

Scottish Initiative for Biotechnology Education
Report to the Darwin Trust of Edinburgh
October 2014 – September 2015



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1. Projects and Activities

School Biotechnology Workshops at National Museum

The 2014-15 programme of biotechnology workshops ('A Question of Taste' polymerase chain reaction technique) was extremely successful, with fantastic feedback from teachers and pupils. The background to this on-going project is detailed in the 2009-2012 SIBE Report to the Darwin Trust.



Workshops are delivered in the National Museum of Scotland, and form a valuable part of their Learning Programme. Dates for 2015-16 are already set, starting in October 2015. Recruitment of postgraduate students and early-career post-doctoral scientist helpers, continues to add value and maintains a bank of trained individuals for long term engagement. The extra funds provided by The Darwin Trust of Edinburgh to aid school pupils from geographically or economically remote areas of Scotland, to attend SIBE events; has continued to assist many schools in attending these workshops, e.g. schools from the Borders have booked this year.

School Practical Workshops at University of Edinburgh

SIBE have always endeavoured to run more workshops for school pupils at the University itself, giving pupils experience of being on campus as well as giving the opportunity to gain laboratory skills. The barrier here is that school term time usually clashes with University term time and hence the teaching labs tend not to be available to host school pupils. SIBE are usually only able to host school pupils in the summer, e.g. for the regular UoE Kickstart programme.

However, very recent talks with the Biology Teaching Organisation have resulted in a positive outcome, and it will now be possible to host school students in teaching labs in the months of May and June. Plans are currently underway to make this happen in 2016, with pupils attending for curriculum-linked practical biology workshops and visits to research labs.

Activities with Edinburgh Zoo

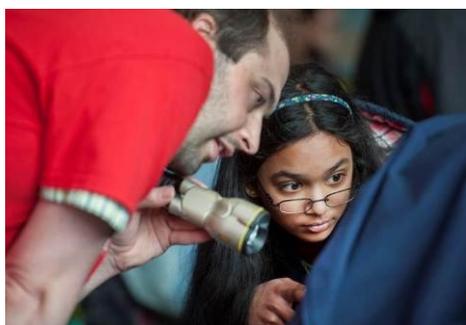
In a new project co-ordinated by SIBE for 2015, staff on the Zoo's 'Wild about Scotland' bus were joined by volunteer PhD students from UoE School of Biological Sciences to celebrate British Science Week in



March 2015. The Royal Zoological Society of Scotland 'Wild about Scotland' bus is a specially adapted double-decker bus which tours Scottish schools with the support of Clydesdale Bank. The bus offers a free and unique learning experience for P6 and P7 school children (age 9- 11) in the form of curriculum-linked interactive lessons.

UoE students who participated were from areas of research relevant to RZSS: evolution, genetics, conservation and animal behaviour. They contributed to twenty 50-minute lessons covering a 'wildcats' and a 'beavers' conservation theme, reaching approximately 500 pupils in five different primary schools. This is intended to be the start of many new activities with the Zoo. A report on the project can be downloaded at this link: <http://tinyurl.com/omxdqb9>.

UoE Family Programme at Edinburgh International Science Festival



The University's participation in Edinburgh International Science Festival is the largest public event in the University's calendar. SIBE has organised and delivered the programme of family activities at the national Museum of Scotland since 2005. The 2015 event attracted approx. 15,500 visitors and received extremely positive visitor feedback.

Colleges of Science and Engineering and Medicine and Veterinary Medicine fund a variety of hands-on science activities, workshops and shows, and this year, College of Humanities and Social Sciences also took part.

In addition to coordinating the whole event, SIBE also organise the specific Biology activities on behalf of School of Biological Sciences (SBS). 'Bio-Discoveries' highlighted current SBS research. Researchers and students from SBS developed activities for and facilitated this event, with mentoring from SIBE. The Discover Science 2015 report has already been circulated but can be downloaded at this link: <http://tinyurl.com/qf4jo4d>. Planning of the 2016 event is underway.

Activities at Midlothian Science Festival

In October 2014, SIBE once again supported Midlothian Science Festival, running hands-on Biology activities at two weekend public events, and co-ordination of an event involving external activity providers. SIBE will once again be involved in the festival in October 2015. See the 2015 programme here: <http://midlothiansciencefestival.com/>

Booklet Resources

The booklets 'Think Darwin, Think Evolution, Think Now' (2009) and 'Stem Cells: Science and Ethics' (2011, with BBSRC) continue to have a legacy. As reported by website downloads, they continue to be used by schools and individuals at various locations including the Education Scotland website, <http://www.educationscotland.gov.uk/> and the National STEM Centre eLibrary, www.nationalstemcentre.org.uk/elibrary.



UoE Visitors' Centre Science Exhibition

The University of Edinburgh Visitors' Centre at George Square, once again ran the 2014 SIBE-coordinated 'The Art of Science' exhibition in April and May 2015.

Science Communication Teaching

SIBE is responsible for delivering a University of Edinburgh Honours Elective course based in School of Biomedical Sciences, open to Biomedical Sciences and some Biological Sciences courses. The time involved in this is bought out by the Biomedical Science Teaching Organisation (BMTO). The background to the course has been covered in previous reports to the Darwin Trust. Session 2014-2015 was very successful, with 16 students enrolled, and very positive student feedback. The 2015-16 course, is currently underway with 16 students enrolled.

SIBE was also involved in the UoE MSc in Science Communication via assessment and Board of Examiners duties. The 2014-15 session had 21 students enrolled and was the third year the course had run. For 2015-16, SIBE has stepped back from involvement in the MSc due to the increasing time requirement affecting other SIBE activities.

Science Communication Mentoring

In addition to the mentoring required when involving staff and students in SIBE events, SIBE continue to co-convene the UoE Post Graduate Science Communication Team and the SBS Press Gang, and to co-mentor the SBS BioPOD team. Staff and students continue to borrow equipment from SIBE for public engagement activities.

SIBE annually provide an opportunity for an individual to take on a three month part-time contract as a science communicator, primarily assisting SIBE with organisation of SBS-specific events at the Edinburgh Science Festival. This post acts as a spring board for individuals embarking on a career in science communication, and is often held by a finishing PhD student. Many post holders go on to a science communication job, for example, a previous post-holder continues to climb the ranks in the Science Media Centre in London, and the most recent post-holder Ross Ziegelmeier has just secured a new job as an education officer with the Linnean Society of London.

Other Activities Oct 2014 – Sept 2015

Famelab Edinburgh Heat judging, November; Science and the Parliament, November; Lego League schools science projects judging, November & December; Scottish Schools Equipment Research Centre (SSERC) Annual Conference, December; UoE Innovative Learning Week activities, February; science writing lecture for medical Biology students, February; Dunbar Science Festival hands-on Biology activities, March; Threshold Public Engagement Network meeting, August; Edinburgh Doors Open Day hands-on Biology activities, September; UoE public engagement staff journal club (throughout the year); Edinburgh Beltane Public engagement Network events (throughout the year).

2. Audience Summary Oct 2014 – Sept 2015

Event	No. sessions	Audience	Attendees	Partners
PCR practical biotechnology workshops at National Museum	16	S5 and S6 Higher & Advanced Higher Biology pupils, Biology teachers	312 pupils 28 teachers	National Museum of Scotland
Hands-on Biology activities at Dunbar Science Festival	1 day	General Public	1700	Dunbar Science Festival
Activities with Edinburgh Zoo for British Science Week	5 days	P6 and P7 primary school pupils, primary teachers	492 20 teachers	The Royal Zoological Society of Scotland
Bio-Discoveries: School of Biological Sciences activities at Edinburgh Science Festival	5 days	General Public	3499	UoE SBS, National Museum Scotland, Edinburgh International Science Festival
Midlothian Science Festival Biology activities	2 days	General Public	602	Midlothian Science Festival
Edinburgh Doors Open day (Swann Building, Kings Buildings)	1 day	General public	517	UoE College of Science & Engineering & School of Biological Sciences
Total			7170	(2013–14 total: 6394)

The figures do not include those reached via the whole UoE Family Programme at Edinburgh International Science Festival 2015 (15,454), for those engaged with booklet resources, for activities run by others which SIBE supported, for mentoring staff and students in public engagement, or for University Science Communication teaching.

3. Funding Summary

Award period 2014-2015 (commencing July 2014)	Core SIBE funding	Darwin Trust of Edinburgh	£65,000
	For school travel bursaries	Darwin Trust of Edinburgh	£5000
	Discover Science 2015	University of Edinburgh	£18,300
	Honours Elective Science Communication	Univ. Edinburgh Biomedical Teaching Organisation	£3,500
	MSc Science Communication	Univ. Edinburgh Biomedical Teaching Organisation	£911
Darwin Trust of Edinburgh core funding 2014-2015			£70,000
External funding 2014-2015			£27,711
% leverage of external funding of direct cash benefit to SIBE			40%

In addition to the 40% leverage obtained on top of core funding from The Darwin Trust of Edinburgh, much in-kind support has been obtained, which is vital to SIBE activities and important for the sustainability of projects. Specifically, the time of staff and students of the University and beyond; the time of our partners such as the National Museum education staff; the use of valuable venue space such as the National Museum Learning Centre and the Zoo education bus; and the many contacts obtained by partnership with like-minded organisations. The School of Biological Sciences (SBS) also places much value on the outreach activities that SIBE undertakes on its behalf, some of which have the added advantage of overlap with recruitment aims.

4. Funding Applications

'On the Edge' (Wellcome Trust Society Award)

As described in the last report, SIBE was a named partner on an application led by the Centre for Regenerative Medicine and SSERC in a project aiming to develop teaching resources using real biomedical data and sources linked to A Curriculum for Excellence including for the new Scottish National Qualifications. The application was short-listed in the initial round, but unfortunately it was not selected for funding in the end. The project proposals will be further developed for future funding applications.

5. Future Plans and Strategy

Our methodology is based on the following: working in accordance with current science education and engagement, policies and recommendations, maintaining knowledge of current educational techniques, interacting with enthusiastic researchers, forming productive partnerships, providing science communication training, producing activities with lasting impact, and relating activities to contemporary life.

Core funding from the Darwin Trust of Edinburgh has made it possible to use this methodology to develop and deliver a wide variety of public engagement projects with lasting legacies, train and facilitate hundreds of researchers in engaging the public with their work, inspire thousands of school pupils and teachers in the learning and teaching of biotechnology and biology, and engage and enthuse countless members of the public, of all ages, with contemporary science. We are delighted to have continued support and encouragement from the Darwin Trust of Edinburgh, with core funding provided up to summer 2016.

It is appreciated that the Darwin Trustees increasingly have many documents to read and hence this report has been scaled down in size compared to previous years. If, at any time, more detail on any SIBE project is required, this can be obtained from janet.paterson@ed.ac.uk. Janet Paterson, October 2015.