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

**Department:** NIHR Biomedical Research (Respiratory Theme) Centre and Department of Respiratory Sciences. Department of Computer Science. Cross college studentship between the College of Life Sciences and College of Science and Engineering.

**Supervisors:** Professor Salman Siddiqui, Professor Yudong Zhang and Professor Paul Monks

**Eligibility:** UK/EU applicants only

Applicants should have a strong background in computer science or mathematics & statistics (2:1 degree or above) and be skilled in relevant programming languages e.g. Python, R and Matlab

**Project Title:** Artificial Intelligence and Machine Learning for Enhanced Phenotyping of Breath Metabolomics Data

**Project Description:**

Exhaled breath contains a rich matrix of volatile chemicals (metabolites) that may be useful as disease biomarkers. However manual visual evaluation of metabolites from exhaled breath samples is subject to significant inter-expert and intra-expert variations. Furthermore conventional statistical techniques need to make prior assumptions on data models.

The PhD program will develop computer vision and deep learning (particularly convolutional neural network) techniques for the analysis and discovery of biomarkers from exhaled samples. Breath metabolomics data has already been acquired in approximately 600 patients with acute exacerbations of cardio respiratory disease in a large exhaled breath metabolomics program funded by the EPSRC/MRC. Breath samples have been acquired using GCxGC-MS and PTR-MS technologies in the acute state and during recovery from an exacerbation. The PhD will focus on biomarker discovery and replication within these existing rich datasets. The project will be hosted jointly in the Department of Computer Science, NIHR Biomedical Research Centre at Leicester University and East Midlands Breathomics Molecular Pathology Node. A range of training opportunities in artificial intelligence and data science will be made available to the successful candidate.

**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:** Please direct initial enquiries to Professor Salman Siddiqui (ss338@le.ac.uk) or Professor Yudong Zhang (yudong.zhang@leicester.ac.uk).

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

**Closing date for applications midday 6th May 2019**

**Interviews to be held on 17th May 2019**