電子所演講公告

Title: Understanding Tolerance Phenotypes in Escherichia coli: Developing the Resistome

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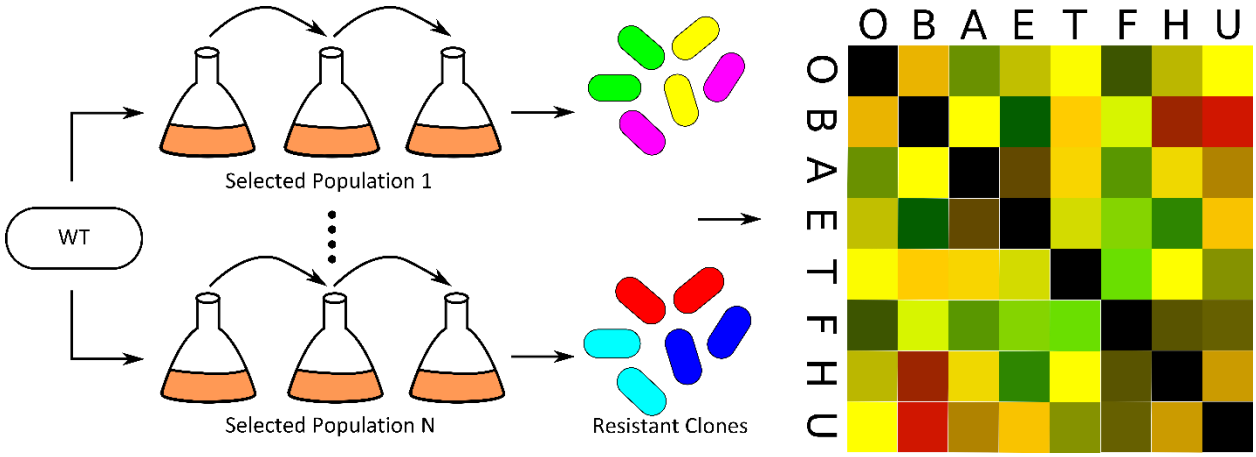

Metabolic and evolutionary engineers have developed increasingly sophisticated approaches for improving biocatalyst resistance to environmental stresses. However, despite the growing wealth of genetic and phenotypic data characterizing these traits of interest, these data remain scattered amongst the literature, and cannot be used for automated analysis to discover novel (anti)correlations between underlying genetic mechanisms. Designing E. coli strains with multiple desirable tolerance phenotypes, or equivalently designing treatments to prevent dual resistance to antibiotic treatments, remains challenging as a result. We address this deficiency by developing the Resistome, a database containing hundreds of E. coli tolerance-conferring genotypes in a standardized, machine-readable format. In this talk, we examine the genetic bases for these tolerance traits, while introducing computational tools that can automatically infer synergy or antagonism between traits of interest. We anticipate that the Resistome will become a powerful tool for metabolic engineers to design and analyze multi-tolerant strain designs, and enable the development of novel dual treatment strategies to forestall evolution of drug resistance in a medical context.

Host: Prof. Ya-Tang Yang, Department of Electrical Engineering

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