

Düsseldorf, Germany

Pre-Congress Symposium 3 (Translational Molecular Imaging & Therapy) **Saturday, October 13, 09:00-12:00**

Session Title

The Role of Molecular Imaging in Radiation Oncology

Chairpersons

Bart Cornelissen (Oxford)
Jacques Barbet (Nantes)

Programme

09:00 - 09:25	Lena Specht (Copenhagen): Radiation Treatment Planning Using PET and Multimodal Imaging
09:25 - 09:45	Roland Hustinx (Liège): Early Response Assessment in Radiation Therapy
09:45 - 10:15	David Jaffray (Toronto): Technology Development in Molecular Imaging Guided Radiotherapy
10:15 - 10:45	Coffee Break
10:45 - 11:05	Mathieu Hatt (Brest): Radiomics for Response Prediction in Radiation Oncology
11:05 - 11:25	Bart Cornelissen (Oxford): Hypoxia and Resistance to Radiation Therapy
11:25 - 11:45	Jörg Kotzerke (Dresden): Dose Painting by Hypoxia Imaging
11:45 - 12:00	Discussion

Educational Objectives

1. To review the current and future impact of molecular and multimodal imaging in radiation therapy
2. To discuss the role, present and potential, of PET imaging, combined with CT or MR, in treatment planning, dose painting, prediction of response and response assessment
3. To review and give an update on the importance of tumor hypoxia, its detection using PET and specific tracers and on the use of PET in dose painting and dose intensification to overcome hypoxia-induced tumor resistance
4. To explain the potential role of AI and radiomics in multimodal imaging for response prediction in radiation therapy

Summary

PET and multimodal imaging are now integral parts of treatment planning in radiation therapy. They increase the precision of RT and reduce the risks of long-term side effects. PET is also instrumental in the assessment of response and allows for early response assessment. New technologies improve the precision of radiation therapy and imaging quality. AI promotes the development of radiomics, which, in turn, predicts tumor response by taking into account tumor heterogeneity as well as biological and genetic parameters. Finally, hypoxia is well known as a major factor of tumor resistance to radiation therapy. Imaging hypoxic areas in tumors improves prognostic and at the same offers a possibility of dose intensification for a better outcome.