

Intravital imaging of infection
Institut Pasteur Paris
Pathogenesis of vascular infections unit
Headed by Guillaume Duménil

Topic. Infectious diseases leading to colonization of the blood by the infectious agent are a major burden to society and lead to a wide array of devastating clinical manifestations including septic shock, hemorrhagic syndromes and infection of the brain (meningitis). The main goal of the proposed project is to decipher the pathophysiological processes underlying these infections focusing on the innate immune response to intravascular colonization by the bacterium *Neisseria meningitidis*. A xenograft-based humanized mouse model of infection by this bacterium will enable *in vivo* characterization of the innate immune response (Bonazzi *et al.* and Melican *et al.*). The experimental approach will be based in particular on dedicated in-house spinning disk confocal microscopy-based intravital imaging allowing fast, high resolution multicolor imaging.

Bonazzi D, Lo Schiavo V, Machata S, Djafer-Cherif I, Nivoit P, Manriquez V, Tanimoto H, Husson J, Henry N, Chaté H, Voituriez R, Duménil G (2018) Intermittent pili-mediated forces fluidize *Neisseria meningitidis* aggregates promoting vascular colonization. *Cell* 174, 1–13, June 28, 2018.

Melican K, Michea Veloso P, Martin T, Bruneval P, Dumenil G (2013) Adhesion of *Neisseria meningitidis* to dermal vessels leads to local vascular damage and purpura in a humanized mouse model. *PLoS Pathog* 9: e1003139.

Context. This research will take place in a young and dynamic group with a strong background in microbiology, cell biology, physics, immunology, animal models of infection and intravital imaging (<https://research.pasteur.fr/fr/team/pathogenesis-of-vascular-infections/>). Core facilities of the Institut Pasteur campus are also available in support for the project.

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