

## **Norwich BioScience Institutes (NBI) School engagement**

The NBI offers a wide range of educational opportunities including work experience, visits, workshops and mentoring. NBI consists of The John Innes Centre, The Institute for Food Research, The Sainsbury Laboratory and The Genome Analysis Centre. Outreach and engagement activities draw up on the scientific expertise and resources of each of the NBI organisations.

### **TSN**

NBI is home to the Teacher Scientist Network (TSN). TSN links the scientific community of the Norwich Research Park with teachers of science from the (Norfolk) Education Community. The core activity is a network of one-to-one teacher-scientist partnerships with a wide portfolio of teacher-led supporting activities. TSN is primarily responsible for provision of CPD for teachers. TSN is also home to the kit-club. A range of ready to use kits that can be loaned by teachers to enhance science in the classroom.

### **Work experience**

Work experience for up to 30 year 10 pupils is provided twice a year. To enable management of the numerous requests for work experience an application process has been put in place with two work experience cohorts each year. A comprehensive programme of induction, tours and training is involved with a group feedback session at the end. Places are awarded to students that demonstrate a true passion for the subject through good grades, attendance and extra-curricular activities.

All applications must include the following:

- A covering letter explaining why you would like to work at JIC and the dates of your work experience
- A CV detailing both subjects taken and extra-curricular activities and interests
- A recommendation form, to be completed by your science teacher or Head of Science.

The programme is administered in conjunction with the Norfolk Exchange and is co-ordinated by Sarah Tolland and myself.

## **Nuffield Scholarship Scheme**

The scheme enables about 10 local first-year sixth formers who are interested in science to carry out a 4-week vacation placement during July and August. The scheme is underwritten by the Nuffield Foundation (through a regional SETNET organiser, The Exchange) and the scholars receive a bursary for the 4-week period.

Candidates, nominated by their schools, are selected by JIC's ad-hoc committee. The scholars are selected on the following criteria: academic excellence and recommendation from school; perceived benefit to be derived from a 4-week research "experience" at JIC/TSL; as wide a range of schools as possible. There is a thorough induction and familiarisation visit one month before the placement commences.

Scholars accepted on the scheme are required to write a brief project report and complete a feedback questionnaire. At JIC students also give a talk/presentation on their project to their fellow Nuffield students and supervisors. Certificates are issued to all scholars and at the end of the placement the students receive a bursary payment from the Nuffield Foundation.

The scheme is run by 18 Nuffield Regional Co-ordinators. In Norfolk, it is administered through The Exchange, a regional SETNET organiser.

Applications forwarded to JIC and IFR by The Exchange are considered by an ad-hoc committee of scientists coordinated by Professor Alison Smith (JIC) Dawn Barrett (IFR). Selection criteria include the perceived benefit to the student to be derived from a research experience, the student's academic attainment and a recommendation from school. The committee are keen to include as wide a range of schools as possible.

## **Inside Science**

Inside Science is a 3 day workshop for gifted and talented students that has been running for four years. Pupils range from year 11-13. In September 2009 sixteen science students from around the region spent three days on an intensive workshop, hearing about the research we do first hand, meeting students, post-docs and research assistants explaining exactly what it is like to work in science. Pupils heard presentations from scientists working at The John Innes Centre, The Institute of Food

Research, The Genome Analysis Centre, The Sainsbury Laboratory, UEA and Norfolk & Norwich University Hospital. There were tours of the facilities and an opportunity to carry out work in the BioImaging suite preparing specimens for the Scanning Electron Microscope (SEM).

### **Insight Days**

NBI run a number of Insight days enabling pupils to visit the site and get involved in activities relating to specific parts of the curriculum. Our insight days include Health and Safety, Microscopy, Genetic Modification, DNA and genetics.

**Health and Safety:** In September 2009 ninety pupils attended for demonstrations, talks and hands on activities, including demonstration of liquid nitrogen handling and training in the use of micropipettes.

**Microscopy:** In September 2009 over 200 pupils attended talks, toured the BioImaging facilities and took part in the popular images quiz.

**DNA:** In December 2009 thirty pupils visited JIC to learn all about DNA, genetics and see the new state of the art Genome Analysis Centre. There was training in the labs on the use of micropipettes, DNA extraction and gel electrophoresis. Over 10 PhD students were involved in running activities, giving presentations and guiding the pupils around the site.

**GM:** In February 2009 sixty A-level pupils visited JIC to learn about GM and in December a further thirty year 11 pupils visited. There were tours of the glasshouses, training in the planting out of Arabidopsis in the potting sheds, talks on GM and the research currently being done at NBI, demonstrations of the gene gun and use of GFP.

### **Careers conferences**

Each year almost 800 year 9 and 10 pupils attend The John Innes Centre for activities to promote science careers and further study. TSN in collaboration with a local Triple Science cluster host a day for year 9 pupils to encourage uptake of Triple Science GCSEs and NRP host a day for year 10 pupils to find out more about STEM careers. There is a wide range of activities and input from across the NRP with NBI having a significant presence in terms of activities and support from PhD students.

## **Tallest Jelly competition**

The Institute of Food Research holds an annual competition in October in association with the Institute of Physics and Norfolk Food Festival for schools to build the tallest jelly. Entries are open to any age group and prizes are awarded to the winners in Primary (up to Yr 6), Secondary (up to Yr 11), 6th Form and an overall prize for the best school. Prizes will also be awarded for the best project design even if ultimately the jelly fails.

## **Science week 2010**

Science week started off with the ambitious challenge of putting a scientist in every school in Norfolk on March 12<sup>th</sup>. Scientists from across the Norwich Research Park have been invited to go into schools as part of the John Innes centenary celebrations.

Throughout the week we ran Blooming Snapdragons in the Curve @ The Forum. A play portraying the untold story of the struggle by women scientists to be allowed to work in labs, study and get paid for their research. There will be a post show debate run by prominent women scientists and the Winners of the Debating Matters regional final. The show is aimed at year 11-13 pupils and supports schools implementing strategies to narrow the gender gap or wanting to raise careers awareness in STEM subjects and contains elements that address How Science Works (1a, b, 4c).

**Genetics Day @ The Forum:** Dr Kens Genetics Show (duration 20 mins), exhibits and hands on DNA activities from a range of organisations on the NRP.

**Science in Norwich Day @ The Forum:** Family science discovery day; hands on activities, exhibitions and displays for all ages

**The Beagle Project @ John Innes Centre:** Talks and activities from staff of the Natural History Museum all about the voyages of the Beagle.

**Showcase of Young Science @ The Forum:** For Yrs 11 Gifted & Talented, 12 & 13. PhD students talk about their research projects after an introduction to the topic by their supervisors. The audience gets to vote for who should get continued funding for their work!

A backdrop to all of the Forum events is “Genetics 100 Years On” an exhibition about the John Innes Centre and the chance to vote for what is our most significant scientific discovery.

### **Norfolk Food Festival**

IFR has a considerable role in the organisation of the Norfolk Food Festival and puts on a variety of events during September, including hands on science activities in the Forum and a science and cinema collaboration.

### **Evolving Words**

NBI is currently running a series of workshops in collaboration with the Welcome Trust and year10 pupils from North Walsham High School. Evolving Words is a poetry and evolution project engaging young people. The project involves young people (age 14-25), a scientist and a local poet who would work together. The young participants have written poems on the theme of evolution. They have attended comedy and contemporary dance events on the theme of Darwin and Evolution, visited an exhibit of Darwins books and worked with scientists from The John Innes Centre.

### **Debating Matters**

Each year IFR hosts the regional round of Debating Matters. This year the topics were CCTV, pop artists and Organic Food with Norwich High School for Girls winning the round.

### **School engagement**

We are working with three schools on a programme of year 8 engagement to enhance the curriculum, inspire young people prior to choosing their options and raise awareness of STEM careers. This involves school visits and visits to the NBI institutes.

We are also providing support to primary schools and pupils from PRUs. Working with a local primary school we recently trained the cookery club and subsequently the

rest of the school in the parts of plants we eat. We have also engaged with schools through community organisations such as the Sheringham Horticultural society who hosted a day on John Innes science, enabling pupils to attend, hearing talks, taking part in experiments and learning about the history of the John Innes centre.