Science and Technology in Medicine

Research Project Proforma (School of Medicine)

Research Title: **Keywords (up to 5)**	**Novel Diagnostic Tools via Proteomics** **Protein, diagnostics, analytical chemistry, disease markers**
Supervisor: **Job Title:** **Department:** **Email Address:** **Telephone:** **Webpage link:**	Sarah Hart Lecturer in Bioscience School of Medicine s.r.hart@keele.ac.uk 01782 733759/34639 http://www.keele.ac.uk/mass-spec/
Type of projects offered (delete as appropriate)	Both

(1) Outline the broad aims of your research and its medical relevance (150 words):

Mass spectrometry has been widely incorporated into diagnostic strategies for a variety of diseases and conditions. Our laboratory is interested in the use of mass spectrometric methods for the characterisation of complex biological samples. To do this, we use a variety of modern ionisation techniques and separations tools to separate and characterise the components of these biological mixtures. Such techniques are broadly applicable to the analysis of many disease conditions, as the protein profile of an individual will vary according to disease onset and severity. Finding

new markers for the onset of disease is a vital step in the development of novel diagnostic tools and in deepening our understanding of the processes underlying disease pathology. Students will have the opportunity to work in a small research group under close supervision.

(2) Indicate the skills/techniques the student will learn (100 words)

Biological mass spectrometry (MALDI-ToF and ESI-QqTOF mass analysis), sample preparation techniques (preparation of protein extracts, proteolysis, isotopic label incorporation and sample handling), liquid chromatography for separation of complex samples, database searching and bioinformatics analysis for handling of proteomics datasets.

Please submit this form electronically to Prof Divya Maitreyi Chari on d.chari@keele.ac.uk by 31 July 2015