Guide for Internship Supervisors and Examiners

Potential supervisors are encouraged to contact the Course Administrator with details of potential projects. The nature of these projects can be quite diverse, as long as computational modelling/analysis of biological systems forms a central part of the project. Potential supervisors are encouraged to give a seminar to the students about their work (although most of the slots are now full for 2015/16).

We typically require no more than a 1/2 page description of the project and try to keep administration to a minimum.

We do however require several commitments from supervisors:

1. Supervisors are expected to provide the students with all the resources required to complete the project. (Students will however have access to a compute server based in the mathematics department.)

2. We recommend at least weekly meetings to ensure that the student is making suitable progress on the project.

3. Co-supervision of the project, e.g. with senior postdocs in a group, is allowed.

4. Internship project reports will be marked independently by two assessors: the project supervisor and an examiner. Each assessor will write a short (usually 1/2 to 1 page) report on the project, commenting where appropriate on the following elements:

   - Scientific approach to problem
   - Results
   - Overall quality of explanation
   - Style and presentation

An overall grade should be provided according to the University-wide MPhil marking scheme:

- 75% and over for a distinction
- 65-74% for strong reports
- 60-64% for satisfactory reports
- A mark of under 60% therefore indicates a fail.

If the discrepancy between two assessors’ marks is less than 10%, the two marks will be averaged. Otherwise, the two assessors will be asked to discuss the reports, and possibly adjust their marks. If no agreement can be reached, another assessor will be asked to adjudicate.

Please note that reports will be made available to students after marking.
Assessment

Students will be assessed in two ways:

5. A written report of the project (worth 2.5 modules).
6. An oral presentation (worth 0.5 modules).

Written report
The exact nature of this report will vary according to the internship, but it should take the format of a dissertation, normally taking the following format:

• Chapter 1 - introduction/aims/literature review
• Chapter 2 - the work (possibly broken down into more than one chapter).
• Chapter 3 - conclusions / future work
• References
• Appendices - for any extra material (e.g. code snippets, detailed derivations) that can be included for future reference, rather than necessarily to be read by the examiner.

The report should be no more than 18,000 words; as a guide it should be no more than around 36 pages of text (at 500 words/page, but that assumes no figures). This word limit excludes the bibliography and appendix. Please note this is an upper word limit --- writing a short, clear report is better than a long report padded with text to reach the upper word limit. Please write the word count on the front page of the report.

Examples of reports from previous years are available from the Course Administrator.

Oral presentation
Presentation files (PPT/PDF/Keynote) are submitted to Moodle and uploaded to a group laptop that is used for all presentations; students are not normally permitted to use their own laptops for presentations. Each talk is expected to last 20-25 minutes, with five minutes for questions. Students are expected to keep to time, as there are many presentations in each day. If any students go over 25 minutes, they will be asked to stop immediately. We strongly advise that students arrange to give several practice talks (e.g. to colleagues, or host lab) as experience has shown that people who practice give better talks. Students are also encouraged to attend the talks of their colleagues.

Key dates and contacts for 2015/16
The key dates for students are:

• Project start: 16 May 2016
• Report submission: 10 August 2016, 16:00 BST
• Presentation submission: 15 August 2016, 16:00 BST
• Presentations: 17-19 August 2016

Project supervisors and examiners will receive reports for grading on 11th August; evaluations are required by 16th August 2016.

Please email the Course Administrator compbiomphil@maths.cam.ac.uk with any queries regarding internships.
Example Project Description

Regulation of genes by retrotransposons mediated through small RNAs

Dr Jerzy Paszkowski and Dr Radu Zabet
(The Sainsbury Laboratory, University of Cambridge)

Retrotransposons are genetic elements that can amplify themselves in a genome using their RNA transcripts and thus rapidly increase copy number. In plants, retrotransposons are highly abundant and we are interested to determine whether retrotransposons regulate expression of genes in trans. There are two possible ways that they can affect the transcript levels of genes in trans: (i) miRNAs that usually cleave the gene transcripts can be sequestered by expressed retrotransposons (target mimicking), thus, increasing the level of transcripts targeted by miRNA (ii) retrotransposons with homology to genes can produce 21nt small RNAs that can cleave the gene transcripts, thus, reducing gene transcript levels. These in trans transposon-gene interactions may be particularly important in plants with transposon-rich genomes (like rice and maize), where mutations impairing the generation of small RNAs produce drastic developmental aberrations during transition to flowering and in flower morphology. We are looking for a student to model these two transposon-gene interactions (and the balance between enhancing and repressing activities) and investigate the implications of these mechanisms in the context of plant development.

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