

Postdoctoral position available to develop engineered nanobodies targeting brain alpha7 nicotinic acetylcholine receptors

Project

The alpha7 nAChRs are abundantly expressed in the brain in regions underlying cognition, especially in the hippocampus and the frontal cortex. There is strong evidence that their activation can ameliorate neurocognitive deficits in patients, notably in schizophrenic patients. In this context, we recently generated two single-chain antibodies from alpacas (nanobodies) targeting this receptor, one acting as a positive allosteric modulator, and the other as a silent allosteric modulator. The aim of the project will be to engineer these nanobodies, through mutagenesis and chemical reactions, to endow them with novel properties: crossing of the blood brain barrier, and converting them into photo-switchable agonists through covalent reaction with azobenzene-grafted agonists. The project will be performed in the framework of an ANR research program and will be conducted in collaboration with the groups of Morgan Besson (institute Pasteur) and Alexandre Mouro (Institut de Biologie Paris Seine) for the evaluation of nanobodies in behavioral and physiological studies in living rodents.

Host Institute

The successful candidate will work in two groups of the Institut Pasteur in Paris: the group of Gabriel Ayme for nanobodies design, engineering and production and the group of Pierre-Jean Corringer for the characterization of nanobodies by two-electrode voltage-clamp electrophysiology (upon agonist of light activation) and by immunofluorescence in transfected cell lines. He will have also access of the many facilities of biophysics of the institute to further characterize the nanobodies and their crossing of the BBB. The Institut Pasteur is a world-class research institute located downtown in Paris nearby exciting culture and city life.

Requirements

We are looking for a motivated individual with a Ph.D. degree in biochemistry or biophysics. Experience in biochemistry is essential; experience with electrophysiology would be a plus but is not mandatory. Applicants will work between two labs and will thus have to be autonomous and take initiatives.

Terms of employment

The position is for 2 years and will be filled as soon as possible. The salary will follow the Institut Pasteur guidelines.

How to apply

Interested applicants should send their CV, a cover letter describing their motivation and contact details of two academic references to Gabriel.ayme@pasteur.fr and pjcorringer@pasteur.fr.