

## Institut Pasteur Lille: International applications to carry out a 3-year thesis

**Title:** Antimicrobial peptides from extremophile organisms as an alternative to combat multiresistance of bacteria causing lung infections

Thesis director: Aurélie Tasiemski (Associate Professor HDR)

Email: aurelie.tasiemski@univ-lille.fr

**Abstract:** Thirty years after their discovery, antimicrobial peptides (AMPs) stage a comeback. The better understanding of their mode of action, feasibilities of modification and synthesis as well as their environmental safety is reigniting their commercial development. However, more tailored structures among AMPs are necessary to harness their full potential in treatment of multi-resistant related infectious diseases. We have successfully identified and patented new AMPs derived from extremophile worms inhabiting the hot part of deep-sea hydrothermal vents showing very high antibacterial activities against three multi-resistant lung pathogens, from the genera of *Pseudomonas* and *Mycobacterium*, without adverse effects.

The goal of this PhD is to analysis their mode of action and the emergence of resistance mechanisms using state-of-the-art biochemical and biophysical techniques and by taking in account the changing microecology of the infected lungs. Innovative tools derived from quantitative genetics models will extend our knowledge of novel targets in priority and critical priority strains. The discovery and optimization of such AMPs may lead to future efficient chemotherapeutic developments against multi-resistant pathogens with a strong impact on human health to respond to the urgent needs to treat patients suffering from respiratory diseases not curable with the existing antibiotics