

## METAL BUILDING BLOCKS FOR TARGET-SPECIFIC DELIVERY OF RADIATION

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Radiopharmaceutical chemistry is an important topic in Life Sciences, aiming to design radiopharmaceuticals for Molecular Imaging (SPECT and PET) and Targeted Therapy. For both, Molecular Imaging and Targeted Therapy, the radiopharmaceuticals in clinical use are predominantly metal-based complexes and the overwhelming majority corresponds to  $^{99m}\text{Tc}$ , which still is the workhorse of nuclear medicine, due to its ideal nuclear properties, rich chemistry, low-cost and convenient availability from commercial generators. The design of these drugs is a multidisciplinary area fuelled by the convergence of biology, medicine, chemistry, physics and engineering. Chemists, in particular, play a critical role in this effort, as they are continuously challenged to use innovative chemical strategies to develop “*smart drugs*”. The introduction of new metals and/or metal-building blocks and generators opened new and innovative routes in radiopharmaceutical chemistry. [1]

In this presentation, I will review some of our most relevant results on metal-based chemistry fuelled by in vivo Molecular Imaging and Targeted Therapy. The importance of the chemistry on the modulation of the biological behavior of such complexes will be also discussed.[2-6]

[1] Radiopharmaceuticals for imaging and therapy, *Dalton Trans.* 2011, 40, 6057 – 6300.

[2] R. Garcia, et al. *J. Am. Chem. Soc.*, 2000, 122, 11240.

[3] M. Morais, et al. *Mol. Pharmaceutics*, 2011, 8, 609.

[4] M. P. C. Campello, et al. *Chem. Eur. Journal*, 2010, 16, 8446.

[5] L. R. Goethals et al. *Contrast Media Mol. Imaging*, 2011, 6, 178.

[6] M. Morais, et al. *J. Med. Chem*, 2013, DOI: 10.1021/jm301647t.

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