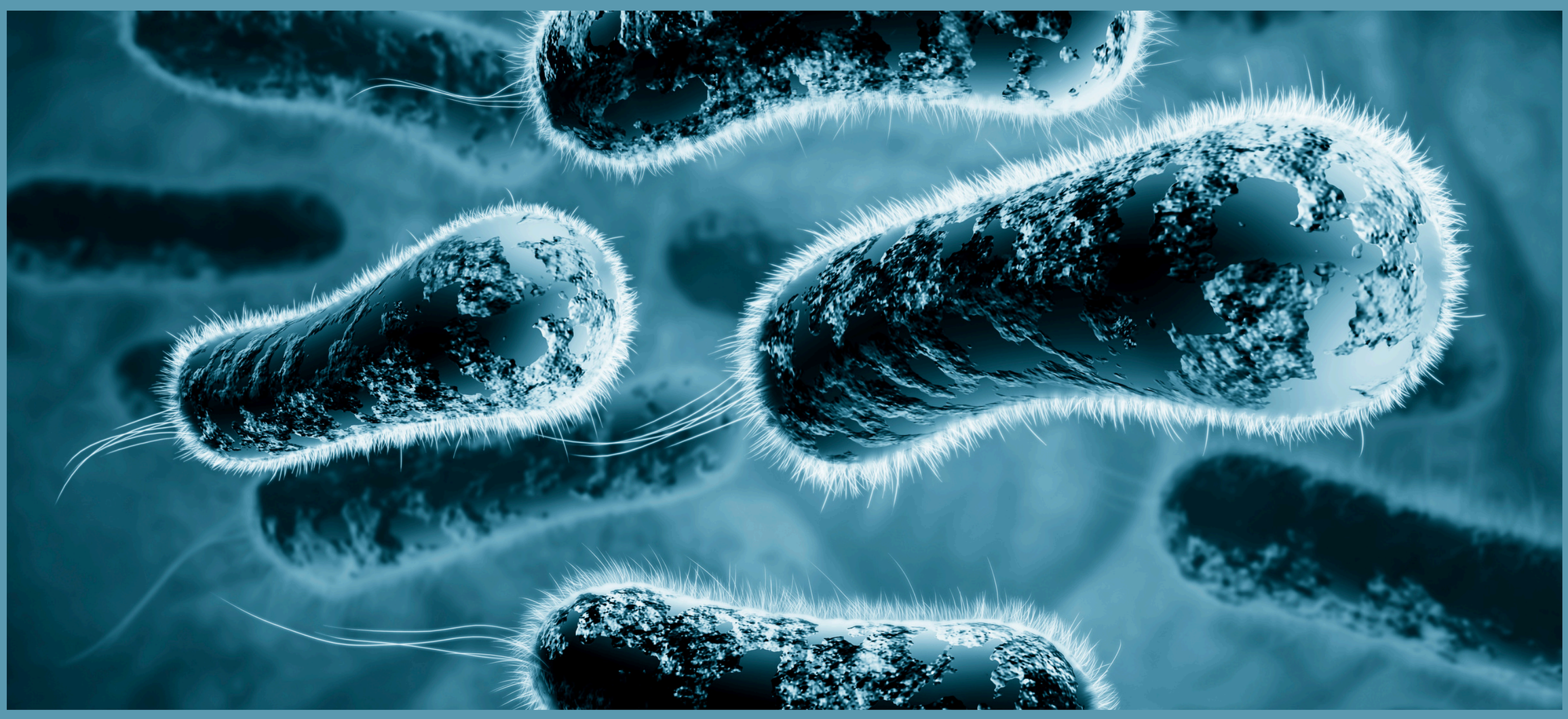
27 MAY AT 11:00 A,M.
ROOM A206 | POVO 1

CIBIO EXTERNAL seminar

CHALLENGES AND OPPORTUNITIES FOR BACTERIAL TRANSCRIPTIONAL REPROGRAMMING AND METABOLIC ENGINEERING WITH CRISPR-CAS REGULATORS

Jesse Zalatan

ASSOCIATE PROFESSOR AT THE DEPARTMENT OF CHEMISTRY,
UNIVERSITY OF WASHINGTON, SEATTLE, WA



CRISPR-Cas transcriptional tools have been widely applied for programmable regulation of complex biological networks. In comparison to eukaryotic systems, bacterial CRISPR activation (CRISPRa) has stringent target site requirements for effective gene activation and limited dynamic range. We have systematically evaluated the features of bacterial promoters and transcriptional effectors that are responsible for these strict requirements. Using this knowledge, we have developed strategies to expand the scope of effective target sites, improve the dynamic range of gene activation, and port CRISPRa/i tools to different bacterial species. Our work provides a framework to choose effective dCas9 variants and transcriptional activators for a given set of gene targets, which will further expand the utility of CRISPRa/i gene regulation in bacterial systems. These regulatory strategies have been applied to optimize gene expression networks for the biosynthesis of industrially-relevant chemical products.

DEPARTMENT OF CELLULAR, COMPUTATIONAL AND INTEGRATIVE BIOLOGY - CIBIO
VIA SOMMARIVE, 9
38123 - POVO (TN)
COMUNICAZIONE.CIBIO@UNITN.IT

UNIVERSITÀ DI TRENTO
Dipartimento di Biologia Cellulare, Computazionale e Integrata - CIBIO