

Soutenance



Institut de Biologie Structurale

Salle des conférences du
bâtiment André Rasset
à Gières &
Visioconférence

THESE

Mercredi 18 Mai 2022 à 14h

Institut de biologie structurale - 71 avenue des Martyrs CS 10090 38044 Grenoble Cedex 9 - T.+33 (0)4 57 42 85 00

www.ibs.fr

par **Manon Janet-Maitre**

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Responses and adaptation of *Pseudomonas aeruginosa* to envelope stress

Thèse de Doctorat de la Communauté Université Grenoble Alpes

Pseudomonas aeruginosa is a Gram-negative opportunistic pathogen causing life-threatening bacteremia. In response to the complement system encountered in the bloodstream, *P. aeruginosa* can persist by forming a tiny subpopulation of evaders able to withstand the complement system activity. Using transposon sequencing (Tn-seq), we discovered three new pathways that improved bacterial survival in human plasma. We showed that reduced ATP and biotin availability leads to increased tolerance and persistence, respectively. Observation of plasma-challenged bacteria by electron microscopy revealed the presence of energy storage polyphosphates granules. In addition, we identified a novel small (7.2 kDa) periplasmic protein SrgA whose overproduction led to a 2-log increase in plasma tolerance. Those three novel pathways improve *P. aeruginosa* survival by impeding the lytic activity of the membrane attack complex activity *per se*. Given the high genetic diversity of strains within *P. aeruginosa* species, we investigated the responses of four genetically and phenotypically different strains to human plasma, further highlighting the complexity and the strain-specificity of plasma resistance mechanisms. Overall this work sheds light onto the multifactorial origin of *P. aeruginosa* resilience to the complement system.

Cette soutenance sera retransmise en visioconférence :

<https://univ-grenoble-alpes-fr.zoom.us/j/93194426098?pwd=U1NkWUhuckRheHdpdmZVa0R2S2t0Zz09>