



FROM DOSIMETRY TO BIOLOGICAL EFFECT: RADIOBIOLOGY AS GUIDE TO CLINICAL PRACTICE IN NUCLEAR MEDICINE

Co-organized with COST BM0607 – Final Action congress

Web site: www.nuclearmedicinediscovery.org

Site: Sorrento, Italy

Date: November 5-8, 2011

CME: 18 European credits

Teaching material: editing of a book with the text of lectures and of abstracts of scientific presentation.

Promoting committee

Marco Chianelli, Rome, Italy
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Massimo Salvatori, Rome, Italy
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Practical Course

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Saturday 5th November 2011

14:00-15:15 Registration

15:15-15:30 Welcome

Marco Chianelli, Luigi Mansi, Massimo Salvatori, Alberto Signore.

15:30-16:15 Opening lecture

Role of Radiobiology in low level radiation risk assessment: status, perspectives and research needs.

Mauro Belli, Rome, Italy

Session 1 - Introduction to radiobiology for nuclear medicine

16:15-16:45 Radiobiology and diagnostic nuclear medicine similarities and differences with respect to radiology

Marco Chianelli, Rome, Italy

16:45-17:15 Radiobiology and therapeutic nuclear medicine similarities and differences with respect to EBRT

Cecilia Arrichiello, Naples, Italy

17:15-17:45 *Coffee Break*

17:45-18:15 Low doses and non targeted effects: genomic instability, bystander effect, adaptive response

Anna Giovanetti, Rome, Italy

18:15-18:45 From markers of exposure to markers of risk

Marco Durante, Germany

18:45-19:15 Round table: Linear no threshold hypothesis does it apply to low doses in nuclear medicine?

chair leaders: *Mauro Belli, Marco Durante*

19:30-21:00 *Welcome cocktail*

Sunday 6th November 2011

Session 2 - Radiation risk for patients, staff and population

- 09:00-09:30 Risk assessment due to ionizing radiation:
conceptual approach for radiological protection purposes
Roberto Moccaldi, Rome, Italy
- 09:30-10:00 Radiation exposure to embryo-fetus and newborn child
Marie Claire Cantone, Milan, Italy
- 10:00-10:30 Use of biologic dosimetry for radiation risk assessment
Anne Vral, Gent, Belgium
- 10:30-11:00 *Coffee Break*
- 11:00-11:30 Risk in SPET and PET diagnostic nuclear medicine
Marco Chianelli, Rome, Italy
- 11:30-12:00 Risk in therapeutic Nuclear Medicine
Marta Cremonesi, Milan, Italy
- 12:00-12:30 Round table: Radionuclide therapy and radioprotection: time for a revision?
chair leaders: *Marco Chianelli, Massimo Salvatori*
- 12:30-14:00 *Lunch*

Oral presentations

Session A: Radiopharmacy Chairmen

- 14:00-14:12 NEW METHOD FOR ⁴⁷SC PRODUCTION IN NUCLEAR REACTOR
B.Bartoś, A.Majkowska, A.Kasperek, A.Bilewicz
- 14:12-14:24 PREPARATION AND QUALITY CONTROL OF ⁹⁰Y-DOTATATE AND ¹⁷⁷LU-DOTATATE FOR CLINICAL APPLICATION IN SERBIA
D.Djokic, N.Nikolic, Dj.Petrovic, D.Stankovic, R.Mikolajczak, D. Pawlak, M.Matovic, M. Jeremic
- 14:24-14:36 EFFECTIVENESS OF QUENCHERS TO PREVENT RADIOLYSES OF ¹¹¹IN OR ¹⁷⁷LU LABELLED PEPTIDES, SUCH AS CCK AND GRP ANALOGS; OPTIMALIZATION TO MAINTAIN RADIOCHEMICAL PURITY
Erik de Blois, Ho Sze Chan, Rory de Zanger, Dik Kwekkeboom and Wouter A.P. Breeman.
- 14:36-14:48 METHOD FOR POST-ELUTION CONCENTRATION AND ACIDITY REDUCTION OF ELUATE OBTAINED FROM SNO₂ BASED ⁶⁸Ge/⁶⁸Ga GENERATOR.
Dariusz Pawlak, Wioletta Wojdowska, Renata Mikolajczak
- 14:48-15:00 RADIOCHEMICAL PURITY ASSESSMENT RETRIEVED FROM VARIOUS CHROMATOGRAPHIC SYSTEMS BASED ON DMSA COMPLEXES WITH ^{99m}Tc AND ¹⁸⁸Re AT (III) AND (V) OXIDATION STATES.
Dariusz Pawlak, Piotr Garnuszek, Michał Maurin, Drina Jankovic, Urszula Karczmarczyk, Renata Mikolajczak

15:00-15:12 EVALUATION OF DOTA-COUPLED MINIGASTRIN NLE CONGENERS AND OUR FIRST EXPERIENCE WITH BI-213 LABELLING
Marko Kroselj, Petra Kolenc Peitl, Rosalba Mansi, MariaLuisa Tamma, Martin Behe, Tanja Gmeiner Stopar, Jean Claude Reubi and Helmut R. Maecke

Session B: Dosimetry
Chairmen

15:12-15:24 DEVELOPMENT OF A REAL TIME 90Y DOSIMETRY ASSESSMENT SYSTEM BASED ON BREMSSTRAHLUNG PINHOLE SPECT DURING LIVER-SIRT
Stephan Walrand, Stanislas Pauwels, François Jamar.

15:24-15:36 3D PATIENT-SPECIFIC DOSIMETRY IN PATIENTS ENROLLED FOR ¹⁷⁷Lu-DOTATOC PRRT
F.Fioroni, E.Grassi, V.D'Errico, E.Mezzenga, A.Filice, A.Versari, D.Salvo, M.Iori

15:36-15:48 MURINE S-FACTORS BASED ON MONTE-CARLO SIMULATION FOR THE REALISTIC MODEL MOBY FOR SEVERAL RADIONUCLIDES OF INTEREST IN μ -PET
T. Mauxion, J. Barbet, M. Bardiès

15:48-16:00 NANODOSIMETRY OF I-125 AUGER ELECTRONS
S. Pszona and A. Bantsar

16:00-16:12 STUDY OF THE RELATIONSHIP BETWEEN THE MEAN NUCLEUS ABSORBED DOSE AND THE BIOLOGICAL RESPONSE OF TUMOR CELLS EXPOSED TO ¹²⁵I-LABELED MONOCLONAL ANTIBODIES
Bérangère Piron, Nathalie Kersual, Nicolas Chouin, Manuel Bardiès, Nadège Gironis, Caroline Bascoul Mollevi, Isabelle Navarro-Teulon, André Pèlerin and Jean-Pierre Pouget

16:15-16:45 *Coffee Break*

Session C: Biological and genotoxic effects
Chairmen

16:45-16:57 IN VIVO CELLULAR GENOTOXICITY OF ¹⁸⁸Re-ANTI-VEGF-MAB ON NORMAL CELLS USING COMET ASSAY
Diana Savu, Valeria Lungu, Dana Niculae, Iuliana Gruia, Rodica Anghel, Cosmin Mustaciosu, Ileana Petcu

16:57-17:09 BIOLOGICAL EFFECTS ON NORMAL TISSUES FOLLOWING LOW DOSE ¹³¹I IRRADIATION; MICROARRAY AND GENE EXPRESSION ANALYSIS
Emil Schöler, Toshima Z. Parris, Nils Rudqvist, Khalil Helou, Eva Forssell-Aronsson

17:09-17:21 GLOBAL TRANSCRIPTIONAL RESPONSE ON MOUSE KIDNEY FOLLOWING INTERNAL IRRADIATION WITH ¹⁷⁷Lu-OCTREOTATE
Emil Schöler, Toshima Z. Parris, Nils Rudqvist, Khalil Helou, Eva Forssell-Aronsson

17:21-17:33 MOLECULAR ANALYSIS OF GENE POLIMORFISMS AND RESPONSE TO RADIOIMMUNOTHERAPY: PRELIMINARY DATA
P. A. Erba, M. Sollini, C. Mazzanti, K. Zavaglia K, F. Lessi, S. Tomei, R. Boni, E. Lazzeri, A. Cataldi, C. Manfredi, G. Bevilacqua and G. Mariani

17:33-17:45 THE TRANSCRIPTIONAL RESPONSE TO IN VIVO ASTATINE-211 EXPOSURE OF MOUSE THYROIDS REVEALS DISTINCT ABSORBED DOSE-DEPENDENT PROFILES
Rudqvist N, Parris TZ, Schöler E, Helou K, Forssell-Aronsson E

- 17:45-17:57 IN VIVO IODINE-131 EXPOSURE REVEALS DISTINCT ABSORBED DOSE-DEPENDENT GENE EXPRESSION PROFILES IN MOUSE THYROID TISSUE
Rudqvist N, Parris TZ, Schüler E, Helou K, Forssell-Aronsson E
- 17:57-18:09 ASSESSMENT OF CYTOGENETIC AND GENOTOXIC EFFECTS OF CURCUMIN ON HUMAN LYMPHOCYTES *IN VITRO*
Natividad Sebastià, Miguel Almonacid, Juan Ignacio Villaescusa, Jose Miguel Soriano, Alegría Montoro
- Session D: Pre-clinical studies**
Chairmen
- 18:09-18:21 PITFALLS OF GLUCAGON LIKE PEPTIDE-1 RECEPTOR IMAGING PERFORMED BY [LYS⁴⁰(AHX-HYNIC-^{99m}Tc/EDDA)NH₂]-EXENDIN-4.
Hubalewska-Dydejczyk A, Sowa-Staszczak A, Pach D, Jabrocka-Hybel A, Stefańska A, Tomaszuk M, Mikołajczak R, Janota B
- 18:21-18:33 PRECLINICAL EVALUATION OF ¹⁷⁷Lu-DOTAM-EGF
Dana Niculae, Valeria Lungu, Rodica Anghel, Iuliana Gruia, Ioana Esanu and Ioan Ursu
- 18:33-18:45 *IN VITRO* BIOLOGICAL TESTING OF ¹⁸⁸Re-ANTI-VEGF ¹⁸⁸Re-ANTI-MUC1 ON TUMOR CELLS
Dana Niculae, Lorelei Brasoveanu, Diana Savu, Iuliana Gruia, Rodica Anghel, Ioana Esanu
- 18:45-18:57 INTRATUMORAL DISTRIBUTION OF RADIOLABELED MONOCLONAL ANTIBODY BR96 IN A SYNGENEIC RAT COLON CARCINOMA MODEL
Sophie E. Eriksson, Anders Örbom, Erika Elgström, Sven-Erik Strand, Jan Tennvall and Rune Nilsson
- 18:57-19:09 THE EFFECTS OF RECEPTOR AFFINITY OF SOMATOSTATIN-BASED RADIOPEPTIDES ON RADIOACTIVITY UPTAKE IN SOMATOSTATIN RECEPTOR-RICH ORGANS
A.Laznickova, M. Laznicek, H.R.Maecke
- 19:09-19:21 COMPARISON OF L-GLU VS. D-GLU ¹¹¹In-DOTA COUPLED MINIGASTRIN CONGENERS FOR TARGETING OF THE GASTRIN RECEPTOR
Petra Kolenc Peitl¹, MariaLuisa Tamma², Marko Kroselj¹, Martin Behe³, Jean Claude Reubi⁴, Helmut R. Maecke^{2,3} and Rosalba Mansi^{2,3}
- 20:30-23:00 *Social Dinner*

Monday 7th November 2011

COST BM0607 WG1: Molecular targets for targeted radionuclide therapy

08:30-08:45 Jaques Barbet - coordinator report

08:45-09:00 BIOKINETICS AND PRELIMINARY DOSE ASSESSMENT OF [LYS⁴⁰(AHX-HYNIC-^{99m}Tc/EDDA)NH₂]-EXENDIN-4 FOR GLUCAGONLIKE PEPTIDE-1 RECEPTOR IMAGING.

Tomaszuk M, Sowa-Staszczak A, Mikołajczak R, Buziak-Bereza M, Lenda-Tracz W, Głowa B, Janota B, Hubalewska-Dydejczyk A

COST BM0607 WG3: Dosimetry and radiobiology

09:00-09:15 Glenn Flux, Mark Konijnenberg - coordinator report

09:15-09:30 A COMPARTMENTAL MODEL TO PREDICT HAEMATOLOGIC TOXICITY
Nicolas Sas, Julie Rousseau, Frédérique Nguyen, Alexandre Govignon, Jérôme Abadie, Jacques Barbet, Cecilia Hindorf

09:30-09:45 4D-SPECT/CT ACQUISITION IN 3D-DOSE CALCULATION AND DOSE PLANNING IN LU-177-PRRT FOR CLINICAL ROUTINE
Aki Kangasmäki, Joakim Pyry, Timo Kiljunen, Kalevi Kairemo

COST BM0607 WG4: Radionuclides

09:45-10:00 Renata Mikolajczak - coordinator report

10:00-10:15 DEVELOPMENT OF A 5 MCI ⁴⁴Ti/⁴⁴Sc RADIONUCLIDE GENERATOR FOR MOLECULAR IMAGING VIA PET
N. Loktionova, D.V. Filosofov, M. Pruszyński, F. Rösch

10:15-10:30 MEASURING SPECIFIC ACTIVITY OF LUTETIUM-177 (¹⁷⁷Lu) BY HPLC: AN ALTERNATIVE METHOD
Wouter AP Breeman, Erik de Blois, Rory de Zanger and Dik J Kwekkeboom.

10:30-10:45 COMPARATIVE EVALUATION OF ^{99m}Tc AND ¹¹¹In-LABELED GRP-ANALOGS: EFFECTS OF METAL CHELATE ON TUMOR AND RENAL UPTAKE
Marsouvanidis PJ, Nock BA, Kaloudi A, Tatsi A, Krenning EP, de Jong M, Maina T

10:45-11:15 *Coffee Break*

Session 3 - How to obtain maximum therapeutic efficacy and the best tolerability in radionuclide therapy

11:15-11:45 Use of radioprotectors in radionuclide therapy
Eugenio Iorio, Naples, Italy

11:45-12:15 Strategies to enhance efficacy of radionuclide treatment
Mark Konijnenberg, Rotterdam, The Netherlands

12:15-12:45 Treatment of hyperthyroidism: is it possible to predict the outcome in Graves' disease?
Claudio Traino, Pisa, Italy

12:45-14:15 *Lunch*

- 14:15-14:45 Tumour biology: choice of radiopharmaceutical in relation to the molecular and biological characteristics of the tumors
Marion de Jong, Rotterdam, The Netherlands
- 14:45-15:15 Peptide receptor radionuclide therapy
Lisa Bodei, Milan, Italy
- 15:15-15:45 Radionuclide treatment of liver tumours and metastases
Carlo Chiesa, Milan, Italy
- 15:45-16:15 Treatment of differentiated thyroid carcinomas: dosimetry and biological dosimetry for tailored treatment with maximum efficacy
Christoph Reiners, Wurzburg, Germany
- 16:15-16:45 Round table: Radionuclide therapy may and has to be more aggressive?
chair leaders: *Alberto Signore and Luigi Mansi*
- 16:45-17:15 *Coffee Break*

COST BM0607 WG2: New ligands and chemistry for targeted radionuclide therapy

- 17:15-17:30 John Mertens, Roger Schibli - coordinator report
- 17:30-17:45 EVALUATION OF FOLIC ACID RADIOCONJUGATE WITH IMPROVED IN VIVO PROPERTIES FOR FOLATE RECEPTOR-TARGETED RADIONUCLIDE TUMOR THERAPY
Cristina Müller, Villigen, Switzerland
- 17:45-18:00 MACROCYCLIC BISPHOSPHONATES FOR PET-IMAGING WITH ⁶⁸GA AND THERAPY WITH ¹⁷⁷LU OF BONE METASTASES
M. Meckel, Mainz, Germany

COST BM0607 WG5: Preclinical studies with radiolabelled peptides

- 18:00-18:15 Otto Boerman and Luigi Aloj- coordinator report
- 18:15-18:30 IMAGING SOMATOSTATIN RECEPTOR 2 GENE TRANSFER WITH POSITRON EMISSION TOMOGRAPHY IN MICE
Luigi Aloj
- 18:30-19:00 THERANOSTICS: GRP RECEPTOR TARGETING PEPTIDES AS AN EXAMPLE
Rosalba Mansi
- 19:00-19:15 ¹⁷⁶LU- VERSUS ¹⁷⁶YB-DERIVED ¹⁷⁷LU LABELLED TO DOTA, TYR³-OCTREOTATE FOR PRRT; FIRST DATA FROM PRECLINICAL STUDIES
Marleen Melis, Mark W. Konijnenberg, Saskia C. Berndsen, Wout A.P. Breeman, Erik de Blois, and Marion de Jong

Tuesday 8th November 2011

(Parallel sessions)

Session 4 - Practical course in biologic dosimetry (small hall)

09:00-13:00 Practical demonstration of relevant biotechniques for biological dosimetry:
a proposal for harmonized research protocols

- Aim, sensitivity and specificity of biological dosimetry
- Isolation of cells and supernatant
- Stocking and preparations of specimens
- Description of the techniques
- Reading and interpretations of results
- Limits, pitfalls, interferences

COST PROGRAMME Management Committee meeting

9:00-10:20 Coordinators' reports

10:20-10:50 *Coffee Break*

10:50-13:00 Coordinators' reports

13:00 -14:00 *Farewell cocktail*