

## Annotating oncogenic pathway signaling with zirconium-based radiotracers for PET imaging

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In recent years, the nuclear medicine and imaging communities have focused attention on the development of “molecular imaging agents” for identification of target-rich sites that purport a relationship to clinically relevant parameters. For example, elevated expression levels of numerous protein biomarkers like epidermal growth-factor receptor (EGFR), Her2/*neu* and prostate-specific membrane antigen (PSMA) have been validated as imaging/therapeutic targets for various cancers. Yet in spite of much preclinical success, translation of new imaging agents has been slow, and the clinical value of such radiotracers remains in contention.

While the repertoire of targeted chemotherapies for cancer continues to expand rapidly, there are virtually no non-invasive technologies that measure the degree of signaling through oncogenic pathways. In this presentation, we explore how an understanding of clinical requirements helped reshape our initial radiotracer program. From a foundation in the design of targeted molecular imaging agents with zirconium-89 radiolabelled monoclonal antibodies for monitoring therapy, we discover how a combination of new and old technologies can be exploited to produce the next generation of radiotracers reporting on functional oncogenic signaling status.

### Biography

Jason P. Holland completed his doctorate in Inorganic, Computational and Radiochemistry at the University of Oxford, UK in 2008. He trained as a Post-doctoral Scholar at Memorial Sloan-Kettering Cancer Center, New York, in the laboratory of Prof. Jason S. Lewis and as a Senior Fellow the ETH Zurich in Switzerland. He was appointed Assistant Chemist in 2012 at Massachusetts General Hospital, Harvard Medical School. He has published more than 50 research papers and serves on the editorial board of several journals including the *Journal of Nuclear Medicine*. His research concentrates on the development and translation of new metal-based radiopharmaceuticals for PET imaging in oncology.

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