

- Presentation sheet :

UMR CNRS 6023 Laboratoire Microorganismes : Génome et Environnement, Clermont Université (D. Debroas)

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Pulmonary infection due to *Klebsiella pneumoniae*: characterization of the induced cytokine storm

*Inflammation is an essential defense mechanism involved in the control of infections. Many respiratory viruses and bacteria are able to modulate the inflammatory response in the lung by inducing "hyper-inflammation" characterized by a strong increase in the production of pro-inflammatory cytokines (cytokine storm) leading to deleterious over-activation of immune cells, systemic inflammation and extensive tissue damage. The objective of this project is to characterize the cellular and molecular actors involved in the development of this cytokine storm, using *Klebsiella pneumoniae* as a respiratory pathogen. The cell signaling pathways and cytokine networks involved in the inflammatory response by *K. pneumoniae* will be analyzed, in vitro, using innate immune cells. The role of cytokine storm in the pathogenesis and progression of pneumonia induced by *K. pneumoniae* will be characterized in a murine model of *K. pneumoniae* pneumonia. The results of this project will contribute to better define the immunological response and therefore to identify new targets that could be used in the control of the inflammatory reaction in patients infected with pathogens responsible for triggering deleterious cytokine storms.*

*Vareille-Delarbre M, Miquel S, Garcin S, Bertran T, Balestrino D, Evrard B, Forestier C. (2019). Immunomodulatory Effects of *Lactobacillus plantarum* on Inflammatory Response Induced by *Klebsiella pneumoniae*. Infect Immun. 2019 18;87(11).*