TRIUMF Colloquium

in the NRC Conference Rm

Thu, 2023-09-07 at **11:00**

Expanding the structural diversity of radiometal chelators for nuclear medicine

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The set of bifunctional chelators used for targeted radiometal nuclear medicine is small. This can result in suboptimal matches between the chelator and metal ion for imaging and treatment. Designing general methods to widen the chemical space of chelators could expand the clinical benefit available from using known and emerging radioisotopes. Our group blends chemistry, microbiology, and molecular biology approaches to access new chelators with new properties. We have considered how bacteria biosynthesize selected natural product chelators, as necessary for their survival, and transferred these methods to a laboratory setting. We have generated high-denticity and water soluble chelators for zirconium(IV)-89, and used a metal-templating approach to allow the metal ion to self-select its own best chelator. Our most recent work re-casts combinatorial chemistry used in drug discovery to chelator discovery. This presentation will provide snapshots of these methodological advances in widening chemical space of chelators, which together with advances in radioisotope production and purification, offer potential to expand the clinical benefit available within the Radiometal Periodic Table.

References:
W. Tieu, T. Lifa, A. Katsifis and R.Codd, Inorg. Chem., 2017, 56, 3719–3728.
T. Richardson-Sanchez, W. Tieu, M. P. Gotsbacher, T. J. Telfer and R. Codd, Org. Biomol. Chem., 2017, 15, 5719–5730.
T. Richardson-Sanchez and R. Codd, Chem. Commun., 2018, 54, 9813–9816.
K. P. Nolan, J. Font, A. Sresutharsan, J. L. Wood, C. A. Rosser, J. Wang, R. M. Ryan, and R. Codd, unpublished.

Rachel Codd is the Professor of Bioinorganic and Medicinal Chemistry at the University of Sydney and leads the Chemical Biology in Drug Discovery group in the School of Medical Sciences. Her research blends synthetic chemistry and chemical biology to engineer new metal-coordinating chelators to support the development of new radiometal therapeutic and diagnostic agents. After completing her PhD in Inorganic Chemistry at the University of Sydney, she undertook postdoctoral research at the University of NSW and the University of Arizona before returning to the University of Sydney. Rachel was awarded the Biota Medal in 2010, which is the most prestigious medal in medicinal chemistry in Australia. She was appointed to the Australian Research Council (ARC) College of Experts from 2016–2018 and was elected as a Fellow of the Royal Australian Chemical Institute (RACI) in 2017.

Please note this lecture is in NRC Conference room due to auditorium renovation. It is a short walk from TRIUMF. The conference is right at the entrance.