

PhD Studentship

Data Science, Optimisation and Modelling Approaches Applied to Antibiotic Resistance

Antibiotic resistance has been identified as one of the biggest challenges we face in modern times (comparable to climate change) (World Health Organisation). A major contributing factor to antibiotic resistance is the overuse of antibiotics. Efforts have been devoted to reduce unnecessary drug prescriptions, but little work is devoted to optimising dosage regimes when they are prescribed. Traditional antibiotic regimens are to apply a constant daily dose, i.e. take X mg per day for N days. Until recently, there has been little reason to change that. This studentship aims to change this. The aim is to automatically derive new, improved antibiotic regimes, which maximise treatment success but minimise total drug use.

This will be achieved by combining and extending our current mathematical model of bacterial infection¹, with state-of-the-art Optimisation and Data Science techniques. The overall goal is to increase the treatment success, while reducing: the amount of drug used, the duration of treatment, and the toxicity experienced by the patient at any point.

We are seeking applications from candidates who have either a computing science background who also possess strong numerical skills, or an applied mathematics background with programming experience. Ideally the candidate will have a 2:1 undergraduate degree or higher. The student will be based at the Division of Computing Science and Mathematics, Faculty of Natural Sciences, University of Stirling, and will work under the supervision of Dr. Gabriela Ochoa and Dr. Andrew Hoyle.

The starting date is flexible, but it must be before the end of September 2018.

The studentship will provide funding for tuition fees (home/EU rate), a stipend of £14,553 per annum plus Research Training Support Grant of £750 pa, for 4 years.

To discuss these posts informally potential candidates are invited to contact Dr Gabriela Ochoa (goc@cs.stir.ac.uk).

¹ I. K. Paterson, A.S. Hoyle G. Ochoa, C. Baker-Austin and N.G.H. Taylor (2016) Optimising Antibiotic Usage to Treat Bacterial Infections. Nature Scientific Reports, 6, 37853; doi: 10.1038/srep37853, <http://rdcu.be/m2Zw>



How to Apply

The requirements for completing an application are:

1. Cover letter
2. CV
3. Copy of degree certificate or academic transcript from previous study.
4. 2 reference letters

Formal applications should be made via the online PG application form at
<https://www.stir.ac.uk/postgraduate/research-degrees/>

Click the “apply online” button towards the bottom of the page.

The closing date for the return of applications is 5pm on Friday 16th March 2018.