9th Symposium on Targeted Alpha Therapy

PAŁAC PRYMASOWSKI
ul. Senatorska 13/15, Warsaw, Poland
May 19-22, 2015

Organizers:

Alfred Morgenstern
Frank Bruchertseifer
European Commission
Joint Research Centre
Institute for Transuranium Elements
Karlsruhe, Germany

Leszek Krolicki
Jolanta Kunikowska
Department of Nuclear Medicine
Medical University Warsaw

Jan Schöpflin
Eckert & Ziegler Eurotope GmbH
Berlin, Germany

Scientific committee:

Dr. Christos Apostolidis
Dr. Frank Bruchertseifer,
Prof. Frederik Giesel
Dr. Clemens Kratochwil
Prof. Leszek Krolicki
Dr. Jolanta Kunikowska
Dr. Saed Mirzadeh
Dr. Alfred Morgenstern

European Commission, JRC-ITU
European Commission, JRC-ITU
University Hospital Heidelberg
University Hospital Heidelberg
Medical University Warsaw
Medical University Warsaw
Oak Ridge National Laboratory
European Commission, JRC-ITU
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European Commission
Joint Research Centre
Institute for Transuranium Elements

Medical University Warsaw

Eckert & Ziegler Eurotope GmbH

Department of Energy - Office of Science
Actinium Pharmaceuticals

NorthStar Medical Radioisotopes, LLC

POLATOM
Program of the
9th Symposium on Targeted Alpha Therapy

PAŁAC PRYMASOWSKI
ul. Senatorska 13/15, Warsaw, Poland
May 19-22, 2015

Tuesday May 19, 2015

19:00 – 22:00 WELCOME RECEPTION AND REGISTRATION
PAŁAC PRYMASOWSKI

Wednesday May 20, 2015

8:30 – 8:45 WELCOME / INTRODUCTION
Leszek Krolicki, Head of Department of Nuclear Medicine, Medical University Warsaw
Alfred Morgenstern
European Commission, Joint Research Centre, Institute for Transuranium Elements

SESSION I CLINICAL EXPERIENCES
Moderator: tbd

8:45 – 9:10 Targeted alpha therapy of glioblastoma multiforme:
clinical experience with $^{213}$Bi-substance P
L. Krolicki$^1$, F. Bruchertseifer$^2$, J. Kunikowska$^1$, H. Koziara$^3$, B. Królicki$^3$, M. Jakuciński$^4$, R. Boll$^5$, K. Murphy$^5$, C. Apostolidis$^2$, A. Morgenstern$^2$

$^1$ Department of Nuclear Medicine, Medical University of Warsaw, Warsaw, Poland; $^2$ European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany; $^3$ Department of Neurosurgery, Institute of Psychiatry and Neurology, Warsaw, Poland; $^4$ Department of Nuclear Medicine, Brodnowski Hospital, Warsaw, Poland; $^5$ Oak Ridge National Laboratory, Oak Ridge, USA
9:10 – 9:35  Targeted alpha-therapy of low-grade gliomas: long-term observation
Adrian Merlo*, Dominik, Cordier*, Helmut Mäcke, Frank Bruchertseifer+, Alfred Morgenstern+, Leszek Krolicki&
Neurosurgery* and Nuclear Medicine&, Universities of Basela and Warsaw#, Switzerland and Poland, +European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

9:35 – 10:00  Clinical experience with intra-arterial ²¹³Bi-DOTATOC in patients with liver confined neuroendocrine tumors
¹F.L. Giesel, ²M. Rius, ²F. Bruchertseifer, ²C. Apostolidis, ²A. Morgenstern, ²C. Kratochwil
¹University Hospital Heidelberg, Dept. Nuclear Medicine, Heidelberg, Germany; ² European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

10:00 – 10:25  ²²⁵Ac-DOTATOC – dose finding for alpha particle emitter based radionuclide therapy of neuroendocrine tumors
¹Clemens Kratochwil, ²Frank Bruchertseifer, ¹Frederik L. Giesel, ²Christos Apostolidis, ¹Uwe Haberkorn, ²Alfred Morgenstern
¹University Hospital Heidelberg, Dept. Nuclear Medicine, Heidelberg, Germany; ² European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

10:25 – 10:55  Coffee break

10:55 – 11:20  Targeted Alpha-Particle Therapy with Actinium-²²⁵ (²²⁵Ac)-Lintuzumab for Acute Myeloid Leukemia (AML) Alone and in Combination with Low-Dose Cytarabine (LDAC)
Columbia University Medical Center, New York, NY; MD Anderson Cancer Center, Houston, TX; Swedish Cancer Institute, Seattle, WA; Memorial Sloan-Kettering Cancer Center, New York, NY; Johns Hopkins University, Baltimore, MD; Texas Oncology-Baylor University, Dallas TX; European Joint Commission, Joint Research Center, Institute for Transuranium Elements, Karlsruhe, Germany, and Actinium Pharmaceuticals, Inc., New York, NY
11:20 – 11:45  
**First intravesical α-radioimmunotherapy of human urothelial carcinoma in men – a promising new therapy for carcinoma in situ after BCG failure?**

M. E. Autenrieth¹, F. Kurtz¹, T. Horn¹, C. Seidl², A. Morgenstern³, F. Bruchertseifer³, C. Apostolidis³, C. Pfob², J.E. Gschwend¹, R. Senekowitsch-Schmidtke², K. Scheidhauer²

¹Dept. Urology, Technische Universität Muenchen, Munich, Germany; ²Dept. Nuclear Medicine, Technische Universität Muenchen, Munich, Germany; ³European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

**SESSION Ila**  
PRECLINICAL STUDIES  
Moderator: tbd

11:50 – 12:10  
**Combination of Alpha-Radioimmunotherapy and a novel Immunomodulatory agent for the treatment for the treatment of multiple myeloma**

Nolwenn Fichou¹²³, Sébastien Gouard¹²³, Fella Tamzalit¹²³, Catherine Maurel¹²³, Bjarne Bogen⁵, Alfred Morgenstern⁶, Frank Bruchertseifer⁶, Yannick Jacques¹²³, Michel Chérel¹²³⁴, Erwan Mortier¹²³ and Joëlle Gaschet¹²³

¹ CRCNA-UMR 892 INSERM; ² CNRS 6299; ³ Université de Nantes, France; ⁴ Institut de Cancérologie de l’Ouest, Saint-Herblain, France; ⁵ Institute of Immunology, University of Oslo, Rikshospitalet-Radiumhospitalet Medical Center, Oslo, Norway; ⁶ European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

12:10 – 12:30  
**Evaluation of the therapeutic potential of alpha-radioimmunotherapy in combination with the adoptive transfer of tumor-specific T cells**

Jérémie Ménager¹²³, Jean-Baptiste Gorin¹²³, Sébastien Gouard¹²³, Catherine Maurel¹²³, Michel Chérel¹²³⁴, Alfred Morgenstern⁵, Frank Bruchertseifer⁵, François Davodeau¹²³, Yannick Guilloux¹²³ and Joëlle Gaschet¹²³

¹ INSERM , U892 - CRCNA, Nantes, France; ² Université de Nantes, Nantes, France; ³ CNRS UMR 6299, Nantes, France; ⁴ Institut de Cancérologie de l’Ouest, Saint-Herblain, France; ⁵ European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany
12:30 – 12:50  
**Anti-tumor efficacy of {superscript}213^{Bi}-labeled anti-MISRII 16F12 monoclonal antibody in ovarian cancer**  
Riad Ladjohounlou{superscript}1,2,3,4, Alexandre Pichard{superscript}1,2,3,4, Vincent Boudousq{superscript}1,2,3,4, Nicolas Chouin{superscript}5, Frank Bruchertseifer{superscript}6, Alfred Morgenstern{superscript}6, Isabelle Navarro-Teulon{superscript}1,2,3,4 and Jean-Pierre Pouget{superscript}1,2,3,4  
1 IRCM, Institut de Recherche en Cancérologie de Montpellier, Montpellier, F-34298, France; 2 INSERM, U1194, Montpellier, F-34298, France; 3 Université de Montpellier, Montpellier, F-34090, France; 4 Institut régional du Cancer de Montpellier, Montpellier, F-34298, France; 5 AMAROC, ONIRIS, Nantes 44300, France; 6 European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany.

12:50 – 14:00  
**Working Lunch / Poster Session I**

**SESSION IIb PRECLINICAL STUDIES**

Moderator: tbd

14:00 – 14:20  
**Pretargeted radioimmunotherapy of CEA-expressing tumors using the alpha emitter bismuth-213**  
Sandra Heskamp{superscript}1, Reinter Hernandez{superscript}2, Markus Essler{superscript}3, Frank Bruchertseifer{superscript}4, Alfred Morgenstern{superscript}4, Wim J.G. Oyen{superscript}1, Christof Seidl{superscript}5, William McBride{superscript}6, David M. Goldenberg{superscript}6, Otto C. Boerman{superscript}1  
1 Department of Radiology and Nuclear Medicine, Radboud university medical center, Nijmegen, The Netherlands; 2 Medical Physics Department, University of Wisconsin-Madison, Madison, WI, USA; 3 Klinik und Poliklinik für Nuklearmedizin, University of Bonn, Bonn, Germany; 4 European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany; 5 Nuklearmedizinische Klinik, Klinikum rechts der Isar der Technischen Universität München, Munich, Germany; 6 Immunomedics, Morris Plains, NJ, USA

14:20 – 14.40  
**{superscript}213^{Bi}-[DOTA{superscript}0,Tyr{superscript}3]-octreotate as promising candidate for targeted alpha therapy: preclinical studies in vivo and in vitro**  
Ho Sze Chan{superscript}1, Mark W. Konijnenberg{superscript}1, Erik de Blois{superscript}1, Tamara Anderson{superscript}3, Monique Nysus{superscript}3, Stuart Koolewijn{superscript}1, Wouter A. Breeman{superscript}1, Robert W. Atcher{superscript}4, Alfred Morgenstern{superscript}5, Frank Bruchterseifer{superscript}5, Jeffrey P. Norenberg{superscript}3* and Marion de Jong{superscript}1  
1 Department of Nuclear Medicine, Erasmus MC, Rotterdam, the Netherlands; 2 Department of Radiology, Erasmus MC, Rotterdam, the Netherlands; 3 Radiopharmaceutical Sciences Program, College of Pharmacy, University of New Mexico Health Sciences Center, Albuquerque, NM, United States; 4 Los Alamos National Laboratory, Los Alamos, NM, United States; 5 European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany
14.40 – 15:00  **Long-term toxicity of $^{213}$Bi-BSA in mice**  
Laëtitia Dorso, Edith Bigot-Corbel, Jérôme Abadie, Sébastien Gomard, Frank Bruchertseifer, Alfred Morgenstern, Catherine Maurel, Michel Chérel, François Davodeau  
INSERM, Nantes, France; European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

15:00 – 15:20  **Survival, dosimetry and RBE determination for external alpha particles and alpha-RIT of the radioresistant human pathogen Cryptococcus neoformans**  
E. Dadachova¹, R. A. Bryan¹, Alfred Morgenstern², Christos Apostolidis², Stephen A. Marino³, Igor Shuryak³  
¹Department of Radiology, Albert Einstein College of Medicine, Bronx, New York, USA; ²European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany; ³Center for Radiological Research, Columbia University Medical Center, New York, New York; Radiological Research Accelerator Facility, Nevis Laboratories, Irvington, New York, USA

15:20 – 15:50  **Coffee break**

SESSION IIc  PRECLINICAL STUDIES  
Moderator: tbd

15:50 – 16:10  **Conjugation of PSMA-targeting ligands to nanocarriers loaded with Actinium-225 enhances perinuclear localization and improves efficacy against tumor endothelial analogues**  
Charles Zhu¹, Amey Bandekar¹, Michelle Sempkowski¹, Sangeeta Ray Banerjee², Martin G. Pomper², Frank Bruchertseifer³, Alfred Morgenstern³, Stavroula Sofou¹  
¹Departments of Chemical and Biochemical Engineering and Biomedical Engineering, Rutgers University, 599 Taylor Road, Piscataway, NJ 08854; ²Russell H. Morgan Department of Radiology and Radiological Science, Johns Hopkins Medical School, Baltimore, MD 21287; ³European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

16:10 – 16:30  **Radioimmunotherapy with $\alpha$-emitting radioisotope $^{211}$At**  
Huizi Li, Sumitaka Hasegawa, Tadashi Kamada, Tsuneo Saga  
National Institute of Radiological Sciences, Japan

16:30 – 16:50  **The Happy Ending Story of Radiumtherapy**  
Christof Seidl  
Department of Nuclear Medicine, Department of Obstetrics and Gynecology, Technische Universität München, München, Germany

16:50  **ADJOURN**
Thursday May 21, 2015

SESSION III  DOSIMETRY AND INSTRUMENTATION
Moderator: tbd

8:30 – 8:50

Quantitative Single-Particle Digital Autoradiography and Imaging Applications of the iQID Alpha Camera
Brian Miller\textsuperscript{1,2}, Matthias Miederer\textsuperscript{3}, Christoph Brochhausen\textsuperscript{4}, Michael Dion\textsuperscript{5}, George Tabatabaze\textsuperscript{4}, Sergei Y. Tolmachev\textsuperscript{4}, Sofia Frost\textsuperscript{1}, Johnnie Orozco\textsuperscript{5}, Oliver Press\textsuperscript{5}, and Brenda Sandmaier\textsuperscript{5}
\textsuperscript{1}Radiation Detection and Nuclear Sciences Group, Pacific Northwest National Laboratory (PNNL), Richland WA, USA; \textsuperscript{2}College of Optical Sciences, The University of Arizona, Tucson, AZ, USA; \textsuperscript{3}University Medical Center of the Johannes Gutenberg University Mainz, Germany; \textsuperscript{4}United States Transuranium and Uranium Registries, College of Pharmacy, Washington State University Richland, WA, USA; \textsuperscript{5}Fred Hutchinson Cancer Research Center, Seattle, WA, USA;

8:50 – 9:10

Ex vivo $\alpha$-imaging and small-scale 3D-dosimetry reveal efficient targeting and high absorbed doses to sub-organ structures in canine tissue biopsies after $^{211}\text{At}$-RIT conditioning for HCT
Sofia HL Frost\textsuperscript{1}, Tom A Bäck\textsuperscript{2}, Brian W Miller\textsuperscript{3,4}, Erlinda B Santos\textsuperscript{1}, Shani L Frayo\textsuperscript{1}, Donald K Hamlin\textsuperscript{1}, Oliver W Press\textsuperscript{1,5}, D Scott Wilbur\textsuperscript{5}, John M Pagel\textsuperscript{1,5}, Brenda M Sandmaier\textsuperscript{1,5}
\textsuperscript{1}Fred Hutchinson Cancer Research Center, Seattle, USA; \textsuperscript{2}University of Gothenburg, Gothenburg, Sweden; \textsuperscript{3}Pacific Northwest National Laboratory, Richland, USA; \textsuperscript{4}College of Optical Sciences, The University of Arizona, Tucson, USA; \textsuperscript{5}University of Washington, Seattle, USA

9:10 – 9:30

Small-scale dosimetry in tumors and kidneys for a pre-clinical model of metastatic prostate cancer using $^{211}\text{At}$-YC-I-27, a PSMA-targeting ligand
Anders Josefsson\textsuperscript{1}, Ana P. Kiess\textsuperscript{1}, Il Mimm\textsuperscript{1}, Ronnie C. Mease\textsuperscript{1}, Mary E. Brummet\textsuperscript{1}, Kwamena Baidoo\textsuperscript{2}, Martin Brechbiel\textsuperscript{1}, George Sgouros\textsuperscript{1}, Martin G. Pomper\textsuperscript{1}, Robert F. Hobbs\textsuperscript{1}
\textsuperscript{1}Johns Hopkins University, Baltimore MD, USA
\textsuperscript{2}National Cancer Institute NIH, Bethesda MD, USA
9:30 – 09:50 Quantitative SPECT Imaging of Ra-223: A Phantom Study
J Yue, EC Frey, T Mauxion, A Josefsson, G Sgouros, RF Hobbs.

09:50 – 10:20 Coffee break

SESSION IV LABELING APPROACHES
Moderator: tbd

10:20 – 10:40 Gold Nanoparticle–Substance P(5-11) Conjugate as a Carrier for 211At in Alpha Particle Therapy
Ł. Janiszewska¹, P. Koźmiński¹, M. Pruszyński¹, A. Bilewicz¹, J. Jastrzębski², J. Choński², A. Stolarz², A. Trzcińska², K. Szklarz³, W. Zipper³
¹Institute of Nuclear Chemistry and Technology, Dorodna 16; 03-195 Warsaw, Poland; ²Heavy Ion laboratory, University of Warsaw, 02-093 Warszawa, Poland; ³Institute of Physics, Department of Nuclear Physics, University of Silesia, 40-007 Katowice, Poland

10:40 – 11:00 Synthesis and characterization of lanthanum phosphate nanoparticles as carriers for 225Ra and 223Ra
J. V. Rojas¹, J. Woodward², N. Chen²,³, A. J. Rondinone² S. Mirzadeh²
¹Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA 23228; ²Center for Nanophase Materials Sciences and Nuclear Safety and Isotopes Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN 37831; ³Provision Center for Biomedical Research, Knoxville, TN 37909

11:00 – 11:20 ⁹⁹mTc and ²²³Ra Labelled Hydroxyapatite Nanoparticles as Potential Theranostic Agents for Nuclear Medicine
P. Mičolová, E. Málková, E. Kukleva, M. Vlk, J. Kozempel
Czech Technical University in Prague, Faculty of Nuclear Sciences and Physical Engineering, Department of Nuclear Chemistry, Břehová 7, CZ-11519 Prague

11:20 – 11:40 Recoil Retention of Recoiling ²²⁵Ac Daughters in Polymersomes
R.M. de Kruijff¹, G. Wang¹, A. Ro¹, A. Morgenstern³, F. Bruchertseifer³, H.T. Wolterbeek¹, A.G. Denkova¹
¹Radiation Science and Technology, Delft University of Technology, Delft, the Netherlands; ²Department of Chemical Engineering, Delft, the Netherlands; ³European Commission, Institute for Transuranium Elements, Karlsruhe, Germany;
11:40 – 12:00  Automating Astatine Labeling of Biomolecules - from Activated Target Material to Radiopharmaceutical Product
Emma Aneheim¹, Holger Jensen², Sture Lindegren¹
¹Targeted Alpha Therapy group, Department of Radiation Physics, Sahlgrenska Academy at the University of Gothenburg, SE41345 Gothenburg, Sweden; ²PET and Cyclotron Unit, KF-3982, Copenhagen University Hospital, Copenhagen, Denmark

12:00 – 12:20  Attempts to rationalize the in vivo instability of $^{211}$At-benzoate compounds
David Teze¹, Tahra Ayed², Rémi Maurice¹, Julie Champion¹, Nicolas Galland³, David Deniaud², Gilles Montavon¹
¹Subatech, UMR CNRS 6457, IN2P3 Université et école des mines de Nantes, France; ²CEISAM, UMR CNRS 6230, Université de Nantes, France

12:20 – 13:30  Working Lunch / Poster Session II

SESSION V  RADIOCHEMISTRY AND NUCLIDE PRODUCTION
Moderator: tbd

13:30 – 13:50  Production and assessment of $^{209}$At as a novel SPECT isotope for the preclinical development of $^{211}$At-based therapies
Jason R Crawford¹,², Paul Schaffer¹, Katie Dinelle², Hua Yang¹, Stephan Blinder³, Vesna Sossi³, and Thomas J Ruth¹,²,³
¹Nuclear Medicine Division, TRIUMF, Vancouver, BC, Canada; ²Dept. Physics and Astronomy, University of Victoria, Victoria, BC, Canada; ³Dept. Physics and Astronomy, University of British Columbia, Vancouver, BC, Canada

13:50 – 14:10  $\alpha$ – emitting radionuclides from natural thorium irradiated with protons
Elena V. LAPSHINA¹, Stanislav V. ERMOLAEV¹, Boris L. ZHUİKOV¹, Aleksandr N. VASILIEV¹, 2, Valentina S. OSTAPENKO¹, ²Ramiz A. ALIEV¹, Stepan N. KALMYKOV²
¹Institute for Nuclear Research of Russian Academy of Sciences, 60th October Anniversary Prospect, 7a, Moscow 117312, Russia; ²Chemistry Department, Lomonosov Moscow State University, Leninskie Gory 1, Russia

14:10 – 14:30  Production and Radiochemical Isolation of $^{230}$Pa/$^{230}$U from Thorium using >50 MeV Protons
Los Alamos National Laboratory, PO Box 1663, Los Alamos, New Mexico, US
14:30 – 14:50 Production of Actinium-225 isotope from long decayed U-233 and development of new technologies for the production of considerable amounts of Actinium-225
N.A. Nerozin¹, V.V. Shapovalov¹, S.V. Khamianov¹, D.Yu. Chuvilin²
¹State Scientific Center of the Russian Federation – Institute for Physics and Power Engineering (SSC RF - IPPE), 249033, Obninsk, Russian Federation; ²RRC “Kurchatov Institute”, Moscow, Russian Federation

14:50 – 15.20 Coffee break

15:20 – 15.50 Tri-Lab (ORNL, BNL, LANL) Research Effort to Provide Accelerator-Produced $^{225}$Ac for Radioimmunotherapy
Eva R. Birnbaum (LANL), Roy Copping (ORNL), David Denton (ORNL), Jonathan W. Engle (LANL), Michael E. Fassbender (LANL), Mitch D. Ferren (ORNL, NIDC), Jonathan M. Fitzsimmons (BNL), Justin R. Griswold (ORNL), Kevin D. John (LANL), John W. Krueger (ORNL), Leonard F. Mausner (BNL), Dmitri G. Medvedev (BNL), Saed Mirzadeh (ORNL), Karen Murphy (ORNL), F. Meiring Nortier (LANL), Dennis R. Phillips (DOE), Phil Pile (BNL), Valery Radchenko (LANL), Wolfgang H. Runde (LANL, NIDC), Daniel W. Stracener (ORNL)

15:50 – 16:10 Extraction chromatographic behavior of actinium and REE
Valentina S. OSTAPENKO¹,², Aleksandr N. VASILIEV¹,², Elena V. LAPSHTINA², Stanislav V. ERMOLAEV², Boris L. ZHUKOV², Ramiz A. ALIEV¹,³, Stepan N. KALMYKOV¹,³
¹Chemistry Department, Lomonosov Moscow State University, Leninskie Gory 1, Moscow, Russia; ²Institute for Nuclear Research of Russian Academy of Sciences, 60th October Anniversary Prospect, 7a, Moscow, Russia; ³National research center Kurchatov Institute, 1, Akademika Kurchatova p.l, Moscow, Russia

16:10 – 16:30 Alternate Method for Production of $^{225}$Ac – Update
James Harvey
NorthStar Medical Radioisotopes, LLC, Madison, WI, US

16:30 – 16:45 SYMPOSIUM CLOSURE

Friday May 22, 2015

8:30 – 18:00 VISIT OF POLATOM SITE AND TRIP TO ZELAZOWA WOLA, FRYDERYK CHOPIN’S BIRTHPLACE
High-resolution alpha-imaging of historical liver samples from patients exposed to Thorotrast
Matthias Miederer¹, Brian Miller², Christoph Brochhausen³, Stephanie Pektor¹, Mathias Schreckenberger¹
¹Department of Nuclear Medicine, University Medical Center of the Johannes Gutenberg University Mainz, Germany; ²Radiation Detection and Nuclear Sciences Group, Pacific Northwest National Laboratory (PNNL), Richland WA, USA; ³Institute of Pathology, University Medical Center of the Johannes Gutenberg University Mainz, Germany

L-Lysine Administration Reduce Nephrotoxicity In Targeted Alpha Therapy With $^{213}$Bi-[DOTA0,Tyr3]-octreotate
Ho Sze Chan¹, Mark W. Konijnenberg¹, Tamara Anderson¹, Monique Nysus³, Erik de Blois¹, Wouter A. Breeman¹, Robert W. Atcher⁴, Marion de Jong¹,², and Jeffrey P. Norenberg³
¹Department of Nuclear Medicine, Erasmus MC, Rotterdam, the Netherlands; ²Department of Radiology, Erasmus MC, Rotterdam, The Netherlands; ³Radiopharmaceutical Sciences Program, College of Pharmacy, University of New Mexico Health Sciences Center, Albuquerque, NM, United States; ⁴Los Alamos National Laboratory, Los Alamos, NM, United States

Application of nephron-based dosimetry model for $^{225}$Ac-7.16.4 α-particle radiopharmaceutical therapy of a pre-clinical metastatic breast cancer model
Anders Josefsson¹, Charles Zhu², Sunju Park¹, Diane Abou¹, Hong Song¹, David Huso¹, Tom Bäck³, Frank Bruchertseifer⁴, Alfred Morgenstern⁴, Wesley E. Bolch⁵, George Sgouros¹, Robert F. Hobbs¹
¹ Johns Hopkins University, Baltimore MD, USA; ² Rutger University, New Jersey NJ, USA ³ University of Gothenburg, Gothenburg, Sweden; ⁴ European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany; ⁵ University of Florida, Gainesville FL, USA

Substance P - nanozeolite labeled with $^{223}$Ra – a new potential radiobioconjugate for internal alpha therapy
A.Bilewicz¹, A. Piotrowska¹, E.Leszczuk¹, Ł.Janiszewska, P.Koźmiński¹, A.Morgenstern², F.Bruchertseifer²
¹Institute of Nuclear Chemistry and Technology, Warsaw, Poland; ² European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

Evaluation of hydroxyapatite particles as carriers for $^{223}$Ra recovered from proton-irradiated thorium
Aleksandr N. VASILIEV¹,², Valentina S. OSTAPENKO¹,², Elena V. LAPSHINA¹, Alexander V. Severin², Stanislav V. ERMOLAEV³, Boris L. ZHUIKOV¹, Stepan N. KALMYKOV³
¹Institute for Nuclear Research of Russian Academy of Sciences, 60¹⁰ October Anniversary Prospect, 7a, Moscow 117312, Russia; ²Chemistry Department, Lomonosov Moscow State University, Leninskie Gory 1, 119991, Russia; ³National Research Center “Kurchatov Institute”, Moscow, 123182, Academician Kurchatov sq., 1, Russia
Triggered interstitial release of diffusing forms of Actinium-225 by non-targeted liposomes improves killing efficacy in large spheroids
Charles Zhu¹, Timothy Holleran¹, Frank Bruchertseifer², Alfred Morgenstern², Stavroula Sofou¹
¹Departments of Chemical and Biochemical Engineering and Biomedical Engineering, Rutgers University, 599 Taylor Road, Piscataway, NJ 08854; ²European Commission, Joint Research Centre, Institute for Transuranium Elements, Karlsruhe, Germany

Hyperpolarized [1-13C]-Pyruvate metabolism in LN18 glioblastoma cancer cells under treatment with alpha-lipoic acid
Benedikt Feuerecker, Christian Hundshammer, Markus Schwaiger
Department of Nuclear Medicine, Technische Universität München, München, Germany

Poster SESSION II

Production of Actinium-225 at Oak Ridge National Laboratory
Shelley Van Cleve, Susan Hogle, Rose Boll, Karen Murphy, David Denton, Saed Mirzadeh
Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831

Production of Thorium-229 at the ORNL High Flux Isotope Reactor (HFIR)
Susan Hogle, Rose Boll, Karen Murphy, David Denton, Allison Owens, Saed Mirzadeh, and Shelley Van Cleve
Oak Ridge National Laboratory (ORNL), Oak Ridge, TN 37831

Production of $^{211}$At at the Copenhagen University Hospital, Denmark
Holger Jensen
PET and Cyclotron Unit, Copenhagen University Hospital, DK-2100, Copenhagen, Denmark.

Production of the $^{211}$At Radioisotope Using the Warsaw Heavy Ion Cyclotron
K. Szkliniarczyk², J. Jastrzębska¹, A. Bilewicz³, J. Choińska¹, A. Jakubowski¹, Ł. Janiszewska³, M. Łyczko³, M. Sitarz¹, A. Stolarz¹, A. Trzcińska¹, B. Wąs⁴, W. Zipper²
¹Heavy Ion laboratory, University of Warsaw, 02-093 Warszawa, Poland; ²Institute of Physics, Department of Nuclear Physics, University of Silesia, 40-007 Katowice, Poland; ³Institute of Nuclear Chemistry and Technology, 03-195 Warszawa, Poland; ⁴Niewodniczański Institute of Nuclear Physics PAN, 31-342 Kraków, Poland

Development of a $^{211}$Rn/$^{211}$At generator using a wet chemistry approach for targeted alpha therapy applications
K. Washiyama¹, R. Amano¹, E. Maeda², N. Yamada², T. Taniguchi², A. Yokoyama², I. Nishinaka¹, A. Toyoshima³, H. Makii⁴, K. Hashimoto⁴
¹Graduate School of Medical Science, and ²Graduate School of Natural Science and Technology, Kanazawa University, Kanazawa, Japan, ³Advanced Science Research Center, and ⁴Quantum Beam Science Directorate, Japan Atomic Energy Agency, Tokai, Japan
Precursor for direct At-211 astatination of proteins - chemistry and evaluation of shelf-life

Sture Lindegren¹, Holger Jensen², Emma Aneheim¹
¹Targeted Alpha Therapy group, Department of Radiation Physics, Sahlgrenska Academy at the University of Gothenburg, SE41345 Gothenburg, Sweden; ²PET and Cyclotron Unit, KF-3982, Copenhagen University Hospital, Copenhagen, Denmark

Simplifying wet chemistry isolation of At-211 using PEG column separation

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Radiochemical challenges in receptor-mediated targeted alpha therapy in mice

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Binding of Bismuth, Actinium and Yttrium by benzoazacrown ether in aqueous solutions

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Assessment of $^{223}\text{Ra}$ radionuclidic purity by extraction paper chromatography

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