



Mardi 20 Novembre 2018 à 9h00

Amphithéâtre Boucherle - UFR de médecine/Pharmacie - Site santé
Domaine de la merci 38700 La Tronche - T.+33 (0)4 76 63 75 49

Lungs, Germs and Steel: Fighting the Cystic Fibrosis Lung Microbiome

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In healthy human airways there is a spectrum of microbial colonization starting with a diverse community of hundreds of species living in the oral cavity, a reduced but still complex community in the upper airway, and a very low, even undetectable at times, microbial presence in the lower airways. During chronic disease, however, the microbial load in the lungs becomes much higher and persistent infections result in intense inflammatory responses. In the cystic fibrosis lung, mucus plugs the airway creating carbon rich anaerobic environments where microbes thrive. The physiochemical properties of a chronically infected CF lung set up a complex and interdependent microbial ecosystem that plagues patients throughout their lifetime. My laboratory has been studying the chemical, metabolic and microbial functions within this consortium with aims at developing new ways to stop it and better understand the affects of antimicrobial treatment against it. Using cutting edge bioinformatic analysis for mass-spectrometry and high-throughput DNA sequencing data, my laboratory investigates the metabolome and metagenome of this complex microbiome. Our work has shown that during periodic symptom flares, called pulmonary exacerbations, there is a shift in microbial physiology from a pathogen-dominated respiratory community to an anaerobe-dominated fermentative community. Antibiotic therapy wipes out these anaerobes that are not generally considered as pathogenic in the CF lung. This seminar will show that anaerobes are a fundamentally important component of the CF lung microbiome and that they have a mutually exclusive dynamic with the major pathogens such as *Pseudomonas aeruginosa*. I will demonstrate how the acute and chronic phases of CF disease are caused by fundamentally different microbial entities and how a microbial ecology approach to infectious disease can reveal novel treatment approaches to improve the lives of patients.

Hôte : Audrey Le Gouëllec (TIMC/TheREx/Groupe Dialogue inter-règne et applications médicales)