A Bioorganometallic Journey from Peptide Bioconjugates to Novel Metal-based Antibiotics

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Our group uses the unique spectroscopic and chemical properties of organometallic complexes for research in biomedical applications. The experimental challenge is to identify air- and water stable organometallic compounds with the desired properties, and to devise methods for the mild, biocompatible synthesis of bioconjugates with these metal complexes. This presentation will highlight various synthetic strategies to obtain bioactive metal-peptide bioconjugates that have been developed in our group, and will present some exemplary biomedical applications of such metal complexes and metal-peptide conjugates. Potent novel anticancer agents based on a number of different metals such as Fe, Ru, Re, and Au were developed, characterized and tested for their antiproliferative activity against a range of different cancer cells. In-depth studies into their possible mode of action were carried out. Also, I will present novel organometallic-peptide conjugates with very potent antibacterial activities that even surpass that of a last-resort antibiotic, vancomycin. Importantly, these organometallic-peptide conjugates have a novel mode of action, allowing them to avoid the common mechanisms of bacterial resistance.

Recent reviews from the Metzler-Nolte group:

Host: Professor Lawrence Que Jr.
Refreshments will be served prior to the seminar.
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