

Applying for a research project (as an assessed component of the UF/Cardiff University exchange program) in the Cardiff University School of Biosciences

Students are welcome to apply to carry out a research project, as one component of their studies. Places are however limited, and Cardiff cannot guarantee that research projects will be available in any particular research area.

Students wishing to carry out a research project in the Cardiff University School of Biosciences should generally arrange this themselves by contacting the relevant member(s) of the research staff directly.

Research descriptions and staff contact details can be found at <http://www.cardiff.ac.uk/biosciences/research>. Cardiff has four research divisions: Molecular Biosciences, Neuroscience, Organisms & Environment, and Biomedicine. Each division page includes a list of academic staff, and a link to their individual research pages. Some staff in the School of Biosciences are also listed via the 'institutes and centres' tab.

When you contact a researcher directly, remember to attach a transcript (can be unofficial), or list of courses you have taken and are currently taking (and a resume if you have one). Please also include in your email your scientific background and why you are particularly interested in their research. Specify whether you will be in Cardiff for the autumn semester, the spring semester, or the full academic year, and let them know whether you will be working on the research project full time, or whether you will also be enrolled on one or more taught modules. If you are successful in arranging a research project, please inform BIOSI-InternationalMobility@cardiff.ac.uk, letting Dr. Henrietta Standley know the name and email address of your research supervisor.

If you prefer, your application can be sent to up to three members of the Cardiff research staff, on your behalf. In this case, please email your letter(s) of application, CV, and the names of research staff that you are most interested in working with, to the Head of International Student Mobility, Dr Henrietta Standley, at BIOSI-InternationalMobility@cardiff.ac.uk.

Please contact:

BIOSI-InternationalMobility@cardiff.ac.uk with queries about research projects in the School of Biosciences.

Please contact:

Brian Harfe, Ph.D (bharfe@ufl.edu) with general queries about the program.

Dr Henrietta J. Standley SFHEA FRSB Reader & Head of International Student Mobility Cardiff University School of Biosciences The Sir Martin Evans Building Museum Avenue Cardiff CF10 3AX UK Phone: +44 (0)29 2087 6735 E-mail: BIOSI-InternationalMobility@cardiff.ac.uk	Dr Henrietta J. Standley SFHEA FRSB Darllenydd a Phennaeth Symudedd Myfyrwyr Rhyngwladol Ysgol y Biowyddorau, Prifysgol Caerdydd Adeilad Syr Martin Evans Rhodfa'r Amgueddfa Caerdydd CF10 3AX UK Ffôn: +44 (0)29 2087 6735 Ebost: BIOSI-InternationalMobility@caerdydd.ac.uk
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Cardiff School of Biosciences

Exchange Program Research Project Student Handbook

Contact: BIOSI-InternationalMobility@cardiff.ac.uk

Research project modules for UF Students studying at Cardiff

While single semester only research projects are possible, **it is highly encouraged** that UF students interested in a research component spend the full academic year at Cardiff.

If you are in Cardiff for the **full academic year** (~September to ~June), please select one of the following four options (must equal 60 credits a semester):

*note that 60 Cardiff credits is equivalent to ~15 UF credits (credits may vary slightly depending on courses taken while at Cardiff). UF students must take 60 credits a semester while studying at Cardiff (i.e. 120 Cardiff credits for the academic year). The below credit numbers are for the Academic Year.

- **BI3002** research project (30 Cardiff credits). Choose BI3002 if you plan on enrolling on taught modules in addition to your project. You can choose up to 90 Cardiff credits of taught modules, e.g. three Year 3 modules. BI3002 is approximately equivalent to 300 hours of project work.
- **BI3003** research project (60 Cardiff credits). Choose BI3003 if you plan on enrolling on taught modules in addition to your project. You can choose up to 60 Cardiff credits of taught modules, e.g. two Year 3 modules. BI3003 is approximately equivalent to 600 hours of project work.
- **BI3009** Erasmus placement research project (40 Cardiff credits). Choose BI3009 if you plan on enrolling on taught modules in addition to your project. You can choose up to 60 Cardiff credits of taught modules, e.g. two Year 2 modules. BI3009 is approximately equivalent to 400 hours of project work.
- **BI3004** Erasmus placement research project (120 Cardiff credits). Choose BI3004 if you plan on working on your research project full time (no taught modules). BI3004 is approximately equivalent to 1200 hours of project work.

Additional notes

- The only difference between the project modules is the time spent performing research. Please select the option that most closely fits with the amount of UF research credits you wish to obtain.
- There are no set hours for working on your project; you will need to agree this individually with your research supervisor. Make sure your research supervisor knows whether you are working on the project full time, or combining it with taught modules. The hours quoted above are an approximate indication of how long you should spend in total on your research project (including practical work and writing up).
- **Assessment usually consists of two components: a written report (worth 75% of the module mark) and a presentation (worth 25% of the module mark).** Your research supervisor will confirm this with you, and will also let you know the deadline for submission of your written report. The deadline is normally in spring for full year students.

WRITTEN REPORT

LENGTH

The recommended length of the main body will be discussed with your research supervisor. The word count does not include figures and figure legends, tables and table legends, reference list, summary/abstract or any appendices. The word count does include citations (named references in the main body of the text). The summary/abstract should not exceed 500 words. Marks may be deducted for reports that are either too lengthy or too short.

FORMAT

Summary/Abstract

Introduction (including Aims)

Experimental procedures/Material and Methods

Results

Discussion (including Future Work)

References

Appendices (optional)

Summary: should not exceed 500 words, should not contain any references, and must be structured into separate sections Background, Methods, Results, and Conclusions. Up to eight key words should also be provided.

Introduction: must be written from the standpoint of scientists without specialist knowledge, (this means that all terms or concepts not commonly used by scientists in all fields must be explained using scientifically relevant English). The introduction must clearly state the background to the research, its aims and what hypotheses or objective(s) are being tested, and could end with a brief statement of what has been achieved. The introduction may contain structured sub-headings.

Experimental Procedures/ Materials & Methods: should be divided into subsections. The Experimental Procedures section needs to include sufficient detail so that a reader could duplicate the experiment (or data-base search) precisely. This section should also include a description of any statistical methods employed in the study. (If a more detailed version of specific procedures or details such as oligonucleotide sequences, strains, and specifics of how constructs were made are necessary, these must be included in an Appendix).

Results: You should only present results in this section, highlighting findings and trends. This section may be broken into subsections with short informative subheadings. In describing your results you should also explain the experimental strategy, e.g. why particular techniques were favoured over others and how the results from one experiment led to the design of a follow-up experiment. The results section will usually contain comments on the immediate implications of an observation but not attempt to place observations in a broader context, i.e. how they relate to other studies that have been described in the literature. A frequent problem in preparing reports is deciding which comments go in the results section and which are more appropriate for the discussion. You should talk this over with your supervisor and, crucially, you should read through research papers in the literature, to see how experienced authors partition material between the results and discussion.

NB. A common mistake in thesis writing occurs when information that should be in one section is placed in another. Background material should only be found in the introduction. Methodology should not contain information on results and similarly results should not explain procedures from

the method. For tips on what goes where you should examine carefully some of the example journals described below and analyse how authors have achieved this task.

Discussion: must clearly describe the main conclusions of the research and give clear explanations of their importance and relevance within the context of the published literature. In addition, the discussion must address any implications that might have resulted from the work and future directions. It is not sufficient to merely describe your findings you **MUST** interpret them as well. Similarly, while it is important to draw in information from other sources (i.e. the literature) the focus should be your work and the other material should be brought in as discussion points relevant to points you are making about your own findings.

Acknowledgments: should be kept to a minimum.

Appendices: Ethical Permissions and Raw Data where necessary. Details of statistical outputs may also be usefully included, e.g. residual plots from regression/ANOVA/GLM. As the term “appendix” implies, this material is additional to the main body of the text. The focus of the assessment will be on the core text, not the appendices.

Examples of good scientific writing styles for all sections of your report can be found in these journals. Your supervisor may add to this list.

- Current Biology: Journal covering a wide range of biomedical, biomolecular and biological subject areas written as primary research articles or review articles
- Global Changes in Biology: High-ranking journal covering research articles on the impact of global change on biological systems.
- Biochemical Journal: Journal covering a range of biomolecular subject areas.
- Journal of Biological Chemistry: Journal covering a range of biomolecular and biomedical subject areas.
- International Journal for Parasitology: Journal covering all aspects of parasitology research.
- Oikos: general ecology journal.
- American Naturalist: high ranking general biology journal.
- Cell
- Development
- The Plant Journal: High-ranking journal covering experimental plant science.
- Medical Education

STYLE REQUIREMENTS

- The report should be submitted as a document with 1.5 spacing, a minimum of 11-point font with margins as a minimum of 1 cm. All pages should be numbered. The use of images or text are not permissible.
- References: All references in the written report must be listed in the reference section. Whilst there is no set limit to the references used within the report it is recommended that a practical report should contain in the region of 40 articles. References should only be used where they are relevant and not as padding. The recording of references in your written report should follow the standard BIOSI Harvard style (available on the intranet at <https://intranet.cardiff.ac.uk/students/study/study-skills/citing-and-referencing/citing-and-referencing-tutorials>) and should be indicated in the text of your written report by surname of the author(s) with the year of publication. When there are more than two authors, use the first

author followed by et al. The full list of references should be provided in alphabetical order and single-spaced.

- Gene symbols should be italicized; protein products of the loci are not italicized; species names should be written in italics and in full on first occurrence. Non-standard abbreviations should be defined when first used in the text. Use of abbreviations should be kept at a minimum.
- Figure legends: should start with a title and should be succinct but sufficient to enable the reader to understand without reference to the main text. A figure legend should be 50-200 words.
- Tables: should be titled and should be succinct but sufficient to enable the reader to understand without reference to the main text. A Table legend should be 50-200 words.
- Tables and figures should be embedded within the text at appropriate points and should not have text wrapped around them, but be placed between points in the text (i.e. at the end of a suitable paragraph). Tables and Figure legends may also be placed on a separate page. For tables the legends should be placed above the table and figures legends should be placed below the figure. Tables and legends should be independently numbered and when referred to in the text should be referenced by this number (e.g. All bird weights were recorded (Table 1 & Figure 2)).

Submission

You will be informed of the deadline by email. You are recommended to ask your supervisor for feedback on a partial or complete draft of your report, well in advance of the deadline. Submit your report to the BIOSI Education Office at biosiofficeug@cardiff.ac.uk. Your report will be uploaded to Learning Central/Turnitin by the Education Office.

ORAL PRESENTATION

Please discuss this with your research supervisor. Your presentation may be part of a weekly lab meeting, or may be arranged separately with your research supervisor and/or one or two other members of academic staff. As a general guide, you may wish to prepare slides using a software package supported by the university (e.g. Microsoft Office PowerPoint), and your presentation should include a summary of your research project in brief containing the key elements: background, aims & objectives, overview of methods, key results, conclusions and future directions. You may be asked to prepare a talk of a particular length (e.g. 10 minutes), after which there may be 5-10 minutes for questions. The presentation should not attempt to cover the entire content of the written report but it should reflect the highlight(s) of the project report. Bear in mind that the audience may include staff or lab members who have not been involved directly in your work, so you should prepare your presentation in a style that can be easily understood by an experienced scientist but not one that is necessarily familiar with your research field. Remember not to put too much text on each slide, and ensure that each slide is legible from a distance.

Potential courses that UF students can take in addition to research credit

see: <https://www.cardiff.ac.uk/study/international/study-abroad-in-cardiff/modules> for more information

Module Code	Module Title	Semester	Number of Credits
LEVEL 4 (YEAR 1 UNDERGRADUATE) MODULES			
BI1001	Skills for Science	AS	20
BI1002	Structure and Function of Living Organisms	AS	20
BI1003	Organisms and Environment	AS	20
BI1004	The Dynamic Cell	AS	20
BI1014	Biological Chemistry	A	20
BI1051	Genetics and Evolution	S	20
LEVEL 5 (YEAR 2 UNDERGRADUATE) MODULES			
BI2131	Animal Diversity and Adaptation	AS	40
BI2132	Genetics and Its Applications	AS	40
BI2133	Ecology and Conservation - Part A	AS	30
BI2134	Ecology and Conservation - Part B	AS	10
BI2231	Cell Biology	AS	40
BI2232	Biochemistry	AS	40
BI2233	Developmental and Stem Cell Biology	AS	40
BI2234	Molecular Biology of the Gene	AS	40
BI2331	Physiology	AS	40
BI2332	Concepts of Disease	AS	40
BI2431	Brain and Behaviour	AS	40
BI2432	Fundamental Neuroscience	AS	40
LEVEL 6 (FINAL YEAR UNDERGRADUATE) MODULES			
BI3002	Biosciences Erasmus Placement Research Project	A/S	30
BI3003	Biosciences Erasmus Placement Research Project	A/S	60
BI3004	Biosciences Erasmus Placement Research Project	AS	120
BI3009	Biosciences Erasmus Placement Research Project	AS	40
BI3151	Plants for the Future: Frontiers in Plant Science	AS	30
BI3152	Ecosystems, Sustainability and Global Change	AS	30
BI3153	Evolution and Adaptation	AS	30
BI3154	Biodiversity and Conservation Biology	AS	30
BI3155	Infection Biology and Epidemiology	AS	30
BI3156	Systems Biology and Modelling	AS	30
BI3252	The 'omics Revolution (Bioinformatics and Functional Genomics)	AS	30
BI3253	Advanced Cell Biology and Imaging	AS	30
BI3254	Genes to Genomes	AS	30
BI3255	Synthetic Biology and Protein Engineering	AS	30
BI3256	Current Topics in Development, Stem Cells and Repair	AS	30
BI3351	Contemporary Topics in Disease	AS	30
BI3352	Cancer: Cellular and Molecular Mechanisms and Therapeutics	AS	30
BI3353	Advanced Musculoskeletal Biology and Tissue Engineering	AS	30
BI3355	Advances in Physiology and Pathophysiology	AS	30
BI3451	Neurobiology of Brain Disorders	AS	30
BI3452	Systems Neuroscience	AS	30