XXXIII^{ème} Journée
Chimie-Biologie-Santé

Vendredi 19 Avril 2019

Amphithéâtre F. Gallais

Laboratoire de Chimie de Coordination

Toulouse

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09h00	Ouverture de la XXXIII^{ème} Journée Chimie-Biologie-Santé de Toulouse
09h10	**Pr. Matthieu SOLLOGOUB** (IPCM**,** Paris) *"Selectively modified Cyclodextrins for bio-inspired applications"*
10h00	**Thomas LEVY** (SPCMIB, Toulouse) *'' Synthèse totale de la wakayine, un alcaloïde marin de la famille des pyrroloquinolines à activité immunothérapeutique potentielle''*
10h20	Pause-café
10h40	**Dr. Franck GALLARDO** (NeoVirTech, Toulouse) *''ANCHOR tagged autofluorescent viruses for antiviral discovery and high resolution imaging in living cells.''*
11h15	**Edinilton MUNIZ-CARVALHO** (LCC, Toulouse) *''Pentacyanoferrate(II) complex of pyrazinohydroxamic acid: hybridized molecule potentially able to release two anti-tubercular active drug-metabolites''*
11h35	**Dr. Séverine FRUCHON** (CPTP, Toulouse) *"Le dendrimère ABP, un candidat médicament pour le traitement des maladies inflammatoires"*
12h05	Session Posters / buffet
14h00	**Dr. Raphaël RODRIGUEZ** (Institut Curie, Paris) *"reprogramming the reactivity of iron in cancer"*
14h50	**Baptiste AMOUROUX** (IMRCP, Toulouse) *"Upconverting nanoparticules, from nanolamp to bioimaging"*
15h25	**Jeanne TROGNON** (LGC, Toulouse) *"Design, synthesis and evaluation of hetrocyclic compounds as Quorum Sensing inhibitors and anti-biofilm compounds"*
15h45	Remise du prix poster offert par la société Cisbio et clôture de la journée

Avec la participation du ***Master 2 Indifférencié Chimie-Santé de l'Université Paul Sabatier***

Comité d'organisation : Dr. Florence Bedos-Belval (SPCMIB), Pr. Vania Bernardes-Génisson (LCC), Dr. Yves Génisson (SPCMIB) et Dr. Jacques Prandi (IPBS)

SELECTIVELY MODIFIED CYCLODEXTRINS FOR BIO-INSPIRED APPLICATIONS

Matthieu Sollogoub
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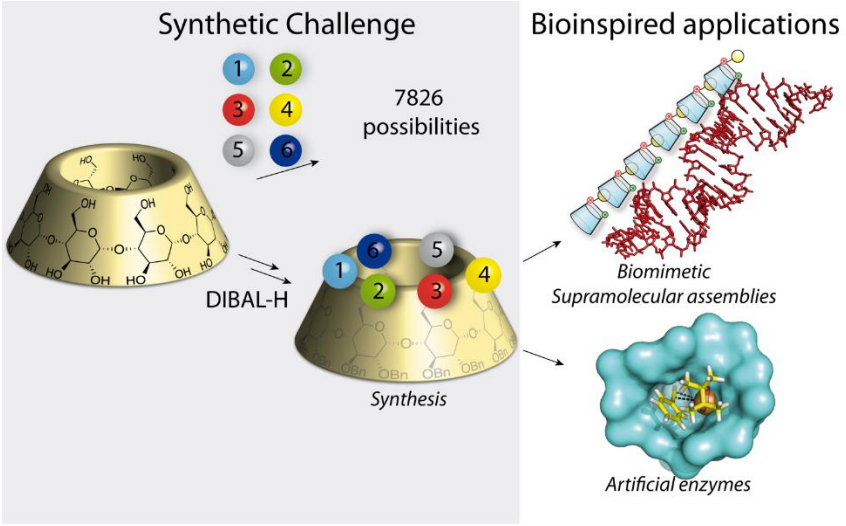
Site-selective functionalization of complex molecules, which consists in targeting only one position out of many similar ones, is a particularly demanding challenge. Concave molecules such as cyclodextrins desperately need efficient and regioselective poly hetero-functionalization methods to expand their field of applications, but this task is highly difficult because of their high symmetry. As an illustration, there are 7826 ways to arrange six functions on the primary rim of α-cyclodextrin. We delineated several strategies to access poly-hetero-functionalized cyclodextrins.[1] The access to such complex structures allows applications in a wide range of areas. We focused on the construction of biomimetic supramolecular assemblies based on our functionalized cyclodextrins and nucleic acids to access an artificial virus.[2] Also inspired by Nature, we encapsulated metals inside the cavity as in metallo-enzymes and used these complexes in catalysis.[3]



[1] M. Sollogoub et al. *Angew. Chem., Int. Ed.* **2008**, *47*, 7060; M. Sollogoub et al. *Angew. Chem., Int. Ed.* **2013**, *52*, 639; M. Sollogoub et al. *Nature Commun.* **2014**, *5*, 5354.

[2] M. Sollogoub et al. *Angew. Chem. Int. Ed.* **2012**, *51*, 487; M. Sollogoub et al. *Angew. Chem. Int. Ed.* **2014**, *53*, 7238; M. Sollogoub et al. *Angew. Chem. Int. Ed.* **2018**, *57*, 7753.

[3] M. Sollogoub et al. *Angew. Chem. Int. Ed.* **2013**, *52*, 7213; M. Sollogoub et al. *Chem* **2017**, *3*, 174; M. Sollogoub et al. *Angew. Chem. Int. Ed.* **2017**, *56*, 10821.

REPROGRAMMING THE REACTIVITY OF IRON IN CANCER

Raphaël Rodriguez
(Institut Curie, Paris)

Mesenchymal cancer cells represent a small fraction of solid tumors at a given time point. Typically, these cells are refractory to conventional therapeutic agents. Furthermore, this cell state has been linked to the development of metastasis and cancer relapse. The complex natural product salinomycin has been shown to selectively kill this population of cells across lineages. It was previously proposed that salinomycin mediates its activity by increasing cellular concentrations of alkali metals such as sodium and potassium. To further illuminate mechanisms underlying the selective activity of salinomycin, we used a combination of synthetic organic chemistry, high-resolution microscopy and molecular biology techniques. In particular, we have shown that salinomycin and its synthetic derivatives accumulate in lysosomes and sequester iron in this organelle. As a result, accumulation of iron leads to the production of reactive oxygen species and lysosomal membrane permeabilization, which in turn promotes cell death by means of ferroptosis. These findings revealed the prevalence of iron homeostasis in mesenchymal cancer cells, paving the way towards the development of next-generation therapeutics. Importantly, this work has led to the discovery that iron operates as a master regulator of cellular plasticity in the context of cancer.