Job offer from January, 2014

The Department of Soft Matter at the Institute of Physics in Rennes, France, is seeking a student in biophysics for a PhD position (PhD). The position is available in October 1st (2014).

Requirements

Candidates shall have completed studies in physics, biophysics, or biochemistry and have expertise to biological field.

The position

The candidate is expected to conduct experimental research in membrane system model interacting with proteins using Langmuir methods, NMR and spectroscopy. He/She should be capable of interdisciplinary work as he/she will have to collaborate with microbiologists. Moreover, the candidate will pass a stage during the PhD (6 up to 12 months) in the Chemistry department of Laval University.

Our offer

The successful candidate will work as part of an innovative, multidisciplinary and dynamic research team with state-of-the-art facilities, located within a vibrant city environment. The position is available for three years.
The present project mainly consists of fundamental research; it is mainly devoted to the understanding of the mechanisms of antimicrobial proteins extracted from the hen's egg. However, it is an essential prerequisite for future developments potentially interesting food industry, since it could result in new uses and/or new "forms" of lysozyme and ovotransferrin as natural preservatives.
These two proteins seem to play major roles in the protection of the embryo development . These two proteins are highly concentrated in hen egg white (3.5 g/L and 13 g/l, respectively), and their physicochemical characteristics are strongly different: lysozyme is a small (14.4 kDa) alkaline (pI 10.7) protein, not glycosylated, and rigid because of 4 intramolecular disulfide bridges; ovotransferrin has a higher molecular weight (77 kDa), is neutral (pI 6.5), glycosylated, and flexible. These two proteins are purified at an industrial scale and they are then commercially available. In our laboratory, we recently established that these two proteins are able to disrupt the membranes of some bacterial species. Up to now, few is known about disruption mechanism.
Using membrane system model as Langmuir film, supported bilayers or vesicles, we want to describe the different steps of interaction between these proteins and the membrane. Tensiometry, ellipsometry, atomic force microscopy and spectroscopy will be the usefull techniques used to improve information.

Your application

Applicants should send a cover letter, CV and names and addresses of at least two referees until July 15, 2014, exclusively by email to vvie@univ-rennes1.fr with the keyword "Antibacterial project".