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AVVISO DI SEMINARIO

Il Dr. Chandradhish Ghosh

Max Planck Institute of Colloids and Interfaces, Potsdam, Germania

il giorno 07/12/2018 alle ore 14 : 30
Nell' Aula seminari del Dipartimento di Scienze e Tecnologie Chimiche

Terrà un seminario dal titolo:

"**The story of aryl-alkyl-lysines: one drug to treat them all",**

Proponente; Prof. Lorenzo Stella

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The story of Aryl-alkyl-lysines: One drug to treat them all

Abstract:
Infectious diseases continue to be one of the major contributors to human morbidity.[1] The rapid rate at which pathogenic microorganisms have developed resistance against frontline antimicrobials, have compelled scientists to look for newer alternatives. Due to their vast antimicrobial repertoire, substantial research effort has been dedicated towards the development of antimicrobial peptides (AMPs) as alternative drugs.[2,3] However, inherent limitations of AMPs have driven substantial efforts by chemists around the globe to develop synthetic mimics of AMPs.[4] In my talk I will describe how simple chemistry could be used to develop synthetic mimics of AMPs. [5,6,7] In the first part of my talk I will describe the identification of functional groups important for designing such molecules. Using antibacterial activity and toxicity as a guide, strategy and synthesis of next generation of antimicrobials will be presented. Solid state NMR and fluorescence spectroscopic studies were used to confirm interactions with bacterial membranes. Subsequently, the biological activity of the compounds will be discussed. Apart from activity against a broad-spectrum of bacteria, the compounds were active even against biofilms.[8,9] The antimicrobial profile of the compounds was also extended to other microorganisms such as fungi, parasites and viruses.[10-12] It was also shown that the compounds can interact with negatively charged components of the Gram-negative bacterial cell wall and prevent the onset of sepsis due to release of lipopolysaccharides. [13] Overall, aryl-alkyl-lysines represent a new class of antimicrobial agents with potential to be developed into drugs against various pathogens.

References:
1. Hancock, R.E.W. *et al. Nat. Biotechnol.* **2006**, 24, 1551; 2. Zasloff, M., *Nature* **2002**, *415*, 389; 3. Brogden, K. A., *Nat. Rev. Microbiol.* **2005**, *3*, 238-250. 4. Ghosh, C. *et al. ChemMedChem* **2015**, *10*, 1606 5. Ghosh, C. *et al. J. Med. Chem*, **2014**, *57*, 1428; 6. Ghosh, C. *et al. ChemMedChem*, **2016**, 11, 2367; 7; Ghosh, C. *et al. Chem. Comm.*, **2017**, *53*, 8427;8. Ghosh, C. *et al. PLoS One*, **2015**, *10*, e0144094 9. Ghosh, C. et al. *ACS Infect. Dis.*, **2016**, *2*, 111 10. Dowall, S. et al. *Viruses* **2016,** *8*, 277. 11. Ghosh, C. *et al. Med. Chem. Comm*. **2017**, *8*, 434. 12. Ghosh, C. et al. *ACS Infect. Dis.* **2017**, *3*, 293. 13. Ghosh, C. et al. *ACS Omega*, **2018,** *3*, 9182-9190