

Study of aggregation of amylin and design of new detection tools of peptide aggregates

Coordination Chemistry Lab – UPR 8241 - Toulouse

Amyloid deposition in pancreatic islets, formed from Islet Amyloid PolyPeptide (IAPP, also called amylin), is a common pathologic feature of Type-2 Diabetes Mellitus (T2DM) found in more than 90% of T2DM patients. The non-invasive, repeatable, *in vivo* imaging of amylin aggregates would be an invaluable tool for early diagnosis of T2DM, but also for the evaluation of potential anti-amyloid therapies; however, today it represents an unmet need. Within the framework of the complete ANR - DIVA project, we want to propose the design, synthesis, *in vitro* (and possibly) *in vivo* validation of new imaging probes based on metal complexes for the detection of amylin aggregates.

In the Coordination Chemistry Lab in Toulouse, the Alzoid team aims at studying *in vitro* the impact of several parameters (pH, peptide concentration, presence of zinc ions....) on the aggregation of the amylin peptide that leads to the amyloid deposits detected in T2DM. The kinetic of aggregation will be monitored by the fluorescence of Thioflavin-T, a known dye of β -sheet structures. Morphology of the aggregates will be probed by microscopy (AFM and TEM). In a second and complementary part, new tools mainly based on lanthanide complexes will be designed, synthesized and probed for their ability to monitor the aggregation pathways and aggregates formation. *In vivo* assays could complete the study since a collaboration is already set with a biology team that breed diabetic mice.

The candidate (**either a PhD or a Post-Doc**) should be highly interested by multidisciplinary researches (chemistry – biology – biophysic), self-motivated and have strong skills in inorganic chemistry and physico-chemical studies.

Starting date: from Oct. 2017 and no later than Feb. 2018.

Duration: 3 years (PhD) or 2 years (post-doc)

Gross salary: 1700 Euros (PhD) or 2500 Euros (post-doc).

To apply, please send your CV and the names of two (PhD) or three (post-doc) referees to beatrice.mestre@lcc-toulouse.fr **AND** christelle.hureau@lcc-toulouse.fr.