

**Master 2 internship project
Year 2026-2027**

Laboratory/Institute: IBS and CHU Grenoble **Director:** W. Weissenhorn
Team: PB&RC (bacterial pathogenesis & cellular responses) **Head of the team:** I. Attrée

Name and status of the scientist in charge of the project: Yvan CASPAR

HDR: yes ☒ (Y. Caspar)

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Program of the Master's degree in Biology:

- ☒ Microbiology, Infectious Diseases and Immunology ☐ Biochemistry & Structure
☐ Physiology, Epigenetics, Differentiation, Cancer ☐ Neurosciences and Neurobiology

Title of the project: Target-agnostic identification of human monoclonal antibodies against multi-drug resistant *Pseudomonas aeruginosa*

Objectives (up to 3 lines): identify human monoclonal antibodies that are effective against *Pseudomonas aeruginosa* infection by implementing target-agnostic discovery strategies and functional screening approaches.

Abstract (up to 10 lines):

Antibacterial monoclonal antibodies (mAbs) development remains at an early stage but they represent a very promising alternative to antibiotics in the fight against multi-resistant bacteria. This project aims to isolate therapeutic human mAbs targeting *P. aeruginosa* (Pa), a highest priority pathogen for which WHO urgently calls for the development of innovative therapeutic solutions, ranking as the 6th most lethal pathogen related to antimicrobial resistance worldwide. While target-centric strategies are predominant, target-agnostic antibacterial humAbs identification methods have emerged very recently. In this project we aim to use high-throughput (HTP) functional screenings based on Pa-induced cytotoxicity and cell proliferation assay to isolate humAbs with broadly inhibiting activity.

Methods (up to 3 lines):

IgG and IgA purification, flow cytometry, automated microscopy and image analysis (High Content Screening), biochemistry (western blots, SDS-PAGE), ELISA, phenotypic profiling. Basic bacterial genetics (mating, transformation, cloning). Bioinformatics.

Up to 3 relevant publications of the team:

Desveaux, JM et al. *eLife* 14, RP105195 (2025). doi.org/10.7554/eLife.105195.3

Amen A, et al. *eLife* 13, RP97865 (2025). doi: 10.7554/eLife.97865.

Janet-Maitre M, et al. *PLoS Pathog* 19(1) e1011023 (2023). doi.org/10.1371/journal.ppat.1011023

Requested domains of expertise (up to 5 keywords): Bacteriology, flow cytometry, molecular biology, microscopy, cellular biology