A 24-month post-doctoral position in Virology

Our research

Both HIV and HTLV emerged in the human population following several cross-species transmission events involving retroviruses (SIVs and STLVs) endemic in nonhuman primates (NHPs). Moreover, **foamy viruses, the third genus of complex retroviruses**, some of which are of simian origin, can also establish persistent infection in humans. Simian foamy viruses (SFVs) are widespread and highly prevalent in many NHP species. These viruses can be readily isolated from buccal samples of infected NHPs. Penetrating bite wounds therefore constitute a potential route of transmission to humans, leading to the establishment of **life-long persistent infection**. **Human infection with zoonotic SFVs constitutes a unique, natural model for studies of the retrovirus emergence in humans**.

The ZOOFOAMENV project "Host pathogens interactions in humans infected with zoonotic foamy viruses"

This multidisciplinary study is funded by the Programme Transversal de Recherche of Institut Pasteur, Paris. The first goal is to examine the **consequences of SFV infection for human health**, including an in depth study of zoonotic strains present in infected Central-African hunters. We have identified coinfection by strains from the two viral genotypes in one-third of hunters, a finding of major importance considering the potential for recombination events that could lead to the emergence of human pathogens, such as was the case for HIV-1. The second goal is to **investigate the Envelope (Env) structure**, define the domains important for cell binding and viral entry, and the epitopes targeted by SFV Env-specific antibodies.

The project involves four research units: The Epidemiology and Physiopathology of Oncogenic Viruses Unit (EPVO, Head A. Gessain) and the Structural Virology unit (VIST, Head Felix Rey) at Institut Pasteur Paris, The Virology Laboratory at Centre Pasteur in Cameroun (LVCPC, Head Richard Njouom) and the Discovery and Molecular Characterization of Pathogens at Institut Pasteur in Shanghaï (DMPC, Head N. Berthet).

The mission

The candidate will join the "Immunity of retroviral infection in humans" group headed by Florence Buseyne in EPVO unit in Paris. She/He will interact with members from VIST. The candidate will perform an in-depth characterization of SFV strains infecting humans with a focus on individuals infected with at least two strains belonging to the two genotypes. First, digital PCR assays will be established to quantify SFV DNA from both genotypes. Secondly, after the determination of the structure of Env, the candidate will define the genotype-specific epitopes on the Env and will develop novel serological assays for coinfection diagnosis. The third task will consist in generating foamy vectors carrying mutant Env for functional testing of their capacity to mediate viral entry and susceptibility to genotype-specific antibodies. The collaborators at DMPC aim to obtain sequences from zoonotic SFV genomes using targeted genome capture and next generation sequencing strategy (TGC-NGS). The candidate will use the foamy vector system to test the function of novel recombinant strains if identified in human samples.

Desired skills and experiments

– Experience in virology and/or immunology will be favored;
– Expertise in cell culture, flow cytometry and molecular biology techniques, including qPCR;
– A good team spirit and sharing knowledge with other members of the team will be essentials.

Application

The application and contact information for two or three referees should be sent florence.buseyne@pasteur.fr.
The applicant is expected to start its fellowship in before March 31st 2021.
More information can be found on the web site https://research.pasteur.fr/en/team/group-florence-buseyne/