PhD Position in Organic Chemistry - September 2020

On the way to the Total Synthesis of Kidamycin

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FINANCIAL SUPPORT
GRANT of the « Ministère de l’Enseignement Supérieur et de la Recherche »
Net salary: around 1400 € / month

PROJECT
The challenging structure of pluramycins, added to their biological profile, has led to several recent synthetic investigations. Displaying a common anthrapyranone backbone ABCD, the structural diversity of pluramycins lies in the nature of the substituent at C2 and deoxyaminosugars E and F at C8 and C10. If it has not yet been possible to achieve a total synthesis of a member of the pluramycin family featuring the configuration of kidamycin, synthesis of aglycones as well as structurally simpler pluramycin-related molecules have been disclosed.

Our approach to kidamycin, a member of this family, relies on a convergent fragment-assembly strategy (cycle A + bicycle DC = tetracycle ABCD) using a key Diels-Alder reaction with a mono- or bis-glycosylated juglone as dienophile and a diene already bearing the lateral chain (or a precursor) of kidamycin. Thanks to preliminary researches, we have already achieved about 2/3 of the synthesis¹ and few scientific bolts still have to be removed before succeeding in the first total synthesis of kidamycin. The selected candidate will be, in particular, responsible for unlocking the last bolts and finishing the total synthesis.

LOCATION: Research will be performed in SYMBIOSE team at CEISAM Laboratory of NANTES University.

COLLABORATIONS: Dr. Gilles Dujardin, IMM laboratory, Le Mans University (France); Dr. François Carreaux, Chemical Sciences Institute, Rennes 1 University (France).

PROFILE: Strongly motivated student with a Master in molecular chemistry with at least a 5-6-month experience in synthetic organic chemistry research. Scientific curiosity, ability to work in team and good English level are essential. An experience in multi-step synthesis would be appreciated.

APPLICATION: Applicants will send to both above contacts a CV, a cover letter outlining motivations and the names and contact information of two persons of reference.