



THE UNIVERSITY OF
SYDNEY



Health

Biologically guided Radiation Therapy (BgRT) Symposium

Tuesday 5 November 2024

**9:00 am – 4:45 pm Messel Lecture Theatre
(A31.04.4002.Sydney Nanoscience Hub (SNH)).**

Biologically guided radiation therapy (BgRT) is an advanced form of radiation therapy that incorporates biological information to deliver personalised radiation treatments. Modulated dose distributions are customised to account for tumour heterogeneity, and treatments may be adapted based on the biological response during treatment. The approach was first proposed more than 20 years ago, but translation to the clinic has been limited due to a number of factors including access to high quality imaging and our ability to accurately calculate and map predicted response to radiation. BgRT, however, is now a rapidly evolving field, as a result of access to advanced imaging techniques, improvements in our understanding of biological response to radiation, the development of imaging biomarkers from quantitative imaging, and modern AI techniques.

This symposium is designed for those who want to know more about BgRT and the development of imaging biomarkers for treatment response, and those interested in future research collaboration. The symposium is open to clinical and research teams, including medical physicists, radiation oncologists, researchers and PhD students.

Register now as spots are limited. [Registration page](#)

Program

8:45 – 9:00	Registration
9:00 – 9:10	Opening (Prof. Annette Haworth) <i>Acknowledgement of Country</i>
9:10 – 9:50	Keynote speaker – Professor Martin Ebert Radiobiology and tumour response modelling. Educational session.
9:50 – 10:20	BgRT – why now? (Prof. Annette Haworth)
10:20 – 10:45	Coffee Break
10:45 – 12:30	Invited Speaker Session (1): Chairs: Dr Sirisha Tadimalla & Dr Erin Wang 10:45-11:05 – Dr. James Drummond: Tumour hypoxia – The MANGO Study 11:05-11:25 – Dr. David Waddington: Preclinical brain cancer imaging with nanoparticles 11:25-11:45 – Dr. Trang Pham: Magnetic resonance (MR) biomarkers for therapeutic response prediction in rectal cancer 11:45-12:15- Prof. Yves de Deene: Uncertainties in imaging biomarkers and hypoxia imaging with MRI 12:15-12:35- Dr. Satomi Higuchi: Use of Computed Diffusion-Weighted Imaging in Prostate Cancer for Monitoring Treatment Response
12:35 – 1:10	Lunch
1:10 – 1:40	Chair: Prof Paul Keall International Keynote Speaker - Clinical A/Prof Murat Surucu RefleXion – BgRT and PET guided RT
1:40 – 2:40	Invited Speaker Session (2): Chairs: Prof Martin Ebert & A/Prof Jeremy Booth 1:40 – 2:00 – Prof Paul Keall: ViTAL: A randomised controlled trial investigating ventilation imaging to improve quality of life for lung cancer patients 2:00 – 2:20 – Dr. Leyla Moghaddasi: Spatially fractionated radiotherapy 2:20 – 2:40 – Dr Yutong Zhao: Dose painting by numbers – the challenges of delivering highly modulated dose distributions
2:40 – 3:10	Rapid Fire Presentations: Chairs: Dr Hayley Reynolds & Dr Sirisha Tadimalla 2:40-2:50 – Kazi Mahtaba: Enhancing Prostate Cancer Recurrence Prediction Using an Atlas-Based Tumour Control Probability Model. 2:50-3:00 – Zoe Zhang: AI and Multiparametric MRI for Detection and Characterisation of Prostate Cancer 3:00-3:10 – Sarah Thompson: MRI Biomarkers of Prostate Cancer Response During Radiation Therapy
3:10 – 3:30	Afternoon tea
3:30 – 3:20	BiRT Team Presentations: Chairs: Prof Annette Haworth & Dr Jonathan Sykes 3:30-3:50 – Dr. Sirisha Tadimalla: Functional imaging for liver sparing HCC RT 3:50-4:10 – Dr. Hayley Reynolds: Identifying MRI-based biomarkers for prostate SABR response assessment: the Auckland SI-BiRT trial 4:10-4:25 – Dr. Erin Wang: Imaging biomarkers for treatment response: the SI-BiRT studies 4:25-4:40 – Dr. Yu Sun: The AAPM IVIM Challenge 4:40-5:00 – A/Prof. Joel Poder: Dose painting with brachytherapy and the challenges of quantitative imaging
5:00 – 5:10	Symposium Close (Prof. Annette Haworth)