MRC-funded IMPACT (Integrated Midlands Partnership for Biomedical Training) Doctoral Training Partnership 3.5 Year PhD Studentship available for September 2019

**Department:** Leicester Cancer Research Centre (College of Life Sciences) and Department of Informatics (College of Science and Engineering)

**Supervisors:** Dr David Guttery (Leicester Cancer Research Centre) Dr Huiyu Zhou (Department of Informatics) and Professor Jacqui Shaw (Leicester Cancer Research Centre)

**Eligibility:** This is a fully funded studentship available Home/EU applicants only

**Project Title:** Machine Learning–Based Multi-Omics Integration to Robustly Predict Survival and Oncogenic Pathway Activation in Common Female Cancers.

**Project Description:** This cross-College studentship aims to develop a machine-learning approach for accurately identifying oncogenic pathway activation and predicting survival in patients with breast and endometrial cancer. Breast and endometrial cancers are the two most common cancers in women in the UK, with a significant impact on lives and healthcare. Genetically, both diseases are highly heterogeneous with complex aetiologies, making prognosis and prediction of relapse challenging.

Recent pan-cancer analyses of the Cancer Genome Atlas (TCGA) using machine learning identified aberrant Ras pathway activation (including NF1 loss) in patients who were Ras wild-type, thereby highlighting potential responders to MEK inhibitors who would otherwise not have been considered for this line of therapy. Furthermore, a multi-omic integration of TCGA data in hepatocellular carcinomas was able to robustly predict survival. Based on these recent findings, this studentship will develop novel machine-learning methods and investigate their use for detecting and matching advanced cancer patients to targeted therapies and predicting patient relapse. Overall, we hypothesise that deep learning of multi-omic datasets (namely somatic mutations, CNVs and transcriptomics) can highlight aberrant pathway activity in breast and endometrial cancers, predict which patients are likely to relapse and identify additional cohorts likely to respond to targeted therapies.

Interviews will be held in the week commencing the 11th February 2019.

**References:**

**Funding details:** MRC IMPACT DTP

**Entry requirements:**

Applicants are required to hold/or expect to obtain a UK Bachelor Degree 2:1 or better in a relevant subject. The University of Leicester [English language](#) requirements apply where applicable.

**How to apply:**

Please apply via: [https://more.bham.ac.uk/mrc-impact/phd-opportunities/](https://more.bham.ac.uk/mrc-impact/phd-opportunities/)

**Project / Funding Enquiries:**

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**Application enquiries to** mrc-impact@contacts.bham.ac.uk

**Closing date for applications** 20th January 2019