Zoom in on Bacterial Social Networking

Forskningsleder
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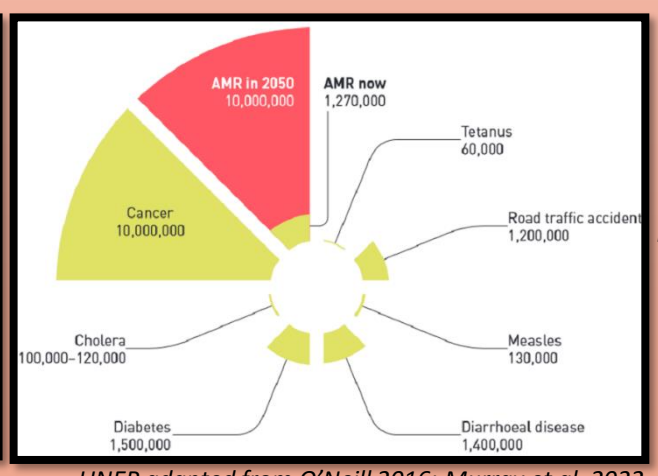
Kerneforsknings-områder

Multidrug antimicrobial resistance is a rapidly developing global concern. These is a list of six so-called ESKAPE bacteria as the leading cause of hospital-acquired infections globally, and most difficult to treat because they are multidrug-resistant. Among them, *Acinetobacter baumannii* exhibits high tolerance to harsh environment such as disinfectant, oxidative stress and complementary killing, as well as long survival on surface. Therefore, it is of great importance to understand the mechanistic details of *A. baumannii* responses and physiology under different environment settings.

Image: Clover Biosoft



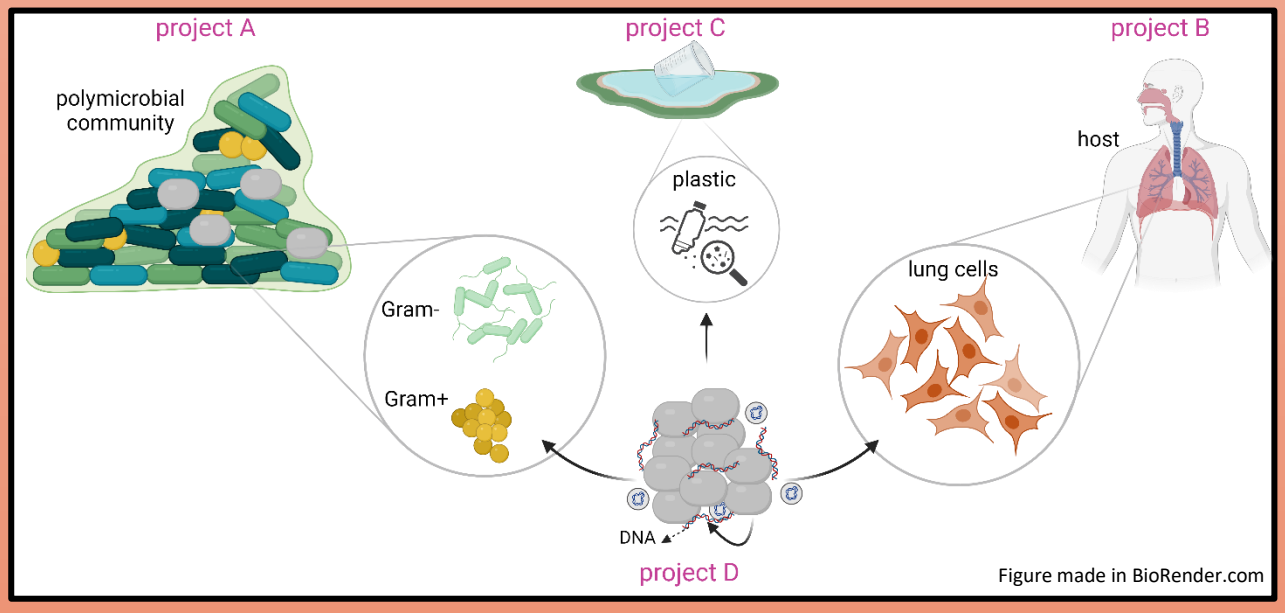
UNEP adapted from O'Neill 2016; Murray et al. 2022

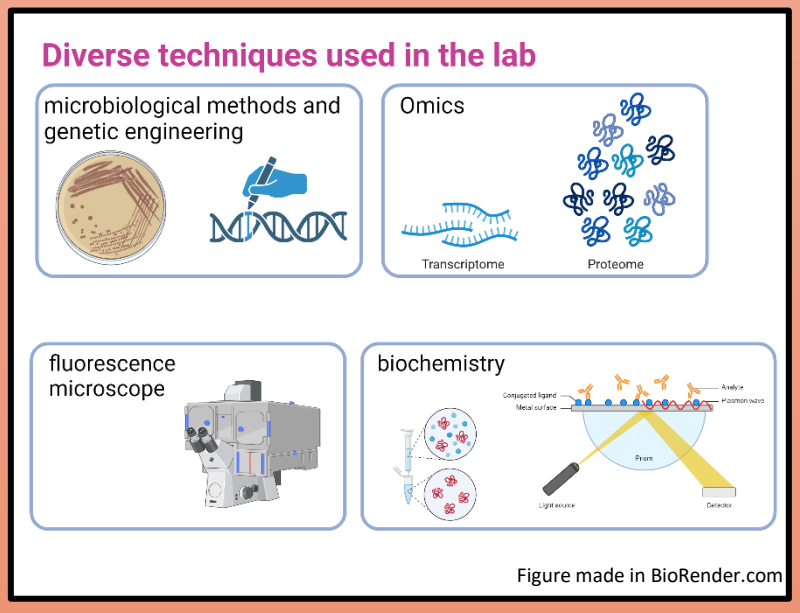
ESKAPE

six highly virulent and antibiotic resistant pathogens

If unchecked, AMR could shave US$ 3.4 trillion of GDP annually! (UN data)

An urgent need to address AMR problem globally





Projekter	Beskrivelse
A. Molecular mechanisms of polymicrobial interaction between ESKAPE	Polymicrobial infection is widespread and prevalent in clinical setting, which can for example alter the reaction to antibiotic treatment and the pharmacodynamics of antibacterials. The goal is to investigate the mechanistic details of how ESKAPE pathogen *A. baumannii* interacts with others in multispecies communities, and further understand how such interactions shape bacterial life in the community.
B. Dynamics and regulation of important virulence factors in *A. baumannii*	*A. baumannii* is an opportunistic pathogen that shows increasingly importance as nosocomial infections. There are multiple virulence factors that contribute differently to its 'persist and resist' infection strategy. We aim to investigate the regulation of the most important virulence factors during its virulence process in molecular level, as well as the dynamics of such in single-cell level.
C. How bacteria use surface structure to interact with plastic	*A. baumannii* becomes problematic by long-term survival on abiotic surface in hospital setting. Importantly, it can bind to plastic via its surface structures. In this project, we want to explore if these surface structures can be used to detect small plastic particles in our environment.
D. eDNA´s Hitchhiker's Guide to bacterial community	DNA is known to all of us as genetic material. However, across the kingdom of life, it has also been abundant in the extracellular space of many habitats and plays diverse biological roles. In bacteria, eDNA is important for the maintenance of biofilm structure, gene transfer, etc.. In this project, we want to study the regulation, function, as well as the spatial dynamics of eDNA in *A. baumannii*.