Pre-Congress Symposium 7
Radiation Protection + Dosimetry Committee
Monday, October 11, 09:00-12:00

Session Title
Biokinetic Modelling in Cancer Therapy and Clinical Impact

Chairpersons
Gerhard Glatting (Ulm, Germany)
Caroline Stokke (Oslo, Norway)

Programme
09:00 - 09:25  Caroline Stokke (Oslo, Norway): Introduction and Overview
09:25 - 09:50  Frederik Verburg (Rotterdam, Netherlands): Biokinetic Modelling and its Clinical Impact for ¹³¹I Therapy of Thyroid Disease
09:50 - 10:15  Marta Cremonesi (Milan, Italy): Modelling of ¹⁷⁷Lu-PRRT Biokinetics and Impact on Clinical Dosimetry
10:15 - 10:30  Break
10:30 - 10:55  Gerhard Glatting (Ulm, Germany): Dosimetry and Treatment Planning for ¹⁷⁷Lu-PSMA Using PBPK Modelling
11:20 - 11:30  Nouran Zaid (Ulm, Germany): Biokinetics of the ²¹²Pb in vivo Alpha Particle Generator and its Radioactive Daughters
11:30 - 11:55  Stig Palm (Gothenburg, Sweden): Biokinetic Modelling and Dosimetry for Optimizing Treatment using ²¹¹At-Labelled Antibodies
11:55 - 12:00  Summary by Chairperson

Educational Objectives
Learn different biokinetic modelling approaches
Understand the clinical impact of biokinetic modelling and methods for different radiopharmaceuticals
Know the relevance of biokinetic modelling for dosimetry in nuclear medicine

Summary
In radionuclide therapy for cancer, the tumor cell-killing effect is a consequence of the transmitted absorbed dose. This in turn is strongly dependent on the biokinetics of the respective radiopharmaceutical, its route of administration and its retention and stability in the patient. Therefore, careful consideration of biokinetics and its clinical impact are mandatory.
This pre-congress symposium will provide an introduction to the biokinetics of various radiopharmaceuticals and radionuclides. Different examples of modelling approaches adapted to different radionuclides (e.g. to alpha emitters) will be presented, but also to different levels of complexity of modelling approaches, such as whole-body physiologically-based pharmacokinetic (PBPK) modelling. This will provide an insight into the state of the art for clinical practice and current research topics.

Key Words
Biokinetic Modelling, Dosimetry, Radionuclide Therapy, Treatment Planning, Cancer Therapy, PRRT, PSMA, RIT, PBPK Modelling, alpha particle emitters, Lutetium-177, Iodine-131, Antibodies