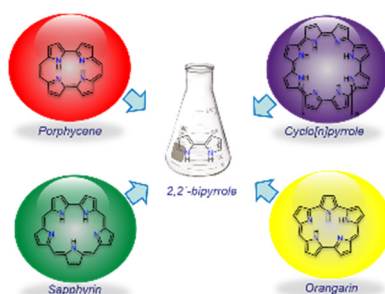


## RESEARCH PROJECT

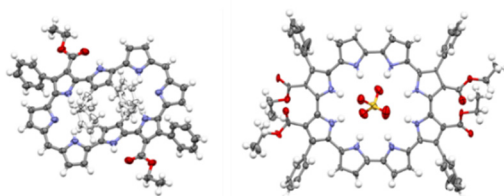
Positions offered (2017-2018): 1 Master research project (6-9 month)

### Pyrrolic macrocycles for imaging and theranostics

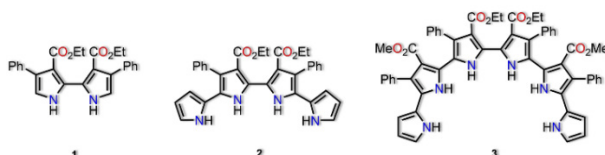
In the last thirty years, expanded porphyrins have emerged as one of the most exciting and versatile families of “non-natural” molecules. The fascination for these compounds has been fueled not only by its indubitable aesthetic appeal but for their many potential application fields ranging from theoretical chemistry to biomedicine.



$\alpha,\alpha$ -linked oligopyrroles play a crucial role in the synthesis of expanded porphyrins<sup>1</sup>. The preparation of macrocycles such as porphycenes, amethyrins or cyclopyrroles are based on the coupling or condensation of the proper functionalized bipyrrole or terpyrrole<sup>1</sup>. Although longer  $\alpha,\alpha$ -linked oligopyrroles have been reported,<sup>2</sup> their chemical instability has hampered their use as synthetic building blocks.



Our group has developed a new family of 2,2'-bipyrroles **1** which possesses a remarkable chemical stability ascribed to the presence of two electron withdrawing groups.<sup>3</sup> Bipyrroles **1** can be easily brominated at the  $\alpha$  positions allowing their homologation with pyrrole units utilizing palladium catalyzed reactions.<sup>3</sup> This strategy has enabled the concise preparation of quaterpyrrole **2** and sexipyrrole **3**. Their use as starting materials to make expanded porphyrins have been demonstrated with the synthesis of a wide range of macrocycles such as octaphyrins and cyclopyrroles.



## References

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