Post-doc in bioinformatics / computational biology

Cancer initiation – Somatic evolutionary dynamics – Tissue ageing in normal and diseased conditions

Post-doc during 30 months in Lyon (France)

The structure you will be joining

The position is a collaboration between the Cancer Research Centre of Lyon (CRCL) and the Institut de Recherche pour le Développement (IRD, Montpellier), The position is secured for 2.5 years, and will be based at the Cancer Research Centre of Lyon (France). The CRCL is located on the campus of the Centre Léon, Bérard, a hospital entirely dedicated to cancer. One of the main goals of the CRCL is to support the development of strong translational research to enable patients to rapidly benefit from breakthroughs in basic research.

An attractive mission

Oral squamous cell carcinoma is the 8th deadliest cancer in the western world, in large part due to often being diagnosed late. Pre-malignant lesions of the oral mucosa such as leucoplakia provide an increased risk of developing OSCC, but may also disappear completely, in a process that yet insufficiently understood.

The project proposes to characterize the evolutionary dynamics of somatic evolution and oncogenesis in the oral mucosa, using original data from human samples. We aim to better understand the oral mucosa ageing process in healthy subjects, as well as in OSCC and Fanconi anaemia patients, and to quantify how exposure to tobacco and alcohol affect field cancerization in this tissue. The longer term goal is to provide better minimally invasive tools and surveillance guidelines to enhance OSCC prevention and early detection.

This will involve both fundamental research, on the somatic evolutionary dynamics governing the ageing process in the oral mucosa, and translational aims to design novel ways to predict and intercept OSCC development in high-risk populations.

Tasks:

- Somatic mutation and CNA identification
- Characterize the evolutionary dynamics of the oral mucosa tissue toward oncogenesis
- Comparative population analyses and prognostic marker evaluation

- NGS data QC and analysis
- Mutation rate and selective advantage calculation, phylogenetic analyses
- Impact of lifestyle habits, linear regression

Your future team

The successful applicant will join the "Integrated Analyses of Cancer Dynamics" team, whose main aim is to understand the longitudinal dynamics of head and neck cancer to intercept transformation of premalignant lesions,

prevent the development of second primary tumors and improve treatment efficacy. Supervisors are Dr Pierre Martinez (bioinformatician) and Dr Benjamin Roche (mathematician), who share a keen interest in tumour evolution. The environment is highly interdisciplinary, with medical doctors, biologists, immunologists and biostatisticians also in the team. The project involves national and international collaborations with research groups in France, Germany and the UK.

The profile we are seeking

You have developed the following skills:

- Bioinformatics, Next Generation Sequencing, Cancer biology or genetics

- Linux environment
- R or Python programming

You must have a PhD in computational biology / bioinformatics or equivalent

- Autonomous in producing, interpreting and reporting results
- Good oral & written English communication skills (French a plus, not a requirement)

- Ideally 0-3 years post PhD at the start of the contract

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Your application (CV and letter of motivation) should be sent to : pierre.martinez@lyon.unicancer.fr