

Welcome to the last edition of the **In2science** newsletter for 2011. Placements have now finished and our Mentors are busy with their end of year exams at university.

We look forward to resuming placements again in 2012.

The **In2science Team** has been busy interviewing prospective Mentors for 2012 and we have been really impressed by the young people we have spoken with – so far we have had well over 320 students indicating they would like to participate which includes 195 new applications and more by the day. It looks like 2012 will be another exciting year for the program.

Many of our current Mentors will be finishing university this year. It is always sad to see them leave, but we wish them all the best and hope they will keep in touch.

We wish to thank our 2011 funding partner; the **Department of Education and Early Childhood Development (DEECD)**. Without their generous support **In2science** would not be able to continue and grow.

Finally, we wish all our Peer Mentors (past and present), teachers and their students a wonderful end of 2011.

In2science News

Coordinator News

Unfortunately Rebecca Waite, our Deakin Coordinator, has finished working with the program to concentrate on her post graduate studies. Rebecca has done a fantastic job of establishing the program at the three Deakin campuses over the last year. Rebecca has been overseeing 15 schools and a large number of Mentors. We wish her every success in her studies and will certainly miss her dedication and enthusiasm for **In2science**.

Placement dates

Placements officially finished the week of **24 October**. Some Mentors have continued on in their role at the schools which is a wonderful achievement.

Activity Cards

The **In2science Team** have developed some activity cards for Mentors to hand out in class. These activity cards are for students to do at home with their family to help engage a wider audience in science and mathematics. The activities are each based on one of four areas (mathematics, physics, biology and chemistry) and there is a set of four for Grade 5-7 and a set of four for Y8-10.

Each card includes a simple activity that can be done at home and they also have interviews of our Peer Mentors carried out by students of the schools the Mentors attended.

These cards are available for teachers to download from the [In2science site](#).

In2science at [STAVCON '11](#)

This year **In2science** will be presenting a session at the Science Teachers Association of Victoria conference in late November. The focus of the presentation will be *“how to use a Guest Scientist in Your Classroom”*. Using the experience gained from eight years of the **In2science** program we will showcase some effective activities which will allow teachers, students and the guest to gain the most from the experience.



International Year of
CHEMISTRY
2011



In2science Roadshows - 2011

This year we will once again be running our regional roadshows this Term. The **In2nanotech** and **In2biotech** programs will visit different regions of the state to allow more remote school student to have access to our **In2science** Mentors and teachers to gain an insight into new areas of science.

In2nanotech will be visiting schools in the Western Districts: Cobden Technical School, Warrnambool College, Portland Secondary College, Heywood District Secondary College and Mortlake P-12 College.

In2biotech (run in conjunction with [Get into Genes](#)) will be visiting schools in NW Victoria visiting Chaffey Secondary College, Irymple Secondary College, Red Cliffs Secondary College, and Charlton College

A new roadshow will also run this year based upon local geology, fossils and climate change. This roadshow will be run in conjunction with 'Earth Ed' the Earth Science Centre in Ballarat.

Did you know that 2012 will be the [International Year of Sustainable Energy for All](#)

Peer Mentoring in Action

Since the start of Semester 2 many of our Mentors have been actively involved in a variety of science and mathematics classroom activities. Mentor involvement has extended to helping with practicals, working on small group activities and presenting a 'show and tell' about themselves and their work at university. Here are the final examples of what our Mentors have been up to at the end of this year's placements:

Mentor Alison enjoyed spending a lesson with small group of Year 7 students at **Heathmont SC**. In this photo Alison is showing students through the latest scientific magazine and discussing careers and job roles relating to different areas of 'science'.



Mentor Alison talks through ideas with students from Heathmont SC

At **Crusoe College** Mentor Tara has been getting to grips with genetics and evolution while helping Y10 students at the school. Although her field of study is Psychology, Tara has been able to link aspects of her knowledge to what the students are learning while engaging them in their studies to a higher level. Well done Tara.

At **Glen Waverley SC**, Mentor Krupesh has been having a great time with his Y8 class. They have been investigating genetics and physiology, including heart dissections and using 'forensic' evidence to identify the species of different bones.

Albert Park College were new to the In2science program this semester, and had three Mentors working in their Y7 science and maths classes. Mentor Sharni worked with two classes: science and accelerated science. This science class learned about forces in term 4 and Sharni was able to help them start their group project. In an accelerated science class, she was able to take in examples of microscopy to show the students.

Mentor Brendan worked with a small group of Yr 9 science students at **Mt Clear College** on a project exploring the efficiency of wind turbines. With his assistance, the students entered their project in the **Peter Doherty Science Award** competition.

At **Ballarat SC East Campus** Mentor Adrian devised an activity to highlight appropriate engineering principles for his Y10 aerodynamics class. Under his guidance students have been investigating the strength of cardboard and paper beams in a variety of structures.

Mentor Dan used his environmental skills to help his Yr 8 science students plan an indigenous plant garden bed at **Ballarat High School**. The planting day and planning for it have been part of their ecology unit this term.

At **Ballarat South Community Learning Precinct, Sebastopol Campus**, Mentor Lauren ran a gram staining of bacteria activity for students in her Y10 biology class, highlighting one of the key techniques used in identifying bacteria.

At **Northcote HS** Mentor Sharon organised a visit for her Y7 class studying classification and living things. They visited the Tieg's Museum at the University of Melbourne. The museum has an extensive collection of specimens representing the whole animal kingdom, ranging from small invertebrates to prepared whole-mounts and skeletons of vertebrates

including an African lion, and a Moa (an extinct emu-like bird from New Zealand). The students enjoyed the visit and the opportunity to be on campus.



Mentor Brianna working with students at Bundoora SC

Mentors Bridie and Brianna have been working hard with students from **Bundoora SC** on their own water quality research projects. Y8/9 students have worked with the Mentors to test the water quality in local creeks around school to assess the state of the environment for flora and fauna. They have tested for pH, nitrates and dissolved solids, they have assessed each location for invertebrates and other live as indicators of the health of the water. Together they have developed a good understanding of the techniques required for real research and the support of the mentors has helped them produce quality reports. The students have even started producing a guide to what they have done so others can follow their work and undertake similar research. Also at the school was Mentor Mark who had his hands full with the weekly task of taking one half of

the Y10 maths class to provide them with a more individual support. The class has been grateful to have such personalised assistance to help them grasp such units as decimals. Well done all of you.

A former student at **Buckley Park SC**, Mentor Julianna worked with the Y10 accelerated program and enjoyed being back at her old school. Recently Julianna gave the class a presentation on research techniques which was good grounding before the class worked on their own research projects on plastics. Mentor Julianna and her teacher also visited the University of Melbourne to hear from two researchers working on protecting marine environments in Australia from pollution.

The **John Monash Science School** had two Mentors this semester. Mentor Jay has been helping students get to grips with bioinformatics. Jay did a great presentation to the students on some of the work he has been doing at university regarding genetic coding. The students valued hearing about real world applications of the topic and enjoy interacting with Jay and asking many questions. Great work Jay.

At **Fitzroy HS** Mentor Louis was working with a Y10 biology class. They have been learning genetics, investigating monogenetic inheritance in barley and incomplete dominance in peas, having recently finished cell structure and replication (mitosis and meiosis). Louis also gave the class a presentation about his research (earth sciences). Also at the school is Mentor Bryan who worked with two different Y8 classes, and most recently they completed their projects on dichotomous keys.

Mentor Peggy was a former student of **Templestowe College**, and this semester was working with a Y7 mathematics class who have been investigating probability. Peggy has been enjoying helping students in her old school and supporting them in their learning.

At **Mill Park SC** Mentor Ayah has been busy helping the Y8 class understand how electrons are arranged around the nucleus. Once this concept was grasped students were then able to watch demonstrations of displacement reactions where they could see the displacement of metal ions in copper sulphate to produce copper and salt. It was then on to more hands on activities where the students mixed their own cocktails of solutions and observed the precipitate reactions.

At **Preston Girls SC** the Y8 class has been very happy to have Mentor Scott in their classroom this semester. The girls have been studying evolution and natural selection and Scott was given the opportunity to initiate a candid discussion with the class on the reasons he believes evolution is how humans came to be. The class used this opportunity to ask Scott many questions, and understand the fundamental basics that science is based on the gathering of evidence, and that hypothesis and theories are proven or disproven based on the evidence gathered. The exercise left the girls eager to find out more.

At **Caroline Springs SC** Mentor Sali has been having lots of fun helping out with two Y10 forensic science classes. Murder by poison was what they were investigating and in groups of four the classes had to design the crime. Sali was needed to bounce ideas off and gauge if the crime could in need be carried out.

The Y10 class at **Reservoir HS** have had the assistance of Mentor Cemil, and when they were set the task to put together a picture presentation on homeostasis his advice and help were much appreciated. The class needed to be able to define homeostasis, and then provide examples of how it is achieved by the body. To make the task even more interesting the presentation had to be put together as a short film with narrative and music.

Mentor Dougal has been working with several Y6 mathematics classes at **Clifton Hill PS**. Together with his teachers, He has helped students explore concepts including volume by building cereal boxes, and learning about shapes. This is Dougal's first time mentoring at a primary school and he found the experience enjoyable and challenging.

Mentor Nelson has been working with a Y8 science class at **University HS** who had just completed digestion as a topic. Nelson has helped students complete an experiment heating Potassium Permanganate crystals to demonstrate convection in a beaker of water. Well done Nelson.

Grade 5 students at **Richmond West PS** have loved having Mentor Gideon visit their Maths class, especially when they don't know what hair colour he will turn up with next. Two students in particular have benefitted from getting one on one help and Gideon has enjoyed seeing them progress.

Information for Schools

Many thanks for all your hard work this year. **In2science** hopes that teachers and students have gained from the experience. Many teachers comment that they were able to learn from the Mentor about a particular aspect of science and that the support in the classroom has been invaluable for their students.

Teacher's and link teacher's evaluations are done online and emails have been sent out regarding this.

**Semester one placements 2012:
Week of 12 March – Week of 1 June**

**Semester two placements 2012:
Week of 6 August – Week of 26 October**

Student feedback from the classes hosting a Mentor is sought from each class and forms have been sent out to schools.

Please try to get the **In2science Evaluations completed and returned by 11 November for inclusion in the annual report.** Please contact the [In2science Team](#) if you are unsure of anything

It is only by undertaking evaluations that we can determine how successful the program is and the benefits being achieved. It is also a way in which we can learn about issues regarding the program and then endeavour to put them right.

We will be sending out letters to the principals of all the schools associated with the program to thank staff for involvement. These letters will also include some best practice advice of how teachers ensured the program had a high profile in their school:

1. The Link Teacher keeps in regular contact with the program.
2. Departmental/faculty meetings allocate some time to discuss the **In2science** program and teachers share their experiences.
3. Students and teachers include articles in the school newsletter about the classes with the **In2science** Mentors.
4. Senior management within the school are kept informed via the Link Teacher.
5. Teachers are encouraged to participate in the program and to experiment with new pedagogy whist supported by the Mentors in the classroom.

We look forward to working with the schools to help maximise the achievable benefits of the program in 2012.

2012 Placements

Please ensure the **Link Teacher online evaluation form** is completed even if your school did not host a Mentor this semester. Information you provide helps us with the planning and allocation of Mentors. We will be contacting schools in early February with details of the Mentors we have available. If schools have preferences for Mentors with a particular discipline background then do let us know so we can do our best to meet your needs.

The Science Experience – Your Y9 or Y10 students may be interested in participating in the science experience this year (formerly Siemens Science Experience). Five of our partner universities will be hosting events. Check out the [website](#) to find out more.

Do contact the **In2science Team** if there is anything you would like support with in schools, where staffing and resources allow, the universities are keen to help.

[Online resource list on In2science website](#)

In2science has a good list of useful websites that may be of interest to teachers. They are organised by discipline to make it easier.

Did you know you can set up your own bank of YouTube clips for use in your school? Many teacher spend hours finding clips for use in the classroom. Here is an example from a UK school and the site they set up:
<http://www.youtube.com/user/highamsparkscience>

Information for Mentors

A big thank you to all our In2science Peer Mentors this year. It has been fantastic working with you all and visiting to see you in action.

We are actively recruiting for 2012. If you have friends interested, get them to contact one of the **In2science Team** or apply [online](#)

Make sure you have completed the 'SurveyMonkey' online form (contact your In2science coordinator if you need to be resent the link) - your feedback is extremely valuable whether this is your first or ninth placement.

If you have not yet informed us of your interest in mentoring again next year then please do so. You may be finishing your studies this year so again keep us informed.

Don't forget to submit your travel expenses for reimbursement of up to \$10.00 per week. Travel claim forms are located at the back of your Peer Mentor's pack or on the [website](#) and should be returned to your In2science Coordinator.

- Best wishes for the exams -

News from the Institutions

La Trobe University

[The Dean's Public Lecture](#)

Dr Richard Gillespie will be delivering a Public Lecture on the 'Great Melbourne Telescope: Astronomy and the Public Understanding of Science'

Date: Wednesday 23 November, 6pm-7pm

Venue: Hooper and Szental Lecture Theatre, La Trobe University, Melbourne Campus

RSVPs: fste.events@latrobe.edu.au

[Nancy Millis public lecture](#)

Professor David Vaux will deliver the Nancy Millis Public Lecture on: 'Molecular mechanisms of programmed cell death – from biology to therapy'

Date: Tuesday 6 December, 6pm – 7pm

Venue: Hooper and Szental Lecture Theatre, La Trobe University, Melbourne Campus

RSVPs: fste.events@latrobe.edu.au

The University of Melbourne

[Public lecture: Polymers and Neutron Scattering](#)

Professor Dame Julia Higgs

Dame Julia Higgins was introduced to the new experimental use of neutron scattering as a doctoral student and fortunate to be at the frontline as new techniques for exploiting the neutron have been developed. A thread running through her scientific career has been the successful application of a number of these techniques to

understanding the organisation and behaviour of long polymer molecules. She will outline the basis of the techniques and their relevance to fundamental questions in polymer science.

Date: Wednesday, 9 November

Time: 5:30-6:30pm

Venue: Theatre A, Elizabeth Murdoch Building

No booking required

Further Information: 8344 4392 or email: rtret@unimelb.edu.au

Public lecture: The Evolution of Purpose

Professor Daniel Dennett

Before there was life on Earth, there were no purposes, no reasons. Things just happened. How could purposes emerge from such purposeless conditions?

Looking back at the evolution of life on the planet, we can now see--if only dimly--the patterns that led to the exquisite functional organizations of matter that living forms exhibit. We human beings are the only living things that can represent these reasons, and comprehend them, but that does not make them illusory.

Date: Tuesday, 15 November

Time: 6:30pm

Venue: Carillo Gantner Theatre, Sidney Myer Asia Centre

Please [register to attend](#) this public lecture

Further Information: 8344 4392 or email: rtret@unimelb.edu.au

Public lecture by Nobel Prize Winner

Professor Martin Chalfie, Nobel Prize Winner in Chemistry 2008

The great American baseball player Yogi Berra once said, "You can observe a lot by watching." Unfortunately, before the early 1990s observations in the biological sciences were usually done on dead specimens that were specially prepared and permeabilized to allow entry of reagents to stain cell components. These methods allowed a glimpse of what cells were doing, but they gave a necessarily static view of life, just snapshots in time.

GFP and other fluorescent proteins revolutionized the biological sciences because these proteins allowed scientists to look at the inner workings of living cells. GFP can be used to tell where genes are turned on, where proteins are located within tissues, and how cell activities change over time. Once a cell can be seen, it can be studied and manipulated.

The discovery and development of GFP also provide a very nice example of how scientific progress is often made: through accidental discoveries, the willingness to ignore previous assumptions and take chances, and the combined efforts of many people. The story of GFP also shows the importance of basic research on non-traditional organisms.

Date: Wednesday, 30 November

Time: 5:00pm

Venue: Mason Theatre, School of Chemistry

Further Information: 8344 4392 or email: rtret@unimelb.edu.au

Monash University

Researcher discovers new dolphin species in Victoria

They're one of the most intelligent marine mammals, well known for their inquisitive and playful nature and now, following an amazing discovery by a Monash University researcher, Victoria's dolphins have been formally recognised as a new species.

Kate Charlton-Robb, a PhD researcher in the School of Biological Sciences unearthed the remarkable findings, which have been published in the latest *PLoS ONE Journal*, showing that coastal dolphins in southern Australia greatly differed from any other dolphin worldwide. The dolphins were originally thought to be one of the two recognised

bottlenose dolphin species; however by using multiple lines of scientific evidence these dolphins were found to be unique. The discovery was made by comparing skulls, external characteristics and a number of DNA regions from the current day population as well as specimens dating back to the early 1900s.

RMIT University

Testing child safety restraints

Aerospace engineer Adam Shrimpton has been researching new ways to model and test child safety restraints being used in aircraft. He is aiming to develop a computer model that will allow simulations to be run to better understand the performance of child restraints in aircraft.

Swinburne University of Technology

Nature's laws may vary across the Universe

One of the laws of nature may vary across the Universe, according to a study published today in the journal Physical Review Letters.

One of the most cherished principles in science - the constancy of physics - may not be true, according to research carried out at the University of New South Wales (UNSW), Swinburne University of Technology and the University of Cambridge.

The study found that one of the four known fundamental forces, electromagnetism - measured by the so-called fine-structure constant and denoted by the symbol 'alpha' - seems to vary across the Universe.

The first hints that alpha might not be constant came a decade ago when Professor John Webb, Professor Victor Flambaum, and other colleagues at UNSW and elsewhere, analysed observations from the Keck Observatory, in Hawaii. Those observations were restricted to one broad area in the sky

The University of Ballarat

Peter Doherty Science Award Presentation Evening

Tuesday 8 November, 6.00pm Lecture theatre F301

Established with the assistance of Nobel Laureate, Professor Peter Doherty in 2007, this award is for excellence in a science and/or technology project by a team of year 9 or 10 public secondary college students in Ballarat.

The efforts of students are celebrated by inviting finalists to present their projects to a substantial audience of peers, parents, educators and scientists. Shortlisted teams and Award winners are presented with their awards at the conclusion of the evening.

Members of the public are invited to support these young scientists by attending the Presentations and Award Ceremony. Contact 5327 9373 or s.davison@ballarat.edu.au

Websites to try

In2science now has a useful list of [websites](#) full of ideas and resources on a whole host of topics. Check them out to see how they could help you.

Royal Society release access to its historical journal for free

The world's oldest scientific academy, the Royal Society, has made its historical journal, which includes about 60,000 scientific papers, permanently free to access online.

Migration game

Interactive game to learn about humpback whale migration in the Pacific – great for middle years

[YouTube spacelab](#)

YouTube have launched a competition for people 14-18 to design an experiment that could be carried out in space. You just need to design an experiment and create a two minute video explaining your idea. Then upload it onto YouTube. The winning experiment will be run at the International Space Station.

As 2011 is the [International Year of Chemistry](#) try getting involved, look out for events near you.

If you wish to recommend any apps or websites please contact us.

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