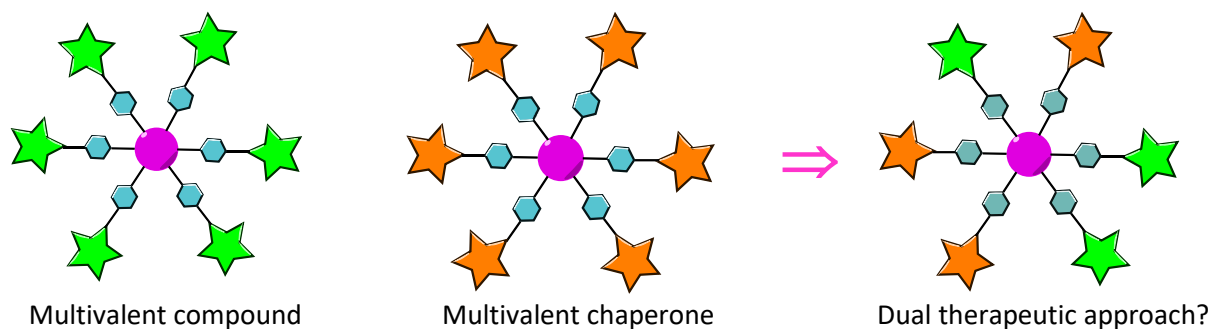


MULTIVALENT DENDRIMERS FOR A DUAL THERAPY AGAINST LYSOSOMAL DISEASE

Period	6 months beginning not later than: <input type="checkbox"/> January <input checked="" type="checkbox"/> February <input type="checkbox"/> March <input type="checkbox"/> April <input type="checkbox"/> May <input type="checkbox"/> June <input type="checkbox"/> July <input type="checkbox"/> September 2021
Internship supervisor(s)	Dr Dehoux-Baudoin Cécile, PhD – Tran My Lan, PhD student baudoin@chimie.ups-tlse.fr - tran@chimie.ups-tlse.fr LSPCMIB - Monalisa team
Location	Toulouse University III -Paul Sabatier- BâtIIR1 118 route de Narbonne 31062 Toulouse - FRANCE
This research master's degree research project could be followed by a PhD <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	

Abstract:

Lysosomal diseases are mostly caused by the misfolding of a lysosomal enzyme leading to the lack in the enzyme activity and so causing the accumulation of the enzyme substrate.^[1] The most widely used therapeutic approaches against lysosomal diseases are: 1) administration of the recombinant enzyme, 2) inhibition of the substrate synthesis and 3) use of pharmacological chaperones to assist refolding of the deficient protein.^[2] This project aims to develop an innovative dual therapeutic approach combining a pharmacological chaperone of the deficient enzyme and another therapeutic strategy on a unique nano-sized multivalent support, such as a dendrimer.^[3-5] During this internship, the student will aim to: (i) synthesize clickable pharmacological chaperones and other clickable relevant compounds. (ii) graft synthesized compounds by click chemistry at the surface of multivalent nano-objects (iii) evaluate biological activities and synergic effects on patient cells.



References:

- [1] J. Stirnemann, N. *et al.* (2017) *Int. J. Mol. Sci.*, 18, 441. <http://www.mdpi.com/1422-0067/18/2/441>
 [2] C. Arenz, (2017) *Futur. Med. Chem.* 1–14. <http://www.future-science.com/doi/10.4155/fmc-2017-0065>
 [3] C. Baudoin-Dehoux., *et al.* (2019) *Molecules*. 24(2), 354. <https://doi.org/10.3390/molecules24020354>.
 (4) Tran, *et al.* C. (2020) *Molecules*, 25 (14), 3145. <https://www.mdpi.com/1420-3049/25/14/3145>
 (5) Castellan, T. *et al.* (2020) *Org. Biomol. Chem.* 2020. <http://xlink.rsc.org/?DOI=D0OB01522A>

Keywords, areas of expertise	Organic synthesis, multi-steps synthesis, multivalent nano-object, click chemistry, cellular evaluation
Required skills for the internship	Skills in organic synthesis, chromatographic purification and spectroscopic analysis are required. Additional knowledge at the chemistry/biology interface would be useful