

# Science and Technology in Medicine



## Research Project Proforma (School of Medicine)

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| <b>Research Title:</b>                                  | Development of new therapeutics for leishmaniasis and African trypanosomiasis                                       |
| <b>Keywords (up to 5)</b>                               | <i>Leishmania</i> , <i>Trypanosoma brucei</i> , Parasite, Neglected Tropical Diseases, Drug Development             |
| <b>Supervisor:</b>                                      | Helen Price   |
| <b>Job Title:</b>                                       | Lecturer in Bioscience  |
| <b>Department:</b>                                      | School of Life Sciences/Faculty of Natural Sciences   |
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| <b>Type of projects offered (delete as appropriate)</b> | Both  |

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

My research focuses on two neglected tropical diseases: leishmaniasis and human African trypanosomiasis (HAT). Leishmaniasis is found in 88 countries, with approximately 2 million new cases annually. HAT is found in 25 countries in sub-Saharan Africa, with 50 million people living in areas where infection is possible. Both diseases are potentially fatal but there are no vaccines and treatment depends on a few expensive and toxic drugs. Alternative safe and

cheap treatments are urgently needed to combat these devastating diseases. My research group is studying the cell biology of the protozoan parasites which cause these diseases, with a view towards the development of new therapeutics. We are using transgenic parasite models to validate and characterise the functions of potential drug targets. We are developing a range of cell lines to facilitate the screening of compounds as possible new drugs and also have a collaboration with researchers in ISTM to investigate the use of nanoparticles as new treatments for leishmaniasis.

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

The student will be working in a Containment Level 3 lab performing in vitro culture of *Leishmania mexicana* and/or *Trypanosoma brucei* parasites. Projects are available in the following areas: screening compounds for anti-parasitic activity; generating genetically modified parasite lines and performing RNA interference (RNAi) to investigate the roles of novel drug targets; analysing protein-protein interactions using biochemical methods such as co-immunoprecipitation; use of nanoparticles for development of therapeutics. Students will gain experience in data analysis and will have the opportunity to present their findings to the research group.

Please submit this form electronically to Prof Divya Maitreyi Chari on [d.chari@keele.ac.uk](mailto:d.chari@keele.ac.uk) by 31 July 2015