



Royal Society Studentship: *Modelling of Gene Regulation by Antisense Transcription*

Academic supervisor: Dr. Andrew Angel and Prof. Jane Mellor.

Project:

The regulation of gene expression is a fundamental process in any organism, underlying its response to the environment and playing a major role in the development of disease. Recent experiments point to a novel role for non-coding RNA in regulation. However the form such regulation takes and its mechanistic basis remain poorly understood.

The purpose of this project is to use mathematical modelling to elucidate the action and underlying mechanisms of gene regulation by non-coding transcription. Genome-wide experiments have recently shown that pervasive transcription is widespread, with many non-coding transcripts that overlap with annotated genes and that are often in antisense orientation (antiparallel to the gene). Intriguingly, the presence of antisense transcription is seen to correlate with altered modes of gene expression and altered chromatin states – hinting at complex mechanisms of regulation. Initial modelling efforts will focus on investigating potential mechanisms of antisense regulation.

The project will be run in a truly interdisciplinary environment in collaboration with Prof. Jane Mellor's lab (also in the Department of Biochemistry) which has developed a yeast system for the study of antisense regulation. Existing experimental results will be used to formulate the initial models; predictions from these models will then be used to design further experiments that will in turn refine the models in an ongoing cycle.

This is an excellent opportunity to work at the forefront of biological research and will suit a candidate with a physical/mathematical science background and an interest in moving into biology, although all candidates will be considered.

Further information:

Dr. Andrew Angel's group website:

<http://www.bioch.ox.ac.uk/aspsite/index.asp?pageid=1104>

Please contact andrew.angel@bioch.ox.ac.uk for an informal discussion.

The project is supported by a 3-year studentship covering fees at home/EU rate plus a living costs allowance of not less than ~£14K per annum (not subject to income tax).

To apply, please submit an online application to the University of Oxford for admission to the **D.Phil. in Biochemistry** (course code 001380). It is very important that you quote Studentship Source Code **RS01**. No research proposal is required as part of the application. Instead you are required to upload a personal statement of no more than 1000 words, describing your motivation and aptitude for this position, and your CV. Please arrange that two, or preferably three, referees directly submit references for you. Deadline: 13th March 2015.