

# Resource List for Student Research in the Biosciences



The Centre for Bioscience has compiled a select list of resources which is designed to complement the *Student Research in the Biosciences* event and the launch of our 3<sup>rd</sup> Learning Guide written by Martin Luck, *Student Research Projects: Guidance on Practice in the Biosciences*. By no means is it intended to be a comprehensive list but rather a selection of resources and useful pointers to the literature in this area. For additional information, please refer to the related section on our website: [www.bioscience.heacademy.ac.uk/resources/guides/studentres.aspx](http://www.bioscience.heacademy.ac.uk/resources/guides/studentres.aspx)

## Centre Publications and Support

---

We would highly recommend you consult the learning guide on **Student Research Projects** by **Martin Luck**, and references therein. This Guide is the third in the Teaching Bioscience Enhancing Learning Series published by the Centre for Bioscience. In the first three chapters Martin explores the value of student research in the biosciences, ways of implementing research projects for final year students, and project outcomes and assessment. The second section of the book features ten bioscience case studies which cover a range of formats of research project: conventional laboratory or field studies, group projects and a diversity of alternative forms involving data-mining and analysis, and commercial, communication and education-based investigations.



[www.bioscience.heacademy.ac.uk/resources/guides/studentres.aspx](http://www.bioscience.heacademy.ac.uk/resources/guides/studentres.aspx)

**Additional case studies of student research provision in the biosciences** which can be accessed via the link above or as indicated:

Davies, S.N. and Cotter, M.A. (2008) Preparing students for research: teaching research skills at level 2. Available at [www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/davies.pdf](http://www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/davies.pdf)

Gallagher, A., McKerr, G. and Gill, C.I. (2008) Streamlining allocation and assessment of traditional final year research projects across multiple undergraduate degree programmes. Available at [www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/gallagher.pdf](http://www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/gallagher.pdf)

Grady, R. (2008) Final year education projects. Available at [www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/grady.pdf](http://www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/grady.pdf)

Latham, H. and Jervis, L. (2008) Student (and staff) Research in Environmental Biochemistry. Available at [www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/latham.pdf](http://www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/latham.pdf)

Lintern, M. (2007) Developing laboratory skills ready for embarking on a research project or Research isn't a series of lab practicals! Available at [www.bioscience.heacademy.ac.uk/ftp/casestudies/linktr\\_MCL.pdf](http://www.bioscience.heacademy.ac.uk/ftp/casestudies/linktr_MCL.pdf)

Murphy, D.J. (2008) Projects marrying advanced technical skills and scientific controversy. Available at [www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/murphy.pdf](http://www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/murphy.pdf)

Reader, T. (2008) How to do research with second-year undergraduates: a research-based field course. Available at [www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/reader.pdf](http://www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/reader.pdf)

Saffell, J.L. (2008) Group research projects: a framework for providing research experience for students. Available at

[www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/saffell.pdf](http://www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/saffell.pdf)

Turner, I. (2008) Promoting Undergraduate Student Conference Attendance Has Benefits for All! Available at

[www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/turner.pdf](http://www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/turner.pdf)

Yeoman, K.H. (2008) Bridging the gap to final year laboratory projects: a Level 2 Research Skills module. Available at

[www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/yeoman.pdf](http://www.bioscience.heacademy.ac.uk/ftp/TeachingGuides/studentresearch/yeoman.pdf)

A further twenty one case studies depicting teaching linked to student 'experiences' of research can be found on the Centre for Bioscience website at

[www.bioscience.heacademy.ac.uk/resources/ltr/linkteachresearchcasestudies.aspx](http://www.bioscience.heacademy.ac.uk/resources/ltr/linkteachresearchcasestudies.aspx)

### Peer-reviewed articles

**Bioscience Education**  
**ejournal**

Finn, J.A. and Crook, A.C. (2003) Research skills training for undergraduate researchers: the pedagogical approach of the STARS project, *Bioscience Education E-journal*, **2-1** available at

[www.bioscience.heacademy.ac.uk/journal/vol2/beej-2-1.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol2/beej-2-1.aspx)

Fraser, G.A., Crook, A.C. and Park J.R. (2007) A Tool for Mapping Research Skills in Undergraduate Curricula, *Bioscience Education E-journal*, **9-1** available at

[www.bioscience.heacademy.ac.uk/journal/vol9/beej-9-1.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol9/beej-9-1.aspx)

Harland, J., Pitt, S. and Saunders, V. (2005) Factors Affecting Student Choice of the Undergraduate Research Project: Staff and Student Perceptions, *Bioscience Education E-journal*, **5-3** available at

[www.bioscience.heacademy.ac.uk/journal/vol5/beej-5-3.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol5/beej-5-3.aspx)

Hollingsworth, M., Mahon, M. and Thomas, L. (2004) Web projects for Life Science students, *Bioscience Education E-journal*, **4-5** available at

[www.bioscience.heacademy.ac.uk/journal/vol4/beej-4-5.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol4/beej-4-5.aspx)

Langan, M., Cullen, R. and Shuker, D. (2008) Student Learning Networks on Residential Field Courses: Does Size Matter? *Bioscience Education*, **11-1** available at

[www.bioscience.heacademy.ac.uk/journal/vol11/beej-11-1.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol11/beej-11-1.aspx)

MacKenzie, J. and Ruxton, G. (2006) Supporting the Development of Undergraduates' Experimental Design Skills and Investigating their Perceptions of Project Work, *Bioscience Education E-journal*, **8-2** available at

[www.bioscience.heacademy.ac.uk/journal/vol8/beej-8-2.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol8/beej-8-2.aspx)

Panizzon, D. and Boulton, A.J. (2004) Strategies for enhancing the learning of ecological research methods and statistics by tertiary environmental science students, *Bioscience Education E-journal*, **4-1** available at

[www.bioscience.heacademy.ac.uk/journal/vol4/beej-4-1.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol4/beej-4-1.aspx)

Ryder, J. (2004) What can students learn from final year research projects? *Bioscience Education E-journal*, **4-2** available at

[www.bioscience.heacademy.ac.uk/journal/vol4/beej-4-2.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol4/beej-4-2.aspx)

Sutcliffe, I.C. and Cummings, S.P. (2007) Making bioinformatics projects a meaningful experience in an undergraduate biotechnology or biomedical science programme, *Bioscience Education E-journal*, **10-2** available at

[www.bioscience.heacademy.ac.uk/journal/vol10/beej-10-2.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol10/beej-10-2.aspx)

Yeoman, K.H. and Zamorski, B. (2008) Investigating the Impact on Skill Development of an Undergraduate Scientific Research Skills Course, *Bioscience Education*, **11**-5 available at [www.bioscience.heacademy.ac.uk/journal/vol11/beej-11-5.aspx](http://www.bioscience.heacademy.ac.uk/journal/vol11/beej-11-5.aspx)

### Event reports

Reports from events about final year projects held in previous years at Durham, Cardiff and Manchester Universities - [www.bioscience.heacademy.ac.uk/events/dur05.aspx](http://www.bioscience.heacademy.ac.uk/events/dur05.aspx) , [www.bioscience.heacademy.ac.uk/events/finalcar.aspx](http://www.bioscience.heacademy.ac.uk/events/finalcar.aspx) and [www.bioscience.heacademy.ac.uk/events/finalman.aspx](http://www.bioscience.heacademy.ac.uk/events/finalman.aspx)

Reports from previous events on the theme of linking research and teaching may also be of interest:

[www.bioscience.heacademy.ac.uk/events/gcal280208.aspx](http://www.bioscience.heacademy.ac.uk/events/gcal280208.aspx) , [www.bioscience.heacademy.ac.uk/events/napier07.aspx](http://www.bioscience.heacademy.ac.uk/events/napier07.aspx) and [www.bioscience.heacademy.ac.uk/events/york05.aspx](http://www.bioscience.heacademy.ac.uk/events/york05.aspx)

### Useful External Publications & Project Outputs

---

Tatalovic, M. (2008) Student science publishing: an exploratory study of undergraduate science research journals and popular science magazines in the US and Europe. *Journal of Science Communication* **7**, 3.

<http://jcom.sissa.it/archive/07/03>

ENGAGE in research: The interactive resource for bioscience students

[www.engageinresearch.ac.uk](http://www.engageinresearch.ac.uk)

### Surveys and Views on Student Research

---

Cowie, R.J. (2005) A snapshot of final year project practice in UK bioscience departments. Available at [www.bioscience.heacademy.ac.uk/ftp/SIG/projectsurvey.pdf](http://www.bioscience.heacademy.ac.uk/ftp/SIG/projectsurvey.pdf)

Cowie, R.J. (2005) Project skills survey. Available at

[www.bioscience.heacademy.ac.uk/ftp/events/york05/projectskills.pdf](http://www.bioscience.heacademy.ac.uk/ftp/events/york05/projectskills.pdf)

### Student Research Publications in the Biosciences

---

#### Bioscience Horizons (UK and Ireland)

"Bioscience Horizons is a free online journal publishing the best undergraduate bioscience research from the UK and Republic of Ireland. The journal provides a forum for students, their supervisors and universities, to showcase high quality undergraduate research work, strengthening the link between teaching and research in higher education. All papers are written by students and based on final year research projects."

<http://biohorizons.oxfordjournals.org/>



#### Biolog-e (University of Leeds)

"Biolog-e was the first undergraduate e-journal to be established at the University of Leeds. The journal publishes representative examples of first class undergraduate bioscience research projects and student articles."

[www.fbs.leeds.ac.uk/students/ejournal/Biolog-e/index.php](http://www.fbs.leeds.ac.uk/students/ejournal/Biolog-e/index.php)

#### BURN (University of Nottingham)

"BURN is the showcase for undergraduates at Sutton Bonington presenting articles and scientific reports of student research from across the Bioscience divisions."

[www.nottingham.ac.uk/burn/](http://www.nottingham.ac.uk/burn/)

### **Origin (University of Chester)**

"Origin is an in-house undergraduate journal ... It was created to publish annually representative examples of the research undertaken by Biological Science students at the University of Chester."

[www.chester.ac.uk/origin/](http://www.chester.ac.uk/origin/)

### **Bioscience Bulletin articles**

---

Lloyd, D. (2006) Final-year projects in science Communication. Bioscience Bulletin 18, p11 available at [www.bioscience.heacademy.ac.uk/ftp/newsletters/bulletin18p11.pdf](http://www.bioscience.heacademy.ac.uk/ftp/newsletters/bulletin18p11.pdf)

Smith, J. and Hawkins, J. (2008) Creating a bank of plant-based research projects for final year students. Bioscience Bulletin 24, p3 available at [www.bioscience.heacademy.ac.uk/ftp/newsletters/bulletin24p3.pdf](http://www.bioscience.heacademy.ac.uk/ftp/newsletters/bulletin24p3.pdf)

### **CETLS**

---

#### **CETL-AURS, Centre for Applied Undergraduate Research Skills**

"The aim of CETL-AURS is to put scholarship and enquiry at the centre of the learning environment by integrating research-based learning into the undergraduate curriculum."

[www.reading.ac.uk/cetl-aurs](http://www.reading.ac.uk/cetl-aurs)

#### **Reinvention Centre for Undergraduate Research**

"The main aim of the Reinvention Centre is to integrate research-based learning into the undergraduate curriculum. The purpose is not simply to teach undergraduates research skills but to enable undergraduates to become involved in research and integrated into the research cultures of their departments."

[www.warwick.ac.uk/go/reinvention](http://www.warwick.ac.uk/go/reinvention)