

The Joint International Symposium on EPR dosimetry and dating (EPR) and the International Conference on Biological Dosimetry (BioDose)

**11 – 15 June 2018 | Munich | Germany
Neuherberg Campus of the Helmholtz Centre Munich**

Program



HelmholtzZentrum münchen
German Research Center for Environmental Health



Bundeswehr Institute of Radiobiology
affiliated to the University of Ulm

Under the auspices of



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Organization and Imprint

Venue

Helmholtz Zentrum München
Deutsches Forschungszentrum für Gesundheit und Umwelt (GmbH)
Ingolstaedter Landstrasse 1
D-85764 Neuherberg

Hosting society

International Association of Biological and EPR Radiation Dosimetry (IABERD)

Conference chairs

Dr. Albrecht Wieser
Helmholtz Zentrum München, Institute of Radiation Protection
Ingolstädter Landstraße 1, 85764 Neuherberg, Germany
Phone +49-89-3187-3069, Fax +49-89-3187-3363
Email: wieser@helmholtz-muenchen.de

Dr. Ulrike Kulka
Federal Office for Radiation Protection

Prof. Dr. Matthias Port
Bundeswehr Institute of Radiobiology affiliated to the University of Ulm

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Albrecht Wieser, HMGU
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Matthias Port, BIR
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Ulrike Kulka, BfS

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Harold Swartz, USA
François Tromprier, France
Albrecht Wieser, Germany

Professional congress organizer

event lab. GmbH
Dufourstr. 15, D-04107 Leipzig, Germany
Telefon: +49 (0)341 24 05 96-50
Telefax: +49 (0)341 24 05 96-51
info@eventlab.org, <http://www.eventlab.org/>

Welcome note

Dear Participant,



It is a pleasure for us to welcome you to the EPRBioDose 2018 in Munich. The Joint International Symposium on EPR dosimetry and dating (EPR) and the International Conference on Biological Dosimetry (BioDose) offers an excellent opportunity for interdisciplinary scientific exchange in the field of retrospective dosimetry. As perfectly made for this conference the scientific location Munich North covers the physical as well as the biologic aspects and the topics of the International Association of Biological and EPR Radiation Dosimetry (IABERD). Among many other activities the Helmholtz Centre Munich is specialized in EPR dosimetry, while the Federal Office of Radiation Protection and the Institute of Radiobiology are dedicated to cytogenetics and other means of biodosimetry.

Most of the presentations at the EPRBioDose 2018 deals with indirect measurement of absorbed dose and its impact on human health. The applied methods are different but aim in the common goal to predict radiation damage in patients and in occupationally, environmentally or accidentally exposed persons. Within several scientific boards the question about the utility of retrospective dosimetry are lively discussed. In order to fulfil the complex needs of radiation casualties an interdisciplinary approach is mandatory. Within the diagnostic area, retrospective dosimetry with all its facets is an indispensable toolset to support stakeholders to make the right decisions. Many published data indicate that only a multiparametric and integrative approach is suitable to deal with the different scenarios in radiation accidents or even attacks.

Building networks like RENEB, REMPAN, RANET or EURADOS are of great use if we prepare for large events, you will have the opportunity to meet the protagonists in person.

We are certain that you will enjoy being in Munich, the capital city of the Free State of Bavaria, for this exciting conference. We look forward to personally welcome you as a participant to this thrilling meeting.

Albrecht Wieser

Ulrike Kulka

Matthias Port

Conference co-chairs

Scientific program – overview, morning

Sunday, 10th	Monday, 11th	Tuesday, 12th	Wednesday, 13th	Thursday, 14th	Friday, 15th
<p>please note: * invited only</p>		<p>7.00 - 8.30</p> <p>IABERD* Executive committee HMGU campus, BFS bldg., Room E130</p> <p>Registration and poster mounting from 8.00</p>			<p>7.00 - 8.30</p> <p>IABERD* Executive committee HMGU campus, BFS bldg. Room E130</p>
	<p>09.30 - 17.00</p> <p>WHO BioDoseNet*</p> <p>HMGU campus, BFS bldg, Room: E128/129</p>	<p>8.45 - 9.10</p> <p>Opening ceremony</p>	<p>8.30 - 10.15</p> <p>EPR dosimetry & dating</p>	<p>8.30 - 10.30</p> <p>Biological & EPR dosimetry for emergency I</p>	<p>8.30 - 10.30</p> <p>Biological & EPR dosimetry for medicine I</p>
	<p>17.30-19.00</p> <p>Open RENEB meeting</p> <p>HMGU campus, BFS bldg, Room: E128/129</p>	<p>Invited lectures</p>	<p>10.15 - Group Photo</p>	<p>10.30 - 11.00 Coffee break</p>	
	<p>10.00 - 17.00</p> <p>ISO WG 18 - EPR*</p> <p>Bldg. 34, Seminar Room 119</p>	<p>11.00 - 12.30</p>	<p>11.00 - 12.30</p>	<p>11.00 - 12.30</p>	<p>11.00 - 12.00</p>
		<p>Biomarker-I</p>	<p>Poster exhibition/presentation</p>	<p>Biological & EPR dosimetry for</p>	<p>Biological & EPR dosimetry for medicine II</p>
		<p>during break: IABERD Scientific committee; Meeting room next to the Auditorium</p>	<p>12.30 - 13.30 Lunch break</p>		<p>12.00 - 12.15</p> <p>CLOSURE</p>
					<p>12.15-13.15</p> <p>IABERD GA Auditorium</p>

Scientific program – overview, afternoon

Sunday, 10th	Monday, 11th	Tuesday, 12th	Wednesday, 13th	Thursday, 14th	Friday, 15th
14.00 - 18.00 RENEB GA meeting* Bundeswehr Medical Office, Institute of Radiobiology	09.30 - 17.00 WHO BioDoseNet* HMGU campus, BFS bldg, Room: E128/129	13.30 - 15.15 Biomarker-II	Departure from HMGU 13.45	13.30 - 14.00 Biological & EPR dosimetry for emergency II (cont)	ISO WG 18* 14.00 - 18.00 I Biodosimetry HMGU campus, BFS bldg, Room: E128/129 14.00 - 18.00 II EPR Seminar Room, Bldg 34, room 119.
	17.30-19.00 Open RENEb meeting HMGU campus, BFS bldg, Room: E128/129	15.15 - 15.45	Conference tour	14.00 - 15.45	
	10.00 - 17.00 ISO WG 18 - EPR* Bldg 34, Seminar Room 119	#4 Biological & EPR dosimetry for epidemiology 15.45 - 16.15 Coffee break 15.15 - 17.15 Biological & EPR dosimetry for		Networking in Biological & EPR dosimetry, QA&QM 15.45 - 16.15 Coffee break 16.15 - 17.45 Poster exhibition/presentation	
		from 17.30 Welcome Reception HMGU canteen		19.30 Conference dinner at "Zum Augustiner"	

Sunday, 10.06.18

14.00-18.00 RENEb General Assembly meeting (invited)
Bundeswehr Medical Office,
Institute of Radiobiology

Monday, 11.06.18

09.30-17.00 WHO BioDoseNet (invited)
HMGU Campus, BfS building, Room E128/129

17.30-19.00 **Open** RENEb meeting
HMGU Campus, BfS building, Room E128/129

10.00-17.00 ISO Working Group 18 – EPR (invited)
HMGU Campus, building 34, Seminar Room 119

Tuesday, 12.06.18

07.00-08.30 IABERD executive committee (invited)
HMGU Campus, BfS building, Room E130

12.30-13.30 IABERD scientific committee (invited)
Meeting room next to Auditorium

Friday, 15.06.18

07.00-08.30 IABERD executive committee (invited)
HMGU Campus, BfS building, Room E130

12.15-13.15 IABERD general assembly (invited), Auditorium

14.00-18.00 ISO Working Group 18 - Biological Dosimetry (invited)
HMGU Campus, BfS building, Room E128/29

14.00-18.00 ISO Working Group 18 - EPR (invited)
HMGU Campus, building 34 Seminar Room 119

Scientific program - Tuesday, 12th June 2018

from 8.00 **Registration and poster mounting**

Opening ceremony

Welcome/Greetings

Chairs: Ulrike Kulka, Matthias Port, Albrecht Wieser

08.45-09.10 Dr. Werner Kirchinger, Helmholtz Center Munich, Institute of Radiation Protection, Neuherberg, Germany

PD Dr. Michaela Kreutzer, Head of Division "Effects and risks of ionizing and nonionizing radiation", Federal Office of Radiation Protection, Neuherberg, Germany

Colonel (MC) Dr. Hans-Ulrich Holtherm, MD, MSc (Univ. London), Director, Military Medical Science and Medical Service Capability Development, and Deputy Commandant, Bundeswehr Medical Academy, Munich, Germany

Dr. Zhanat Carr, World Health Organization, Geneva, Switzerland

09.10-10.30 **Invited lectures**

09.10-09.30 Beginning and development of the International EPR and
OP-01 Biological Dosimetry Conference Series - a flashback
Dieter Regulla, formerly Institute of Radiation Protection

09.30-10.00 The Future of Biodosimetry
OP-02 Harold Swartz, Geisel School of Medicine at Dartmouth

10.00-10.30 An Overview of Cytogenetic Dosimetry
OP-03 David Lloyd, Public Health England

10.30-11.00 **Coffee break, Foyer**

11.00-12.30 **Session: Biomarker I**

Chairs: Elizabeth Ainsbury, Ruth Wilkins

11.00-11.30 Metabolomics for radiation biodosimetry: designing a robust
OP-04 radiation signature
Evagelia C. Laiakis, Georgetown University Washington

11.30-11.45 Biomarkers for assessing radiation injury identified using
OP-05 nonhuman primate model
Vijay Singh, SRD - AFRRI, PHA - SOM

11.45-12.00
OP-06 Dotting the Eyes: Mouse strain dependency of the lens epithelium
to low dose radiation-induced DNA damage
Stephen Barnard^{1,2}, Sophie Lloyd^{1,3}, Michele Ellender¹, Liz
Ainsbury¹, Jayne Moquet¹, Roy Quinlan²
¹PHE, ²Durham University, ³Birmingham University

12.00-12.15
OP-07 Impairment and recovery of GI function following lower hemi-body
radiation exposure in a Göttingen minipig model
Amandeep Kaur^{1,2}, Gabriele A.M. ten Have³,
Nicolaas E.P. Deutz³, Cara H Olsen², Maria Moroni^{1,2}
¹AFRRI, ²USUHS, ³Texas A&M University

12.15-12.30
OP-08 Validating the gene expression assay for biological dosimetry in
emergencies involving exposure to mixed beams of high and low
LET radiation
Dante Olofsson¹, Lei Cheng¹, Lovisa Lundholm¹, Andrzej
Wojcik¹
¹Stockholm University

12.30-13.30 Lunch break, Foyer

13.30-15.15 **Session: Biomarker II**
Chairs: William Blakely, Nataliya Maznyk

13.30-13.45
OP-09 Cytogenetic Biodosimetry in Experimental Modeling o
Inhomogeneous, Mixed Dose Radiation Exposure
Volodymyr Vinnikov,
Grigoriev Institute for Medical Radiology of National Academy
Medical Sciences of Ukraine

13.45-14.00
OP-10 An improved statistical methodology for analysis of translocations
for biodosimetry purposes
Manuel Higuera¹, Elizabeth A. Ainsbury², David Endesfelder³
¹Basque Center for Applied Mathematics, ²PHE, ³Federal Office
for Radiation Protection

14.00-14.15
OP-11 Study of chromosome aberrations as biomarkers of partial body
exposure in cancer patients in early stages of radiotherapy course
Nataliya Maznyk¹, Tetiana Sytko¹, Nataliya Pshenichna¹, Olena
Sukhina¹, Viktor Starenkiy¹

- 1Institute for Medical Radiology of National Academy Medical Sciences of Ukraine
- 14.15-14.30
OP-12 EURADOS review on retrospective dosimetry techniques for internal exposure to ionizing radiation
Augusto Giussani¹, Maria Antonia Lopez², Antonella Testa³
1Bundesamt für Strahlenschutz, 2CIEMAT, 3ENEA
- 14.30-14.45
OP-13 Biomarkers for use in early and late biodosimetry using lymphocytes from relapsed and refractory neuroblastoma patients treated with targeted 131I-MIBG.
Angela C. Evans¹, Haley R. Segelke¹, Jackson Swift², Andrew Vaughan², Katherine K. Matthay³, M. Meaghan Granger⁴, Araz Marachelian⁵, Daphne A. Haas-Kogan^{6,7}, Steven G. DuBois⁶, Matthew Coleman^{1,2}
1Lawrence Livermore National Laboratory, 2University of California Davis, 3University of California San Francisco, 4Cook Children's Hospital, 5Children's Hospital Los Angeles, 6Dana-Farber Cancer Institute, 7Brigham and Women's Hospital
- 14.45-15.00
OP-14 A simulation study: Comparison of statistical methods for uncertainty estimation in biological dosimetry
David Endesfelder¹, Ursula Oestreicher¹, Teresa Mangold¹, Ulrike Kulka¹
1Bundesamt für Strahlenschutz
- 15.00-15.15
OP-15 A Novel and Sensitive Blood Test for Radiation Biodosimetry
Naduparambil Jacob¹, Sagar Bhayana¹, Marshleen Yadav¹, Arnab Chakravarti¹
1The Ohio State University
- 15.15-17.15**
Chairs: **Session: Biological and EPR dosimetry for epidemiology**
Paola Fattibene, Antonella Testa
- 15.15-15.30
OP-16 Establishment and validation of gene expression biodosimetry based on age and gender in human peripheral blood models of radiation exposure
Shuang Li¹, Xue Lu¹, Jiang-Bin Feng¹, Mei Tian¹, Ling Gao¹, De-Qing Chen¹, Qing-Jie Liu¹

1National Institute for Radiological Protection, Chinese Center for Disease Control and Prevention

15.30-15.45
OP-17

Chromosome aberration studies of peripheral lymphocytes obtained from orthopaedic surgeons involved in X-ray fluoroscopic surgery

Tomisato Miura^{1,2}, Naoki Echigoya³, Yohei Fujishima¹, Valerie See Ting Goh¹, Kentaro Ariyoshi², Kosuke Kasai¹, Akifumi Nakata⁴, Yasuyuki Ishibashi⁵, Mitsuaki A. Yoshida²

¹Hirosaki University Graduate School of Health Sciences,
²Hirosaki University Institute of Radiation Emergency Medicine,
³Hirosaki Memorial Hospital, ⁴Hokkaido Pharmaceutical University School of Pharmacy, ⁵Hirosaki University School of Medicine

15.45-16.15

Coffee break, Foyer

16.15-16.30
OP-18

Contribution of EPR and FISH methods to dose reconstruction for the Southern Urals Population

Marina Degteva¹, Bruce Napier²

¹Urals Research Center for Radiation Medicine, ²Pacific Northwest National Laboratory

16.30-16.45
OP-19

Model for estimation of mean doses absorbed in peripheral blood T-lymphocytes after local bone marrow exposure (based on the Techa River study)

Evgenia Tolstykh¹, Marina Degteva¹, Alexandra Vozilova¹, Lynn Anspaugh²

¹Urals Research Center for Radiation Medicine, ²University of Utah

16.45-17.00
OP-20

Application of EPR tooth dosimetry for validation of the uncertainties of calculated external doses: experience in dosimetry for the Techa River cohort

Elena Shishkina¹, Alexandra Volchkova², Denis Ivanov^{3,4}, Paola Fattibene^{3,5}, Albrecht Wieser⁶, Bruce Napier⁷

¹Chelyabinsk State University, ²URCRM ³Institute of Metal Physics, Urals Division of Russian Academy of Sciences, ⁴Ural Federal University, ⁵Istituto Superiore di Sanità and Istituto

Nazionale di Fisica Nucleare 6Helmholtz Zentrum München,
7Pacific Northwest National Laboratory

17.00-17.15
OP-21

Assessment of exposure doses to uranium personnel of the mining enterprise and the population of the adjacent territories of Northern Kazakhstan using tooth enamel EPR method
Kassym Zhumadilov¹, Alexander Ivannikov², Artem Khailov², Sergei Orlenko², Baurzhan Abyshev¹, Valeriy Skvortsov², Valeriy Stepanenko², Shin Toyoda³, Masaharu Hoshi⁴
¹L.N. Gumilyov Eurasian National University, ²A.F. Tsyb Medical Radiological Research Center, ³Okayama University of Science
⁴Hiroshima University

17.30-19.00

Welcome reception HMGU canteen (Mensa)

08.30-10.30

Session: EPR dosimetry and dating

Chairs:

Shin Toyoda, Maurizio Marrale

08.30-09.00

OP-22

ESR dosimetry of fossil tooth enamel: current status and challenges

Mathieu Duval

Australian Research Centre for Human Evolution (ARCHE),
Environmental Futures Research Institute, Griffith University

09.00-09.15

OP-23

ESR dating of *Notiomastodon platensis* teeth from João Dourado, Bahia, Brazil

Angela Kinoshita¹, Fabio Faria², Priscila Pegorin¹, Ismar Carvalho³, Ana Maria Graciano Figueiredo⁴, Oswaldo Baffa⁵
¹Universidade do Sagrado Coração, ²Universidade Federal do Rio de Janeiro, ³Universidade Federal do Rio de Janeiro, Geology, ⁴Instituto de Pesquisas Energéticas e Nucleares, ⁵Universidade de São Paulo

09.15-09.30

OP-24

ESR dating on a late Pleistocene fossil from the Mirim Lake, southern Brazilian coast

Renato Lopes¹, Angela Kinoshita², Sonia Tatum³, Ana Maria Graciano Figueiredo⁴, Oswaldo Baffa⁵

¹University Caçapava do Sul, ²Universidade do Sagrado Coração ³UNIFESP, ⁴IPEN, ⁵Universidade de São Paulo/FFCLRP

09.30-09.45

OP-25

ESR Dating Teeth from Medzhibozh, Ukraine: Using Isochrons to Track U Uptake in a Middle Pleistocene Open-Air Site

Justin K. Qi¹, Bonnie Blackwell^{1,2}, Impreet Singh², Vadim N. Stephanchuk³, Joel I. B. Blickstein², Jonathan A. Florentin^{1,2}, Anne R. Skinner^{1,2}, John F. Hoffecker⁴

¹Williams College, ²RFK Science Research Institute, ³National Academy of Sciences of Ukraine, ⁴University of Colorado

09.45-10.00

OP-26

The development of in-vivo electron-paramagnetic resonance tooth dosimeter at SNU

Jong In Park¹, Kwon Choi¹, Hiroshi Hirata², M. Swartz Harold³, Sung-Joon Ye¹

¹Seoul National University, ²Hokkaido University, ³Geisel School of Medicine at Dartmouth

Scientific program - Wednesday, 13th June 2018

OP - 27 cancelled

10.00-10.15 Characterization of a lithium formate EPR-dosimetry system for
OP-28 proton radiation therapy
 Tatiana Costa¹, Emelie Adolfsson¹, Marcus Fager², Eva Lund¹
 ¹University of Linköping, ²Karolinska University Hospital

10.15-10.30 Group photo

10.30-11.00 Coffee break, Foyer

11.00-12.30 Poster exhibition

12.30-13.30 Lunch break, Foyer

13.45 Departure from HMGU for conference tours

08.30-10.30 Session: Biological and EPR dosimetry for emergency I

Chairs: Laurence Roy, Harold Swartz

08.30-09.00 Operational basis and capacity of the RENEB network
OP-29 Andrzej Wojcik¹, Ursula Oestreicher², Lleonard Barrios³, Anne Vral⁴, Georgia Terzoudi⁵, Elizabeth Ainsbury⁶, Kai Rothkam⁷, Francois Trompier⁸, Ulrike Kulka²
1Centre for Radiation Protection Research, 2BfS, 3Universitat Autònoma de Barcelona, 4Universiteit Gent, 5National Center for Scientific Research "Demokritos", 6PHE, 7University Medical Center Hamburg, 8IRSN

09.00-09.15 RABIT-II-DCA: Automating the Dicentric Chromosome Assay
OP-30 using a commercial robotic platform
Mikhail Repin¹, Ekaterina Royba¹, Sergey Pampou^{1,2}, Charles Karan², David Brenner¹, Guy Garty¹
1Columbia University, Center for Radiological Research, 2Columbia University, Genome Center

09.15-09.30 Population-scale biodosimetry with the Automated Dicentric
OP-31 Chromosome Identifier and Dose Estimator (ADC1) software system
Ali Shaimaa ¹, Yanxin Li², Ben Shirley², Ruth Wilkins ³, Farrah Flegal ⁴, Peter Rogan^{2,5}, Joan Knoll^{1,2}
1University of Western Ontario, 2CytoGnomix, 3Health Canada, 4Canadian Nuclear Laboratories Radiobiology & Health, 5University of Western Ontario

09.30-09.45 FDXR is a biomarker of radiation exposure in vivo
OP-32 Grainne O'Brien¹, Lourdes CruzGarcia¹, Matthäus Majewski², Jakub Grep³, Michael Abend², Matthias Port², Aleš Tichý³, Igor Sirak⁴, Andrea Malkova⁵, Ellen Donovan⁶, Lone Gothard⁷, Sue Boyle⁷, Navita Somaiah⁷, Elizabeth Ainsbury¹, Lucyna Ponge⁸, Krzysztof Slosarek⁸, Leszek Misczyk⁸, Piotr Widlak⁸, Edward Green⁹, Neel Patel⁹, Mahesh Kudari⁹, Fergus Gleeson⁹,

Volodymyr Vinnikov¹⁰, Viktor Starenkiy¹⁰, Sergii Artiukh¹⁰,
Leonid Vasyliiev¹⁰, Azfar Zaman¹¹, Christophe Badie¹
¹PHE, ²Bundeswehr Institute of Radiobiology ³University of
Defence, ⁴University Hospital Hradec Králové, ⁵Charles
University, ⁶University of Surrey, ⁷Institute of Cancer Research,
⁸Maria Skłodowska-Curie Institute, ⁹Churchill Hospital,
¹⁰Grigoriev Institute for Medical Radiology, ¹¹Newcastle
University

- 09.45-10.00 Non-Coding RNAs as Biomarkers for Radiation Biodosimetry
OP-33 Molykutty Aryankalayil¹, C.Norman Coleman¹
 ¹National Cancer Institute
- 10.00-10.15 The higher detections of dicentric chromosomes in metaphases
OP-34 and in prematurely condensed chromosomes permit to reevaluate
 the dose effect curves with low dose exposure.
 Michelle Ricoul¹, Tamizh Gnana Sekaran¹, Jean Michel Dolo¹,
 Patricia Brochard¹
 ¹CEA, DRF/UPSAC/USPS/PROCyTox
- 10.15-10.30 Recent Advances in the Imaging Flow Cytometry Cytokinesis-
OP-35 Block Micronucleus Assay for Radiation Biodosimetry
 Ruth Wilkins¹, Lily Elayoubi¹, Sylvie Lachapelle¹, Joni Driscoll¹,
 Matthew Rodrigues², Qi Wang³, Mikhail Repin³, Helen Turner³,
 David Brenner³, Lindsay Beaton-Green¹
 ¹Health Canada, ²MilliporeSigma, ³Columbia University
- 10.30-11.00 Coffee break, Foyer

11.00-12.30 Session: Biological and EPR dosimetry for emergency II

Chairs: Alexander Romanyukha, Marco Valente

11.00-11.30 Biological and EPR dosimetry for emergency
OP-36 François Trompier¹, Laurence Roy¹, Eric Gregoire¹
 1IRSN

11.30-11.45 Radiation dose, a predictor with limitations regarding patient
OP-37 outcome and clinical support needs of the ARS
 Michael Abend¹, Matthias Port¹, Bettina Pieper¹, Harald Doerr¹,
 Matthias Majewski¹
 1Bundeswehr Institute of Radiobiology

11.45-12.00 EPR dosimetry in TBI patients - a feasibility study and
OP-38 assessment of reliability of the method in nails irradiated in vivo
 Agnieszka Marciniak¹, Bartłomiej Ciesielski¹, Paweł Czajkowski²,
 Karolina Krefft¹, Piotr Boguś¹, Anita Prawdzik-Dampc³, Joanna
 Lipniewicz³
 1Medical University of Gdańsk, Department of Physics and
 Biophysics, 2Oncology Centre in Gdynia, 3Medical University of
 Gdańsk, Department of Oncology and Radiotherapy

12.00-12.15 A comparative study of EPR and TL signals in Gorilla® glass
OP-39 samples for potential emergency dosimetry
 Stephen McKeever¹, Sergey Sholom¹, Josh Chandler²
 1Oklahoma State University, 2University of Tennessee

12.15-12.30 An advance in EPR dosimetry technique with nails
OP-40 Sergey Sholom¹, Steve McKeever¹
 1Oklahoma State University

12.30-13.30 Lunch break, Foyer

13.30-14.00 Session: Biological and EPR dosimetry for emergency II (cont.)

Chairs Alexander Romanyukha, Marco Valente

13.30-13.45 Criticality dosimetry based on alanine pellets: state of the art and
OP-41 new developments
François Trompier¹, Alexander Romanyukha², Marion
Baumann¹, Bruno Asselineau¹, Thad Sharp², Matthieu Duluc¹
1IRSN, 2Naval Dosimetry Center

13.45-14.00 Retrospective ESR/EPR cattle tooth enamel doses given by the
OP-42 radioactive nuclei released by the accident of Fukushima Dai-ichi
atomic power plants
Shin Toyoda¹, Mika Murahashi¹, Masahiro Natsuhori², Seturo
Ito³, Alexander Ivannikov⁴
1Okayama University of Science, 2Kitasato University, 3Fazenda
da Esperanza Fukushima, 4A. Tsyb Medical Radiological
Research Center

14.00-15.45 Networking in Biological and EPR dosimetry, QA&QM

Chairs Andrzej Wojcik, Sergey Sholom

14.00-14.30 The standardization of physical and biological tools for a better
OP-43 evaluation of the dose in emergency situations and research
projects
Laurence Roy¹, Eric Gregoire¹, Francois Trompier¹, Andrzej
Wojcik², Ulrike Kulka³
1IRSN, 2Stockholm University, 3Bundesamt für Strahlenschutz,

14.30-14.45 Results of a global inter-laboratory comparison on the cytogenetic
OP-44 and genomic assays in the frame of the European Network of
Biodosimetry – RENEB
Eric Gregoire¹, Gaetan Gruel¹, Michael Abend², Elisabeth
Ainsbury³, Christophe Badie³, Joan Francesc Barquinero⁴,
Leonardo Barrios⁴, Christina Beinke², Philip Beukes⁵, Kamil
Brzoska⁶, Julie Depuydt⁷, Inmaculada Dominguez⁸, Pham Ngoc
Duy⁹, Tamizh Gnana Sekaran¹⁰, Inci Guclu¹¹, Kamile
Guogyt¹², Valeria Hadjidekova¹³, Roberta Hristova¹³,
Seongjae Jang¹⁴, Ulrike Kulka¹⁵, Katalin Lumniczky¹⁶,
Matthaeus Majewski², Grainne Manning³, Roberta Meschini¹⁷,
Mirta Milic¹⁸, Octavia Monteiro Gil¹⁹, Alegria Montoro²⁰, Jayne

Moquet³, Mercedes Moreno²¹, Ursula Oestreicher¹⁵, Jelena Pajic²², Clarice Patrono²³, Maria Jesus Prieto²¹, Michelle Ricoul¹⁰, Laurence Roy²⁴, Laure Sabatier¹⁰, Natividad Sebastia²⁰, Sylwester Sommer⁶, Georgia Terzoudi²⁵, Antonella Testa²³, Marco Valente²⁶, Penruma Venkatachalam²⁷, Anne Vral⁷, Ruth Wilkins²⁸, Andrzej Woicik²⁹, Demetre Zafiropoulos³⁰

1IRSN, SERAMED, 2Bundeswehr Institute of Radiobiology, 3PHE, Didcot, 4UAB, 5IHEMBA, 6ICHTJ, 7GENT University, 8Sevilla University, 9Nuclear Center Institute, 10CEA, 11CNAEM, 12RSC, 13NCRRP, 14KIRAMS, 15BfS, 16NRIRR, 17UNITUS, 18IMROH, 19IST, 20LA FE, 21SERMAS, 22SIOH, 23ENEA, 24IRSN, SESANE, 25NCSRD, 26IRBA, 27SRI University, 28Health Canada, 29Stockholm University, 30LNL

14.45-15.00
OP-45

RENEB - network contribution to emergency preparedness and response

Ulrike Kulka¹, Elizabeth Ainsbury², Christophe Badie², Leonard Barrios³, Joan Francesc Barquinero Estruch³, Eric Gregoire⁴, Gaetan Gruel⁴, Valeria Hadjidekova⁵, Alicja Jaworska⁶, Mercedes Moreno Domene⁷, Ursula Oestreicher¹, Matthias Port⁸, Maria Jesus Prieto Rodriguez⁷, Laurence Roy⁴, Zaneta Szkarlat⁹, Anne Vral¹⁰, Michael Warning¹, Albrecht Wieser¹¹, Clemens Woda¹¹, Andrzej Wojcik¹²

1Bundesamt fuer Strahlenschutz, 2PHE, 3Universitat Autònoma de Barcelona, 4IRSN, 5National Center for Radiobiology and Radiation Protection, 6Norwegian Radiation Protection Authority, 7Servicio Madrileño de Salud - Hospital General Universitario Gregorio Marañón, 8Bundeswehr Institute of Radiobiology affiliated to the University of Ulm, 9National Center for Radiobiology and Radiation Protection, 10Universiteit Gent, 11Helmholtz Zentrum München, 12Centre for Radiation Protection Research

Scientific program - Thursday, 14th June 2018

- 15.00-15.15
OP-46 A network of networks in biodosimetry – partnerships
between EURADOS Retrospective Dosimetry WG10 and RENEB
Elizabeth Ainsbury¹, Paola Fattibene², Ulrike Kulka³, Laurence
Roy⁴, Francois Trompier⁴, Clemens Woda⁵, Andrzej Wojcik⁶
1PHE, 2Istituto Superiore di Sanita, 3Federal Office for Radiation
Protection, 4 IRSN, 5Helmholtz Zentrum München, 6Stockholm
University
- 15.15-15.30
OP-47 Proposal for a European Metrology Network for Metrology Support
to Radiobiology and Biological Dosimetry
Hans Rabus¹, Woon Yong Baek¹, Volker Dangendorf¹, Gerhard
Hilgers¹, Heidi Nettelbeck¹, Ulrich Giesen¹
1Physikalisch-Technische Bundesanstalt (PTB)
- 15.30-15.45
OP48 Concepts of Operations for a U.S. Biodosimetry Network
Nicholas Dainiak¹, Adayabalam S. Balajee¹, Alexander
Romanyukha², Thad J. Sharp², Meetu Kaushik³, Joe Albanese³,
William F. Blakely^{3,4}
1Radiation Emergency Assistance Center/Training Site,
ORISE/Department of Energy, 2Naval Dosimetry Center, US
Navy, 3Yale University, 4USUSHS/AFRRI
- 15.45-16.15 Coffee break, Foyer
- 16.15-17.45 Poster exhibition
- 19.30 Conference dinner at “Zum Augustiner”,
Neuhauser Straße 27, 80331 Munich
Poster prize award



08.30-10.30

Session: Biological and EPR dosimetry for medicine I

Chairs

Katalin Lumniczky, Yumiko Suto

08.30-09.00

OP-49

Contribution of biodosimetry for different medical issues

Michael Abend¹, ¹Bundeswehr Institute of Radiobiology

09.00-09.15

OP-50

The effects of chronic inflammation on chromosomal aberrations and DNA damage after 1.0 Gy X-ray irradiation in type 2 diabetes mouse model

Valerie Swee Ting Goh¹, Ayaka Azumaya¹, Kentaro Ariyoshi², Yohei Fujishima¹, Mitsuki A Yoshida², Akifumi Nakata³, Tomisato Miura¹

¹Hirosaki University School of Health Sciences, ²Hirosaki University Institute of Radiation Emergency Medicine, ³Hokkaido Pharmaceutical University School of Pharmacy

09.15-09.30

OP-51

Application of biodosimetry techniques to determine the biological effects of heavy ions in human lymphocytes

Prakash Hande¹, Dimphy Zeegers¹, Shriram Venkatesan¹, Swaminathan Sethu¹, Manikandan Jayapal¹, Birendranath Banerjee¹, Akira Fujimori², Ryuichi Okayasu²

¹National University of Singapore, ²National Institute of Radiological Sciences

09.30-09.45

OP-52

Biological effects in non-target tissues observed in nuclear medicine patients undergoing radium-223 chloride (²²³RaCl₂) therapy

Antonella Federica Testa¹, Clarice Patrono¹, Maria Balduzzi¹, Valentina Dini², Valentina Palma¹, Rosa Sciuto³, Antonella Soriani³, Lidia Strigari³, Raffaella Marconi³, Maria Antonella Tabocchini²

¹ENEA, ²National Institute of Health (Italy), ³Regina Elena National Cancer Institute

09.45-10.00

OP-53

Automated scoring of dicentric chromosomes to investigate age dependent radiosensitivity after Computer Tomography (CT)

Ursula Oestreicher¹, David Endesfelder¹, Maria Gomolka¹, Ulrike Kulka¹, Carita Lindholm², Ute Rößler¹, Daniel Samaga¹

¹Bundesamt für Strahlenschutz, ²Radiation and Nuclear Safety Authority

Scientific program - Friday, 15th June 2018

- 10.00-10.15
OP-54 A new methodology for diagnosis of Fanconi Anemia from biological dosimetry.
Ademir Amaral¹, Marcela Lemos-Pinto¹, Leone Maltz Borges da Silva ¹, Suelen Cristina de Lima¹, Luciano Lucena¹, Terezinha Marques Salles², Edvane Borges da Silva¹, Simey Pereira Magnata¹
¹Federal University of Pernambuco, Laboratory of Modelling and Biological Dosimetry, ²University of Pernambuco, Oswaldo Cruz Hospital
- 10.15-10.30
OP-55 Clinical Applications of Biomarkers of Radiation Exposure: Limitations and Possible Solutions through Coordinated Research
Volodymyr Vinnikov¹, Ruth Wilkins², Satoshi Tashiro^{3,4}, Prakash M Hande⁵, Andrzej Wojcik⁶, Yaacov Lawrence^{7,8}, Oleg Belyakov⁹
¹Grigoriev Institute for Medical Radiology, ²Health Canada, ³Hiroshima University, ⁴HICARE, ⁵National University of Singapore, ⁶Stockholm University, ⁷Sheba Medical Center, ⁸Thomas Jefferson University, ⁹IAEA
- 10.30-11.00 Coffee break, Foyer

11.00-12.00

Biological and EPR dosimetry for medicine II

Chairs:

Angela Kinoshita, Mercedes Moreno Domene

11.00-11.15

Dosimetry with alanine/ESR in magnetic fields

OP-56

Raya Roshana Gallas¹, Thomas Hackel¹, Ralf-Peter Kapsch¹
1Physikalisch-Technische Bundesanstalt (PTB)

11.15-11.30

The effect of a strong magnetic field in alanine dosimetry

OP-57

Ilias Billas¹, Hugo Bouchard², Clare Gouldstone ¹, Sebastian Galer¹, Peter Sharpe¹, Simon Duane¹
1National Physical Laboratory

11.30-11.45

EPR/alanine dosimetry for verification in Helical Tomotherapy
Stereotactic Radiosurgery (HT SRS) treatments

OP-58

Salvatore Panzeca¹, Giuseppina Iacoviello², Salvatore Gallo^{1,3},
Giorgio Collura^{1,4}, Teresa Cucchiara⁵, Maurizio Marrale^{1,6,7}
1University of Palermo, Department of Physics and Chemistry,
2Civic Hospital of Palermo, Health Physics Unit, 3University of
Milan, 4University of Palermo, Department of Biopathology and
Medical Biotechnologies, 5Civic Hospital of Palermo, 6Istituto
Nazionale di Fisica Nucleare, 7University of Palermo, ATeN
Center

11.45-12.00

Clinical Applications using in vivo EPR, adapted from

OP-59

Advancements in in vivo EPR Dosimetry
Ann Barry Flood
Geisel School of Medicine at Dartmouth

12.00-12.15

CLOSURE

Poster session 1 (PP - 1 – PP - 35)

Biomarker

PP - 1

Intercomparison in cytogenetic dosimetry among 49 laboratories in China

Jian Xiang Liu^{1,2,3}, Yan Pan^{1,2,3}, Li Na Wu^{1,2,3}, Jian lei Ruan^{1,2,3}, Chun nan Piao^{1,2,3}, Gang Gao^{1,2,3}, Xu Su^{1,2,3}

¹China CDC, Key Laboratory of Radiological Protection and Nuclear Emergency,

²National Institute for Radiological Protection, Chinese Center for Disease Control and Prevention, ³Medical Emergency Response Centre for Nuclear Accident,

National Health and Family Planning Commission of the People's Republic of China

PP - 2

Predicting exposure to ionizing radiation by biochemically-inspired genomic machine learning

Peter Rogan¹, Jonathan Z. L. Zhao¹, Eliseos J. Mucaki¹

¹University of Western Ontario

PP - 3

mFISH visualizing chromosomal abnormalities in mesenchymal stem cells induced by low-dose X-ray radiation

Victoria Nikitina¹, Tatiana Astrelina¹, Elena Lomonosova¹, Vladimir Nugis¹, Yulia Suchkova¹, Daria Usupzhanova¹, Vitalyi Brunchukov¹, Irina Kobzeva¹, Tatiana Karaseva¹, Anna Rastorgueva¹, Anastasia Machova¹, Andreyan Osipov¹, Andrey Bushmanov¹, Aleksandr Samoylov¹

¹Burnasyan Federal Medical Biophysical Center of Federal Medical Biological Agency of Russia

PP - 4

Effect of acute whole-body gamma irradiation on circulating microparticles levels in rats

Ghassan Al Massarani¹, ¹Atomic Energy Commission of Syria (AECS)

PP - 5

Biomarkers and Multiparametric Biodosimetry after Exposure to Mixed-Field (Neutron and Gamma) vs Pure Gamma in Mouse Total-body Irradiation Model

Natalia Ossetrova¹, Paul Stanton¹, Katya Krasnopolsky¹, Mohammed Ismail¹, Arpitha Doreswamy¹, Kevin Hieber¹, Mohammed Ismail¹

¹AFRRI, USUHS, SRD

PP - 6

Identification of Bioindicators of Exposure to Chronic Low Dose Ionising Radiation in Two Populations of b-Lymphocyte Cell Lines

Christelle Chua¹, Lance Tay¹, Lai Kwan Ho¹

¹National University of Singapore, Singapore Nuclear Research and Safety Initiative

PP - 7

Research progress of nucleoplasmic bridge levels in human lymphocytes as a radiation biomarker

Qing-Jie Liu¹, Hua Zhao¹, Xue Lu¹, Xue-Lei Tian¹, Tian-Jing Cai¹, Jiang-Bin Feng¹, Shuang Li¹, De-Qing Chen¹

¹National Institute for Radiological Protection, Chinese Center for Disease Control and Prevention

PP - 8

Dicentric dose estimates for patients undergoing radiotherapy enrolled in the RTGene study to assess 1) blood dosimetric models and 2) the Bayesian zero-inflated Poisson finite mixture method for estimating partial body gradient exposure.

Jayne Moquet¹, Manuel Higuera², Ellen Donovan³, Sue Boyle⁴, Stephen Barnard¹, Clare Bricknell¹, Mingzhu Sun¹, Lone Gothard⁴, Grainne Manning¹, Lourdes Cruz-Garcia¹, Christophe Badie¹, Elizabeth Ainsbury¹, Navita Somaiah⁴

¹PHE- Centre for Radiation Chemical and Environmental Hazards, Radiation Effects, ²Basque Center for Applied Mathematics, ³University of Surrey, Centre for Vision Speech and Signal Processing, ⁴Institute of Cancer Research / Royal Marsden (ICR/RM) NHS Foundation Trust

PP - 9

Neutrophil to lymphocyte ratio as a radiation biomarker in multiple radiation model systems

William F. Blakely¹, David L Bolduc¹, Arifur Rahman¹, Ann M Farese², Thomas J MacVittie², Matthias Port³, Diane Agay⁴, Jean-Claude Mestries⁴, Michel Drouet⁴, Michael Abend³, Ronald E Goans⁵, Francis Hérodin⁴

¹USUHS/AFRRI, Scientific Research Department, ²University of Maryland School of Medicine, Department of Radiation Oncology, Baltimore MD, United States
³Bundeswehr Institute of Radiology, ⁴Institut de Recherche Biomédicale des Armées, ⁵MJW Corp. & Tulane University, School of Public Health and Tropical Medicine

Poster session 1

PP - 10

Influence of confounding factors on radiation dose estimation in in vivo validated transcriptional biomarkers

Lourdes Cruz-Garcia^{1,2}, Grainne O'Brien¹, Ellen Donovan³, Lone Gothard³, Sue Boyle³, Antoine Laval⁴, Isabelle Testard⁴, Lucyna Ponge⁵, Grzegorz Woźniak⁵, Leszek Miszczuk⁵, Serge M. Candéas⁴, Elizabeth Ainsbury¹, Piotr Widlak⁵, Navita Somaiah³, Christophe Badie¹

^{1,2}PHE, ³Institute for Cancer Research / Royal Marsden NHS Foundation Trust,

⁴CEA, ⁵Maria Skłodowska-Curie Institute – Oncology Center,

PP - 11

Plasma soluble proteins as potential dose-assessment biomarkers

Enikő Kis¹, Katalin Lumniczky¹, Piotr Widlak², Sáfrány Géza¹

¹NPHI, NRIRR, ²COG

PP - 12

Sensitivity of the dicentric assay for low-dose biodosimetry of therapeutic radiation exposure

Carola Hartel¹, Yvonne Knies¹, Udo Gaipl², Benjamin Frey², Sylvia Ritter¹

¹GSI Helmholtz Center for Heavy Ion Research, Biophysics, ²Universitätsklinikum Erlangen

PP - 13

A “three in one” biodosimetry assay as a potential tool for triage dose assessment in case of large scale radiological emergency

Antonella Federica Testa¹, Valentina Palma¹, Clarice Patrono¹

¹ENEA

PP - 14

The impact of dose rate on the cytogenetic calibration curve for gamma radiation

Magdalena Lipka¹, Aneta Wegierek-Ciuk¹, Anna Lankoff¹, Andrzej Wojcik^{1,2}, Halina Lisowska¹

¹Institute of Biology/Jan Kochanowski University, ²Centre for Radiation Protection Research/Stockholm University

PP - 15

RABiT-II: The use of ANSI/SLAS microplate formats for development of biodosimetry assays on commercial high-throughput biotech robotic systems

Mikhail Repin¹, Sergey Pampou², Katya Royba¹, Helen C. Turner¹, Guy Garty¹, David J. Brenner¹

¹Columbia University Medical Center, Center for Radiological Research, ²Columbia University, Columbia Genome Center

PP - 16

Increased Retention of Radiation-Induced γ -H2AX Foci by Phosphatase Inhibitors for Biodosimetric Applications

Satish B S Rao¹, Akshaykumar Nayak A¹, Kamalesh Mumbrekar D¹

¹School of Life Sciences, Radiation Biology & Toxicology

PP - 17

Radiation-induced NF- κ B activation and expression of its down-stream target genes as biomarker of radiation quality

Christine E. Hellweg¹, Arif A. Chishti^{2,3}, Kristina Koch², Sebastian Feles², Bikash Konda², Luis F. Spitta², Bernd Henschenmacher², Sebastian Diegeler², Claudia Schmitz², Christa Baumstark-Khan²

^{1,2}German Aerospace Center, Institute of Aerospace Medicine, ³University of Karachi, The Karachi Institute of Biotechnology and Genetic Engineering

PP - 18

Dose estimation with uncertainty quantification from the gamma-H2AX assay
Jochen Einbeck¹, Rachel Sales¹, Manuel Higuera², Elizabeth Ainsbury³, Stephen Barnard³

¹Durham University, Mathematical Sciences, ²Basque Centre for Applied Mathematics, ³PHE-CRCE

PP - 19

High-sensitive biomarkers of blood total antiradical activity in mice exposed to gamma-irradiation

Tamar Sanikidze¹, Georg Ormotsadze², Irakli Chkhikvishvili¹, Irakli Gvilava¹, Michail Gogebashvili², Nazi Ivanishvili², Maka Buleishvili¹

¹Tbilisi State Medical University, ²Beritashvili center of experimental medicine

PP - 20

The Potential Biomarkers for Screening Lung Cancer Risk in High Residential Radon

Narongchai Autsavapromporn¹, Pitchayaponne Klunklin¹, Busyamas Chewaskulyong², Wirote Tuntiwechapikul³, Sittiruk Roytrakul⁴, Kanokporn Rithidech⁵, Teruaki Konishi⁶, Masahiro Hosoda⁷, Shinji Tokonami⁸
¹Faculty of Medicine, Chiang Mai University, Radiology, ²Chiang Mai University, Internal Medicine, ³Chiang Mai University, Biochemistry, ⁴Genome Institute, National Center for Genetic Engineering and Biotechnology (BIOTEC), ⁵Stony

Poster session 1

Brook University, ⁶National Institutes for Quantum and Radiological Sciences and Technology (QST), NIRS⁷, Hirosaki University, Graduate School of Health Science, ⁸Hirosaki University, Institute of Radiation Emergency Medicine

PP - 21

Application of autologous adipose tissue-derived stromal vascular fraction (SVF) cells in patients affected by Cutaneous Radiation Syndrome.

Andres Rossini¹, Natalia Lendoiro¹, Mercedes Portas², Marina Di Giorgio¹

¹Nuclear Regulatory Authority, Radiobiology, ²Burn Hospital at the city of Buenos Aires, Department of Plastic Surgery

PP - 22

The use of lymphocyte prematurely condensed chromosomes as a biomarker to study biological effectiveness of different radiation qualities

Georgia Terzoudi¹, Roberto Cherubini², Demetre Zafiropoulos², Lucia Sarchiapone², Antonio Pantelias¹, Viviana De Nadal², Laura Baggio³, Gabriel Pantelias¹

¹NCSR Demokritos, INRASTES, Agia Paraskevi, ²INFN-Laboratori Nazionali di Legnaro, ³Istituto Oncologico Veneto

PP - 23

Validation of translational potential of the Göttingen minipig model of H-ARS for radiation countermeasure testing using abbreviated Neulasta regimen

Betre Legesse¹, Maria Moroni¹, Amandeep Kaur¹, Doreswamy Kenchegowda¹, Bernadette Hritz¹

¹UHSUHS, SRD-AFRRI

Biological and EPR dosimetry for medicine

PP - 24

Exploring the variability of in vivo cytogenetic damage yield in radiotherapy patients for adverse effects assessment: Palliative mathematical solutions

Volodymyr Vinnikov¹

¹Grigoriev Institute for Medical Radiology of the NAMS of Ukraine

PP - 25

Construction of dose response curves for cytogenetic biodosimetry in the low dose range based on five persons

Yu Abe¹, Mitsunori A Yoshida², Kurumi Fujioka³, Yumiko Kurosu¹, Risa Ujiie¹, Aki Yanagi¹, Naohiro Tsuyama¹, Tomisato Miura⁴, Toshiya Inaba³, Kenji Kamiya⁵, Akira Sakai¹

¹Fukushima Medical University School of Medicine, ²Hirosaki University Institute of Radiation Emergency Medicine, ³Hiroshima University Research Institute for Radiation Biology and Medicine, Molecular Oncology, ⁴Hirosaki University Graduate School of Health Sciences, ⁵Hiroshima University Research Institute for Radiation Biology and Medicine, Experimental Oncology

PP - 26

Establishing gene expression for biodosimetry and prediction of acute health effects after radiation exposure

Michael Abend¹, Matthias Port¹

¹Bundeswehr Institute of Radiobiology

PP - 27

Evaluation of absorbed dose on mouse bones by EPR spectroscopy for radiobiology studies

Morgane Dos Santos¹, François Trompier², Stéphane Flamant¹, Marion Baumann², Gaetan Gruel¹

¹IRSN, PSE-SANTE/SERAMED/LRAcc, ²IRSN, PSE-SANTE/SDOS/LDRI

PP - 28

EPR Alanine Dosimetry in a Prostate Radiotherapy Simulation with Metallic Implants.

Diana Cuevas Rojas¹, Juliana Fernandes Pavoni¹, Oswaldo Baffa¹

¹Universidade de São Paulo/FFCLRP, Física

PP - 29

End-to-end audit – comparison of TLD and lithium formate EPR dosimetry

Emelie Adolfsson^{1,2}, Paulina Wesolowska³, Joanna Izewska³, Eva Lund¹, Asa Carlsson Tedgren^{1,4}

¹Linköping University, Radiological Sciences, IMH, ²Linköping University hospital,

³IAEA, ⁴Karolinska University hospital

PP - 30

Integrated dose estimation in Chernobyl clean-up workers.

Elizaveta Neronova¹, Voldemar Tarita¹, Sergei Aleksanin¹

¹Nikiforov Russian Center of Emergency and Radiation Medicine (NRCERM) EMERCOM of Russia

Poster session 1

PP - 31

Dose evaluation by chromosome aberrations at a remote time after different radiation accidents

Vladimir Nugis¹, Maria Kozlova¹, Natalia Nadejina¹, Irina Galstyan¹,
Victoria Nikitina¹, Igor Khvostunov², Elena Golub²

¹Burnasyan Federal Medical Biophysical Center, Federal Medical Biological Agency of Russia, ² A. Tsyb Medical Radiological Research Center - branch of the National Medical Research Radiological Center, the Ministry of Health of the Russian Federation

PP - 32

The TOP-IMPLART proton linear accelerator: characterization of the 35 MeV beam
Cinzia De Angelis¹, Alessandro Ampollini², Giulia Bazzano², Evaristo Cisbani¹, Sara Della Monaca¹, Francesco Ghio¹, Fausto Giuliani¹, Maurizio Lucentini¹, Paolo Nenzi², Carmelo Notaro¹, Cristina Placido¹, Luigi Picardi², Massimo Piccinini², Concetta Ronsivalle², Fabio Santavenere¹, Antonella Soriani³, Alessandro Spurio¹, Lidia Strigari³, Vincenzo Surrenti², Emiliano Trinca², Monia Vadrucchi²

¹Istituto Superiore di Sanità, ²Italian National Agency for New Technologies, Energy and Sustainable Economic Development, ³Istituti Fisioterapici Ospitalieri, IFO-Regina Elena

PP - 33

Dose-dependent DNA damage after ex-vivo irradiation of blood with radionuclides frequently used in Nuclear Medicine

Sarah Schumann¹, Uta Eberlein¹, Jessica Müller², Michael Lassmann¹, Harry Scherthan²

¹University Hospital Würzburg, Department of Nuclear Medicine, ²Bundeswehr Institute of Radiobiology affil. to the Univ. of Ulm

PP - 34

Evaluation of inhomogeneous dose distribution in real cases- Different approaches

Marina Di Giorgio¹, Jorge Ernesto Gonzalez Mesa², Analía Radl¹, Adrian Claudio Perez¹

¹Nuclear Regulatory Authority, Biological Dosimetry and Radiopathology, ²Centro de Protección e Higiene de las Radiaciones

PP - 35

Characterization of phenolic solid state pellets for ESR dosimetry with radio-therapeutic photon and electron beams

Salvatore Gallo¹, Giuseppina Iacoviello², Salvatore Panzeca³, Ivan Veronese¹, Daniele Dondi⁴, Gianfranco Loi⁵, Eleonora Mones⁵, Maurizio Marrale³

¹University of Milano, Physics, ²Hospital Civico, Medical Physics, ³University of Palermo, Physics and Chemistry, ⁴University of Pavia, Chemistry, ⁵Hospital Maggiore della Carità, Novara, Italy

Poster session 2 (PP - 36 – PP - 81)

Biological and EPR dosimetry for emergency

PP - 36

Relaxation Time Measurements Using Pulse Electron Spin Resonance (ESR) in Tooth Enamel for Retrospective Biodosimetry

Lotem Buchbinder^{1,2}, Hanan Datz², Aharon Blank¹

¹Technion - Israel Institute of Technology, ²Soreq Nuclear Research Center

PP - 37

The influence of the blood storage temperature and anticoagulant for cytogenetic biodosimetry

Yohei Fujishima¹, Tomisato Miura¹, Syuki Kanahama², Shigeki Hagino², Ayaka Azumaya¹, Shiori Kawamori², Valerie Swee Ting Goh¹, Kentaro Ariyoshi³, Akifumi Nakata⁴, Kosuke Kasai¹, Kyogo Yamada⁵, Yasushi Mariya⁶, Mitsuaki A. Yoshida³

¹Hirosaki University Graduate School of Health Sciences, Department of Bioscience and Laboratory Medicine, ²Mutsu General Hospital, Department of Laboratory Medicine, ³Hirosaki University Institute of Radiation Emergency Medicine, Department of Radiation Biology, ⁴Hokkaido Pharmaceutical University School of Pharmacy, ⁵Mutsu General Hospital, Department of Surgery, ⁶Mutsu General Hospital, Department of Radiology/Radiation Oncology

PP - 38

The effect of sunlight and cosmetic UV lamp on EPR signal in nails

Agnieszka Marciniak¹, Bartłomiej Ciesielski¹, Małgorzata Juniewicz¹, Karolina Krefft¹, Anita Prawdzik-Dampc²

¹Medical University of Gdańsk, Department of Physics and Biophysics, ²Medical University of Gdańsk, Department of Oncology and Radiotherapy

PP - 39

The project of another low-cost metaphase finder (Second Report)

Akira Furukawa¹

¹National Institutes for Quantum and Radiological Science and Technology

Poster session 2

PP - 40

Machine learning approach to assessment of the native background EPR signal amplitude in tooth enamel

Artem Khailov¹, Kassym Zhumadilov², Alexander Ivannikov¹, Valeri Skvortsov¹, Valeri Stepanenko¹, Benjamin Williams³, Ann Flood³, Harold Swartz³

¹Tsyb Medical Radiological Research Center, ²Gumilyov Eurasian National University, ³Geisel School of Medicine at Dartmouth

PP - 41

Cytogenetic biodosimetry of plutonium radiation-exposed workers

Yumiko Suto¹, Takako Tominaga¹, Miho Akiyama¹, Yoshio Takashima¹, Kumiko Fukutsu¹, Momoki Hirai¹, Osamu Kurihara¹, Hideo Tatsuzaki¹, Makoto Akashi¹

¹National Institutes for Quantum and Radiological Science and Technology, NIRS

PP - 42

Baboon radiation quality (mixed field neutron and gamma, gamma alone) dose-response model systems: Assessment of H-ARS severity using hematologic biomarkers

David Bolduc¹, William Blakely¹, Matthias Port², Diane Agay³, Jean-Claude Mestries³, Michel Drouet³, Francis Hérodin³

¹AFRRI, ²Bundeswehr Institute of Radiobiology, ³Effets Biologiques des Rayonnements Département, IRBA

PP - 43

Evaluation of the influence from difference of tooth shape and relevant calibration method in X-band EPR in vivo Tooth dosimetry

Ke Wu¹, Jierui Zou¹, Junwang Guo¹, Guofu Dong¹, Jianbo Cong¹, Lei Ma¹

¹Beijing Institute of Radiation Medicine, Health Physics

PP - 44

The Dose-Response Calibration Curve for Cytogenetic Biodosimetry in Saudi Arabia and its Application in Cases of Radiological Emergency

Ghazi Alsbeih¹, Khaled Al-Hadyan¹, Sara Elewisy¹, Najla Al-Harbi¹, Sara Bin Judia¹, Krishna Mishra¹, Belal Moftah¹

¹King Faisal Specialist Hospital & Research Centre, Biomedical Physics

PP - 45

Reconstruction of low dose electron spin resonance (ESR) response in soda-lime glasses

Maja Vojnic Kortmis¹, Nadica Maltar-Strmecki²

¹Ruder Boskovic Institute, Department of Occupational Safety and Health, Fire and Radiation Protection, ²Ruder Boskovic Institute, Division of Physical Chemistry

PP - 46

Optimization of Image Selection in Automated Dicentric Chromosome Analysis

Yanxin Li¹, Ben Shirley¹, Ruth Wilkins², Farrah Flegel³, Joan Knoll^{1,4}, Peter Rogan^{1,5}

¹CytoGnomix, ²Health Canada, ³Canadian Nuclear Laboratories, ⁴University of Western Ontario, Department of Pathology, ⁵University of Western Ontario, Department of Biochemistry

PP – 47 **cancelled**

Approach on combining imaging flow cytometry with high-throughput automated robotic systems for measuring radiation biomarkers

Qi Wang¹, Mikhail Repin¹, Matthew Rodrigues², Younghyun Lee¹, Sergey Pampou³, Jay Perrier¹, Lindsay A. Beaton-Green⁴, Ruth C. Wilkins⁴, David J. Brenner¹, Helen C. Turner¹

¹Columbia University Medical Center, Center for Radiological Research, ²MilliporeSigma, ³Columbia University Medical Center, Columbia Genome Center High-Throughput Screening facility, ⁴Health Canada,

PP - 48

Developement of an image-processing based sample quality index for non-fluorescent micronucleus assay which offers extended robustness feature for automated scoring

Tímea Hülber¹, Zsuzsa S. Kocsis², Enikő Kis³, Géza Sáfrány³, Csilla Pesznyák⁴

¹Radosys Ltd., ²National Institute of Oncology, Center of Radiotherapy, ³National Public Health Centre, National Research Directorate for Radiobiology and Radiohygiene, ⁴National Institute of Oncology, Center of Radiotherapy,

PP - 49

A comparison of different spectra deconvolution methods used in EPR dosimetry with Gorilla® glasses

Sergey Sholom¹, Albrecht Wieser², Steve McKeever¹

¹Oklahoma State University, Physics, ²Helmholtz Zentrum Muenchen

Poster session 2

PP - 50

Non-Resonant ESR for Fast and Reliable Retrospective Personal Dosimetry
Pragya Shrestha^{1,2}, Robert Gougelet³, Kin P. Cheung¹, Jason T. Ryan¹, Jason P. Campbell¹

¹National Institute of Standards and Technology, Engineering Physics Division,

²Theiss Research, ³Global Resonance Technologies LLC

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Design and realization of an open EPR resonator at X-Band frequencies

Paola Fattibene^{1,2}, Cinzia De Angelis^{1,2}, Giorgio De Angelis³, Sara Della Monaca^{1,2}, Luigi Di Trocchio^{2,4}, Luca Ficcadenti^{2,5}, Andrea Mostacci^{2,5}, Erika Pittella⁶, Maria Cristina Quattrini^{1,2}, Giulia Sacco⁶, Fabio Santavenere³, Stefano Pisa⁶

¹Istituto Superiore di Sanità, Core facilities, ²Istituto Nazionale di Fisica Nucleare,

³Istituto Superiore di Sanità, TISP, ⁴University of Bordeaux, IS MS, CNRUMR 5218,

⁵La Sapienza University, Basic and Applied Sciences for Engineering, ⁶Sapienza University, Information Engineering Electronics and Telecommunications

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Lourdes CruzGarcia¹, Stanislav Polozov², Vladimir Vinnikov², Christophe Badie¹

¹PHE, ²Grigoriev Institute for Medical Radiology

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Stephen Pecoskie, Connor Davis and Farrah Flegal

Canadian Nuclear Laboratories, Radiobiology and Health

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Nicolas Tkatchenko¹, Alexander Romanyukha², Steven Swarts³, Dmitry Tipikin⁴, François Trompier¹, Didier Gourier⁵

¹IRSN, SDOS, ²Naval Dosimetry Center, US Navy, ³Department of Radiation

Oncology, University of Florida, ⁴In vivo Multifunctional Magnetic Resonance center (IMMR), West Virginia University, ⁵PSL Research University, Chimie-ParisTech-

CNRS

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Tkatchenko Nicolas¹, Yann Le Du¹, Mariem El Afrit¹, François Trompier², Didier Gourier¹

¹PSL Research University, Chimie-ParisTech-CNRS, ²IRSN, SDOS

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D.RE.A.M.: A software for uncertainties analysis in retrospective dosimetry

Maurizio Marrale^{1,2,3}, François Trompier⁴, Clemens Woda⁵, Elizabeth Ainsbury⁶

¹University of Palermo, Department of Physics and Chemistry, ²Istituto Nazionale di Fisica Nucleare, Section of Catania, ³University of Palermo, ATeN Center, ⁴IRSN, ⁵Helmholtz Zentrum München, ⁶PHE

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Marco Valente¹, François Desangles¹, Jérôme Pateux¹, Francis Herodin¹, Michel Drouet¹

¹IRBA

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Kwon Choj¹, Jong In Park¹, Chang Uk Koo¹, Sung-Joon Ye¹

¹Seoul National University, Department of Transdisciplinary Studies

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Tatsuya Shimasaki¹, Osamu Kawahara¹, Kenichi Yokota², Mariko Mine², Yoshioki Shiraishi¹, Naoki Matsuda², Seiji Okada¹

¹Kumamoto University, Institute of Resource Development and Analysis, ²Nagasaki University, Atomic Bomb Disease Institute

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¹PHE, ²Southern Urals Biophysics Institute, ³University of Pavia, ⁴Helmholtz Zentrum München, ⁵Memorial Sloan Kettering Cancer Center, ⁶Agenzia Nazionale Per Le Nuove Tecnologie, L'energia e Lo Sviluppo Economico Sostenibile, ⁷Guglielmo Marconi University, ⁸Indiana University School of Medicine, ⁹Central Research Institute of Electric Power Industry, ¹⁰Technical University Munich, ¹¹Federal Office for Radiation Protection, ¹²Durham University, ¹³Oxford Brookes University

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Kassym Zhumadilov¹, Alexander Ivannikov², Valeriy Stepanenko², Masaharu Hoshi³

¹L.N. Gumilyov Eurasian National University, ²A.F. Tsyb Medical Radiological Research Center, ³Hiroshima University

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Margarita Tzivaki¹, Edward J. Waller¹

¹University of Ontario Institute of Technology

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Tatyana Seredavina¹, Arkady Rukhin¹, Natalya Sushkova¹

¹The Institute of Nuclear Physics (INP) of the Ministry of Energy of the Kazakhstan Republic, The Center of Ecological Investigation INP

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Ngoc Duy Pham¹, Que Tran¹

¹Dalat Nuclear Research Institute

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Ahlem Nora Messal¹, Lotfi Louhibi¹, Abdallah Boudjema¹, Nadhira Saidi-Mehtar¹,
Ileonnard Barrios², Maria Rosa Caballin³, Joan Francesc Barquinero³

¹University of Science and Technology USTO, ²Autonomous University of Barcelona, Cellular Biology unit., ³Autonomous University of Barcelona, Biological Anthropology unit.

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Nataliya Maznyk¹, Franz Fehringer², Christian Johannes³, Tetiana Sytko¹,
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¹Institute for Medical Radiology of National Academy Medical Sciences of Ukraine,
²Institute for Radiation Protection of the BG ETEM and BG RCI (IfS), ³University Duisburg-Essen

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Seongjae Jang¹, Yumiko Suto², Jiangxiang Liu³, Qing-Jie Liu³, Yahui Zuo⁴, Pham
Ngoc Duy⁵, Tomisato Miura⁶, Yu Abe⁷, Kanya Hamasaki⁸, Keiji Suzuki⁹,
Seiji Kodama¹⁰

¹Korea Institute of Radiological and Medical Sciences, ²National Institute of Radiological Sciences, QST, ³National Institute of Radiation Protection, China CDC,
⁴China Institute of Radiation Protection, ⁵Nuclear Research Institute, ⁶Hirosaki University, ⁷Fukushima Medical University, ⁸Radiation Effects Research Foundation
⁹Nagasaki University, ¹⁰Osaka Prefecture University

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Sara Della Monaca¹, François Trompier², Albrecht Wieser³, Wi-Ho Ha⁴, Nadica Maltar-Strmecki⁵, Maurizio Marrale⁶, Sergey Sholom⁷, Paola Fattibene¹

¹Istituto Superiore di Sanità, Core facilities, ²IRSN, ³Helmholtz Zentrum Muenchen,

⁴Korea Institute of Radiological and Medical Sciences (KIRAMS), ⁵Ruder Boskovic Institute, ⁶University of Palermo, ⁷Oklahoma State University

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Emanuela Bortolin¹, Cinzia Cardamone², Brunella Carratù¹, Antonio Eugenio Chiaravalle³, Graziella Deiana⁴, Annamaria Di Noto², Maria Teresa Di Schiavi⁵, Maria Cristina D'Oca⁶, Raffaella Gargiulo¹, Michele Mangiacotti³, Maria Crristina Quattrini¹, Michele Tomaiuolo³, Franco Sechi⁴, Concetta Boniglia¹

¹Istituto Superiore di Sanità, ²Istituto Zooprofilattico Sperimentale della Sicilia,

³Istituto Zooprofilattico Sperimentale della Puglia e della Basilicata, ⁴Istituto Zooprofilattico Sperimentale della Sardegna, ⁵Istituto Zooprofilattico Sperimentale del Lazio e della Toscana, ⁶Università degli Studi di Palermo

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Hasan Tuner¹, ¹Balikesir University

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Hasan Tuner¹, Mustafa Polat²

¹Balikesir University, ²Hacettepe University

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Denis Ivanov^{1,2}, Elena Shishkina^{3,4}, Denis Osipov³, Vera Starichenko⁵,

Evgeny Pryakhin³

¹Institute of metal physics, ²Ural Federal University, ³Urals Research Center for Radiation Medicine, ⁴Chelyabinsk State University, ⁵Institute of Plants and Animals Ecology

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Timor Grego¹, Nadica Maltar-Strmecki²

¹University Hospital Center Zagreb, ²Ruder Bošković Institute

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Angela Kinoshita¹, Ricardo Ribeiro², Hermínio Araújo-Júnior³, Ana Maria Graciano Figueiredo⁴, Ismar Carvalho², Oswaldo Baffa⁵

¹Universidade do Sagrado Coração, ²Universidade Federal do Rio de Janeiro,

³Faculdade de Geologia, Universidade do Estado do Rio de Janeiro, ⁴Instituto de Pesquisas Energéticas e Nucleares, ⁵Universidade de São Paulo

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Mohamed Morsy¹

¹King Fahd University of Petroleum & Minerals

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Mariem El Afrit¹, Yann Le Du¹, Nicolas Tkatchenko², François Trompier²

¹Institut de Recherche de Chimie Paris (IRCP), UMR 8247 (CNRS – Chimie ParisTech), ²IRSN

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Toshitaka Oka^{1,2}, Atsushi Takahashi³, Kazuma Koarai², Yasushi Kino², Tsutomu Sekine^{1,2}, Yoshinaka Shimizu⁴, Mirei Chiba⁴, Toshihiko Suzuki⁴, Jun Aida⁴, Ken Osaka⁴, Keiichi Sasaki⁴, Hisashi Shinoda⁴

¹Tohoku University, Institute for Excellence in Higher Education, ²Tohoku University, Graduate School of Science, ³Tohoku University Hospital, ⁴Tohoku University, Graduate School of Dentistry

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Norehan Mohd Nor¹, Suhairul Hashim¹, Ahmad Termizi Ramli¹, Elias Saion², Taiman Kadni³

¹Universiti Teknologi Malaysia, ²Universiti Putra Malaysia, ³Agensi Nuklear Malaysia

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Emanuela Bortolin¹, Cinzia De Angelis¹, Maria Cristina Quattrini¹, Oscar Barlascini¹, Paola Fattibene¹

¹Istituto Superiore di Sanità

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Joel I. B. Blickstein^{1,2}, Bonnie A. B. Blackwell^{1,2}, Ljiljana S. Korobar³, Clara L.C. Huang², Jianlin Zhuo², Blagoja Kitanovski², Sasko Vasilevski³, Jonathan A. Florentin^{1,2}

¹RFK Science Research Institute, Glenwood Landing, ²Williams College, Dept. of Chemistry, ³National Archaeological Museum

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Maurizio Marrale¹, Leonardo Abbene¹, Salvatore Gallo², Giorgio Collura¹, Salvatore Panzeca¹, Maria Cristina D'Oca¹, Antonio Bartolotta¹, Luigi Tana³, Francesco d'Errico⁴, Fabio Principato¹

¹University of Palermo, Physics and Chemistry, ²University of Milano, Physics, ³Hospital of Pisa, ⁴University of Pisa, School of Engineering

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General hints for speakers and poster presenters

Advice for speakers

1. Please prepare your presentation in PowerPoint (Maximum Version 2010) or pdf file format. For MAC users it is recommended to use OpenOffice.org to avoid compatibility problems.
2. Please don't use special characters in the file names.
3. The presentation file(s) should be made available on USB stick
4. Make sure to bring your presentation at least 2 h before your session starts.
5. Files for early morning presentations should ideally be handed in the day before.
6. Check the Corrigenda to determine if there are any changes to the program that might relate to your presentation.
7. If possible, arrive at the lecture room prior to the start of the session and introduce yourself to the chair.
8. Keep strictly to the scheduled presentation time, which includes the time for discussion. The chairpersons are advised to start the sessions in time and to terminate the lectures on schedule to avoid any overrun.

Guidelines for poster presenters

1. Posters should be prepared in English and can be presented up to a size of A0 (or 84.1 cm width x 118.9 cm heights).
2. We will provide some material for mounting posters at the conference office.
3. Your poster should be presented on the assigned poster board during the whole conference.
4. The **PERMANENT** poster ID (**PP - ID**) will be available in the scientific program and the book of abstracts on the USB stick.
5. There will be two poster sessions:
Session 1: Wednesday, 13th June (11.00-12.30), PP – 1 – PP - 35
Session 2: Thursday, 14th June (16.15-17.45), PP – 36 – PP - 81
During the sessions the respective presenting authors should be personally present at the poster.

Tuesday, 12th June 2018

17.30-19.00 Welcome reception HMGU canteen

Wednesday, 13th June 2018

13.45 Conference tour, Departure from HMGU Campus
(according to your choice at conference registration)

1. Guided City Tour

Three-hour walk through Munich's historic town with a competent and entertaining tour guide. You will be visiting all highlights from Marienplatz via St. Peter's Church, Viktualienmarkt, Alter Hof, Dallmayr, Hofbräuhaus, Cathedral, Residence to Odeonsplatz. Explore paths into the past and future. An entertaining and not just historical tour.

Language: English

Time: Approx. from 2:30 – 5:30 pm

2. Spatenbräu

Two-hour brewery tour on the premises of Spaten-Franziskaner-Löwenbräu. The walking tour is filled with lots of interesting information and followed by a beer tasting and Pretzel snacking.

Language: English

Time: Approx. from 2:30 – 5:00 pm

Thursday, 14th June 2018

19.30 Conference dinner at "Zum Augustiner"
Meeting at "Zum Augustiner"
Neuhauser Straße 27, 80331 München

Can be easily reached from stations

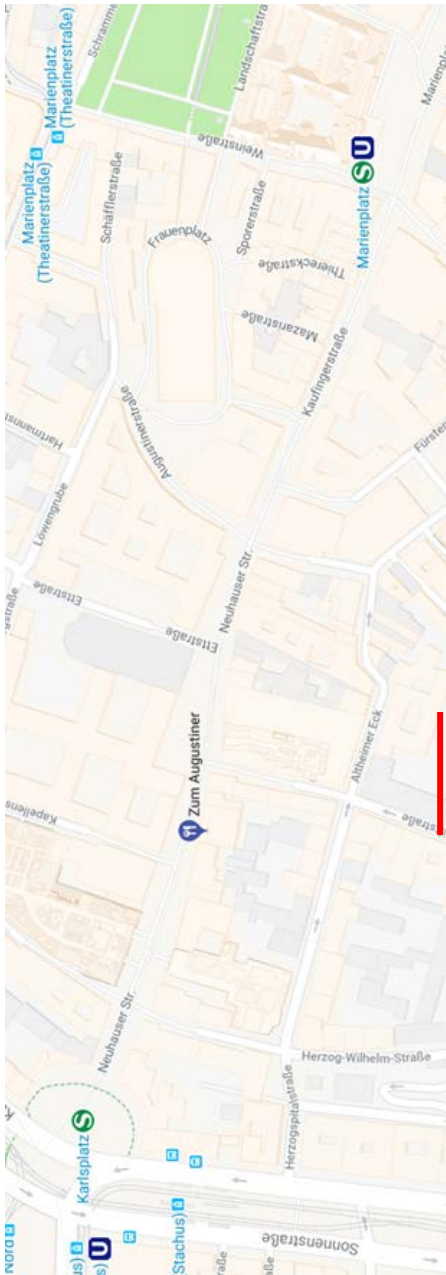
"Hauptbahnhof" (U1, U2, U7, U8, S-Bahn), "Karsplatz" (U4, U5, S-Bahn) or "Marienplatz" (U3, U6; S-Bahn)

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The International Association of Biological and EPR Radiation Dosimetry (IABERD) is a scientific association, established for the public benefit to advance research, development and education in biological dosimetry and EPR dosimetry applied to ionizing radiation. Biological dosimetry is the measurement of radiation-induced biological and biophysical changes to estimate the exposure dose reflecting an equivalent of dose to the whole-body in order to assess acute and delayed health-risks. The biological material used especially includes blood, urine, cells isolated from body surfaces, nails, teeth, and bones. The association began with meetings that primarily focused on EPR dosimetry but now has diversified to include all types of Biological dosimetry, planning for responses to unanticipated release of ionizing radiation, and other related topics.

Our objectives: The aim of the IABERD is to stimulate and coordinate biological and EPR radiation dosimetry activities around the world, with two major objectives: To hold and arrange courses and meetings on matters connected to these fields such as this meeting in Munich, June 2018 and to promote diffusion and exchange of information among people interested in these fields

Website: The website (iaberd.org) is one of the primary means by which IABERD provides sources of useful information for researchers in the field including, but not limited to, upcoming meetings and publications of interest. It is still under active development and all members are strongly encouraged to help evolve this into an optimally valuable resource for those interested in this field.

Membership: The activities of IABERD are supported by donations from industry and, especially, the dues of the members (The cost is €25 for full membership and €15 for students). This membership fee gives you access to the members only section of the website, the right to vote at the General Assembly meeting, to participate in the committees of IABERD to advance the field, to be eligible to be elected with the governance by membership in the Scientific Council, and to support young researchers. Please consider becoming a IABERD member today at: <http://iaberd.org/index.php/subscribe/#account/join>

Meeting of the General Assembly:

12:15 Friday, June 15th immediately following the close of the EPRBiodose meeting



RENEB is a network of organisations, who are active in biological and retrospective physical dosimetry. 26 organisations from 16 European countries have signed a Memorandum of Understanding (MoU) to provide mutual assistance in individual dose estimation in the case of large scale radiological and nuclear emergencies. It started in 2012 as an EU-funded network in order to be able to act as a legal partner for organisations and platforms which are active in emergency preparedness, in radiation protection and in research. Since 2017 it is a registered association. Website: <http://www.reneb.net/>.

RENEB provides

- various techniques of biological and retrospective physical dosimetry for rapid triage classification or for precise individualised dosimetry in small and large scale radiological/nuclear incidents in Europe and beyond
- practical laboratory training in various techniques;
- the opportunity to participate in exercises and intercomparisons.

RENEB enables

- high quality and capacity of biodosimetry services for European countries;
- effective assistance outside Europe, either directly or by means of international organisations.

RENEB communicates

- the main results of its activities to policy makers and stakeholders including the public
- its activities and findings to responsible national agencies, involved in disaster control and emergency preparedness & response and in industrial and medical application of ionising radiation.

In case of questions or requests for training, contact us (reneb@bfs.de) and find out current opportunities and individualised training options in our partner laboratories.



EURADOS was established in 1981. Currently we are a network of more than 70 European institutions (Voting Members) and 560 scientists (Associate Members). Our aim is to advance the scientific understanding and the technical development of the dosimetry of ionising radiation, to foster harmonization of dosimetry across Europe, to organize intercomparisons and benchmark studies, and to offer training activities.

Currently Eight Active Working Groups

The work of EURADOS is mainly performed in Working Groups which are composed of Associate Members. Currently we have eight active Working Groups:

- Harmonisation of Individual Monitoring
- Environmental Dosimetry
- Computational Dosimetry
- Internal Dosimetry
- Radiation Dosimetry in Radiotherapy
- Retrospective Dosimetry
- High-Energy Radiation Fields
- Dosimetry in Medical Imaging

EURADOS Working Group on Retrospective Dosimetry

This Working Group was established in 2009 to support European collaboration in physical and biological retrospective dosimetry, with the aim

- To establish a multi-parameter dosimetry approach based on biological and physical methods
- To disseminate knowledge among various institutions and stakeholders
- To evaluate newly developed physical and biological dosimetry methods
- To establish a common approach for estimation of dose uncertainty
- To elaborate a dosimetric approach after partial body or internal exposure

For further information please visit www.eurados.org. New members with interest and expertise in dosimetry are always welcome!

Certificate of attendance

Certificates of attendance will be made available at the check-in desk.

Name badge

Please wear your name badge during all conference events. Participants will receive their name badge when collecting their conference documents at the check-in desk.

Cloakroom

Coat racks are next to the lecture room.

Opening hours

	Tue 12 June	Wed 13 June	Thu 14 June	Fri 15 June
Check-in desk	08.00-16.30	08.00-13.00	08.00-13.00	08.00-12.30
Poster exhibition	throughout the conference			
Industr. exhibition	throughout the conference			

Service for impaired people

The lecture room is accessible for wheelchair.

Wifi access

Wifi is available.

Catering

Catering (coffee breaks, lunch) will be served during the official coffee breaks in the foyer of the lecture room.

Mobile/cell phones

All participants are asked to switch their mobile phones off before entering the conference sessions.

Publication of abstracts of oral and poster presentations

All abstracts will be published on USB flash drive. The USB flash drive will be handed out at the check-in desk.

General information

Publication of proceedings

The proceedings will be published within one year after the conference, as a special issue of Radiation Protection Dosimetry. All manuscripts will be evaluated by two referees and have to meet the journal's acceptance criteria. Submission is only available to the first author of each manuscript. Manuscripts have to be submitted online via the journal's homepage. Deadline for manuscript submission is 31 July 2018.

Poster prize

The poster prizes for young scientists (prize money of 1500 €) are sponsored by IABERD (International Association of Biological and EPR Radiation Dosimetry), RENEB (Running the European Network of Biodosimetry), and EURADOS (The European Radiation Dosimetry Group). The prizes will be judged by the audience (voting paper deposited in backpack) and awarded during the conference dinner.

Shuttle bus from subway station U2 "Am Hart", 12th – 15th June 2018

For the bus shuttle schedule, please refer to the pin board (check-in desk, foyer).

EPRBio Dose 2018 Munich



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