

# MICROS 2017

## Scientific Programme

Sunday, November 5, 2017

15.00-18.00 Registration at the "Congress Centre" – "Cultural Center Don Orione Artigianelli", Dorsoduro-Zattere, Venice (Venezia), Italy

*Registration Desk will remain open from Monday Nov.6 to Friday Nov.10 throughout the Symposium Scientific Sessions.*

17.30-19.00 **Opening Ceremony:**

Opening Addresses

Opening lecture: "*H.H. Rossi Lecture*":

**Hans-Georg Menzel**, Germany and ICRU

*The complexity of quantities in radiation dosimetry. The issue of radiation quality [50min]*

19.30 Welcome Dinner - at the "San Trovaso Restaurant", Dorsoduro-Zattere, Venice

Monday, November 6, 2017

8.30-9.30 **Refresher Course**

*Chair : M. Davidkova*, Czech Rep.

**Michael Dingfelder**, USA (*Invited Speaker*)

*Track structure simulations: gold nano-particles [50min]*

9.30-11.00 **Session I - Physics and Chemistry of radiation tracks**

Chair : **D.T. Goodhead**, UK

**Werner Friedland**, Germany (*Invited Speaker*)

*Mechanistic modelling of subcellular and cellular radiation effects with PARTRAC*  
[30min]

**Caterina Monini**, France

*NanOx, a new multiscale model to predict biological effects of ionizing radiation* [20min]

**Nicolas Tang**, France (*Micros2017 award*)

*Simulation of early radiation-induced DNA damage on different types of cell nuclei*  
[20min]

**Fabiano Vasi**, Switzerland

*A nanodosimetric based mechanistic cell survival model applied to charged particle survival curves* [20min]

11.00-11.30 *Coffee-Break*

11.30-13.00 **Session II - DNA damage and repair /experiments and modelling**

Chair : **Y. Furusawa**, Japan

**George Iliakis**, Germany (*Invited Speaker*)

*Defined Biological Models of High LET Radiation Lesions* [30min]

**Reza Taleei**, USA (*RRS award*)

*Modeling DSB and SSB repair kinetics for DNA damage induced from particle therapy*  
[20min]

**Naoya Shikazono**, Japan

*Detection and mutagenic potential of clustered DNA lesions* [20min]

**Andris Abramenkovs**, Sweden

*Measuring DNA double strand breaks by flow cytometric analysis of DNA-PKcs phosphorylation* [20min]

13.00 *Lunch* - at the "San Trovaso Restaurant"

**14.30-16.30 Session III - Radiation Action/RBE and Radiation Quality**

Chair: **G. Iliakis**, Germany

**Kevin Prise**, UK (*Invited Speaker*)

*From DNA damage complexity to an RBE for protons, challenges in translation* [30min]

**Thomas Friedrich**, Germany [*RRS award*]

*Unveiling coexisting spatial scales of radiation damage interaction and their relevance for the RBE* [20min]

**Mario Pietro Carante**, Italy [*Micros2017 award*]

*Predicting biological effects along hadrontherapy dose profiles by the BIANCA biophysical model* [20min]

**Carsten Herskind**, Germany

*A model of radioresistance and cell survival curve shape based on cell-cycle progression and damage tolerance* [20min]

**Sofia Barbieri**, Italy [*Micros2017 award*]

*Mechanistic study of low- and high-LET radiation induced DNA damages: benchmarking Monte Carlo simulations with experimental results* [20min]

**16.30-17.00 Coffee-Break**

**17.00-18.30 Session IV - Systems Biology in Radiation Effects**

Chair : **M. H. Barcellos-Hoff**, USA

**Marc S. Mendonca**, USA (*Invited Speaker*)

*Metabolic Reprogramming Increases Radiation-induced Cell Killing in Pancreatic Cancer* [30min]

**Maddalena Mognato**, Italy

*MiRNA-mediated modulation of DNA double-strand repair genes in  $\gamma$ -irradiated human cancer cells* [20min]

**Andrea Ottolenghi**, Italy

*What roles for track structure and microdosimetry in the era of omics, systems biology and holistic approaches?* [20min]

**Pavel Kandrát**, Germany

*Mechanistic modelling predicts anti-carcinogenic radiation effects on intercellular signalling in vitro turn pro-carcinogenic in vivo [20min]*

**Tuesday, November 7, 2017**

8.30-9.30     **Refresher Course**

*Chair : M. S. Mendonca, USA*

**Jean-Pierre Pouget**, France *(Invited Speaker)*

*Role of oxidative mechanisms in targeted and non-targeted effect of radiation therapy [50min]*

9.30-10.45     **Session V - Genomic instability, signalling, epigenetics effects**

*Chair : J-P. Pouget, France*

**Carmel Mothersill**, Canada *(Invited Speaker)*

*The role of secondary excitation decay and exosomes in generation of bystander effects [30min]*

**Alisa Kobayashi**, Japan *[Micros2017 award]*

*Bystander WI38 normal lung fibroblast cells modulate double strand breaks repair of microbeam targeted A549 cells through gap junction intercellular communication [20min]*

**Gabriele Babini**, Italy *[Micros2017 award]*

*Perturbed temporal dynamics of MIRNOME profiles of endothelial cells irradiated with low dose of gamma-rays [20min]*

10.45-11.15     **Coffee-Break**

**11.15-13.00 Session VI - Low-dose effects /non-linear mechanisms**

Chair : **C. Mothersill**, Canada

**Mary-Helen Barcellos-Hoff**, USA (Invited Speaker)

*The Contribution of Non-targeted Effects to Low-Dose Radiation Carcinogenesis: New insights on immune system dysfunction [30min]*

**Yuya Hattori**, Japan

*A mathematical model of enhanced DNA repair effect on cell survival in radiation-induced adaptive responses [20min]*

**Balázs Madas**, Hungary

*Computational modelling of low dose hyper-radiosensitivity applying the principle of minimizing mutation rate [20min]*

**Masatoshi Ukai**, Japan

*Novel analytical study for reaction intermediates in the primary radiation interaction of DNA using a synchrotron radiation induced luminescence spectroscopy [20min]*

13.00 Lunch - at the "San Trovaso Restaurant"

**14.30-16.00 Session VII - Auger Electrons and Internal Emitters/Nanoparticles**

Chair : **M. Dingfelder**, USA

**Sandrine Lacombe**, France (Invited Speaker)

*Effects of nanoparticles combined with medical ion radiation [30min]*

**Hilary Byrne**, Australia [RRS award]

*Impact of nanoparticle clustering on energy deposition, ionisations and dose enhancement [20min]*

**Tobias Dressel**, Germany

*An algorithm to determine the nanodosimetric impact of gold nanoparticle concentrations on cell models [20min]*

**Nora Hocine**, France

*Distribution of Sr-90 in the bone and cellular dosimetry using MCNPX and PENELOPE Monte Carlo codes [20min]*

16.00-16.30 *Coffee-Break*

16.30-18.30 **Session VIII - POSTER SESSION** (Presentation of the posters with odd ID numbers)

**Wednesday, November 8, 2017**

8.30-9.30 **Refresher Course**

*Chair : V. Bashkirov, USA*

**Anatoly Rosenfeld**, Australia (Invited Speaker)

*Dosimetry of synchrotron micro-and charged particle mini-therapeutic beams [50min]*

9.30-11.00 **Session IX - Space Radiation Research**

*Chair : M. Hill, UK*

**Francis A. Cucinotta**, USA (Invited Speaker)

*Non-Target Effects Alter Space Radiation Risk Dependence on Mission Duration [30min]*

**Yoshiya Furusawa**, Japan

*Dose-rate and cell killing sensitivity of high-LET Ion Beam [20min]*

**Alessio Parisi**, Belgium

*Microdosimetric modeling of the relative efficiency of thermoluminescent detectors exposed to charged particles [20min]*

**Giorgio Baiocco**, Italy

*Innovative solutions for personal radiation shielding in space: the PERSEO project [20min]*

11.00-11.30 *Coffee-Break*

**11.30-13.00 Session X - Neuro-Radiobiology / CNS effects**

*Chair : B. Stenerlow, Sweden*

**Francis A. Cucinotta** *(Invited Speaker)*

*Track Structure and the Degradation of Neuron Morphology in Hadron Therapy and Space Radiation Exposures [30min]*

**Francesco Tommasino**, Italy [SIRR award]

*A new facility for proton beam irradiation at the Trento proton therapy centre [20min]*

**Charbel Koumeir**, France

*The radiobiological platform at cyclotron Arronax [20min]*

**Martin Sefl**, Czech Republic [Micros2017 award]

*GEANT4-Based dosimetry of biological samples in microtubes [20min]*

13.00            *Lunch - at the "San Trovaso Restaurant"*

14.30-19.00    *Social Tour*

**Thursday, November 9, 2017**

**8.30-9.30 Refresher Course**

*Chair : M. Eidemuller, Germany*

**David Brenner**, USA *(Invited Speaker)*

*Mechanistic models for radiation carcinogenesis [50min]*

**9.30-10.45 Session XI - Experimental and Computational Micro- and Nano-dosimetry**

*Chair : A. Rosenfeld, Australia*

**Chiara La Tessa**, Italy *(Invited Speaker)*

*The role of microdosimetry in hadrontherapy and space radioprotection [30min]*

**Davide Bortot**, Italy

*A novel TEPC for microdosimetry at nanometric level: response against 62 AMeV He-4 ions [20min]*

**Jasper Kouwenberg**, Netherland

*Experimental Alpha Microdosimetry using Fluorescent Nuclear Track Detectors [20min]*

10.45-11.15 *Coffee-Break*

11.15-13.00 **Session XII - Experimental and Computational Micro- and Nano-dosimetry**  
*(continuation)*

Chair : **A. Waker**, Canada

**Carmen Villagrasa**, France *(Invited Speaker)*

*Assessing the contribution of cross-sections to the uncertainty of MonteCarlo calculations in micro- and nano-dosimetry [30min]*

**Fernanda Villegas**, Sweden

*The role of cavity size in microdosimetric specific energy distributions and linear-quadratic parameterization of cell survival [20min]*

**Marcin Pietrzak**, Poland

*On the two modes of nanodosimetric experiments - exercise with JET counter [20min]*

**Anna Selva**, Italy

*Nanodosimetry as a bridge between physics and radiobiology [20min]*

13.00 *Lunch - at the "San Trovaso Restaurant"*

14.30-16.00 **Session XIII - X-rays and Particles' Micro- and Mini-beams: biological and clinical applications**

Chair : **D. Brenner**, USA

**Peter O'Neill**, UK *(Invited Speaker)*

*Tracking the fate of cellular DNA damage in real-time following microbeam irradiation with ultrasoft X-rays [30min]*



**Radu Vasilache**, Romania

*The development of a novel array detectors for overcoming the dosimetry challenges of measuring in very short pulsed charged particle beams - the ELIDOSE project [20min]*

**Matthias Würll**, Germany

*Development of two prototype spectrometers for laser-accelerated proton bunches [20min]*

**Judith N. Rivera**, USA *[RRS award]*

*Nano-scintillating fiber optic dosimetry system for real-time microbeam radiation peak dose measurement [20min]*

16.00-16.30 *Coffee-Break*

16.30-18.30 **Session XIV - POSTER SESSION** (Presentation of the posters with even ID numbers)

20.30 Social Dinner

**Friday, November 10, 2017**

8.30-9.30 **Refresher Course**

*Chair : W. Friedland, Germany*

**Emanuele Scifoni**, Italy *(Invited Speaker)*

*Biologically oriented treatment planning [50min]*

9.30-10.45 **Session XV - Risk Assessment**

*Chair : H.G. Menzel, Germany*

**Dudley T. Goodhead**, UK *(Invited Speaker)*

*Biological effectiveness of lower-energy photons for cancer risk, with reference to the new NCRP report [30min]*

**Markus Eidemüller**, Germany

*PASSOS: methodology and software to assess long-term health risks after breast cancer therapy and heart diagnostic procedures [20min]*

**Marie Davidkova**, Czech Republic

*Properties of Nuclear Track Emulsions and their use in Neutron Dosimetry [20min]*

10.45-11.15 *Coffee-Break*

11.15-13.30 **Session XVI - Advances in Radiotherapy including Hadrontherapy, BNCT, Radio-immunotherapy**

*Chair : M. Waligorski, Poland*

**Leszek Grzanka**, Poland

*The confusing role of LET in radiation therapy - will microdosimetry help ? [20min]*

**Tatsuhiko Sato**, Japan

*Application of stochastic microdosimetric kinetic model to boron neutron capture therapy [20min]*

**Eric Diffenderfer**, USA

*A time-resolved mini-TEPC measurement and data acquisition system for therapeutic proton beams - development and validation [20min]*

**Giulio Magrin**, Austria

*Ion-beam therapy and microdosimetry: effects of detector shapes and materials [20min]*

**Michal Pomorski**, France

*Single Crystal CVD Diamond Membrane Microdosimeters for Hadron Therapy [20min]*

**Marcello Serra**, Italy

*Characterization of a small FOV portable GC: MediPROBE [20min]*

*Symposium Closure*

13.30 *Lunch - at the "San Trovaso Restaurant"*

15:00 - Satellite Event

S.I.R.R. Annual General Meeting