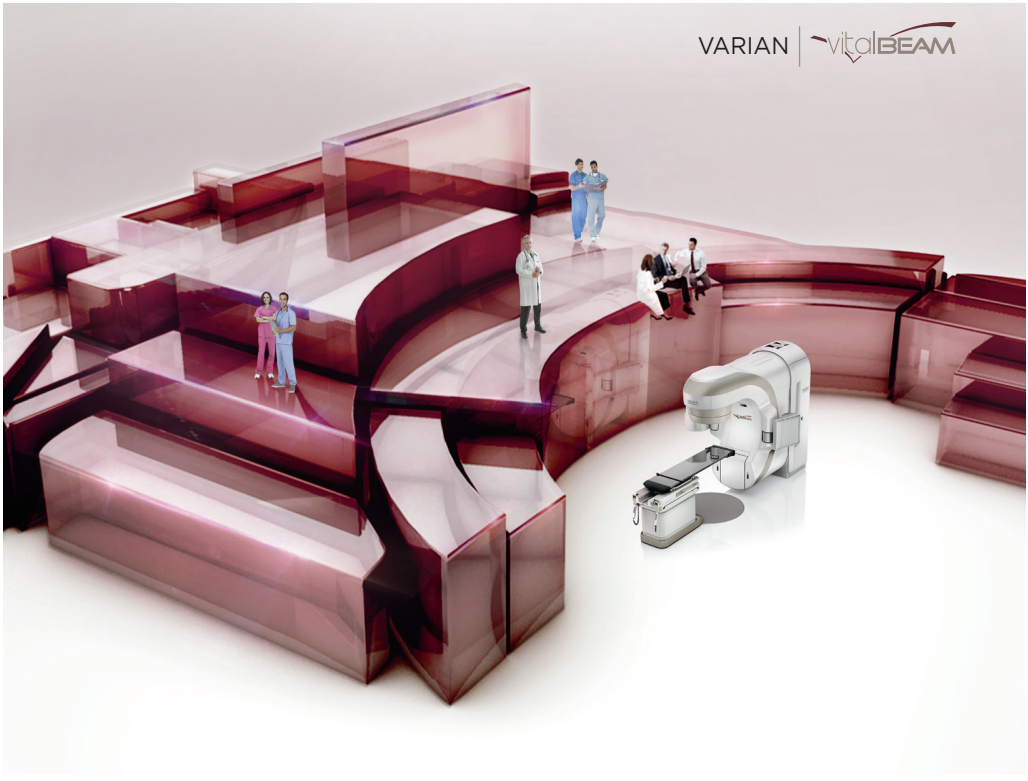

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