

Munich, March 21-23 2022

Program

Invited speakers:

Anthony Chalmers, University of Glasgow, United Kingdom - **Keynote speaker**

Paola Coan (replaced by Giacomo Barbone), Ludwig Maximilians Universität, Munich, Germany

Pierre Montay-Gruel, University of Antwerp Belgium

Gabriele Niedermann (replaced by Ludwig Dubois), University of Freiburg, Germany

Katia Parodi, Ludwig Maximilians Universität, Munich, Germany

Karl Butterworth, Patrick G Johnston Centre for Cancer Research, Queen's University Belfast, Northern Ireland, UK

Monday March 21

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| 8.30-9.00 | Registration |
| 9.00-9.10 | Opening address: K Parodi, K Lauber, G Landry, F Verhaegen (Munich, Maastricht) |
| 9.10-9.50 | KEYNOTE ADDRESS. Chair: K Lauber A Chalmers – Translational aspects of image-guided preclinical precision radiation studies: maximizing clinical relevance |
| Novel irradiation modalities. Chair: F Verhaegen | |
| 9.50-10.15 | INVITED: P Montay-Gruel - FLASH radiation therapy: long term neurocognitive benefits and GBM treatment optimization in mouse models |
| 10.15-10.27 | J Metzkes-Ng - Laser-plasma based proton accelerators for small animal pre-clinical radiation research [ONLINE] |
| 10.27 – 12.39 | J Groen - Robust, plan-based locoregional heating in small animals using the newly developed ALBA micro8 hyperthermia system |
| 10.40-11.10 | Coffee break |
| Tumor targeting. Chair: K Lauber | |
| 11.10-11.35 | INVITED: L Dubois (replacing G Niedermann) – Preclinical evaluation of radiotherapy/immunotherapy combinations and its theranostic evaluation |
| 11.35-11.47 | L Dubois - Photodynamic therapy triggered by X-rays: a novel approach to cancer treatment. |
| 11.47-11.59 | M Orth - Fractionated, CT-based irradiation plus inhibition of DNA-dependent protein kinase (DNA-PKcs) as a treatment approach for pancreatic ductal adenocarcinoma (PDAC) |
| 11.59-12.11 | M Gillespie - A Pre-Clinical Testing Platform to Develop Novel Radiotherapy Immunotherapy Treatment Combinations in Locally Advanced Rectal Cancer |
| 12.11-12.23 | T Frenzel - Improving locally ablative radiotherapy of mice with subcutaneously implanted tumor nodules |
| 12.23-12.45 | Discussion Session I- Moderators: K Lauber & F Verhaegen |
| 12.45-14.00 | Lunch |
| Technology and Imaging. Chair: S Brandenburg | |
| 14.00-14.12 | G Lovatti - Design study of a novel in-beam PET scanner for a prototype small animal precision proton irradiation platform |
| 14.12-14.24 | B Rezaeifar – Harnessing artificial intelligence to improve bioluminescence tomography |
| 14.24-14.36 | E Pérès - MRI biomarkers for the detection of radiation-induced brain injury associated to cognitive deficits |
| Progress in the field from the manufacturers. Chair: G Landry | |
| 14.36-14.51 | K Beera (Precision X-Ray) - Deep Learning in the Pre-Clinical Space |
| 14.51-15.06 | M Reinhart (Xstrahl) – Xstrahl news FLASH |
| 15.06-15.21 | B Pouran (MILabs) - VECTORCT-RT: Modular PET-SPECT-Optical-CT platform for high precision image guided radiotherapy |
| 15.21-15.50 | Coffee break |
| 15.50-16.05 | M Zeilinger (Molecubes) - Advantages of small animal PET imaging in the development of targeted radiopharmaceuticals |
| 16.05-16.20 | R Nilsson (RaySearch) - The μ -RayStation TPS for x-ray small animal irradiator-based research |
| 16.20-16.35 | E Traneus (RaySearch) - μ -RayStation for proton IMPT/FLASH and x-ray micro beam small animal research |
| 16.35-16.50 | J Perez (Varian) - Expanding FLASH Research |
| 16.50-17.05 | J Uher (Radalytica) – Robotics and photon-counting detectors for image guided irradiation |
| 17.05-17.20 | N Staut (SmART Scientific Solutions) - Current and future developments in preclinical irradiation planning |
| 17.20-17.40 | Discussion Session II - Moderators: S Brandenburg & G Landry |
| Free evening | |

Tuesday March 22

| Targeting normal tissue and tumors. Chair: L Dubois | |
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| 9.00-9.12 | M Ghita - Cardiac sub-volume targeting demonstrates regional sensitivity in the mouse heart |
| 9.12-9.24 | W Sievert - Improved overall survival of mice by reducing lung side effects after high-precision heart irradiation using a Small Animal Radiation Research Platform |
| 9.24-9.36 | N Brix - Local and systemic immune responses upon radiotherapy: Combined experiences from preclinical animal studies and the clinical IORT-MC trial |
| 9.36-9.48 | R Bütof - Orthotopic glioblastoma models for evaluation of the CTV concept |
| 9.48-10.00 | R d'Alonzo - Fractionated radiotherapy and its effect on the tumor microenvironment: a small animal study [ONLINE] |
| 10.00-10.12 | J Wiedemann - The necessity of heart sparing for cardiopulmonary recovery after thoracic irradiation investigated in a rat model system of precise lung and heart proton irradiation |
| 10.12-10.24 | J Malimban - External validation of deep learning models for mouse thorax autocontouring |
| 10.24-11.00 | Coffee break |
| Imaging & Technology. Chair: K Parodi | |
| 11.00-11.25 | INVITED: G Barbone (replacing Paola Coan) – 3D multi-scale X-ray phase contrast CT as a preclinical tool to study the effects of radiotherapy from organ down to cellular level |
| 11.25-11.45 | Special guest: J Wong – Considerations to translate FLASH radiation treatment |
| 11.45-11.57 | J Lascaud - Development of a multimodal 3D printed mouse phantom for quality assurance of ionoacoustics for range verification in precision preclinical proton radiation research |
| 11.57-12.09 | B Epel - A 25 mT Preclinical Electron Paramagnetic Resonance Oxygen Imager, JIVA-25, and its application to small animal image-guided radiotherapy |
| 12.09-12.21 | S May - Developing image-guided precision radiotherapy in preclinical liver cancer models |
| 12.21-12.33 | K Brown - Preclinical Radiomics: A novel approach linking imaging with biological outcomes in mouse models |
| 12.33-12.50 | Discussion Session III – Moderators: L Dubois & K Parodi |
| 12.50-14.00 | Lunch |
| Dosimetry&Technology. Chair: E Traneus | |
| 14.00-14.25 | INVITED: K Butterworth – 15 Years of small animal image-guided radiotherapy research; Trends, impact & opportunities |
| 14.25-14.37 | K Stevenson - Optimising a cranial window intravital imaging model for glioblastoma |
| 14.37-14.49 | M Duda - Dual Energy CT Implementation at a Small Animal Radiation Research Platform (SARRP) |
| 14.49-15.11 | I Silvestre Patallo - Development and implementation of an end-to-end dosimetry test for preclinical research with small animals' irradiation platforms |
| 15.11-15.23 | M Wegner - Development of a modular, additive manufactured mouse phantom for quality assurance of a small animal irradiation device |
| 15.23-15.35 | A Gasparini - A platform for customized 3D printed heterogeneous mouse phantoms, towards mouse-free validation in preclinical radiotherapy |
| 15.35-16.00 | Coffee break |
| Proton/carbon beam studies. Chair: M Pinto | |
| 16.00-16.25 | INVITED: K Parodi – Development of a novel platform for precision small animal image-guided proton irradiation |
| 16.25-16.37 | S Brandenburg - IMPACT: image guided particle irradiations for preclinical research |
| 16.37-16.49 | E Beyreuther - Precise image-guided proton irradiation of mouse brain sub-volume |
| 16.49-17.11 | J Bortfeldt - Development of a Small Animal Proton Computed Tomography System using High Precision Single Particle Tracking |
| 17.11-17.23 | J Bohacova - Irradion – Portable Small Animal Particle Irradiation and Imaging Unit |
| 17.23-17.35 | B Knäusl - Image guided small-animal scanned proton and x-ray reference irradiation - dosimetry, treatment planning and workflow aspects: experience when setting up a facility |
| 17.35-17.47 | S Valable - Comparative preclinical study of the effect of proton therapy versus conventional radiotherapy on circulating leukocytes in a context of brain tumour irradiation |
| 17.47-18.00 | Discussion Session IV – Moderators: E Traneus & M Pinto |

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| 19.30-20.00 20.00-... | Symposium Dinner: Restaurant Stemmerhof (Austrian cuisine), Pliganserstrasse 6, Munich https://www.stemmerhof.de/altischeune.html Drinks Dinner |
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Wednesday March 23

| Targeting normal tissue and tumors. Chair: A Chalmers | |
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| 9.00-9.12 | J Bécam - The physical activity attenuates the brain irradiation-induced cerebral and skeletal muscle injuries in the adult rat |
| 9.12-9.24 | S Dobiash - Radiation response and acute toxicity after high-precision radiotherapy in an orthotopic pancreatic tumor mouse model |
| 9.24-9.36 | K Lauber (for U Schötz) - Prognostic biomarkers and targets for personalization of radiotherapy of HNSCC: CD44v6 |
| 9.36-9.48 | A Dietrich - MALDI-imaging to study late proton radiation-induced brain injury |
| 9.48-10.00 | T Hellevik - Exploring the impact of radiotherapy on Cancer-Associated Fibroblasts by antigen-specific PET-imaging |
| 10.00-10.12 | E Curley - Validating image Guided Treatment Plans in Genetically Engineered Mouse Models |
| 10.12-10.24 | I Telarovic - Radiotherapy treatment volume in a mouse model of radiation-induced lymphopenia |
| 10.24 - 10.36 | S Nexhipi - Single cell analysis of microglia activation in proton-irradiated mouse brains |
| 10.36-11.10 | Coffee break |
| Dosimetry&Imaging&Technology. Chair: A Gasparini | |
| 11.10-11.22 | T Frenzel - Long term experience with a dedicated web-based database and evaluation tool for monitoring of small laboratory animal radiation experiments |
| 11.22-11.34 | M Reinhart - Validation of Monte Carlo and Superposition-Convolution Dose Engines in MuriPlan 3.0.0 |
| 11.34-11.46 | K Schnürle - CMOS Integration Mode Proton Imaging for a Small Animal Irradiator |
| 11.46-11.58 | A Vaniqui - Dose to water versus dose to medium from cavity theory applied to small animal irradiation with kilovolt x-rays |
| 11.58-12.10 | N Kurichyanil - Active beam delivery system for the small animal irradiation platform SIRMIO |
| 12.10-12.22 | E Diffenderfer - Simulating proton PBS at FLASH dose rates for small animal radiobiology |
| 12.22-12.40 | Discussion session V – Moderators: A Chalmers & A Gasparini |
| 12.40-13.00 | K Parodi, K Lauber, G Landry, F Verhaegen – Best Young Speaker Awards & closing the Symposium |

Posters

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| 1 | S Kampfer | Fractionated irradiation in an orthotopic pancreatic tumor mouse model: can skin markers increase the setup accuracy? |
| 2 | K Brown | Evaluation of the injectable fiducial marker (BioXmark) in small animal image guided radiotherapy [replaced by new topic, but keep poster too] |
| 3 | R Jager | Review of 10 year of commissioning of commercial x-ray-based image guided small animal irradiation systems |
| 4 | T Rösch | Laser-driven ion source development at the Centre for Advanced Laser Applications |
| 5 | M Bellezzo | Irradion – A novel platform for imaging and irradiation of small animals with photons and protons |
| 6 | M Schneider | An optimized setup for preclinical proton experiments |
| 7 | G Landry | Validation of an image-guided preclinical treatment planning system for novel degrees of freedom |
| 8 | A Gelil | Evaluation, validation and quantitative assessment of a small-animal computed tomography imaging system for the central implementation of image-guided treatment planning, irradiation and response assessment |
| 9 | W Kozłowska | A comparison of proton linac system parameters needed for transmission and conformal FLASH irradiation of small animals |
| 10 | M Pinto | Development and validation of a treatment planning framework based on μ RayStation for a preclinical proton irradiation platform |
| 11 | N Cini | A Small Animal Irradiation Device Compatible with Clinical Proton Treatment Room for In-vivo Research |
| 12 | A DeCarlo | Radiation Sensitization of High-Risk Medulloblastoma |