MSc in Research Methods in Cell Biology

Awarding Institution: The University of Reading
Teaching Institution: The University of Reading
Faculty of Life Sciences Programme length: 12 months
24 months part-time)
For students entering in 2004 Date of specification: Sept 2003
Programme Director: Dr M.J. Fry
Board of Studies: Dr J.M.Gibbins (Chair, Admissions tutor), Dr M.J.Fry (Programme Director), Prof. G Brooks, Prof. P.G Strange, Dr A.G. Stephens, Dr D Savva.
Accreditation: N/A

Summary of programme aims
The aims of the programme are:
1. to train students in practical aspects of the study of cell biology, including performing a research project
2. to enable students to develop an up to date understanding of the role of cell biology processes in the function of cells. This will include understanding how hormones and neurotransmitters act and the roles of cell surface receptors, nuclear receptors and associated signalling proteins such as G proteins and kinases, intracellular trafficking. Students will also understand the methods used for studying these processes.
3. to train students in the theory and practice of research in cell biology
4. to provide transferable skills equipping students for subsequent work in cell biology (career, PhD)
5. to show how cell biology research is performed in academic and industrial environments

The learning outcomes of the programme are such that at the end of the programme students will:
1. know about the modern aspects of cell biology and how these relate to health and disease
2. have a range of practical skills to study cell biology
3. have performed a piece of original research in cell biology
4. be able to analyse experimental cell biology data
5. be able to analyse papers in the literature
6. be able to give an oral and poster presentations on their work
7. be able to evaluate and summarise seminars
8. understand how research is performed, organised and funded
9. understand the ethical and commercial aspects of research
10. know about cell biology research as it is practised in different settings (universities, industry etc) and consider different career paths

Transferable skills

By the end of the programme students will have developed the following transferable skills:
1. ability to perform modern analyses of cell biology both practically and theoretically
2. ability to work as part of a research group and manage time
3. ability to use computers for statistics, data analysis and communication
4. ability to use data bases and other library resources

5. writing skills: writing of articles for a scientific and a broader audience, abstraction of other's work from written and oral material, critically reviewing the work of peers
6. ability to make oral presentations
7. ability to present data as a poster

Programme content

		Credits	*Level*
Term 1	Introduction to Research AMMA21	20	M
Terms 1/2	Introduction to Cell Biology AMMA22	30	M
Terms 1/2/3	Research Project AMMP21	130	M

Part-time/Modular arrangements
This degree will be particularly amenable to part-time study. Indeed there may be demand for this. It is anticipated that with a few minor modifications this course will be adapted in the future for part time students.

Progression requirements
None.

Summary of teaching and assessment
Teaching is by a variety of methods, including lectures, small group seminars and tutorials, discussion sessions, individual feedback on progress and one-to-one advice, but a major part of the ethos of the programme is the research project and the development of practical research skills.
Assessment procedures mirror the diversity of teaching methods and include scientific essays, oral and written presentations of work through seminars, essay based examinations, practical reports, production of a project report in the format of a scientific paper and direct assessment of practical skills.

Written examination will be performed at the beginning of the Spring and Summer terms.

Marks should be interpreted within the following framework:

Mark	Interpretation
70% - 100%	Distinction
60% - 69.9%	Merit
50% - 59.9%	Pass
0% - 49.9%	Fail

The pass mark for both the MSc and the individual modules is 50%. Students will be expected to have gained a mark of at least 50% in at least 160 credits to qualify for the award of MSc.

Admission requirements
Entrants to this programme are normally required to have obtained an honours degree in a suitable subject, for example biological science, biochemistry, pharmacology, cell biology. Applicants should have gained or expect to gain a class mark of 2(1) or better

(i.e. 60%+ [or international equivalent, e.g. B+ US letter grade]). Applicants holding 2(2) degrees may also apply and each case will be considered on its own merits. The admission tutor for this course is Dr J.M. Gibbins.

Support for students and their learning

University support for students and their learning falls into two categories. Learning support includes IT Services, which has several hundred computers and the University Library, which across its three sites holds over a million volumes, subscribes to around 4,000 current periodicals, has a range of electronic sources of information and houses the Student Access to Independent Learning (S@IL) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Programme Directors, the Careers Advisory Service, the University's Special Needs Advisor, Study Advisors, Hall Wardens and the Students' Union.

Within the School of Animal and Microbial Sciences, graduate students are supported both pastorally and academically. Each student on this programme will be assigned to a personal tutor who will advise them as they progress through the course. Additionally, once the research project has been chosen there will be a major role form the project supervisor in developing the research skills of the student.

The School is very well equipped with up to date equipment for Cell Biology (confocal microscopes (2), flow cytometers (2), Biacore, cell culture etc), and through the use of the newly established University BioCentre, students will have access to state of the art proteomics and transcriptomics facilities.

Career prospects

The practical and theoretical skills acquired by students on this programme are of direct relevance to the pharmaceutical and biotech. industry. Much of the effort in current drug development focuses on receptors and their associated signalling pathways. We, therefore, expect those who successfully complete this programme to be highly employable in these industries.

Opportunities for study abroad or for placements

Through the Socrates/Erasmus schemes, or collaborations with research groups in AMS, students may be able to perform some of the practical research project in other institutions in the UK or abroad.

Educational aims of the programme

1. To prepare students for a career in R&D, or for taking a higher degree by research.
2. To allow the students to undertake a self contained piece of practical research with guidance but not necessarily day-to-day supervision from an experienced researcher.
3. To train the students so that they are able to investigate a proposed research topic and establish the extent of published knowledge in the field, understand and summarise that knowledge and be able to report formally, both orally and in writing.

Programme Outcomes

Knowledge and Understanding

A. Knowledge and understanding of:	**Teaching/learning methods and strateg**
1. modern concepts of cell biology 2. methods used to investigate cell biology processes 3. techniques used to analyse data derive from cell biology research 4. how research is organised, funded and performed in different settings	1. is covered in the taught modules ir lectures, seminars 2. is covered in the taught modules a research project in lectures, seminars, practical work and individual sessions 3. is covered in the research project 4. is covered in the taught modules i lectures and seminars *Assessment* These are all assessed in the corresponding modules

Skills and other attributes

B. Intellectual skills – able to:	**Teaching/learning methods and strategies**
1. understand modern theories in cell biology 2. analyse experimental data form cell biology research 3. comprehend seminars on cell biolog 4. design experiments to analyse cell biology	1. covered in the taught modules 2. covered in the research project 3. covered in the research project modul 4. covered in the research project modul *Assessment* These are all assessed in the corresponding modules

C. Practical skills – able to:	**Teaching/learning methods and strategies**
1. perform a wide range of cell biology research techniques 2. analyse data from 1 3. present data in the form of an oral or poster presentation or as a written report 4. use computers for research, data analysis and presentation	These are covered in the research project and the poster and oral presentations following this *Assessment* These are assessed in the research project module.

D. Transferable skills – able to:	**Teaching/learning methods and strategies**
1. perform modern analyses of cell biology pathways, both practically and theoretically	1. Covered in the research project module
2. work as part of a research group and manage time	2. Covered in the research project module
3. use computers for statistics, data analysis and communication	3. A component of all modules
4. use data bases and other library resources	4. Covered in the Introduction to Research and the Research Project modules
5. write articles for a scientific and a broader audience, abstraction of other's work from written and oral material, critically reviewing the work of peers	5. Covered in the research project module
6. make oral presentations	6. Covered in the Introduction to Research and the Research Project modules
7. present data as a poster	7. Covered in the Introduction to Research and the Research Project modules
	Assessment These are assessed in the modules described above.

*Please note:*This specification provides a concise summary of the main features of the progran and the learning outcomes that a typical student might reasonably expect to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. Mor detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in module and programme handbooks.