

Ph.D. projects in progress

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Title of the research topic: Aiding the Development of Anti-virulence Therapy for Inflammatory Bowel Disease by Evaluating Risks Related to Resistance Evolution

Description of the research topic: Targeted eradication of pathological bacteria from the intestinal ecosystem has a great promise as precision medicine to restore the homeostasis of gut microbiota in chronic inflammatory bowel disease (IBD). Therapeutic agents that target pathogen-specific virulence factors (i.e. virulence inhibitors) may have a key role in these treatment strategies, as they have a uniquely tailored activity spectrum that leaves beneficial commensal bacteria unaffected. However, there are also concerns that resistance against virulence inhibitors can readily evolve akin to antibiotic resistance, and consequently, altered bacterial virulence may compromise natural immunity. Here, we aim to provide a functional genomic platform that investigates horizontal gene transfer-mediated resistance evolution against virulence inhibitors. Then, we will use the technology to better understand some of the most worrying biological issues in the field.