

BBSRC Public Engagement Awards 2009

Dr Alan Trudgett, Queen's University, Belfast

What Evolutionary Biology can tell us about Irish Origins

The School of Biological Science at Queen's University, Belfast in collaboration with W5, the award winning Science Discovery Centre, will be delivering a lecture and discussion programme suitable for A-level pupils, and a teacher's in-service day, on evolutionary biology, explaining Darwinism as part of a modern synthesis and how it has facilitated new insights into the origin of people, agriculture and the biota of Ireland. Not only have the latter topics been of intense research interest over the last decade with unexpected and novel results emerging at a growing rate, they are of inherent interest to the public and those in education. For example, the origin of people in Ireland has been the subject of a recent television series. Many school pupils and their teachers and the general public may have little interest in science but be intensely interested in 'history'. This activity will hopefully attract students who are interested in studying science at university but also to engage those who may only have a passing interest in science but can appreciate what evolutionary biology can tell them about other disciplines.

Prof Andrew Fry, University of Leicester

How can studying simple organisms help scientists develop medicines?

This project will produce, and make available online, a short (approximately 5 minute) video and accompanying teaching resources introducing the scientific rationale and ethical arguments in favour of the use of model organisms in biomedical research. The resources will be of particular relevance to secondary school students, for whom the ethical significance of developments in biology and medicine has become a core component of both the GCSE Science and A level Biology specifications (Willmott and Willis, 2008). The finalised materials produced in this project will be made freely available on the internet and therefore will potentially reach many additional audiences.

Mr Bennett Young, University of Manchester

Harnessing Evolution and the Alien Plant Invasion

This activity will take the form of a one-day event in the summer of 2009 for the general public with the theme of plants from an evolutionary perspective. The event will focus on how plants have evolved to be incredibly diverse in all aspects of their lives to enable them to survive in a wide range of conditions raising awareness of evolution by demonstrating how interesting, varied and useful plants are. The impact of humans on plants will also be covered to show the public how we have effectively hijacked evolution in the commercialisation of plant species for our own purposes. The event will be based at the Manchester Museum and will be incorporated into one of the Museum's 'Big Saturdays' which regularly attract up to 1000 visitors. This will target families, thereby engaging a wide range of age groups. Throughout the day there will be a range of interactive events divided over two education rooms.

Dr Claire Cockcroft, The Babraham Institute

Real Life, Real Science

The Babraham Institute has pioneered a successful science programme for primary schools, which has delivered innovative science teaching by 'real scientists' to over 5000 primary and pre-school pupils since 2004. This project will strengthen and expand the programme beyond the current catchment area around Cambridge, to enable pupils in more distant parts of the region that have previously not had any STEM engagement to benefit from Babraham's science enrichment programme. In particular schools will be identified that are disengaged from science and those in localities where there are high levels of social deprivation, unemployment and high cultural diversity.

The project has five aims/target audiences:

- 1) to develop and deliver new Darwin-themed resources to strengthen science in our local primary schools
- 2) to extend our outreach geographically, working with local STEMNETs to identify new primary school targets in deprived areas and those with no prior STEM engagement

3) to deliver these activities via after-school science clubs (pilot scheme) to pupils at the primary-secondary transition, particularly schools in the region that have had little or no STEM enrichment

4) to deliver these resources and activities to community-based groups (eg guides)

5) Continuing Professional Development for teachers: pilot workshop/open day to train teachers and NQTs

Dr Dawn Arnold, University of the West of England

Evolving Communities

Evolving Communities will involve a multi-stage engagement between UWE biological scientists and local inner city school students, culminating in a public display and supporting interactive activities in a central location within Bristol. This display will represent the students' "visions of human evolution" with regards to biological research and evolution, and will incorporate opportunities for local community members to contribute additional ideas to the display. The project will involve the pupils in three stages of interactive activities: Exploration Sessions, Display development and a Public Display where the pupils final designs will be displayed within Bristol city centre and where the pupils themselves will interact with the wider community. The wider community will be able to participate in the interactive activities and will have the opportunity to contribute their own thoughts to the display about "visions of human evolution" as impacted by biological sciences and evolution.

Dr Giovanni Lo Iacono

Encouraging Scientific Debate: comics written and reviewed by young learners

Students will produce material that will be assessed by peers (referees) from another school. The material produced will be in the format of a comic exploring the specific topic of how variation, inheritance and evolution impact in modern life. The students will be guided to topics related to ongoing research at Rothamsted such as the development of resistance to antibiotics and pesticides, the selection of modern varieties of crops, mathematical modelling for evolution or the co-existence of different species of plants in communities in different environments. The articles produced will provide valuable insights into the students own preferred means of communication, as well as their perception and understanding of Darwin's ideas. The students are expected to have a double role: authors and referees. As authors, the students will produce articles in comic form and following referees' feedback, they will respond to the referees. They can accept the referees' comments and modify their work accordingly or provide valid arguments to defend their work. As referees they will review the articles for scientific content, originality and effectiveness in communicating key concepts in evolutionary biology. They are expected to provide clear feedback and precise suggestions. The students will be guided during this process through appropriate questionnaires, case studies, etc...An editorial board of scientists and teachers will check the correctness of the content. Subject to school and parental consent the outputs (including referees' comments, author's response and/or additional comments from the editorial board) will be disseminated through printed versions as well as online via the Rothamsted Research website and BBSRC. A panel of professional scientists, science communicators and graphic designers will chose the best article to be the cover of a magazine that will contain all the works produced.

Dr John Chilton, Peninsula Medical School, University of Plymouth

Men in White meet The Fly

'Men in White' is an outreach event that has been piloted at the University of Plymouth and has become well-known among some Plymouth secondary schools. It is run by Dr. John Chilton at the Peninsula Medical School (PMS), part of the Universities of Plymouth and Exeter. Currently it runs during National Science and Engineering Week, hosting 150 Year 12 and 13 pupils over two days. The students spend time in the PMS laboratories to see first-hand how cutting edge biomedical research is carried out and researchers at all levels get the chance to engage with the students and to develop their communication skills by explaining their work beyond their usual peer group. Each year the project has slowly expanded and made continual improvements based on participant feedback. The focus of this project is an event at Drake's Circus, a major new shopping centre in Plymouth. Thus there will be an excellent opportunity to engage with a large number of people from all parts of the community across the region. 'Men in White' currently caters for Year 12 and 13 pupils but will target a younger audience to get them enthused by science at an earlier age by offering a similar

event for Year 10 and 11 pupils from local schools to come into the labs. We will use tried and tested activities modified to fit in with the topics studied at GCSE level, aiming to extend ideas and provide novel experiences rather than repeat a given syllabus.

Dr Keith Edwards, University of Bristol

Voyages of Discovery in Bristol's Botanic Garden

The University of Bristol Botanic Garden will bring Darwin's work alive and up-to-date for a wide audience using scientist-led tours of key domestic and exotic plant species studied by Darwin in the course of his revolutionary work. In addition to bringing 180 school-age and 120 adult visitors to the Garden during summer 2009, the tours will be specifically designed to increase the accessibility of the Garden for the Deaf community. A Deaf audience has never been directly engaged by activities at the Garden, and is largely excluded by spoken-English tours. This aspect of the project will be co-developed with BSL-trained Garden personnel and members of the University of Bristol's leading Centre for Deaf Studies.

The tours are proposed as highly interactive conversations between a member of the Garden staff, a scientist, and the audience. Tours for a Deaf audience would be presented in BSL, via in-person interpreters for scientists and Garden staff. Handheld devices will also be developed and trialled to see if this would be a more sustainable alternative to in-person translation, and allow a richer self-guided tour experience. For hearing adult audiences, each of the Beagle and Plants & Pollinators tours would take place once per month in June, July and August (six tours), reaching a total of 120 people (20 people per tour). An additional six tours during June and July would bring 180 children as part of school groups (30 children per tour) to the Garden. Outside these times the tour material would also be available as self-guided tours with interpretive information for a variety of levels, reaching a potential audience of 3000 adults and 300 children (mainly through school groups) during the 2009 season, with the potential of a much greater audience over subsequent seasons.

Dr Susan Deuchars and Mr Stuart Kyle, University of Leeds

The Discovery Zone at Leeds Festival

The Discovery Zone has become an important component of the University Of Leeds Festival Of Science week after the success of this venture last year. The Discovery Zone aims to motivate school children across a diverse age range (8-13) to discover a joy of learning about science. The event will take place on 23-24th March with two hour sessions running in the morning and afternoon for different school groups (capacity of 120 pupils for each session, thus 480 pupils will attend in total). They (and their teachers) will be exposed to the many types of scientific research that are ongoing in the laboratory and will be given the chance to participate in experiments, model specific important events that occur in the body (such as communication between neuronal cells in the brain) and construct objects that will inform them about different scientific concepts. The aim this year is to particularly target those schools identified by the University of Leeds as a priority to raise attainment and aspirations of the pupils. Thus, these schools have been offered grants for free bus transport to the events and the chance to have follow-up talks from participating members of staff in the school environment. In this way, a useful resource for schools will be provided to encourage their pupils to reach beyond their normal horizons. The event will take the form (as last year) of 20-30 different "stalls" run by PhD students, postdoctoral research fellows and academics who have expertise in that area. Each stall will demonstrate to small groups a particular concept or phenomenon regarding their area of science. These will include making hovercrafts where the pupils will learn about friction, exploding volcanoes, testing how the body responds to hot or cold stimuli, taking part in experiments about crowd behaviour, examining how we balance, learning about how plants, birds and insects have evolved depending on their environment and determining how to extract DNA.

Prof Zafar Bashir, University of Bristol

Brain matters

The activities in this project create opportunities for an adult audience of approximately 2400 people to engage directly with neuroscientists, focussing on how the brain works and how it can be kept fit and healthy at all stages of life. These activities include an opportunity for non-specialists to pose their own informed questions and respond to the views of others through a virtual forum, as well as opportunities for face-to-face dialogue in a science café format and in

conjunction with hands-on activities. The activities complement and extend a series of Brain Awareness Week events for young people for which funding has already been obtained, and will mainly occur in a family-oriented venue (At-Bristol Science Centre) which attracts adults and children alike, frequently in family groups.

The activities will include:

1. Visual display materials to enhance adults' experience of hands-on activities.
2. "News and Views": opportunities to submit impressions and questions on specific neuroscience topics through a virtual forum.
3. Two Science Cafes to encourage adult audience dialogue with neuroscientists.
4. An interactive evaluation stand to increase participation in evaluation, establish areas of interest and encourage questioning around neuroscience.