

# Symposium on Molecular Radiotherapy Dosimetry

## Final Programme

Thursday November 9th

**08:00 08:30 Registration**

**08:30 09:00 Opening**

Manuel Bardiès, Efi Koutsouveli, Paddy Gilligan, Pola Platoni

**09:00 10:30 Session 1**

**Chair Steffie Peters**

**09:00 09:30 Caroline Stokke**

**Invited talk Implementation of Dosimetry for Radionuclide Therapy: Results from a European Survey**

Presenter		abstract n°	Session 1: Metrology & Preclinical studies
<b>09:30</b>	<b>09:40</b> Rachel Delorme	75	Parametric modeling study of intracellular radionuclide distribution impact in Targeted Alpha Therapy
<b>09:40</b>	<b>09:50</b> Ali Parach	82	In vitro dosimetric analysis of Alpha therapy using <sup>223</sup> Ra for prostate cancer cells
<b>09:50</b>	<b>10:00</b> Anne-Marie Frelin	9	Experimental dosimetry of in vitro irradiation of tumor cells with <sup>212</sup> Pb
<b>10:00</b>	<b>10:10</b> Clarita Saldarriaga Vargas	48	A realistic multi-region model of a mouse kidney for preclinical dosimetry of beta- and alpha-particle emitting radionuclides
<b>10:10</b>	<b>10:20</b> Daniele Pistone	35	Discrepancies between PET-measured and vendor-stated <sup>90</sup> Y-microspheres vial activities and Monte Carlo investigation of their causes
<b>10:20</b>	<b>10:30</b> Ana Denis-Bacelar	68	AlphaMet: A European project on metrology for emerging targeted alpha therapies

**10:30 11:00 Coffee Break**

**11:00 12:30 Session 2**

**Chair Pablo Mínguez Gabiña**

**11:00 11:30 Jan Taprogge**

**Invited talk Quantitative imaging and dosimetry of radioiodine in multi-centre clinical trials**

Presenter		abstract n°	Session 2: Quantification
<b>11:30</b>	<b>11:40</b> Julien Salvadori	20	Anatomy-based correction of kidney PVE on <sup>177</sup> Lu SPECT images
<b>11:40</b>	<b>11:50</b> Frida Westerbergh	54	Terbium-161 SPECT Imaging: Assessing Quantifiability for a Novel Theragnostic Nuclide
<b>11:50</b>	<b>12:00</b> Lovisa Jessen	18	Evaluation of quantitative SPECT using 3D printed anthropomorphic phantoms with non-uniform activity distributions
<b>12:00</b>	<b>12:10</b> Robin de Nijs	24	A novel model-based equation for size dependent mean recovery coefficients for spheres and other shapes
<b>12:10</b>	<b>12:20</b> Richard Laforest	13	Quantitative Bremsstrahlung SPECT in post Y-90 Radioembolization Therapy
<b>12:20</b>	<b>12:30</b> Gerardo Ramírez-Nava	71	Flexible actuated lung phantom for the assessment of nuclear imaging systems

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**12:30 13:00 Poster session**                      **Chair**                      **Carlo Chiesa**

Presenter		abstract n°	ePoster session 1
12:30	12:33	Mathilde Demonchy	41 Accuracy of thyroid uptake calibration method: a multi-centric study with realistic phantoms
12:33	12:36	Staffan Jacobsson Svård	12 SPECT/CT system calibration for 131I dosimetry — Robust routines and pitfalls
12:36	12:39	Seval Beykan	58 A head-to-head comparison of three CE-certified dosimetry software solutions for 177Lu-labelled radioligand therapies
12:39	12:42	Johan Gustafsson	26 Number of projections, total projection time, and reconstruction settings for quantitative 177Lu SPECT: Systematic and random errors
12:42	12:45	Ludovic Ferrer	19 Septal penetrations correction for 225Ac quantitative images
12:45	12:48	AP Stefanoyiannis	33 Trustworthy Artificial Intelligence in hybrid imaging Theranostics: the emerging role of medical physicists in AI ethics' auditing
12:48	12:51	Elena Solfaroli Camillocci	27 The wearable individual dose monitoring apparatus: a new approach to the internal radiation dosimetry
12:51	12:54	Evgenia Alamani	87 Management of outpatients and radioactive waste following Lu-177 DOTATATE PRRT: the approach of Attikon University Hospital
12:54	12:57	Cyril Jaudet	7 Extravasation of Lutetium-177-DOTATATE dosimetric evaluation and management

**13:00 14:30 Lunch Break**

**14:30 15:30 Session 3**                      **Chair**                      **Ana Denis Bacelar**

**14:30 15:00 Irène Buvat**                      **Invited talk**                      **AI: a game changer in quantitative molecular imaging and clinical dosimetry**

Presenter		abstract n°	Session 3: Artificial intelligence
15:00	15:10	Yazdan Salimi	45 Fully automated deep learning-guided segmentation and lung-shunt fraction calculation on total body planar images
15:10	15:20	Julian Leube	60 Comparison between deep learning-based partial volume correction and iterative Yang technique for 177Lu SPECT/CT imaging
15:20	15:30	Zahra Mansouri	88 Deep learning-assisted prediction of 90Y SIRT post-therapy dose distribution from pre-treatment 99mTc-MAA dose maps
15:30	15:40	Max Celio Nzatsi	14 Use of artificial intelligence for the reduction of the time footprint on dosimetry procedures in molecular radiotherapy using the radiopharmaceutical 177Lu – PSMA
15:40	15:50	Katja Smits	57 Reducing the influence of noise in bone marrow activity concentration estimates by using AI-generated projections in the SPECT reconstruction
15:50	16:00	Lenka Vávrová	76 Predicting radioiodine ablation therapy outcome using machine learning

**16:00 16:30 Coffee Break**

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16:30	19:00	Sponsor session	Chair	Efi Koutsoutveli
		Presenter	Company	Title
16:30	16:45	Chahrazed Ghannoudi	DOSIsoft	Planet Dose a multi-radionuclide platform for voxel-based personalized dosimetry
16:45	17:00	Helena McMeekin	HERMES MEDICAL	Dosimetry methods: from first principles to practical solutions
17:00	17:15	Pinelopi Founta	MIM	Theranostics in practice
17:15	17:30	Abhi Chakrabarti	Voximetry	In pursuit of Dosimetry as an Imaging Biomarker
17:30	17:45	Andreas Stratis	GE Healthcare	Q.Thera: An integrated dosimetry platform powered by AI-based organ segmentation tools
17:45	18:00	Franco Poljak	ITM	Introduction to ITM Isotope Technologies Munich SE
18:00	18:15	Steffen Heeger	Full-Life Technology	Full-Life Technologies, a cutting-edge radiopharmaceutical company
18:15	18:30	Ioanna Stamouli	Karvonis	Clinical experience in MRT dosimetry using Planet Onco Dose software
18:30	18:45	Eileen Sneed	RayzeBio	RayzeBio Corporate Overview and 225Ac-DOTATATE (RYZ101) dosimetry results from Part 1 of the ACTION-1 Trial

**Friday November 10th**

**08:00 09:00 Gerhard Glatting CPD Time-Activity-Curve fitting**

**09:00 10:30 Session 4**

**Chair Carlo Chiesa**

**09:00 09:30 Glenn Flux & Katarina Sjögreen-Gleisner**

**Invited talk EFOMP policy statement on Dosimetry in Molecular Radiotherapy – The Final Countdown?**

		Presenter	abstract n°	Session 4: Time-related variables, TAC fitting and PK assessment
09:30	09:40	José Fragoso-Negrín	84	Absorbed dose rate algorithm comparison in 177Lu-based molecular radiotherapy dosimetry.
09:40	09:50	Oleksandra Ivashchenko	22	Time-Activity Data Fitting in Molecular Radiotherapy: background, methodology and pitfalls
09:50	10:00	Monika Kvasshheim	80	Clinical phase 0 trial of 212Pb-PSMA therapy AB001: activity concentrations of 212Pb and 212Bi in whole blood, plasma, and red blood cells
10:00	10:10	Elham Yousefzadeh-Nowshahr	51	Towards single-time-point dosimetry in [177Lu]Lu-PSMA-617 therapy
10:10	10:20	José Fragoso-Negrín	85	Clinical Dosimetry Workflow comparison with OpenDose3D in molecular radiotherapy.
10:20	10:30	Valentina Vasic	78	Comparing implementations of a PBPK model for PRRT with [177Lu]Lu-DOTA-TATE in SAAM II and MATLAB/SimBiology

**10:30 11:00 Coffee Break**

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**11:00 12:30 Round table**                      **Moderator**    **Steffie Peters**

Round table		Dosimetry-driven molecular radiotherapy optimisation	
<b>11:00</b>	<b>12:30</b>	<b>Participants</b>	Prof P Gilligan, EFOMP President Prof K Sjögreen-Gleisner, Lund University, Sweden Dr A Cardone, CEO Cancer Patients Europe Dr M Gaze, UCL, UK Dr A Sundlöf, Swedish Medical Products Agency Dr C Chiesa, Istituto Tumori Milan, Italy

**12:30 13:00 Poster session**                      **Chair**                      **Pablo Mínguez Gabiña**

Presenter		abstract n°	ePoster session 2
<b>12:30</b>	<b>12:33</b>	Maria Paphiti	63 Cyclotron produced radionuclides
<b>12:33</b>	<b>12:36</b>	Ageliki Manetou	64 Co-Infusion of DTPA solution during PRRTs with <sup>177</sup> Lu-, <sup>90</sup> Y- and <sup>111</sup> In- labelled peptides reduces the trivalent ionic (free) contaminants, aiming to bone marrow protection
<b>12:36</b>	<b>12:39</b>	Ioannis-Klontian Priftis	69 The Pre-Therapeutic introduction of n.c.a. <sup>177</sup> Lu-PSMA I&T (“LuteScan”) as a SPECT compatible radioligand for PSMA Imaging in Metastatic Prostate Cancer Patients
<b>12:39</b>	<b>12:42</b>	Georgios Limouris	62 Safety and efficacy of non carrier added (n.c.a.) <sup>177</sup> Lutetium-PSMA-I&T radioligand therapy in hormone resistant metastatic prostate cancer patients
<b>12:42</b>	<b>12:45</b>	Gerardo Ramírez-Nava	77 Development of a computer application for the dosimetry assessment of internal radiotherapy treatments with <sup>177</sup> Lu
<b>12:45</b>	<b>12:48</b>	Rachele Danieli	49 Robustness of a method for tumour delineation in <sup>177</sup> Lu SPECT images acquired on a StarGuide
<b>12:48</b>	<b>12:51</b>	Christian Macis	73 Clinical platforms in NET patients treated with radioligand therapy: a dosimetric comparison
<b>12:51</b>	<b>12:54</b>	Daniele Pistone	43 The relevance of Internal Bremsstrahlung in evaluating Dose Point Kernels and Voxel S-Values for <sup>90</sup> Y and <sup>32</sup> P
<b>12:54</b>	<b>12:57</b>	Yi-Kang Lee	67 Evaluation of Eye Lens Dose Using TRIPOLI-4® for Nuclear Medicine Professionals: <sup>177</sup> Lu Molecular Radiotherapy
<b>12:57</b>	<b>13:00</b>	Francesca Nicolanti	46 A Geant4 Monte Carlo simulation that imports DICOM ROIs to define detectors and primary sources.

**13:00 14:30 Lunch Break**

# Symposium on Molecular Radiotherapy Dosimetry

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**14:30 16:00 Session 5**

**Chair Gerhard Glatting**

**14:30 15:00 Anna Sundlöv**

**Invited talk Therapeutic radiopharmaceuticals in a changing regulatory landscape**

Presenter		abstract n°	Session 5: Clinical dosimetry (OAR)
<b>15:00</b>	<b>15:10</b>	Selma Curkic Kapidzic	17 Renal dosimetry in [177Lu]Lu-DOTA-TATE therapy based on multiple small VOIs as an alternative to whole-kidney delineation
<b>15:10</b>	<b>15:20</b>	Jens Hemmingsson	11 Bone marrow dosimetry model for somatostatin receptor-based radionuclide therapies; comparison between lutetium-177 and terbium-161
<b>15:20</b>	<b>15:30</b>	Linn Hagmarker	28 Combined planar and SPECT image methodology for bone marrow dosimetry during treatment with [177Lu]Lu-DOTATATE
<b>15:30</b>	<b>15:40</b>	Vappu Reijonen	36 Bone marrow dose in Lu-177-PSMA therapy: case report and discussion
<b>15:40</b>	<b>15:50</b>	Nicolas Sas	10 The retina as an organ at risk in molecular radiotherapy in a phase I clinical trial of [131I]ICF01012 in metastatic melanoma: a proposed methodology for calculating patient-specific retinal S-values for dosimetry.
<b>15:50</b>	<b>16:00</b>	Daniele Pistone	34 Salivary glands dosimetry in 18F-PSMA-1007 PET/CT: comparison among different calculation approaches

**16:00 16:30 Coffee Break**

**16:30 17:00 Poster session**

**Chair Emmanuil Papanastasiou**

Presenter		abstract n°	ePoster session 3
<b>16:30</b>	<b>16:33</b>	Georgios Limouris	83 Over Two Decades of Individualized GEP-NET Radio-peptide Therapy The Experience In a Single Institute (Aretaieion Univ Hosp): From Bench to Bedside
<b>16:33</b>	<b>16:36</b>	Alexandre Pignard	25 Use of whole-body retention data for personalized lesion dosimetry: evaluation for iodine-131 treatments from the MERAIODE clinical trial
<b>16:36</b>	<b>16:39</b>	Dimitrios Verganelakis	81 I-131 MIBG THERAPY IN CHILDREN
<b>16:39</b>	<b>16:42</b>	Marina Sutto	44 SINGLE CENTRE STUDY ON THE QUANTIFICATION ACCURACY OF 99m-Tc-MAA FOR PRE-TREATMENT DOSIMETRY OF 90-Y LIVER EMBOLIZATION
<b>16:42</b>	<b>16:45</b>	Ludovica Miseo	70 Dosimetry of Liver and Hepatic Metastases in Ho-166 Microspheres Radioembolization Treatments
<b>16:45</b>	<b>16:48</b>	Sara Barbiero	32 Comparison of 99mTc-MAA SPECT-CT and 90Y resin -microsphere PET-CT dosimetry for selective internal radiation therapy (SIRT) for hepatic tumours
<b>16:48</b>	<b>16:51</b>	Oleksandra Ivashchenko	30 Quantification accuracy evaluation of Yttrium-90 PET for post-therapeutic voxelised dosimetry on three generations PET/CT scanners
<b>16:51</b>	<b>16:54</b>	Laura Grikke	65 Evaluation of treatment effect prediction based on voxel dosimetry in liver radioembolization with Y-90 resin microspheres
<b>16:54</b>	<b>16:57</b>	Johanna Rieke	79 Retrospective verification of image-based dosimetry for SIRT using Simplicit90Y

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## Final Programme

17:00 18:30 Session 6

Chair Glenn Flux

17:00 17:30 Mark Gaze

Invited talk Can dosimetry improve the outcome of molecular radiotherapy for neuroblastoma?

Presenter		abstract n°	Session 6: Clinical dosimetry (tumour)
17:30	17:40	Joachim Nilsson	16 Predicting initial iodine avidity in thyroid cancer
17:40	17:50	Konstantinos Roussopoulos	74 COMPARISON AND EVALUATION OF n.c.a. AND c.a. 177Lu-[DOTA0, Tyr3] OCTREOTATE IN (GEP-NETs) TREATED PATIENTS
17:50	18:00	Carlo Chiesa	55 124I PET dosimetry to optimize 131I therapy of Metastatic Differentiated Thyroid Cancer (MDTC): initial results of a phase II trial
18:00	18:10	Maria Paphiti	61 Evaluation of n.c.a. Lu-177-Dotatoc in Inoperable Neuroendocrine Liver Metastases of Gastro-Enteropancreatic (GEP) Tumors
18:10	18:20	Pablo Minguez Gabiña	39 Lesion dosimetry in treatments of neuroendocrine tumours with [131I]I-mIBG
18:20	18:30	Dominic Rushforth	90 131I-mIBG 3D Voxel dosimetry in a patient with a high whole-body dose

Saturday November 11th

08:00 09:00 Manuel Bardiès

CPD Quality Assurance in clinical nuclear medicine dosimetry

09:00 10:30 Session 7

Chair Steffie Peters

09:00 09:30 Carlo Chiesa

Invited talk Dosimetry and clinical outcome in radioembolization: light and shadow

Presenter		abstract n°	Session 7: Quality Assurance in clinical dosimetry
09:30	09:40	José Fragoso-Negrín	86 OpenDose3D, an open-source software for advancing clinical molecular radiotherapy dosimetry.
09:40	09:50	Johannes Tran-Gia	56 The EARL Quantitative Lu-177 SPECT-CT accreditation programme
09:50	10:00	Oleksandra Ivashchenko	21 Internal Dosimetry Results Reporting Practices for [177Lu]Lu-DOTA-TATE Therapy: where do we stand?
10:00	10:10	Daniela Panciera	52 QVolumetrix Validation for Lu-177: preliminary results
10:10	10:20	Manon Jacquemin	37 Quality assurance (QA) of the Q-suite® 2.0 software package for absorbed dose calculation for SIRT treatment with 166Ho microspheres
10:20	10:30	Stathis Varzakis	72 Application of priors in EARL Lu-177 SPECT accreditation with an Open-Source reconstruction software

10:30 11:00 Coffee Break

# Symposium on Molecular Radiotherapy Dosimetry

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11:00 12:30 Session 8

Chair Caroline Stokke

11:00 11:30 Marta Cremonesi

Invited talk Absorbed dose-effects in Molecular Radiotherapy: lutetium-labelled radiopharmaceuticals

Presenter		abstract n°	Session 8: Absorbed dose - effect relationships in Molecular Radiotherapy
11:30	11:40	Maria Luisa Belli	29 223Ra alpha-emitter radionuclide pharmaceuticals (RN) and external beam radiotherapy (EBRT): a radiobiological model for the combined treatment
11:40	11:50	Lore Santoro	59 A 6 years 'experience of dosimetry in clinical routine for patients treated with 177Lu-DOTATATE: Absorbed dose-effect relationship exploration
11:50	12:00	Jonathan Gear	89 Evidence of dose response relationships in Y90-DOTATATE therapy
12:00	12:10	Jan Taprogge	38 Initial results of the INSPIRE clinical trial – Radioiodine dosimetry for differentiated thyroid cancer patients
12:10	12:20	Eduardo Rios Sanchez	15 68Ga-PSMA PET/CT Imaging Features with PSA Variation for Castration-Resistant Prostate Cancer Patients
12:20	12:30	Nicolas Varmenot	53 A review of the role of imaging and dosimetry in clinical trials of Lu-177 for the treatment of cancer

12:30 13:00 SIG\_FRID SC

Free discussion

Special Interest Group for Radionuclide Internal Dosimetry: what's next...

13:00 13:30 Closure