

# **Innovation in Medical Education: Using high performance computing to share mixed methods research projects across Medical Schools**

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## **Abstract**

Research in Medical Schools is extremely diverse ranging from bench to bedside with the use of both qualitative and quantitative methodologies. This is reflected in the curriculum of medical students through the offering of varied types of research projects which involve wet lab experiments, large dataset analysis, longitudinal investigations, patient and public questionnaires or systematic reviews. A large number of project supervisors and day-to-day facilitators are therefore required for the yearly supervision of 200-300 students in each Medical School. With a growing number of medical students and face-to-face restrictions during the Covid-19 pandemic, it has become challenging to recruit a sufficient number of research projects while it is also time-consuming to create projects or materials to investigate for groups of a few students only. For the academic year 2020-2021, The Research Module Lead Coordinators of the Medical Schools of the University of Sheffield (UOS) and University College London (UCL) joined forces to test a novel concept in medical education through UCL/UOS-shared teaching and supervision of UOS medical students who enrolled in a research project aimed at characterising the student skin microbiomes. This mixed methods research project, initially developed at UCL, involves state-of-the art teaching and learning methodologies, including lectures, lab sample collection and next generation sequencing, high performance computing sessions for analysis of genome sequences, sharing and interpretation of metagenomics data, together with writing and oral presentation. This research project was very popular and well received by the 20 students who took part in it. The UCL/UOS collaboration has proved so successful that the skin microbiome research project will be offered again in 2021-2022 and we are currently exploring the development of additional clinically-relevant applications with which to engage medical students with computational biomedicine.