Position: 3 year PhD position at Institut Pasteur in Paris
Starting date: September 1st, 2015
Website: http://www.pasteur.fr/en/research/labex/IBEID

PROJECT  
Dynamics of bacterial cell shape and its role in pathogenicity

Bacteria change their cell shape via a dynamic process that is influenced by the environment. Access to nutrients, the ability to divide, active motility and the capacity to adhere to host cells are among the important features that influence and determine cell shape. Two essential processes are implicated in cell shape determination, i.e. cell wall biosynthesis and cell division. The main players are the penicillin-binding proteins, cell division protein FtsZ and the MreB-D proteins that together with regulatory factors determine cell shape. *Helicobacter pylori* is a helical-shaped bacterium that colonizes the stomach. Its particular shape and polar flagella provide torsion to penetrate the mucus layer and reach the gastric epithelial cell layer. *H. pylori* transitions from spiral into coccoïd form as a mechanism to escape the immune system. It is currently unknown how and when cell shape changes or what mechanism underlies cell shape transition. In this research project we will identify novel regulatory factors involved in cell shape dynamics by a bacterial genetics approach, determine the cellular localization of cell shape determinant proteins by fluorescence microscopy and study cell shape changes upon interaction with host cells and in host organs by various complementary microscopic methods.

Candidate requirements: The successful candidate is expected to have solid background in general microbiology, bacterial genetics and molecular biology. Expertise with fluorescence microscopy is desirable but not necessary. Good communication and English language skills and desire to work on interdisciplinary problems. The PhD student will be integrated into the BGPB Unit headed by Dr. Ivo G. Boneca. The project profits from collaborations within the Labex IBEID, in particular with laboratories headed by Dr. Marc Lecuit and Dr. Sven van Teeffelen.

To apply: Applicants should send their CV, a motivation letter and two names of references to Nienke Buddelmeijer (nienke.buddelmeijer@pasteur.fr), Biology and genetics of the bacterial cell wall Unit, Institut Pasteur, 28 rue du docteur Roux, 75015 Paris. Deadline for application: May 1st, 2015.