March 15, 2021

Studying the interaction of light with bacterial biofilm to design a luminescent aerosol for the treatment of lung infections

Applications are invited for **an open 2-years post-doctoral position** at Laboratoire Jean Perrin (LJP) - CNRS - Sorbonne-Université in Paris in the **Micro-Organism Biophysics group under the supervision of Dr Nelly HENRY (**https://www.labojeanperrin.fr/?article7&lang=en).

The post-doctoral fellow will study the interactions of a bacterial biofilm with light in the framework of a **EU-funded Fet-Open project**, Light-4-Lungs (L4L), involving 8 international partners (https://cordis.europa.eu/project/id/863102), (https://light4lungs.eu/partners/). L4L project is dedicated to developing new treatment for bacterial lung infections using inhalable light sources under the form of a luminescent nanoparticle aerosol expected to kill bacteria via the photodynamic effect, i.e. the excitation of bacterial endogenous photosensitiserssuch as porphyrins followed by the local production of reactive cytotoxic oxygen.

The group in Paris will focus first on biofilm light absorption properties in order to define the spectral efficiency of the whole design, second on light sensitivity of the biofilm in terms of bacterial survival. The laboratory holds an established expertise in the *in situ* real time monitoring of bacterial biofilm development under controlled flow in millifluidic setups. Quantitative analysis of developmental kinetics, spatial distribution and internal dynamics is performed based on video-microscopy data generated both in transmitted light and fluorescence. The experimental work dedicated to L4L project will range from instrumental design, microfabrication, video-microscopy, computer interfacing up to bacteria culture.

The selected candidate will be expected to actively participate in the EU-consortium

involving regular consortium meetings, collaborations in Spain, UK and Italy and could possibly, depending on the sanitary situation, include experiments in Firenze at Prof. Giovanni Romano's laboratory.

Candidate profile: Applicants must have a PhD and their main background in physics or physico-chemistry with a strong interest in biology. A PhD at the interface of these disciplines would be highly appreciated. Yet a strong motivation for biological systems will also be favorably considered for a candidate with no background in biology.

CV, motivation and references to nelly.henry@sorbonne-universite.fr

Position is immediately opened but a 2 months-long incompressible administrative procedure will fix the actual employment date after candidate selection.Gross monthly salary ranges from 2515 € to 3060 € (count about 20% tax withholding) depending on the candidate seniority.

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