UMR CNRS 6023
Laboratoire Microorganismes : Génome Environnement (LMGE)
Université Clermont Auvergne

Postdoc position in microbiology - molecular biology

A **24-month post-doctoral position** is available in the laboratory of Pr Christiane Forestier (Microbial Communities: Ecotoxicology Health). Our team is part of the CNRS unit LMGE, a research laboratory dedicated to microbiology (www.lmge.univ-bpclermont.fr).

The project entitled "Maturation and dispersion of bacterial biofilms" has been funded by the CPER AURA 2020 Défi Epicure 3DBio.

The formation of bacterial biofilms is a complex process, initiated by the adhesion of a few bacteria to a surface, followed by the formation of microcolonies evolving into three-dimensional structures composed of bacteria enclosed in a self-produced and protective matrix. The maturation of biofilms is accompanied by a dispersion phase, characterized by the release of part of the biofilm, either in the form of isolated bacteria or in mini-aggregates. This step plays a fundamental role in the contamination of other sites and the passage to chronicity of the infectious forms.
The objective of the project is to characterize the molecular mechanisms leading to the phenomenon of dispersion during biofilm maturation with the opportunistic pathogenic bacterium *Klebsiella pneumoniae* as a model.
We propose:
1 / To optimize and model the process of biofilm formation by K. pneumoniae in a kinetic model allowing the application of controlled shear forces (BiofluxTM system), by defining the mechanical parameters of the biofilm during its formation and maturation with images from the Bioflux system
2 / To analyze the behavior of mutants from a library previously created by transposon insertion.
3 / To determine the insertion points of transposons in the chromosome of mutants deficient for the dispersal step in order to know the genes involved in the process of biofilm maturation. A classical molecular approach will then be applied to determine the function of the genes thus demonstrated.

Candidates for this position should have solid knowledge and expertise in **molecular biology, bacteriology** and, if possible, **image analysis**. The main activities will be: monitoring the evolution of biofilms in the kinetic system, determining genes - functions involved in the dispersal process.

The project will be carried out in close collaboration with Jean Denis Mathias (INRAE Senior researcher) specialist in the modeling of complex environmental systems.

The position is **available starting january 2022**.

Please send a cover letter describing past research accomplishments and future research interests, CV, and a list of 2 references by email to**: christiane.forestier@uca.fr**