WTDTP Projects for September 2022

Project Reference: T2/34

Project Title: **Uncovering the genomic landscape of head and neck cancer in the underserved South**

**Asian population.**

Theme(s): Theme 2: Genomics for Precision Medicine in Underserved Populations

Primary Supervisor: Dr Alessandro Rufini (University of Leicester)

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Department: Genetics and Genome Biology

Project Summary: Efforts to define the genomic landscape of cancer are biased by an uneven representation of different ethnic groups, with limited inclusion of black and Asian minorities. We aim at addressing this issue leveraging the high incidence of head and neck cancer within the Asian population in Leicester and Leicestershire. Using a combination of bioinformatics and wet-lab, we will:

* + - * + Identify the most common mutations in HNC and assess their incidence in tumours isolated from patients of Asian background.
        + Address the incidence and distribution microsatellite instability (MSI) and loss of heterozygosity. MSI, an alteration prompted by defective DNA repair mechanisms in which the number of repeated DNA bases in a microsatellite (a short, repeated sequence of DNA) is different from the original inherited sequence, is also an important predictor of patients’ response to immunotherapy.
        + Isolate DNA from patients’ plasma and saliva samples, also known as liquid biopsy, to identify tumour-related mutations as a mean for early detection of malignancy.

This exciting, multidisciplinary project addresses a key issue in cancer genetics, i.e. the influence of ethnicity in shaping the tumour genetic landscape. It will provide training in bioinformatics and state-of-the-art technologies, such as droplet digital PCR. The project will be carried out within the Leicester Cancer Research Centre, at the University of Leicester, a vibrant research hub that hosts numerous postgraduate students and offers opportunities for training, networking and knowledge exchange.