Bio-inorganic Chemistry at PSL



A series of seminar in bio-inorganic chemistry,

presented by M. Fontecave (CdF), G. Gasser (Chimie Paris-Tech), Clotilde Policar (ENS) and Raphaël Rodriguez (Institut Curie).

PSL - BIC Program 2019 – Semester 2

Room E012, salle des éléments, département de chimie de l'ENS, 24 rue Lhomond, 16h30 / 4pm30 — This seminar is founded by PSL (ANR 10-IDEX-0001-02)

NB : The PSL-BIC programme can be found on https://www.chimie.ens.fr/agenda/

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Who, When	University	Title	
2019, November 8 Kevin Lam	The University of Greenwich, School of Science <u>k.lam@greenwich.ac.uk</u>	From Analytical Electrochemistry to Bio Organometallic Drugs: A Strange Journey	O cc fi m
2019, November, 22 nd , 10 am, Salle 205, Chimie ParisTech Bernhard Spingler <i>NB: Time and room unusual</i>	Department of Chemistry, University of Zurich CH 8057 Zurich, Switzerland spingler@chem.uzh.ch	Novel photosensitizer for photodynamic therapy and new methods to grow single crystals of small molecules	T cl A tł
2019, November 29 Ines Batinic-Haberle	Department of Radiation Oncology-Cancer Biology Duke University Medical Center, Durham, NC 27710, USA ibatinic@duke.edu	Mn porphyrins, commonly known as SOD mimics, act as radioprotectors of normal tissue and anticancer agents via thiol signaling	M ra ca in bi of gl of an
2019, December 6 Frédéric Taran	Service de Chimie Bioorganique et de Maraquage, CEA- Saclay Frederic.taran@cea.fr	Click chemistry with mesoionics : new tools for heterocyclic chemistry and chemical biology	T th ch ex of u

Short abstract

Our group has recently discovered, synthesised and patented Cymanquine, a novel organomanganese-containing ompound which exhibits promising anticancer and parasitic activities. This talk will take you through a journey across the elds, we will disclose a new approach to drug design that relies on combining electrochemistry with organometallic and nedicinal chemistry.

'he presentation will report about our studies aimed at exploring the possible synergistic effects of combined photo- and hemotoxic moieties within one compound.

dditionally, tips and tricks for growing single crystals of small molecules will be given, starting from manual methods till he nano-crystallization, which is performed with the help of robots.

Mn porphyrin (MnP), MnTnBuOE-2-PyP⁵⁺ (BMX-001) is presently in 4 clinical trials with cancer patients on the adioprotection of normal brain, salivary glands, mouth mucosa and low pelvic region. The 5th clinical trial is on nonancerous applications of another analog MnTE-2-PyP⁵⁺ (AEOL10113, BMX-010) – atopical dermatitis and itch. While nitially developed as SOD mimics, over 2 decades of research taught us that MnPs are able to interact with numerous iological targets acting as antioxidants and pro-oxidants while producing favorable therapeutic effects. Combined efforts f numerous groups that worked on basic and translational aspects of MnPs demonstrated that MnPs, in the presence of lutathione and H₂O₂, oxidize protein cysteines thereby effecting signaling processes. The most obvious impact of MnP was n the oxidation/S-glutathionylation of NF-kB. Additionally the impact of MnP on Nrf2, MAPK, phosphatase and endogeous ntioxidative defenses has been reported also.

'he development of bio-orthogonal reactions that can be performed in living systems has long held unique fascination in he field of chemical biology. On the other hand, the discovery of chemical reactions fulfilling the criteria of the click hemistry concept continue to have a huge impact in many research fields including heterocyclic chemistry. Quintessential xample is the copper-catalyzed azide-alkyne cycloadditions (CuAAC). Our laboratory is involved in the discovery and use f such reactions with a focus on mesoionic compounds which can act as new interesting dipoles. These reactions were sed both for biological and synthetic applications.