

November 2008

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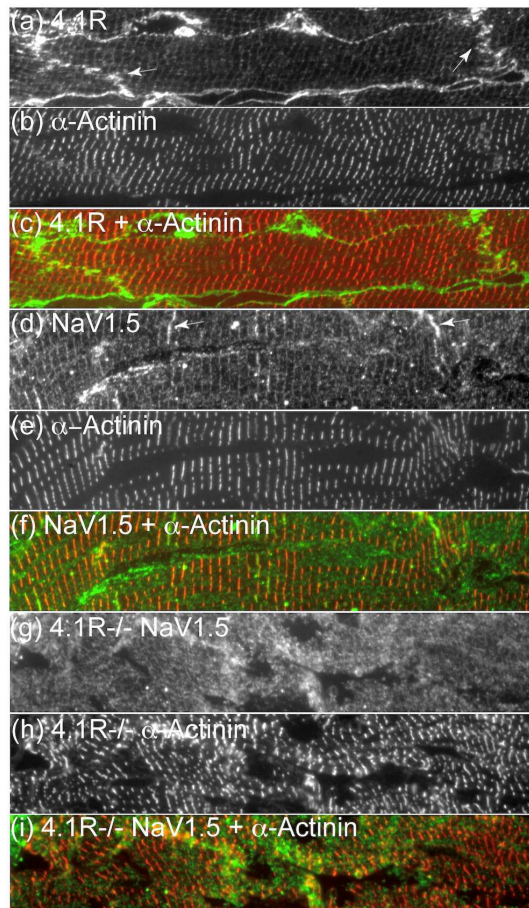
**View from the Dean's Office**

The Autumn semester is already half-way through and the STMS Faculty welcomed a bumper intake of new students again this year. Science numbers are growing again as the message gets out that science can be fun! Demand from industry is buoyant as witnessed by the recent publication "Skills needs for biomedical research" published by the Association of British Pharmaceutical Industries ([www.abpi.org.uk](http://www.abpi.org.uk)) - basic maths and practical skills are very much in demand! The Science Council is also keen to encourage more schoolchildren into science and their developing website "Future morph" ([www.futuremorph.org](http://www.futuremorph.org)) is seeking ideas and feedback so please support it if you can.

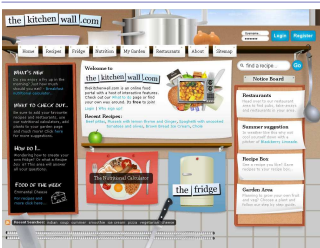
As usual, 'Sciences@Kent' includes a variety of articles and news from the STMS Faculty, as well as material from other scientists working across the campus, and we would appreciate your feedback, contributions or suggestions for future items.

All the best  
Peter

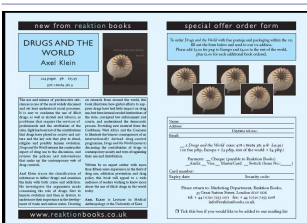
**The Heart of Heart Disease**



This month's image is from the laboratory of Dr Anthony Baines and represents PhD student Ed Carter's work. It shows the distribution of the proteins 4.1R and NaV1.5 in a mouse heart. This is from Ed's data that contributed to a recent paper describing alterations to heart beat in mice lacking protein 4.1R. Ed showed that the amount of the sodium channel NaV1.5 is reduced in these mice, and it appears to be disorganised. In collaboration with colleagues at King's College and Imperial College, it has been found that signalling through this channel is altered in these mice, which have a slow heart beat. NaV1.5 is of great interest because mutations in it are associated with human heart diseases, including arrhythmias that can lead to sudden death from heart failure. Ed's data help define a new mechanism that regulates the activity of this channel.



In the Students' Kitchen—page 3



Let's Talk about drugs—page 3

## Award for Best Paper for Electronics Researchers

Karl Harmer and Gareth Howells of the Department of Electronics were the recipients of the Best Paper Award at the 2008 ECSIS Symposium on Bio-Inspired, Learning and Intelligent Systems for Security (BLISS 2008) held in Edinburgh in August.

The paper, "Fuzzy Vault Fingerprint Smartcard Implementation using an Orientation-Based Feature Vector", was authored by members of the Department's Image Processing and Computer Vision Research Group (K. Harmer (postgraduate student), G. Howells, W. Sheng, M.C. Fairhurst and F. Deravi) and resulted from work carried out on their Engineering and Physical Sciences Research Council (EPSRC) grant "Template-free Biometric Encryption for Data Integrity Assurance" to address the concern over the security regarding the storage of biometric templates. In the paper, a fuzzy vault fingerprint smartcard implementation, which is unlocked by using an orientation-based feature vector, was presented. The fuzzy vault contains an unknown key which can be used either for identification or for file encryption/decryption.



**Professor Tughrul Arslan of Edinburgh University (left) presents Karl Harmer (centre) and Gareth Howells (right) with the BLISS 2008 award for best paper.**

## Kent computing professor receives national teaching award



**Professor Michael Kölling receives his National Teaching Fellowship certificate at the NTFS awards ceremony**

Professor Michael Kölling from the Computing Laboratory received a National Teaching Fellowship award at a prestigious ceremony

held in London on the 24 September 2008. The Higher Education Authority made the award in recognition of Michael's innovative work in developing the BlueJ and Greenfoot systems which help students to learn computer programming more easily than when using traditional methods. The award also acknowledges his highly successful approach in advancing the teaching and learning of computer programming worldwide. The award, worth £10,000, will help support the ongoing development of the Greenfoot interactive Java programming environment. It will also go towards supporting further activities to widen the uptake of Greenfoot by schools and by society at large. Professor Kölling already runs a highly successful programme of Greenfoot workshops for local schools, contributes to articles in computing magazines and maintains the Greenfoot web site which hosts a computer games gallery where Greenfoot users can upload their latest games creations.

Since the 1990s, Professor Kölling has been working to address the shortage of computer scientists and programmers in the national employment market. Initially, this was through the development of BlueJ, a highly successful software system that fundamentally changes the way in which modern Java

programming can be taught to beginners. Today, it is used in more than 850 institutions worldwide, including more than half of all English universities. Professor Kölling is also co-author of a text book on BlueJ, which is the best-selling Java text book in Europe and number two in the USA. Building on this success, he has been working on the development of Greenfoot, an easy-to-use Java-based system designed to teach programming to secondary school students. With Greenfoot, students can create real interactive graphical computer applications, such as games and simulations, and so experience the challenge and satisfaction that arise from these activities.

Greenfoot is used at many schools and universities for programming teaching and, at present, there are more than 40 institutions actively using the system. The impact of Greenfoot on programming education was recognised last year, when the software won the Duke's Choice Award 2007, an industry award sponsored by Sun Microsystems. It is anticipated that the success rate of Greenfoot will match that of BlueJ, with recent feedback from teachers and students about their experiences with Greenfoot demonstrating that it is already making a significant impact.

# Kent Lecturer on Addictive Behaviour takes seat on BBC panel about illegal drugs



Dr Axel Klein, Lecturer in the Study of Addictive Behaviour in the Centre for Health Services Studies was an invited panel member on BBC Radio 4's Iconoclasts, broadcast live on Wednesday 29 October at 8pm.

Chaired by Edward Stourton, the programme 'Illegal drugs can be good for you', featured the scientist and writer Dr Susan Blackmore whose point of argument was as the programme's title. The panel was to test her argument and Dr Axel Klein was joined by Dr Ken Checinski, A psychiatrist and senior lecturer in addictive behaviour at St George's University Hospital and Sarah Graham who has a Priory Professional Diploma in Addictions Therapy and works for the charity In-volve – counselling children in schools.

Axel's appearance on BBC Radio 4 coincides with the publication of his latest book 'Drugs and the World', in which he addresses the use and misuse of psychoactive substances and the coherence of such substances with social processes.

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**DRUGS AND THE WORLD**  
Axel Klein

224 pages pb £15.95  
978 1 86189 381 9

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To order *Drugs and the World* with free postage and packaging within the UK, fill out the form below and send to our UK address. Please add £3.00 for p&ap to Europe and £4.00 to the rest of the world, plus £1.00 for each additional book ordered.

The use and misuse of psychoactive substances is one of the most widely discussed and yet least understood social processes. It is easy to condemn the use of illicit drugs, as well as alcohol and tobacco, as problems that require the services of professionals and the retribution of the state. Sight has been lost of the contributions that drugs have played in society and culture and the key role they play in ritual, religion and possibly human evolution. *Drugs and the World* restores the constructive aspect of drug use to the discussion, and reviews the policies and interventions that make up the contemporary web of drug controls.

on research from around the world, this book illustrates how global efforts to suppress drugs have had little impact on drug use, but have instead eroded institutions of the state, corrupted law enforcement and courts, and undermined the democratic process. Providing new material from the Caribbean, West Africa and the Caucasus to illustrate the bizarre consequences of an internationally devised drug-control programme, *Drugs and the World* moves to discussing the contribution of drugs to contemporary society, and ways of regulating their use and distribution.

Axel Klein traces the classification of substances to define 'drugs', and examines the links with both crime and addiction. He investigates the arguments made concerning the role of drugs, first in human evolution and then in history, to underscore their importance in the development of trade and nation states. Drawing

Written by an expert author with more than fifteen years experience in the field of drug use, addiction prevention and drug policy, this book will appeal to a wide audience of readers wishing to know more about the use of illicit drugs in the world today.

AXEL KLEIN is Lecturer in Medical Anthropology at the University of Kent.

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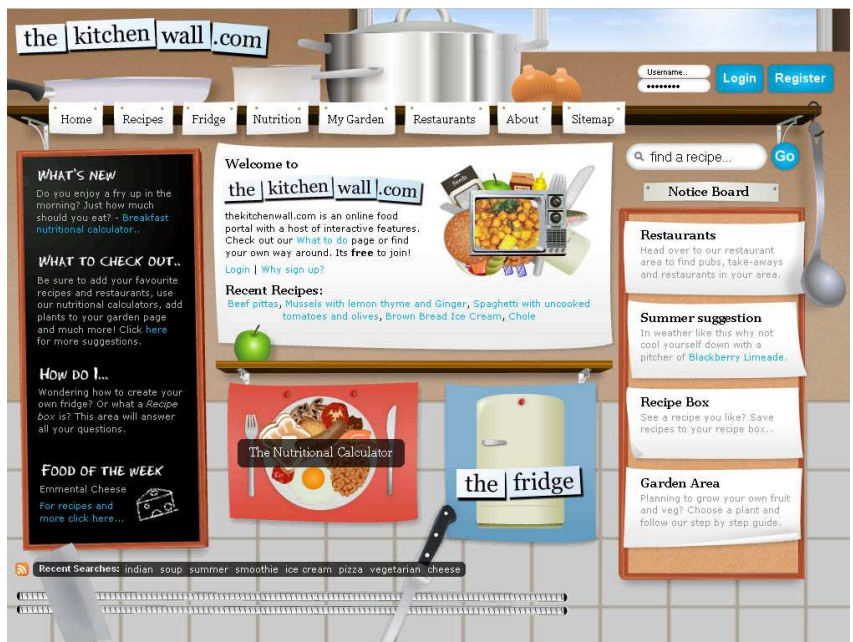
In the Christmas/New Year newsletter, Axel will present an article on heroin

# Multimedia Students win Prestigious European Award

Joe Campion and Gavin Clark, who graduated in July with First Class Honours Degrees from the Multimedia Technology and Design with a Year in Industry programme in the Department of Electronics, have won the prestigious Quality Seal Award from Europrix, Europe's Premier Top Talent Competition in Multimedia.

The Europrix Multimedia Awards are Europe's contest for young professionals and students who work on innovative projects in the field of e-content and design, using various multimedia channels.

The Seal was awarded in the online/web projects category for their final year project entitled **The Kitchen Wall**. The project can be seen at [www.thekitchenwall.com](http://www.thekitchenwall.com) or [http://www.europrix.org/en\\_projects\\_quality-seals.html](http://www.europrix.org/en_projects_quality-seals.html).



Joe and Gavin were also prize winners at the Electronics Graduation Reception this summer and are seen here receiving the Sagittarius Marketing Prize for the Best Integrated Multimedia Project from Paul Stephen, the Director of Sagittarius Marketing.

Christmas Science Lectures for Schools sponsored by  
For years 10, 11, 12 and 13



## Tuesday 25 Nov 10.30am & 2.30pm

Dr Pete Vukusic, University of Exeter

### Light and Colour:

#### Nature Knows Best

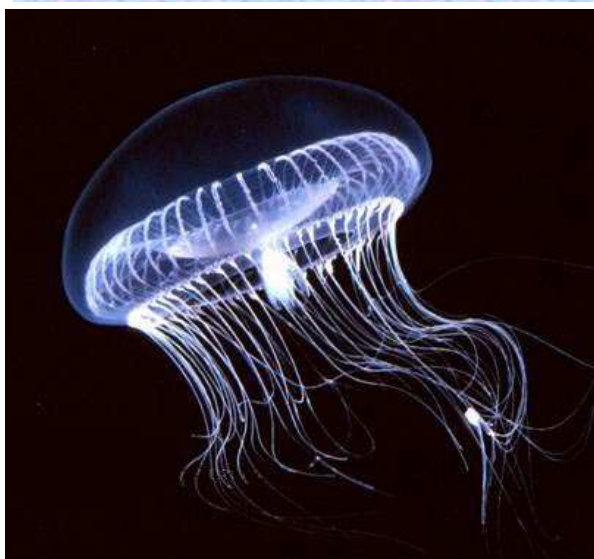
Light fantastic: the Science of Colour will open pupils' eyes to the basic concepts of the science of light and colour and show how technology is making the most of light's astonishing properties.

This presentation will include demonstrations, hands-on activities and movie clips to help shed light on the science of colour. It will explore the properties and characteristics of radiant electromagnetic energy and discover how the use of light has created the world we live in today and will shape the world we will live in tomorrow.

This year's theme is colour and light in nature

The lectures will take place in the Gulbenkian Theatre.

Tickets are free but places must be booked



**Raskoff Aequoria** image courtesy of Professor Bill Gullick's Laboratory in the Department of Biosciences

## Wed 26 Nov 10.30am & 2.30pm

Paul Beaumont, Homerton College, Cambridge

### From Sellotape to Fireflies: Things that Glow in the Dark

Light is given out or used in biological or chemical reactions. This lecture looks at a range of examples and attempts to answer some of the following questions; Why do fireflies and glow worms produce light?

What possible connection is there between envelopes, sellotape and disposable nappies?

Who were the 'Blue People' of Troublesome Creek in Kentucky, why was their skin blue, and how was their condition treated?

What do the 1812 Overture by Tchaikovsky and chemistry have in common?

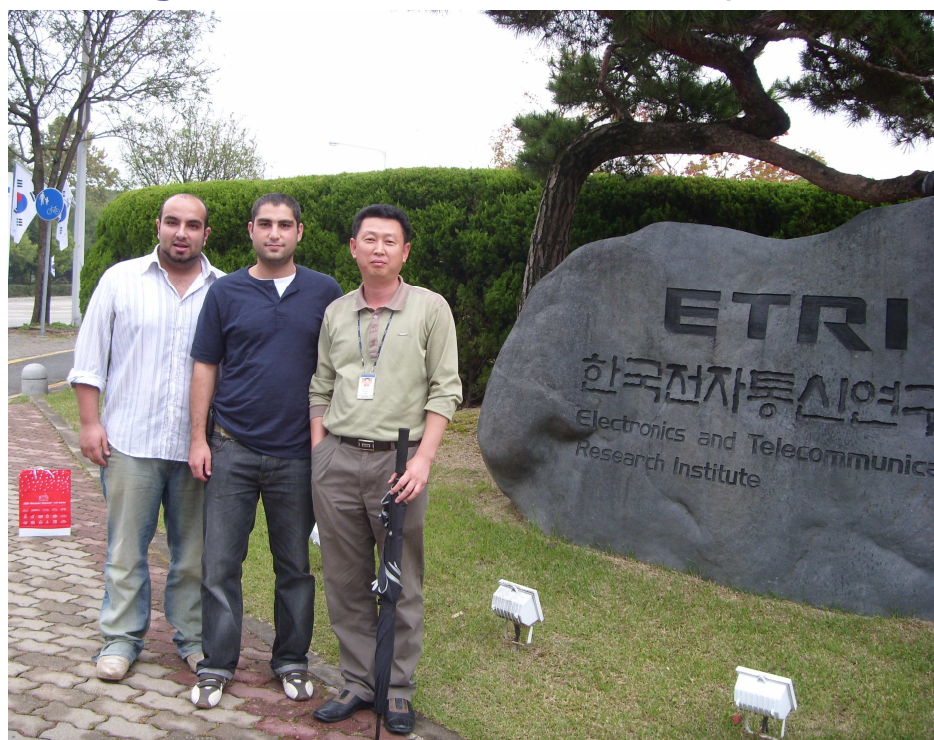
None of these demonstrations require sophisticated equipment and can therefore be readily transferred into the classroom.

The Electronics and Telecommunications Research Institute (ETRI), Korea is a government-backed research institute in Daedeok Science Town in Daejeon, Republic of Korea. With over 3,000 employees and researchers, ETRI has been at the forefront of technological excellence for over 25 years, with 12 patents to its credit.

Dr. Shyqyri Haxha's photonics team within the Broadband and Wireless Communications Research Group in the Electronics Department has increased its collaboration with ETRI over the past year and the team can boast two prestigious IEEE journal articles published in collaboration with the Institute.

In October, Dr Haxha's PhD students Huseyin Ademgil and Oussama El-Khatib visited ETRI for ten days. The visit included a hands-on approach to various topics such as fabrication techniques, biosensors, PCFs, surface Plasmon and, most importantly, Electro Optic Modulators. This visit has greatly strengthened the association between ETRI and Dr. Haxha's team, and is an important step towards further collaboration.

## Electronics PhD students strengthen link with ETRI, Korea



**Oussama El-Khatib (left), Huseyin Ademgil (centre) with Dr. Jung Jin Ju from the Optical Devices Department at ETRI**

## e-skills promote the Greenfoot message to schools

SCHOOL CHILDREN from across Kent experienced computer programming and the process of product development as part of the 'Experience IT Chances' workshop held at the Computing Laboratory, University of Kent. The workshop was organised by e-skills UK, the Sector Skills Council for IT and Telecoms, in partnership with the Computing Laboratory, as part of the e-skills ICT activity programme for schools.

Brockhill Park School, Christ Church School in Ashford, Marsh Academy and Pent Valley Technology College participated in the workshop which took place on Wednesday 22 October at the Computing Laboratory, University of Kent.

Another session introduced pupils to the range of ICT skills similar to those found in industry where a combination of business and technical expertise is typically required. Led by Kirsty Dawson from GTI, pupils were



**Second year university student helpers at the workshop**

asked to invent and market the next big thing in mobile phones, a fantasy phone. The pupils worked in teams and were assisted by second year students from the Computing Laboratory. They used brainstorming techniques to identify new ways in which a mobile phone could be used, incorporating novel features and using cutting-edge technologies, which would result in a product likely to be highly desirable and successful in the market place.

Each team then presented their ideas to the other groups and a prize was awarded to the team with the most impressive product pitch. The challenge required pupils to use a combination of communication skills, presentation skills, team working and creativity which are all valuable transferable skills in today's workplace.

E-skills UK co-ordinator, Caralyn Banham, provided the final session of the day with a presentation, 'Next Steps into IT', covering the various routes into IT from apprenticeships through to university degrees.

Pupils were also able to experience university life for a day, taking lunch in a college dining hall and exploring the campus.



**Pupils collaborating in a workshop activity**

Pupils used the Greenfoot interactive programming environment to learn the principles of computer programming by developing animated Java programs. Greenfoot was developed at Kent by Professor Michael Kölling who also led the session. The system is very successful at motivating school children and helps to teach real computer programming concepts in an easy and appealing way. By the end of the session pupils had succeeded in creating an animated computer game of their own design.



**Caralyn Banham from e-skills UK**



**Workshop contributors: left to right - Kirsty Dawson (GTI), Prof. Simon Thompson, Prof. Michael Kölling and Janet Linington**

The Greenfoot system and Java are freely available as downloads from the Greenfoot web site at [www.greenfoot.org](http://www.greenfoot.org). The web site provides many other facilities including tutorials, a chat room and a gallery of computer games which have been designed by Greenfoot users and uploaded to the site for everyone to share.

## Kent wins three 'Best' awards at CPA conference



**Carl Ritson**

Members of the Computing Laboratory at Kent excelled at the recent Communicating Process Architectures conference, hosted by the University of York, picking up 'best' awards in three categories. Carl Ritson, a research associate, and Jon Simpson, a research student, both from the Systems Architecture research group, picked up the 'best paper' award, for their work on Virtual Machine Based Debugging for occam-pi.

Neil Brown additionally won the 'best student paper' award, for his joint work with Marc Smith (Vassar College, USA) on Representation and Implementation of CSP and VCR Traces.

Research students Eric Bonnici and Neil Brown, of the Systems Architecture research group, won the 'best fringe presentation' awards, for their respective work on Ant Colony Simulation and Invisible Processes.



**Jon Simpson**

## Science Departments Lead the Way on Knowledge Transfer Projects

Four of the science departments have recently been awarded funding for four projects under the Knowledge Transfer Partnership (KTPs) scheme. KTP projects are part-funded between the Government and the participating company and are designed to support and promote collaboration and cooperation between businesses and the UK knowledge base. They enable the transfer of knowledge and technology to develop and improve a business's chance of success.

With support from Kent Innovation and Enterprise, the Department of Electronics, the School of Physical Sciences and the Department of Biosciences are each undertaking the recruitment of a KTP associate, a recently graduated person who will implement the project on behalf of the individual project team. The Computing Laboratory and the Department of Electronics are two departments which are already experienced in successfully bidding for KTP funded projects and that currently have projects running within their departments. This increase of KTP projects within the Faculty is also in line with the Government's policy to increase the number of funded KTP projects over the next three years.

Electronic Engineers, Winston Waller and Dr John Batchelor are working with Whitstable-based company, Martec, to recruit the project's associate. Martec specialises in the design and manufacture of hermetic connectors, glass to metal seals and ceramic feed-throughs for aerospace, military, automotive, marine, medical and industrial applications. The partnership involves working together to develop a wireless telemetry link for monitoring and taking measurements in extreme and hazardous environments. The project will run over two years and is supported by a £120,000 budget.

Over the past year Winston has also been

working with another electronics engineer, Peter Lee on a KTP project with C-Scope International Limited which develops and manufactures a range of hobby metal detectors and a separate range of pipe and cable locators used to find underground services (water pipes, gas pipes, and electricity cables) prior to excavation of a construction site. The project objective is the development of a Digital Signal Processing (DSP) based Cable Location and Metal Detection System to initiate a new product generation and introduce DSP technology into the company. The project is supported by a £80,000 budget and will be completed in 2009.

Professor of Physical Chemistry, Alan Chadwick along with chemist, Dr Maria Alfredsson, and physicist Dr Gavin Mountjoy, are working with Hilger Crystals Limited based in Margate. The project aim is to establish the origin of afterglow in crystal scintillators and develop an efficient, high volume crystal growth process for single crystal scintillators, which are used for infra red and X-ray detection applications. The academics in the School of Physical Sciences will work with their industrial partners to help them to recognize the fundamental questions related to the technological processes that will lead to a greater understanding of the how to develop new product. The project will run over 30-months with a budget of £150,000.

Dr Mark Smales, Reader in Mammalian Biotechnology in the Department of

Laboratories within Universities, Pharmaceutical and Forensic Science companies. The various devices are used for transporting, holding or the collection of DNA and associated molecules. The aims of the project are the commercialisation and further development into other medical applications of a unique electroporation licensed technology that efficiently transports DNA/ molecules into cells for cancer research. The project will run over two years and is supported by a £126,000 budget.



Mark Smales

Professor Simon Thompson from the Computing Laboratory is working with Swedish company Erlang Training & Consulting. This is a niche company specialising in the open source programming language Erlang (developed by Ericsson) and its middleware OTP, the Open Telecom Platform, which together form an environment for the rapid development of distributed real-time fault tolerant software applications. Erlang's areas of operation include training, consulting, contracting, recruitment and IT systems development. The aims of the project are to better develop generic software components and adopt refactoring into its development process to speed up the deployment of new systems. It will run over two years and is supported by a £109,000, budget.



Simon Thompson

**For more information how the KTP funding scheme works or how to develop a KTP partnership please contact Clare Witcher or Christina Schönleber at Kent Innovation and Enterprise on 01227 827376**



Right to left above, Maria Alfredsson, Gavin Mountjoy and Alan Chadwick.

Biosciences is working with Cell Projects Limited which designs and sells consumable sampling devices such as DNA swabs, DNA isolation kits and cuvettes used in Cancer Research and Forensics



Electronics Engineers, clockwise, Winston Waller, John Batchelor and Peter Lee

## Daphne Jackson Fellowship award enables Scientist to return to career in Medical Image Analysis



**Joanna Mathias who has been awarded a Daphne Jackson Fellowship**

Joanna Mathias in the Department of Electronics has been awarded a Daphne Jackson Academic Fellowship of £42,000 to enable her to update her knowledge and skills as a researcher in the field of Medical Image Analysis. She will be working on a project entitled: "Development and enhancement of an automated system to investigate dyspraxic children". Joanna hopes that this will allow her to return eventually to an academic career in Science, Engineering and Technology (SET) following an 8-year career break to have children.

From a very early stage, Joanna's interest in research and Medical Physics was the driving force behind

an established and highly rewarding career in SET. Joanna completed her studies the University of Sheffield with a First Class Honours and PhD Degree in Electronic and Electrical Engineering. She then gained 3 years' postdoctoral research experience first at the Harvard-MIT Division of Health Sciences and Technology in the USA then at the University of Sussex. When her research was completed in 1994, Joanna became a lecturer in Medical Physics and stayed for 4 years at University College London, until she had her first child.

After becoming a mother, Joanna decided to take a career break which lasted over 8 years, until her second

daughter started school. During this period Joanna took time to review her interests and consider the next phase of her career. As part of the review process, she secured a short-term, part-time post as Research Administrator within the Department of Electronics at the University of Kent. This position provided an opportunity for Joanna to gain firsthand experience of the developments that had occurred within the academic environment. She found this renewed her appreciation of the challenges, rewards and exciting atmosphere of a SET research and teaching community. Joanna's primary interest and motivation remains in the area of medical applications of SET and ultimately, she wishes to resume academic research activity in the important and highly relevant field of Medical Image Analysis.

With this aim in mind, Joanna was advised to apply for a Daphne Jackson Academic Fellowship. The Fellowship Scheme for Women Returners to Science and Engineering was set up by Professor Daphne Jackson in 1985. On Daphne's untimely death, the Scheme became the Trust in 1992. The Daphne Jackson Trust enables scientists, engineers and IT specialists to return to work after career breaks. Specifically, Fellowships are designed to improve employability through updating of skills and knowledge. As a Daphne Jackson Research Fellow, Joanna will be carrying out a research project with Professor Michael Fairhurst in the Department of Electronics over two years, as well as attending selected Undergraduate and MSc lectures, conferences and workshops.

Joanna said "I am very grateful to the Daphne Jackson Trust for their support and also to the University of Kent who have so generously agreed to fund the post. I am particularly grateful to Professor Fairhurst who enthusiastically gave of his time to help compose the research component of the Fellowship application. I am now tremendously excited to be about to embark on this next stage of my career. The Department of Electronics and Professor Michael Fairhurst, have always provided an enormously supportive work environment."



**Professor Mike Fairhurst, Department of Electronics**

## Meet the Scientist

This month, we meet Dr Marcus Allen who is a Lecturer in Cell and Developmental Biology in the Department of Biosciences. After graduating with a degree at the University of Leicester, he went to the University of Warwick to study for his PhD, after which he stayed on to until 1998 as a Postdoctoral Fellow. He then spent two years at the University of Massachusetts as a postdoctoral research associate. He returned to the UK and spent a year at the University of Sussex before joining Kent in 2001. In 2003, he was awarded his Post Graduate Certificate in Higher Education and has recently been elected as a Fellow of the Institute of Biology.



**Dr Marcus Allen, Lecturer in Cell and Developmental Biology in the Department of Biosciences.**

*"How did you first get into science?"*

As a youngster I was a "why?" child who would keep asking questions until the exasperated adult would say "I just don't know!" or "that's just the way it is!" I was naturally interested in science and nature, and for my 6<sup>th</sup> birthday I received the present that I had wanted for months - an anatomical model of the whole body which included the skeleton and all the organs! As a teenager I was further inspired to study Biology after hearing a fantastic lecture by the famous developmental biologist Lewis Wolpert.

*"What is the focus of your current research?"*

I am interested in how the nervous system develops and how neurones form synapses with other neurones to build neural circuits. In particular I am interested in the role of the cytoskeleton (the cells "skeleton") in these processes. This is a dynamic network of proteins that has many functions in neurones and other cell types. We use the fruit fly, *Drosophila melanogaster*, as a model system because of the very powerful molecular genetic techniques that can be used to study its development and the relative simplicity of its nervous system. We have a particular focus on the formation of an adult neural circuit that mediates the fly's "escape" response to predators, newspapers etc and investigate this using genetics, molecular biology, cell biology and electrophysiology.

*"Can you tell us about your current research group, what the group is working on and the purpose of the research?"*

Liz Coates, who has nearly finished her studies for her PhD, is investigating a cytoskeletal gene in *Drosophila* that, at present, nobody knows the function of in the developing fly. This is a joint project with Dr Anthony Baines in Biosciences whose group identified the human counterpart of this gene. By investigating the gene in both invertebrates and mammals we will be able to gain a good understanding of the function of this gene in all organisms. Sasha Sandher, who has just finished a MSc and is starting an PhD, is investigating a gene that seems to regulate the cytoskeleton during the formation of central synapses within the escape circuit. I also still manage to do some experimental work in the laboratory and, with a Leverhulme Trust Fellowship, have just completed a genetic screen in which I systematically removed genes from the neurones of the escape circuit during development and was able to assay whether this had any effect on its function in the adult flies. From this the lab now has some interesting genes on which to base further studies.

*"How has research in your area changed over the past few years?"*

Like many areas of the Biosciences there have been rapid changes and we are now in the "-omics" era. Nobody clones and sequences genes any more! In fact, twelve related species of *Drosophila* have now had their complete genomes sequenced allowing comparative genomic studies. There are tools to eliminate the function of all of the 15,000 or so predicted genes in *Drosophila* and now multiple genes can be systematically taken out or put back into cells within the organism. This is an exciting time and we are now in a position to ask some very complex biological questions. Of course, the answers may be very complex as well!!

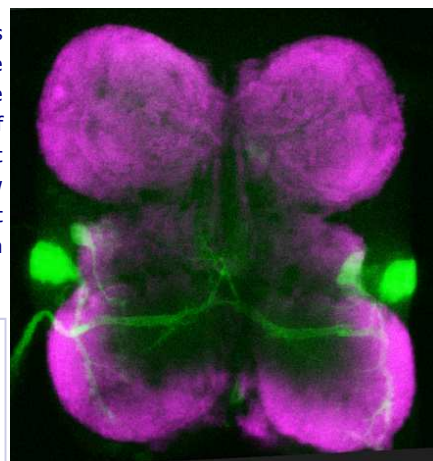
*"What do you consider is the most significant accomplishment in research in your area in the last few years?"*

I think there are two significant accomplishments; first, it was always thought that the neurones and nervous system of *Drosophila* were too small to be able to label neurones and make electrophysiological recordings of neural activity. In the last few years several techniques have been developed to label and genetically manipulate neurones in the fly and electrophysiological techniques are now used by many labs studying the neurobiology of *Drosophila*. Secondly, the cytoskeleton had traditionally been thought of as a static structure that just helps maintain the shape of a cell. Recent research has revealed that this is far from the truth and that the cytoskeleton is very dynamic and has pivotal roles in a myriad of cellular processes.

*"What kind of challenges do you see lie ahead in your specialism in the future?"*

The greatest challenge is undoubtedly working out how the brain is built. Even in a simple nervous system such as that of *Drosophila*, we are still just scratching at the surface at how complex neural networks are built and function to control even relatively simple behaviours.

**The picture shows the thoracic ganglia from an adult fly. The neurone in green is part of the adult "escape" circuitry.**



## Recent Published Papers

### Department of Electronics

**Bobrowicz, A.** "Tension: Between Art and Entertainment" (2008). 6th International Symposium of Interactive Media Design, Istanbul, 15th-17th October 2008.

**Sanz-Izquierdo, B.,** Ekpo, L.T., Robertson, J.-B., **Parker, E.A., Batchelor, J.C.** (2008) "Wideband EM Architecture of Buildings: Six-to-One Dual-Passband Filter for Indoor Wireless". *Electronics Letters*, **44**, 1268-1269.

**Sanz-Izquierdo, B.,** Huang, F., **Batchelor, J.C.** Sobhy, M.I. (2008) "Study of Single and Dual Band Wearable Metallic Button Antennas for Personal Area Networks". *Time Domain Methods in Electrodynamics*, Springer-Verlag, 173-187, ISBN 978-3-540-68766-5.

### The School of Physical Sciences

Hawelek L, Brodka A, **Dore JC**, Honkimäki V, Burian A. "Fullerene-like structure of activated carbons" (2008). *Diamond & Related Materials*, **17**, 1633-1638.

Hawelek L, Brodka A, **Dore JC**, Honkimäki V, Tomita S, Burian A. "Structural studies of nanodiamond by high-energy X-ray diffraction" (2008). *Diamond & Related Materials*, **17**, 1186-1193.

Savin SLP, Berko A, Blacklocks AN, Edwards W, **Chadwick AV**. "The applications of X-ray absorption spectroscopy in the study of nanocrystalline materials and electrochemical systems" (2008). *Comptes Rendus Chimie*, 1-16.

O'Dell LA, Savin SLP, **Chadwick AV, Smith ME**. "Structural characterisation of the silica and alumina Zener pinning phases in nanocrystalline CeO<sub>2</sub> by <sup>29</sup>Si and <sup>27</sup>Al nuclear magnetic resonance" (2008). *Journal of Nanoparticle Research*, **10**, 1263-1270.

**Zhang F**, Skoda MWA, Jacobs RMJ, Zorn S, Martin RA, Martin CM, Clark GF, Weggler S, Hildebrandt A, Kohlbacher O, Schreiber F. "Reentrant Condensation of Proteins in Solution Induced by Multivalent Counterions" (2008). *Physical Review Letters*, **101**, 148101-4.

**Mallion R.B.**, "Topological Ring-Currents in Condensed Benzenoid Hydrocarbons" (2008). *Croatica Chemica Acta*, **81**, 227-246.

Carta D, Loche D, **Mountjoy G**, Navarra G, Corrias A. "NiFe<sub>2</sub>O<sub>4</sub> Nanoparticles Dispersed in an Aerogel Silica Matrix: An X-ray Absorption Study" (2008). *Journal of Physical Chemistry*, **112**, 15623-15630.

Gozzi D, Latini A, Carta, D, Corrias A, Falqui A, **Mountjoy G**, Lazzarini L, Salviati G, Fiddy SG. "Lanthanide-Doped Scandia and Ytria Cathodoluminescent Films: A Comparative Study" (2008). *Chemistry of Materials*, **20**, 5666-5674.

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## Recent Published Papers

### Computing Laboratory

Sanders, K., Richards, B., Mostrom, J. E., Almstrum, Edwards, V. S., **Fincher, S.**, Gunion, K., Hall, M., Hanks B., and Lonergan, S. "DCER: Sharing Empirical Computer Science Education Data" (2008) In Proceedings of the Fourth International Workshop on Computing Education Research (ICER), ACM, August 2008,137-148.

Delaney, A., Taylor J. and **Thompson, S.** "Spider Diagrams of Order and a Hierarchy of Star-Free Regular Languages", in Diagrammatic Representation and Inference: 5th International Conference, Diagrams (2008) Eds. Gem Stapleton and John Howse and John Lee. Lecture Notes in Computer Science series number 5223., Herrsching, Germany, September 19-21, 2008, 172-187.

Pears, A., **Fincher, S.**, Adams, R. and Daniels, M. "Stepping stones:Capacity building in engineering education" (2008) In the 38th Annual Frontiers in Education (FIE) Conference, October 2008, T3F.

Huiqing, Li, **Thompson, Simon**, Orosz, George and Toth, Melinda. "Refactoring with Wrangler, updated: Data and process refactorings, and integration with Eclipse". (2008) In Zoltan Horvath and Tee Teoh, editors, Proceedings of the Seventh ACM SIGPLAN Erlang Workshop, ACM Press, September 2008, 12.

Rodgers, P., **Zhang, L.**, Stapleton, G. and Fish, A. "Embedding wellformed euler diagrams" (2008) In Information Visualisation, IV '08. 12th International Conference, IEEE Computer Society, IEEE, July 2008, 585 - 593.

Stapleton, G., Fish, A. and Rodgers, P. "Abstract Euler Diagram Isomorphism". (2008) In 14th International Conference on Distributed Multimedia Systems, Visual Languages and Computing. Knowledge Systems Institute, September 2008.

Rodgers, P., **Zhang, L.** and Fish, A. "General Euler Diagram Generation." (2008) In Proceeding Diagrams 2008, LNCS (LNAI) 5223, 13-27.

Stapleton, G., Howse, J., Rodgers, P. and **Zhang, L.** "Generating Euler Diagrams from Existing Layouts" (2008) In Proceedings of Layout of (Software) Engineering Diagrams, volume 13. Electronic Communications of the EASST, September 2008.

### Department of Biosciences

**Tuite, Mick**, Stjanoski, Klement, Ness, Frederique, **Merritt, Gloria** and Koloteva-Levine, Nadejda . Biochem. Soc. Trans. (2008) 36, 1083-1087 "Cellular factors important for the de novo formation of yeast prions".

Studte, P., Zink, S., Jablonowski, D., Bär, C., **von der Haar, T., Tuite, M.F.** & Schaffrath, R. (2008) Molecular Microbiology 69, 1266-1277. "tRNA and protein methylase complexes mediate zymocin toxicity in yeast".

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## Seminars

Date	Day	Time	Subject	Lecturer and Title	Location
3	Mon	2.30pm	Pure & Applied maths	Alfredo Deano (Cambridge)	Maths LT
3	Mon	4pm	Theoretical Computer Science Group	Andy King, Grant Proposal Review	S110B
3	Mon	4pm	Biosciences	Dr. Paola Vagnarelli - Wellcome Trust Centre for Cell Biology, University of Edinburgh, Condensin and PP1 regulate chromosome structure and dynamics in mitosis	Biosciences LT
5	Wed	2pm	SPS	Haida Liang, School of Science and Technology, Nottingham Trent University, Optical Coherence Tomography for Archaeology, Art History and Conservation	Ingram 110
6	Thur	2pm	Statistics	Professor Richard Boys (University of Newcastle upon Tyne), Bayesian Emulation and Calibration of a Stochastic Computer Model of Mitochondrial DNA Deletions in Substantia Nigra Neurons	Maths LT
7	Fri	2-4pm	Electronics	Seminar 1, Challenges and Reforms on China Engineering Education Seminar 2, Broadband Mobile Communications Technologies in China Professor Zhenhui TAN, Past Vice-Chancellor, Beijing Jiaotong University, China	Electronic Eng Laboratory LT
7	Fri	3pm	Pure & Applied maths	Al Kasprzyk (Kent)	Maths LT
10	Mon	2.30pm	Pure & Applied maths	Tom Claey's (Brunel)	Maths LT
10	Mon	4pm	Theoretical Computer Science Group	Rodolfo Gomez	S110B
10	Mon	4pm	Biosciences	Dr. Jon Lane - Department of Biochemistry, University of Bristol, Assembly and function of the apoptotic microtubule network	Biosciences LT
11	Tues	2pm	Applied & Interdisciplinary Informatics Group	Dominique Chu	S110B
12	Wed	2pm	SPS	Stephen Ogden, Faculty Learning Technologist (STMS & KBS), Introduction to Moodle	Ingram 110
13	Thur	2pm	Statistics	Professor Rosemary Bailey (Queen Mary, University of London), Efficient Design for Two-colour Microarray Experiments	Maths LT
14	Fri	3pm	Pure & Applied maths	Clare Dunning (Kent)	Maths LT
17	Mon	2.30pm	Pure & Applied maths	Sinead Lyle (UEA)	Maths LT
17	Mon	4pm	Biosciences	Professor Simon Foster - Department of Molecular Biology and Biotechnology, University of Sheffield, Staphylococcus aureus: virulence, carriage and fighting the fat	Biosciences LT
19	Wed	2pm	SPS	Dr Steve Matcher, Lecturer in Biomedical Engineering, The Kroto Institute, University of Sheffield, Title TBA	Ingram 110
20	Thur	2pm	Statistics	Dr Ajay Jasra (Imperial College London), Stochastic Boosting	Maths LT
21	Fri	3pm	Pure & Applied maths	Ashley Hobson (Kent)	Maths LT
24	Mon	2.30pm	Pure & Applied maths	Cristina Zambon (Durham)	Maths LT
24	Mon	4pm	Biosciences	Professor Andrew T. Smith - Department of Chemistry and Biochemistry, University of Sussex, Structural requirements for lignin peroxidase activity: Engineering a redox active Trp in Coprinus cinereus peroxidase	Biosciences LT
25	Tues	2pm	Applied & Interdisciplinary Informatics Group	Maria Schilstra (Hertfordshire)	S110B

## Recent Grants Awarded

### Department of Biosciences

Professor Peter Jeffries has been awarded £51,720 for a studentship for Louisa Robinson-Boyer by East Malling Research.

Dr Mark Smales has been awarded £84,598 for a KTP Project 6984 with Cell Projects Limited by Momenta.

Dr Mark Smales has been awarded £41,668 for a KTP Project 6984 with Cell Projects Limited by Cell Projects Ltd.

### Institute of Mathematics, Statistics and Actuarial Science

Dr Gavin Brown has been awarded £1050 for an international outgoing visit connected with the project entitled 'Pluricanonical rings of threefolds of general type' by the Royal Society,

Professor Byron Morgan has been awarded £9,349.50 for Consultancy for the Biometric Department by Pfizer.

Professor Byron Morgan has been awarded £641 to travel to an International Biometric Conference in Ireland by the Ryal Society.

### Department of Electronics

Professor Mike Fairhurst and Dr Joanna Mathias have been awarded £44,444 for a Daphne Jackson Fellowship for a project entitled 'Development and enhancement of an automated system to investigate dyspraxic children by the Daphne Jackson Trust.

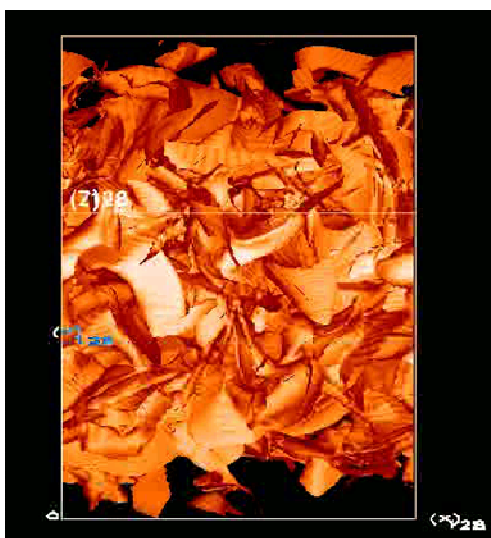
### School of Physical Sciences

Professor Mark Burchell has been awarded £15,048 for Hydroclave Laboratory curing by Lockheed Martin UK INSYS Limited.

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## Recycled leaves in the autumn of our Galaxy



What happens when you take a box of molecules and shake it up? This question became of interest to Professor Michael Smith after working on the problem of how stars still manage to form in our old Universe. Ten years ago, he discovered with his collaborators that clouds in our galaxy are predominantly recycled with only a small fraction getting bound up within new stars. Hence the clouds are ephemeral, like the daffodils described by William Wordsworth.

The material survives until now. However, for stars to be simultaneously forming, some of this gas must transform back into molecules despite being dispersed by the turbulent shaking. The

supercomputer simulation of this problem indeed demonstrates that molecules remain in the form of thin sheets, appearing as orange leaves in the displayed figure. The simulation was performed on an SGI Origin2000 within a box containing two million cells.

The full movie can be watched at: <http://astro.kent.ac.uk/mds/Research/Turbo/turbulence.html>

For more details contact Prof Michael Smith or consult:

<http://astro.kent.ac.uk/mds/turbulence.html>

Professor Michael Smith, Professor of Astronomy.

School of Physical Sciences

### Café Scientifique Ye Olde Beverlie, St Stephen's Green, Canterbury Tuesday 11th November 2008

#### Professor Darren Griffin: Designer Babies part deux: This time it's personal

The definition of a "Designer baby" is "a baby that has been designed by its future parents to have all the desirable genetic traits that the parents would wish for - presumably to give the resulting child the best possible start and advantages in life." The purpose of this talk will be to explore some of the facts that surround this much-vaunted media phrase and, in the process, dispel some of the myths that surround it. The practices of Preimplantation Genetic Diagnosis (PGD), cloning and germline therapy will be introduced along with an appraisal of how the practicalities of these procedures justify the hype that accompanies them. Finally, I will explore the most practical means through which we can all try to have our own designer babies.

Darren Griffin is Professor of Genetics in the Department of Biosciences. In the early 1990s he collaborated with Professors Alan Handyside and Robert Winston and became the first person to use a technique called "FISH" to diagnose sex in IVF embryos. This is a technique used to the present day and Professor Griffin's work has taken him into the genetics of human sperm, birds, fatness in pigs, sex determination and computer-based learning. More recently, again in collaboration with Alan Handyside, he has been a major contributor to the test dubbed the "Genetic MoT for embryos."



Professor Darren Griffin, Professor of Genetics, Department of Biosciences

University of  
**Kent**

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

### Café Scientifique in 2008/9

Dec 9, 2008

Prof Martin Warren, Department of Biosciences: The Medical Mystery of King George III

Jan 13, 2009

TBA

Feb 10, 2009

TBA

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