SEMINAR PROGRAM

DEPARTMENT OF CHEMISTRY & BIOCHEMISTRY
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We Are Pleased to Announce a Seminar
Presented By

Klaas-Martinus Pos
Goethe University, Frankfurt, Germany

Friday, March 24, 2023
11:00 am
SLSRC 3410/3430

Antimicrobial Resistance: How a single efflux pump recognizes multiple drugs and inhibitors

Tripartite efflux pumps in Gram-negative bacteria play a prominent role in the resistance against multiple antibiotics. These efflux systems comprise an inner membrane transporter as a substrate binding/transport and energy-coupling determinant, a periplasmic adaptor protein, and an outer membrane channel. Transport of drugs across the outer membrane and its coupling to the electrochemical gradient is dependent on the presence of all three protein components. In *Escherichia coli*, the inner membrane transporter AcrB of the AcrAB-TolC tripartite efflux pump recognizes and transports a wide selection of toxic compounds including bile salts, organic solvents, detergents, dyes, and multiple antibiotics. Using structural analysis and other biophysical/biochemical methods, we obtained insight into the molecular basis of this substrate promiscuity and the distinct transport pathways of drugs through AcrB. Moreover, functional and structural analysis on two classes of effective efflux pump inhibitors revealed their discrete binding sites on AcrB, rendering the AcrAB-TolC efflux machinery inactive.

Refreshments will be served.