

Department of Chemistry and Pharmaceutical Sciences

AVVISO di SEMINARIO

Il giorno **MERCOLEDI' 5 APRILE 2023** ore **12:15**, **Sala del Consiglio**, *Ed. C11*, *DSCF*

il Prof. Sylvestre Bonnet

Leiden Institute of Chemistry, Leiden University, The Netherlands

terrà una conferenza dal titolo:

Ruthenium-based photoactivated chemotherapy for hypoxic tumors treatment: progresses and challenges

on line al seguente link di MS Teams: http://bit.ly/3Znv4eG

Tutti gli interessati sono cordialmente invitati a partecipare

II Direttore

Prof. Paolo Tecilla

Abstract

Photo-Activated Chemotherapy (PACT), like PhotoDynamic Therapy (PDT), aims at activating anticancer medicines with visible light to circumvent to the tumour site the toxicity of traditional chemotherapy. PACT makes optimal use of ruthenium-based photocages, which can "hide" the biological function of a natural inhibitor in the dark, but recover it upon visible light irradiation [1]. Unlike PDT, Ru-based PACT agents are activated by a photosubstitution reaction. As this activation mechanism is inherently independent from the presence of dioxygen in the irradiated tissues, we engaged into developing them in particular for the killing of hypoxic tumors, where PDT typically fails. In this presentation, several fundamental chemical and biological properties of Ru-based PACT compounds will be presented [2][3]. We will also show our most recent *in vivo* results on this family of compounds, and discuss the challenges to face before clinical applications can become a reality. Financial support by the European Research Council (Starting Grant, Proof-of-Concept grants) and NWO (VIDI, VICI grants) is gratefully acknowledged.



References

- [2] Q. Chen, J.-A. Cuello-Garibo, L. Bretin, L. Zhang, V. Ramu, Y. Aydar, Y. Batsuin, S. Bronkhorst, Y. Husiev, N. Beztsinna, L. Chen, X.-Q. Zhou, C. Schmidt, I. Ott, M. J. Jager, A. M. Brouwer, B. E. Snaar-Jagalska, S. Bonnet, *Chem. Sci.* 2022, 13, 6899
- [3] V. H. S. van Rixel, V. Ramu, A. B. Auyeung, N. Beztsinna, D. Y. Leger, S. T. Hilt, S. E. Le Dévédec, T. Yildiz, T. Betancourt, M. B. Gildner, T. W. Hudnall, V. Sol, B. Liagre, A. Kornienko, S. Bonnet, J. Am. Chem. Soc. 141 (2019), 18444

CV – Prof. Sylvestre Bonnet

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Prof. Sylvestre Bonnet is full professor in bioinorganic chemistry at Leiden University. In 2005 he obtained a PhD on light-activated molecular machines with Jean-Pierre Sauvage at the University of Strasbourg, France. He then moved to The Netherlands to work as a postdoc with Gerard van Koten, Bert Klein Gebbink, Antoinette Killian (Utrecht University), and Jan Reedijk (Leiden University). He then completed a Tenure Track position at Leiden University (2009-2014), where he became full professor in 2020. He received several prestigious grants from The Netherlands Organization for Scientific Research (VENI, VIDI, VICI) and from the European Research Council (Starting Grant and Proof-of-concept). He is a Fellow of the Young Academy of Europe, of which he was Board Member from 2017 to 2020. His expertise lies at the crossing road between bioinorganic chemistry, photochemistry, and liposomes. His current research interests are light-activated anticancer metallodrugs, upconversion, and biomimetic photocatalysis

^[1] S. Bonnet, *Dalton Trans.* **2018**, *47*, 10330.