Volume 1, issue 3

University of Kent

Sciences @ Kent

Christmas and New Year Issue
December 2007/January 2008

In this Issue:

Congregations Ceremonies P5

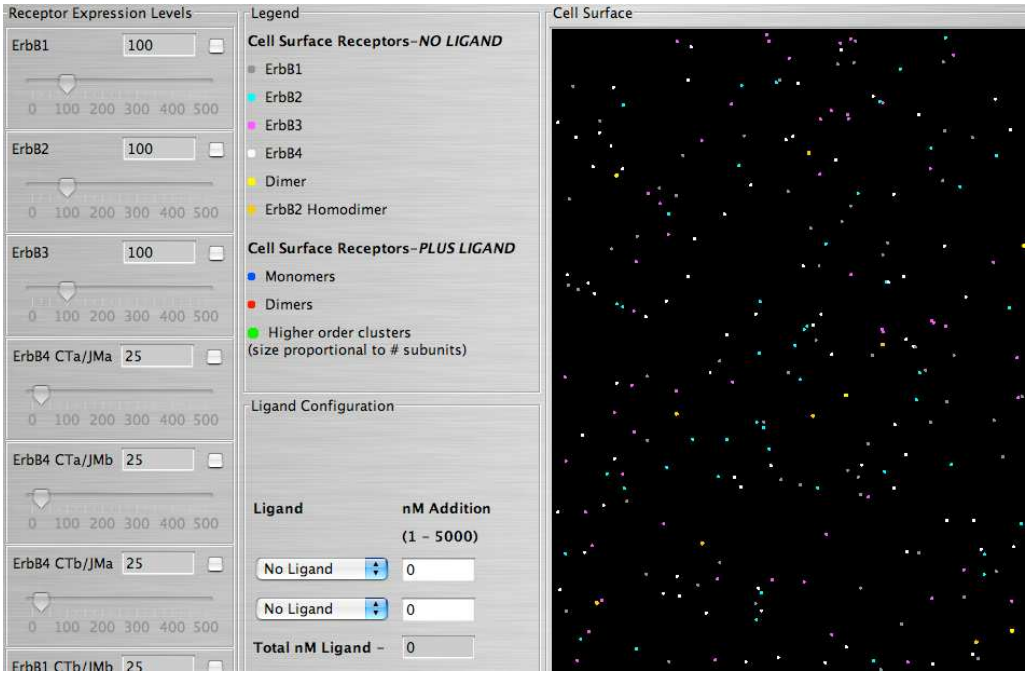
Page 11

View from the Dean's Office

Welcome to this bumper Xmas issue of Sciences@Kent. We have been overwhelmed with the response to our request for articles and intend to move to a regular monthly issue come February. Inside you will find examples of staff who have made the news in terms of success, in teaching, research and enterprise. It also reflects another record year for new research grants and contracts for the Faculty with over £9M in new awards for 2006/7 (representing 58% of the University total). We also highlight the diversity of scientific activity within the Faculty from large and distant star clusters to small and local bacterial threats to health. We are also keen to showcase our publications, particularly relevant as November saw the publication of the consultation document on how the new Research Excellence Framework (REF) will work for science subjects from 2009 onwards. Please visit the hefce website. Please visit the website (http://www.hefce.ac.uk/news/hefce/2007/ref.asp) and feedback comments to your Head of Department or directly to me. The RAE (Research Assessment Exercise) is dead...long live the REF!

Merry Christmas to all our readers
Peter

Centre for Biomedical Informatics Image of the month



This month's image represents the work of PhD student, Emmet McIntyre, who is jointly supervised by Dr. Colin Johnson, Senior Lecturer in the Computing Laboratory and Professor Bill Gullick, Professor of Cancer Biology and Scientific Advisor for the Kent Cancer Trust. The image is taken from a simulation developed by Emmet, of Epidermal Growth Factor receptor clustering, a phenomenon important in the early stages of some cancers.
Further details of Dr Colin Johnson and his work can be found on page 10 where he features as this month's guest scientist.

Centre for BioMedical Informatics BMI

Human Health, Agriculture and the Environment to Benefit from Bioengineering Project

Martin Warren, Professor of Biochemistry in the Department of Biosciences, has been awarded over £750,000 from the Biotechnology and Biological Sciences Research Council for research on 'bioengineering' of complex metabolic pathways. The study could ultimately lead to identifying methods on how to deliver improved health benefits for humans and how to develop important new technologies and products for agriculture and bioremediation (the use of plants or microorganisms to clean up pollution or contaminated material).

Professor Martin Warren

This research may substantially benefit people such as the elderly and those with a vitamin B12 deficiency – a state that is associated with neurological disorders, megablastic anaemia and developmental problems in unborn babies.

This study will investigate biochemical pathways, how they are controlled and how they can be engineered to enhance the metabolic ability of the host cell. It will explore the limitations and consequences of engineering complex chemical reactions carried out by a cell in different organisms. Professor Warren said: "Vitamin B12 is unique among the vitamins in that it is the only one whose synthesis is restricted solely to bacteria. We plan to take the genetic software that allows bacteria to make vitamin B12 and transfer it into bacteria that are unable to make B12, as well as into yeast and a higher plant, thereby conferring upon these organisms the ability to make this essential nutrient".

For this project Professor Warren and his team will take advantage of the latest developments and technologies in metabolic engineering.

Title of 'Senior Fellow' conferred on Kent Academic

Sally Fincher, Senior Lecturer in the Computing Laboratory has been conferred with the title of 'Senior Fellow' by the Higher Education Academy (HEA).

This is the first time that Senior Fellows have been chosen by the HEA and Sally is one of only fourteen academics throughout the country who have been recognised as providing outstanding leadership in teaching and supporting the student learning experience in higher education.

The title of Senior Fellow was conferred by a committee of Vice-Principals, Deputy Vice-Chancellors and Pro-Vice Chancellors, chaired by Professor Simon van Heyningen, Vice-Principal (Teaching and Learning) at the University of Edinburgh.

Sally Fincher
Senior Lecturer and Senior Fellow, Computing Laboratory

Professor of Mathematics heading to Australia

Professor Liz Mansfield, on the beach during a break from a recent conference in Norway

Professor of Mathematics, Elizabeth Mansfield from the Institute of Mathematics, Statistics and Actuarial Science leaves in January to spend three months as a Distinguished Fellow at the Institute of Advanced Studies, LaTrobe University, Australia. She will be working with Professor Reinout Quispel on new generation numerical methods that incorporate the geometry of the physical model into the number crunching. Potential applications include computer graphics, which have to emulate the correct physics in order to be convincing to human viewers.

Elizabeth's research interest is the development of algorithms for analysis, in the context of symbolic computation and increasingly numerical computation. She has recently published papers on the discrete variational calculus and moving frames.

Star Cluster Discovered

A team of astronomers including Dr Dirk Froebrich, Lecturer in Astronomy and Astrophysics, has discovered a closely packed group of about 100,000 starts located 30,000 light years away in the inner parts of our galaxy.

This previously unknown globular cluster, detected with the aid of the European Southern Observatory's New Technology Telescope at La Silla, Chile, is about seven light years wide.

The newly identified cluster, about seven miles wide and ten billion years old

ESO PR Photo 12/07 'The newly identified star cluster'. Final image processing

Investigation of Evolutionary Processes Using Computer Simulation

Dr Dominique Chu, an Academic Fellow in the Computing Laboratory, has been awarded an £18,000 grant from the Engineering and Physical Sciences Research Council (EPSRC) to explore the use of computer simulation in investigating evolutionary processes within organisms. The project, entitled "Evolution of group properties via individual level selection" will concentrate on the evolution of individual level traits that are selectively neutral at the level of the individual but not at the level of the group. It will run for one year from November 2007.

"...the first step in a longer strategy to develop realistic evolutionary computer models..."

The project involves building models that allow the evolution of organisms to be replayed in computer programs and continues to build on research work currently being undertaken by Dominique in collaboration with Dr Ian Blomfield, Senior Lecturer in Biosciences. In particular, it will make it possible to test hypotheses about how evolution works by repeating simulations of evolutionary processes over and over again in the computer. The specific system that Dominique is looking at is a hair-like structure on bacteria such as *Escherichia coli* (*E. coli*) which have been found to cause diseases. Dominique will develop computer models that will explain why these hair-like structures have evolved and in which sense they are adaptive.

Dominique said:
"This project is the first step in a longer strategy to develop realistic evolutionary computer models that allow computer-based hypothesis testing about evolutionary scenarios".

Dr Dominique Chu, Computing Laboratory

The Sky's the Limit for Kent Students

XL Airways, a Gatwick based charter airline providing services to over 50 destinations from 11 airports in the UK to Europe, the Middle East, Asia and North America has presented second year computing students with a project based around a scheduling problem to which they are tasked with finding a solution.
The company operates 26 aircraft and students must develop timetables, taking into account the availability of resources to meet the timetable requirements as efficiently as possible in terms of human resource, cost, rules and regulations concerning flying hours and the need for pilots to be in the right place and time.
The project is the brainchild of Kent graduate, Daniel Hiller, the IT Business Architect of XL Airways. Having taken part in group projects during his student days, he was keen to inject a touch of realism into the process.
Daniel Hiller said "This is a really exciting opportunity for our industry to work with academia and the undergraduate population which I see developing into a long term partnership. By gaining an insight into XL's business we hope that students will gain an appreciation for the leisure industry that could develop into future employment opportunities". This novel approach to project work aims to give students experience of the commercial world which will make them more attractive to future employers.

Daniel Hiller, XL Airways Project Coordinator

Reader in Statistics Appointed as Deputy Head

Martin Ridout, Reader in Statistics at the Institute of Mathematics, Statistics and Actuarial Science has recently been appointed as Deputy Head of Department.
His research interests include methods for discrete data, transform inversion methods, stochastic modelling and applications in biosciences and ecology.
Current collaborative work includes 'Stochastic models for yeast prions' with Professor Mick Tuite in Biosciences and Professor Byron Morgan, Professor of Applied Statistics and 'Methods of analysing activity patterns of cryptic mammal species from camera-trap data' with Dr Matthew Linkie from the Durrell Institute of Conservation and Ecology (DICE).
Martin currently supervises two PhD students (jointly with Prof Byron Morgan) who are working on problems in cell biology and plant population dynamics. He also acts as Course Tutor for the MSc in Statistics.

Martin Ridout, newly appointed Deputy Director of the Institute of Mathematics, Statistics & Actuarial Science

Leading Multinationals Bid to Attract Kent's Best Industrial Placement Students

Morgan Stanley, one of the world's largest investment banks, and Siemens, one of Europe's largest engineering conglomerates, are among some of the leading multinational companies that are currently bidding to attract Kent's computing students to their industrial placement schemes.

Throughout the Autumn, the Computing Laboratory has been hosting the industrial placement scheme presentations which also include those made by Lehman Brothers (global investment bank), Intel (the world's largest semiconductor company), Eli Lilly (global pharmaceuticals), IBM (computer technology and consulting corporation and largest information technology employer in the world), Nexor (security products provider for defence customers worldwide) and Accenture Technology Services (part of one of the largest management consulting firms in the world).

The Autumn presentations provide Computing students with an insight into the companies, their core business activities and the career opportunities offered to students. Undergraduate students who are actively seeking placements are given details of the industrial placement schemes on offer for 2008. They also meet current or former industrial placement students who provide personal accounts of their expectations when they began the placement and the realism of their experiences.

Current placement student with Morgan Stanley, Patrick Smith (Computer Science with a year in Industry), giving a personal view on the benefits of his industrial placement.

Kent has developed fertile links with a number of multinational companies and has achieved impressive high conversion rates for graduate students. Once offered an industrial placement as part of their degree, students are given the opportunity to expose their talents in a commercial context often resulting in successful recruitment applications.

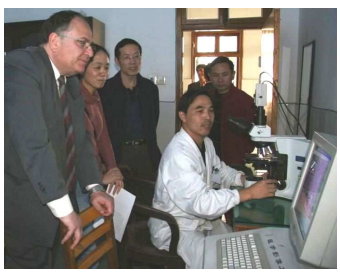
Placements Co-ordinator Nina Dietrich said, "The visits have made our students far more aware of the opportunities open to them and have helped them to make informed decisions about which companies they should apply to".

Chris Edmonds, Head of European Enterprise Computing & Enterprise Telecommunications at Morgan Stanley, talking to students about the placement scheme.

Leading Heart Professor establishes links in the Far East

Professor Ghazwan Butrous (right)

Ghazwan Butrous, Honorary Professor of Cardiopulmonary Sciences at the Kent Institute of Medicine and Health Sciences and Managing Director of the Pulmonary Vascular Research Institute (PVRI) travelled to China to attend the inauguration of the China Centre in Beijing. The Centre will be a research and educational body under the auspices of the PVRI. The Institute is an international academic medical centre that assembles world leaders in pulmonary vascular disease in thematic research and focuses on underserved populations of the world. The PVRI has its administrative office at the Kent Institute of Medicine and Health Sciences.



As part of his role as PVRI Managing Director, Professor Butrous is organising an international research programme for the assessment of the risk of pulmonary vascular diseases due to schistosoma infection. As part of this process, he visited the China World Health Organisation Collaborating Centre for Research & Control on Schistosomiasis in the Lake Region (Dangting Lake), Yueyang in Hunan province (in central China) and discussed the involvement of China Centres in the programme.

After leaving China, Professor Butrous travelled to Dubai for the first Joint Saudi Thoracic Society and PVRI symposium where he presented two invited talks on "The effect of infectious diseases on pulmonary hypertension" and "The pulmonary vascular disease in adult congenital heart disease".

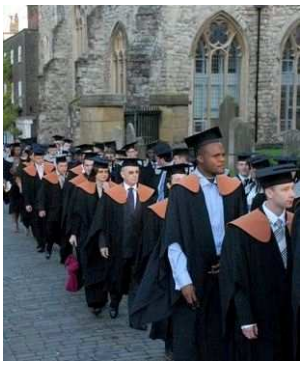
Before returning to the UK, he travelled to Australia where he was invited to give a lecture on Cardiology at the Frontiers in Sydney. The lecture is about Drug induced Cardiac Arrhythmia and focuses on the issue of pro-arrhythmias and clinical and pathological feature of torsade de pointes, a lethal arrhythmia associated with Long QT Syndrome. Before the lecture, Professor Butrous visited the Electrophysiology and Biophysics laboratories at the Victor Chang Cardiac Research Institute in Sydney where he met with postgraduate and research fellows.

Autumn Congregations Ceremonies

Graduands from the Faculty of Science, Technology and Medical Studies in Procession to Canterbury Cathedral

The cathedrals of Canterbury and Rochester were the magnificent settings of the recent Congregations ceremonies.

Nearly six hundred students studying Science, Technology and Medical Studies programmes were presented with their awards by the Chancellor, Sir Robert Worcester. Almost half of the students were from Kent's associate colleges, Canterbury College, Mid-Kent College and South Kent College, all of whom had achieved Higher National Certificates, Higher National Diplomas, Foundation Degrees and Degrees. Over one hundred students were awarded with Certificates and Diplomas from Medical Studies Programmes with a further eighty achieving Masters' level awards in programmes including Surgical Practice, Supportive and Palliative Care, Psychotherapy and BioMedical Imaging.



Graduands in procession at Rochester Cathedral to receive their Masters Awards

Entering Rochester Cathedral

The study of Actuarial Science is becoming increasingly popular as the fifty students who achieved Graduate Certificates and Diplomas in the subject can confirm.

The Faculty was especially pleased to confer the title of Doctor on twenty postgraduate students whose specialisms include Biochemistry, Computer Science, Electronic Engineering, Physics and Statistics.

Funding Boost for Glass Medical Research

The Functional Materials Group led by Professor Bob Newport in Physical Sciences has received £266,000 in additional funding from the Engineering and Physical Research Council (EPSRC) to continue its research on new forms of bioactive glass.

The purpose of the research, which involves teams from the universities of Kent and Warwick, Imperial College London and University College London, is to investigate bioactive glass forms, and polymer composites of the glass with the aim of developing materials that will promote bone regeneration in load-bearing sections of the skeleton. As part of this regenerative process, the glass dissolves safely away when in contact with body fluids such as blood plasma.

Kent Represented by Undergraduate

Euan Monaghan, an undergraduate student in Physical Sciences has recently returned from Finland where he attended the 7th European Workshop on Astrobiology (EANA07). He presented a poster about planetary protection, with emphasis on protecting the Earth and planets from cross contamination of each other's biospheres.

Involvement of undergraduate students in research is a key part of teaching at Kent. By participating in the meeting Euan not only represented Kent, but was also exposed to the broad spectrum of research activities Europe-wide.

Computing Appoints Knowledge Transfer Associate

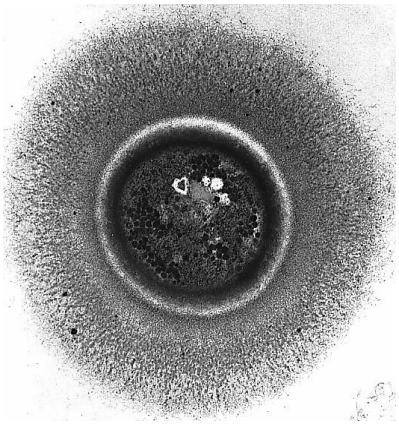
Under the joint Computing Laboratory and Erlang Training and Consulting partnership initiative, Xingdong Bian has been appointed Knowledge Transfer Partnership (KTP) Associate. The initiative has attracted £111,000 in funding.

Under the joint supervision of the Computing Laboratory and Erlang Training and Consulting, Xingdong will make a substantial contribution to improving the company's competitiveness and productivity by using the knowledge, technology and skills provided by the Computing Laboratory and applying them to the company's internal system development processes.

The aim of a KTP is to transfer expertise from academia to industry and in this partnership the Computing Laboratory will be transferring refactoring skills to Erlang Training and Consulting which will use refactoring technology to extract re-usable components from existing products in order to make their software development operations more efficient. In return, the Computing Laboratory will gain valuable industrial input to its research programme of building tool support for refactoring.

Xingdong has a BSc in Computer Science from the University of York and a MSc in Software Engineering from the University of Sheffield.

£400,000 Grant to Fight Lethal Brain Infections



Cryptococcus neoformans
With permission from G. Janbon

Professor Fritz Mühlschlegel from the Department of Biosciences has been awarded £400,000 by the Medical Research Council for research into to combat fungal brain infections. The fungus, *Cryptococcus neoformans* can infect the human brain leading to disease (cryptococcosis) that is usually fatal if untreated. It is 'dressed to kill' with a sugar coat that protects it against attack by the human immune system.

Professor Mühlschlegel is to conduct research into how the production of the fungal sugar coat is regulated. He said "Almost forty million people worldwide are infected with HIV and more than 60% of these (approximately 25.8 million) live in sub-Saharan Africa. Cryptococcosis is the initial defining illness in 88% of AIDS patients in southern Africa".

Penal Reform Programme in Caribbean Managed by Kent Doctor

Dr Axel Klein, Lecturer in the Study of Additive Behaviour has just returned from the Caribbean where he attended the First Caribbean Regional Conference in Antigua.

The conference is the final event in a Department for International Development-funded programme supporting penal reform in the Eastern Caribbean, entitled 'Alternatives to Incarceration in the Caribbean' which has been managed by Dr Klein over the last two years. The main partner is the Caribbean Drug Abuse Research Institute.

Dr Klein at the 1st Caribbean Regional Conference in Antigua

Dr Klein working through some issues with colleagues

As part of the programme, Dr Klein's work has involved conducting assessments, promoting the programme to policy makers, and running training seminars for magistrates, probation officers, welfare workers and Non-Governmental Organisations (NGOs). The aim of the conference was to set out the argument for alternatives to custodial punishment for petty offenders, develop instruments and mechanisms to facilitate the implementation of community punishments and to strengthen the coalition for Criminal Justice reform within countries, the region and beyond.

Boost to Cross Faculty Scientific Interest

December and January herald in increase in scientific interactions amongst Kent's three Faculties.

The Faculty of Humanities will host Professor Simon Thompson, Head of the Computing Laboratory and Professor of Logic and Computation, when he presents his lecture in the Centre for Reasoning in December. In his talk entitled 'How expressive are visual logical notations?', Professor Thompson will introduce a variety of visual, or diagrammatic, notations for logical concepts and contrast them with traditional logical forms, pointing out the advantages and limitations of the visual approach. The main body of the talk will explore the 'spider diagram' notation for naive set theory, and give a characterisation of the limits of expressiveness of this visual notation. The expressiveness proof uses a model theoretic argument to characterise what can and cannot be expressed by means of spider diagrams.

In return, Café Scientifique hosts Professor Mark van Vugt from the Faculty of Social Sciences and Dr Jon Williamson from the Faculty of Humanities over the Christmas and New Year period—see back page for details.

Simon Thompson Professor of Logic and Computation

Kent Professor made President Elect of International Society

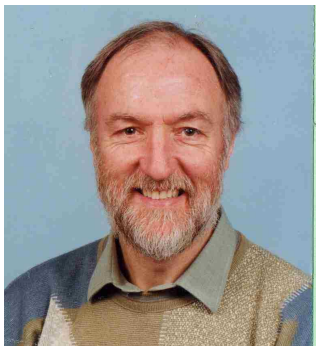
Byron Morgan, Professor of Applied Statistics has just become President Elect of the British Region of the International Biometric Society.

This prestigious appointment ensures that Kent will be at the forefront of an international organisation that is committed to the development and application of statistical and mathematical theory and methods in the biosciences, including agriculture, biomedical science and public health, ecology, environmental sciences, forestry, and allied disciplines.

The terms 'Biometrics' and 'Biometry' have been used since early in the 20th century to refer to the field of development of statistical and mathematical methods applicable to data analysis problems in the biological sciences.

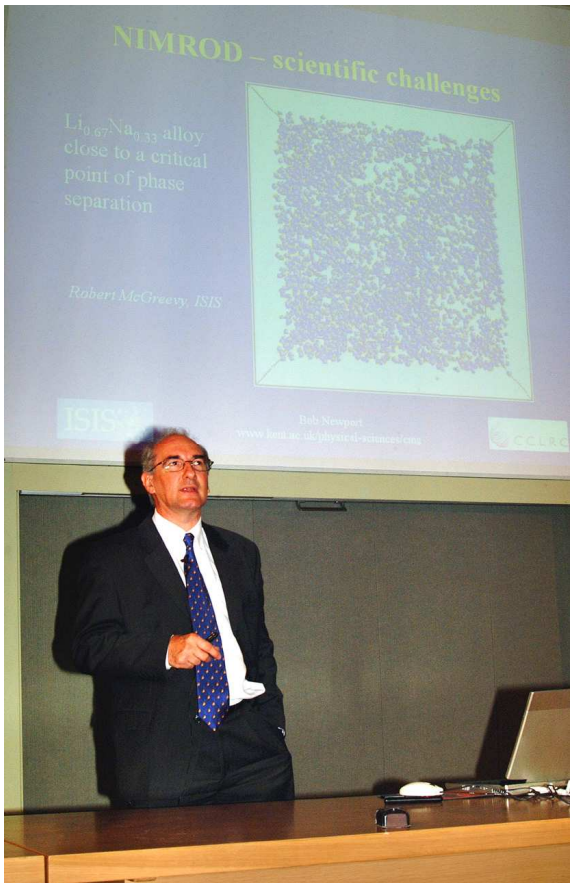
The application of statistical analysis by the International Biometric Society includes, comparison of data pertaining to the yield of different varieties of wheat, analysis of data from human clinical trials to evaluate the relative effectiveness of competing therapies for disease and analysis of data from environmental studies on the effects of air or water pollution on the appearance of human disease in a region or country.

Professor Morgan will take up his two-year term of office in October 2008.



Professor Byron Morgan, Institute of Mathematics, Statistics and Actuarial Science

A boost for Materials Science at Kent with NIMROD



Professor Bob Newport

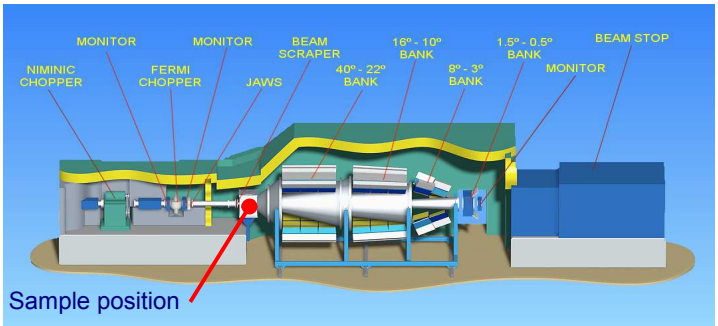
Professor of Materials Science, Bob Newport, has been awarded a four-year grant from the Engineering and Physical Sciences Research Council (EPSRC) to enable Kent scientists to contribute to the development and early scientific exploitation of the newly constructed diffractometer named 'NIMROD'.

Located at the UK's world-leading ISIS pulsed neutron facility at the Rutherford Appleton Laboratory near Oxford, the completion of NIMROD will open up new opportunities in technologically significant areas, particularly in the fields of soft condensed matter, bio-molecular science, advanced materials and nanoscale science. Commissioning is due to take place in 2008, with the experimental programme commencing in October 2008.

'NIMROD' is designed to provide an insight into the structure of materials. Its unique design will enable scientists not only to access that information at the atomic scale, but also at the continuous range of mesoscopic length scales. 'NIMROD' is ideally suited to the study of the subtle balance between short-, medium- and long-range interactions found in many materials of contemporary importance such as the intrinsically porous sol-gel glasses synthesised by the Functional Materials Group, particularly those currently being studied as vehicles for drug delivery and as bioactive materials for tissue regeneration.

The award will fund a PhD studentship from October 2008 and presents a unique opportunity for a postgraduate research student to become closely involved in the development of this key component of 21st century materials science.

Professor Bob Newport, who has been involved with the project since its conception over four years ago added "It's always exciting to be able to join a major development like this on 'Day One' - I shall be quite envious of whoever the PhD student is who eventually joins our team to work on this project".



Schematic of the ISIS 2nd target station's 'Day 1' instrument *NIMROD*

MRSA—The Superbug Coming Back to Haunt Us

In the second of our medical articles, we move the focus from *Clostridium difficile* to the superbug MRSA. Although it is only over the last ten years that MRSA has been in the news, it has been around since the 1950s. In this article, Professor Mühlschlegel explains today's reality regarding the spread and consequences of the infection and the future hopes of the medical profession for its control through research.

We were naïve to think we were unbeatable and could control infection. The spread of antibiotic-resistant microorganisms is a clear example that we cannot simply intervene in human-microbe relationships without careful consideration of microbial ecology and evolution.

MRSA stands for "methicillin resistant *Staphylococcus aureus*". MRSA is a member of a group of bacteria called *Staphylococcus aureus* (*S. aureus*). It is such a huge problem for hospitals, care homes and people in the community because it is resistant to most "standard" antibiotics. Penicillin, one of the major breakthroughs in modern medicine, was introduced in the 1940s and helped tackle *S. aureus* infections. However, by 1959 approximately 95% of *S. aureus* isolates were resistant to Penicillin. As a consequence Methicillin was developed. Although a resistant strain (MRSA) was reported only a year after the compound's introduction it was only in 1995 that the MRSA superbug established itself in hospitals throughout the UK.

MRSA can colonize the body and infect a broad range of tissues. Consequently the spectrum of diseases it can cause is diverse. In fact, MRSA infection can be a potentially fatal invasion of the bloodstream or manifest itself as wound infections or deep abscesses. Furthermore, MRSA frequently enters the bloodstream by means of an intravenous catheter. Overall, blood-stream infections are associated with the highest death rate.

Professor Fritz Mühlschlegel, Department of Biosciences

"Overall, blood-stream infections are associated with the highest death rate."

Importantly *Staphylococcus aureus* and MRSA can survive both in the body and in the environment. This remarkable ability facilitates transmission. In fact a carrier can be the source of infection for him/herself and others by passing on the bacterium via someone's hands or infected equipment.

Prevention of transmission is of particular importance. This involves speedy diagnosis and treatment of infection, making sure the patient is on the appropriate antibiotics and hand-washing with hot, soapy water. Furthermore, in a hospital setting, one needs to consider moving infected patients away from others to prevent further spread of MRSA whilst ensuring that all things infected patients may come into contact with through touch, like bed-rails and door handles, are washed thoroughly. Likewise, patients' bedding should be changed and laundered frequently. Also pre-screening for MRSA carriage prior to major surgery (like hip-replacement) and selective decontamination with skin treatment is helpful.

Dr Marcus Coales, Senior Biomedical Scientist, East Kent Hospitals' Trust

The Department of Biosciences has a very productive interaction with the East Kent Hospitals' NHS Trust. Indeed, one of the areas of particular interest is Medical Microbiology which also involves the supervision of PhD students by Biosciences staff. One such student is Marcus Coales whose PhD is supervised by Professor Mühlschlegel. Marcus is a Senior Biomedical Scientist responsible for bacteriology in the East Kent Hospitals' Trust Clinical Microbiology Service. His interest lies in environmental survival of *Staphylococcus aureus* and MRSA. Marcus Coales said "I am investigating a set of *S. aureus* isolates which we named symbiotic *S. aureus.* These strains have a much reduced ability to survive outside the host in the non-living environment".

Professor Mühlschlegel concluded by saying "By studying the molecular principles underlying environmental survival we may be able to interfere with spreading and hopefully transmission of the superbug in the future".

February issue:
Professor Alan Colchester, Professor of Clinical Neuroscience & Medical Image Computing will be talking about Creutzfeldt-Jakob disease (CJD).

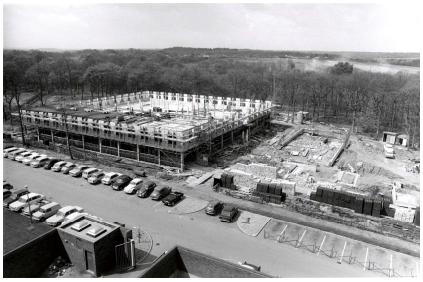
Great Lives Archive

As each year closes, it is customary to reflect on past events and how they may affect the present and their legacy in the future. This Christmas and New Year issue of the Sciences@Kent Newsletter provides us with an opportunity to reflect upon the life of a Kent professor who made substantial contributions to science throughout his life.

Roger Jennison was an astronomer and scientist who began his scientific career as a serving commissioned officer in the Royal Air Force during the Second World War when he worked on the development of radar and microwave systems using the Magnetron. After the war, Roger Jennison continued his work at the Jodrell Bank Observatory, as a Radio Astronomer under Robert H Brown, where he developed an imaging technique for obtaining information about visibility phases in an interferometer when delay errors are present. In the late 1950s, he published details of his work in an article entitled 'A phase sensitive interferometer technique for the measurement of the Fourier transforms of spatial brightness distributions of small angular extent' in the Monthly Notices of the Royal Astronomical Society. His dedication to his work led to other successes including his work in 1953 with M K Das Gupta, from Calcutta University, on Cygnus A when they discovered that it showed to be a double source.

The first graduation 1969. Roger Jennison back row left, Mike Fairhurst, current Head of Electronics, second row, 4th left

Roger Jennison joined the University of Kent in 1965 as Professor of Physical Electronics. Within a year he had established a new Department that was at the forefront of transistor technology, computing and communications. He set up mainstream teaching programmes which were the natural precursors of the engineering courses taught today. He initiated research projects into the development of flat screen TV displays, data compression, computing arrays and cybernetics. Such was the strength of Roger's vision that he even played a significant role in



Construction of Electronics building

the detailed design of the new Electronics Building in which the Department is now housed.

Roger's enthusiasm for science was inspirational and in addition to his role of Director of the Department of Electronics, he dedicated much of his own time to research in relativity, studying paths of light in rotating systems and the study of ball lightning. He was a Fellow of the Royal Astronomical Society, the Institute of Electrical Engineers and the Royal Society of Arts.

Roger retired from Kent in 1990. His legacy to the Department is perhaps most telling as seen in the breadth of the courses which are now offered. Always interested in science and engineering in the broadest sense, he would have strongly identified with the Department's development over recent years, and would have enthusiastically embraced both the quality of the traditional engineering courses which still provide an inspirational engineering education to our undergraduates, and also the way in which pioneering courses spanning both multimedia technology and design are now prospering in our increasingly interconnected educational environment.

In his private life, Roger was himself a talented artist, and this image neatly sums up these two facets of his personality, linking his dedication to the Department and traditional science with his passion for artistic creativity.

Department of Electronics painted by Professor Roger Jennison December 1922 – December 2006

Meet the Scientist

Each month, we focus on one of our scientists who describes their interest in science and how they are inspired. For this Christmas and New Year issue of the newsletter, Dr Colin Johnson explains how his scientific interest in computer programming was fostered from his days in the school classroom and how that developed into his specialised knowledge of Computational Biomedicine and Nature-Inspired Computing.

Dr. Colin Johnson, Senior Lecturer, Computing Laboratory and Deputy Director of the Centre for BioMedical Informatics. Specialism: Computational Biomedicine and Nature-Inspired Computing

"*How did you first get into science*?"
When I was at school, I found that I was interested in maths, which wasn't generally a very popular subject with the other pupils! I didn't get on so well with the practical side of science, so I went to do a maths degree at York, then a masters, applying mathematical techniques to engineering problems. I've been interested in computer programming from a young age too, so for my PhD (here at Kent) I used computational simulations of evolution to solve mathematical and logical problems.

"*What is the focus of your current research*?"
I am interested in how mathematical and computational techniques can interact with the natural sciences. In particular, I am working on computational biology and medicine, for example in using computational methods to understand the progress and diagnosis of disease and the other way round, looking at how we can look to the complexity and robustness of the natural world as inspiration for new computing methods.

"*Can you tell us about your current research group, what the group is working on and the purpose of the research*?"
I currently supervise a group consisting of six research students. Several of these are co-supervised with academics from other areas of the University, which is a good way for students to get into new areas of academic research. They are working on a wide variety of topics: using computational and statistical methods to predict how newly-discovered protein molecules function, analysing data sets and images drawn from large numbers of cancer patients to pick out patterns and identify different patient groups who might be best treated in different ways, using evolution as an analogy to improve computer programs, and using computers to pick out patterns in how people hear sounds and using that understanding to improve music technology systems.

"*How has research in your area changed over the past few years*?"
Researchers seem to be much more open to working with researchers in other areas. Just ten years ago, most scientists were working in narrow specialisms—which is important—but, in addition, many scientists are now much more willing to share ideas. Just in the last few days I have talked about research with people specialising in statistics, biology, and philosophy, and such interactions are now a day-to-day part of working in a university such as this.

Scientists of the future currently under the supervision of Dr Johnson take time away from the screen in a recent lecture.

"*What do you consider is the most significant accomplishment in research in your area in the last few years*?"
New technologies in molecular biology and medical imaging allow us to get large data sets in a way that hasn't been possible before; for example, studying the molecular profile of samples from a large number of cancer patients. This means that we can use computational and statistical techniques to find patterns in these data, whereas before there just weren't enough data to be able to generalise about these phenomena.

"*What kind of challenges do you see lie ahead in your specialism in the future*?"
One big challenge is using computational and statistical techniques to drive the move towards personalised medicine. This is where patients are given an individualised treatment, based on past successes in treating patients who are "similar" to them, whether at the genetic level or in terms of the progress of their disease. Discovering these patterns of similarity from large databases of past patient data is a huge challenge.

February Issue:
Dr Farzin Deravi, Reader in Information Engineering and Dir of Research in the Department of Electronics describes his scientific interests.

Winners of the FIRST℠ LEGO® League 2007

Langton LegoLads, from Simon Langton Grammar School for Boys, Canterbury, joint champions of FIRST LEGO® League 2007, receiving their prize from Julia Goodfellow, Vice Chancellor, University of Kent

Janet Linington, Kent Regional Final FLL organiser, said:
"We were delighted to see so many school children being enthusiastic about Science and Computing. They demonstrated great talent for the subject and we were impressed by their ingenuity".

Leg-2-Bot from Invicta Grammar School for Girls, Maidstone, joint champions of FIRST LEGO® League 2007, having just been awarded their Champions prize

Langton LegoLads, the team from Simon Langton Grammar School for Boys and Leg-2-Bot both clinched first place in the Kent Regional Final of FIRST℠ LEGO® League (FLL) 2007 after competing against 23 other teams from schools across Kent, Sussex and Surrey. Professor Julia Goodfellow, Vice-Chancellor at the University of Kent, presented them with the Champions' trophy, a cup made completely from LEGO®.

This year's competition theme was 'Energy' and participants were asked to consider how energy production and consumption choices affect the planet and quality of life today, tomorrow and for future generations. They were also asked to propose solutions for reducing energy consumption or using alternative sources.

Each team had to present their solutions to a panel of judges, as well as tackling a series of practical challenges using robots. The teams designed and built their own robots from LEGO® bricks, using a special programmable brick as the controller. This year's challenges included: installing a solar panel on the roof of a model house, erecting wind turbines, designing and building a wave turbine and planting trees - all done in LEGO.

Twenty five schools participated from across the county:-

1. Archers Court Maths & Computing College (Dover)
2. Brunswick House Primary School (Maidstone)
3. Byron Primary School (Gillingham)
4. Chatham House Grammar School (Ramsgate)
5. Dartford Technical College
6. Folkestone Youth Project
7. Gravesend Grammar School
8. Highsted Grammar School (Sittingbourne)
9. Invicta Grammar School (Maidstone)
10. Kent College (Canterbury)
11. King Ethelbert School (Birchington)
12. Oakwood Park Grammar School (Maidstone)
13. Queen Elizabeth's Grammar School (Faversham)
14. Sandwich Technology School
15. SAP Germany sponsored team (Sutton)
16. Simon Langton Grammar School for Boys (Canterbury)
17. Sir Joseph Williamson's Mathematical School (Rochester)
18. Sir Roger Manwood's School (Sandwich)
19. St Anselm's Catholic School (Canterbury)
20. St Christopher's School (Hove)
21. St Lawrence CEP (Hurstpierpoint)
22. St Mary's (Reigate)
23. The Hereson School (Broadstairs)
24. The North School (Ashford)
25. Whitfield and Aspen School (Dover)

Sir Roger Manwood's School, Sandwich

Gravesend Grammar School

Kent College, Canterbury.

St Anselm's Catholic School, Canterbury

The winners of the Kent regional final go on to the National Finals at Birmingham University on 2 February 2008. Over 7,000 teams are taking part worldwide.

Sponsored by SETPOINT Kent and Medway, and the Kent Branch of the British Computer Society, the event was hosted by the Computing Laboratory at the University of Kent.

The results were as follows:

Champions of the Kent regional Finals

- "Langton LegoLads" from Simon Langton Grammar School for Boys, Canterbury
- "Leg-2-Bot" from Invicta Grammar School for Girls, Maidstone

"Power Puzzle" Research Presentation Award

- "The Arrows" from Archers Court Maths & Computing College, Dover
- "North School Cybernetics Corp" from The North School, Ashford
- "Whitfield Raging Robots" from Whitfield and Aspen Primary School, Dover

Team Spirit

- "Team RSM 1" from St Mary's, Reigate

Teamwork Award

- "KCO2" from Kent College, Canterbury

Robot Design Award

- "KES Allstars" from King Ethelbert School, Birchington
- "Raging Inferno Robotics" from Gravesend Grammar School
- "Defenders of the Earth" from Byron Primary School, Gillingham

Robot Performance Award

- "Manwood Maniacs" from Sir Roger Manwood's School, Sandwich
- "Bright Energy" from Dartford Technical College
- "KCO2" from Kent College, Canterbury

Judges Special Award

- "Manwood Maniacs" from Sir Roger Manwood's School, Sandwich

Forthcoming Lectures and Seminars—December/ January

Date	Time	Speaker and Lecture Title	Lecture Theatre
3 Dec	2.30pm	Dr Betti Hartmann, Jacobs University Bremen, Germany, '**Monopoles, Sphalerons and the cosmological constant**'.	IMSAS, McVittie Library
3 Dec	4pm	Dr. Anne Bertolotti, Neurobiology Division, MRC Laboratory of Molecular Biology. '**Modulators of expanded polyglutamine protein aggregation**'. Host: Professor Mick Tuite.	Biosciences LT1
3 Dec	4pm	Professor Edmund Robinson, Queen Mary University of London, '**Theoretical Research at Queen Mary**'.	Computing S110b
4 Dec	4pm	Professor Ross Anderson, University of Cambridge, '**Information, Security, Economics and Beyond**'.	Computing Brian Spratt Room
5 Dec	2—4pm	Professor Simon Thompson, Computing Laboratory, '**How expressive are visual logical notations?**' (This seminar is being hosted by the Centre for Reasoning—see Café Scientifique for more cross Faculty events presented by the Faculties of Humanities and Science, Technology and Medical Studies).	Grimond GS7
5 Dec	2pm	Dr. Gordon Love, Physics Dept Durham University, '**Astronomical Adaptive Optics & Photonic Applications**'.	Rm 110 SPS
6 Dec	2pm	Dr Maria Dr Iorio, Imperial College London, '**Statistical models for DNA sequence segmentation: linkage disequilibrium and haplotype blocks**'.	Maths Lecture Theature, IMSAS
6 Dec	4-5pm	Adam Sampson and Neil Brown, Computing Laboratory, **'Tock: every compilation begins with a single pass'**.	SW101 Computing
7 Dec	3pm	Stephane Launois, Applied Mathematics (Kent), '**Non-negativity is a quantum phenomenon**'.	IMSAS, McVittie Library
10 Dec	2.30pm	Anne-Sophie Kaloghiros, University of Cambridge, '**The topology of algebraic varieties**'.	IMSAS, McVittie Library
10 Dec	4pm	Professor David Hornby, Department of Molecular Biology and Biotechnology, University of Sheffield. '**Novel approaches to the isolation and characterisation of multi-protein assemblies**'. Host: Professor Martin Warren.	Biosciences LT1
10 Dec	4pm	Philip Charles, Theoretical Computer Science Group, UoK, '**Evolving Polyhedral Approximations**'.	Computing S110b
11 Dec	4pm	Lawrence Beadle, Applied and Interdisciplinary Informatics Group, UOK, '**Behavioural Diversity in Genetic Programming Starting Populations'**.	Computing SW 101
11 Dec	7pm	CAFÉ SCIENTIFIQUE, Professor Mark van Vugt, Department of Psychology, UoK, '**Evolutionary Psychology: A theory about sex, shopping, and warfare**'.	Ye Olde Beverlie
15 Jan	7pm	CAFÉ SCIENTIFIQUE, Dr Jon Williamson, Centre for Reasoning, UoK '**Machines that Reason**'.	Ye Olde Beverlie
16 Jan	2pm	Professor Robert Nichol, University of Portsmouth, '**Seeing Dark Energy**'.	Rm 110 SPS
30 Jan	1pm	CTR FOR BIOMEDICAL INFORMATICS, Dr Anthony Baines, Biosciences and Martin Ridout, Institute of Mathematics, Statistics and Actuarial Science, '**Analysing the Evolution of Genes'**.	Marlowe LT 2
30 Jan	2pm	Professor Elias Brinks, University of Hertfordshire, '**The Nearby Universe**'.	Rm 110 SPS

The Pulmonary Vascular Research Institute Roundtable Symposium on Clinical Trials

23rd and 24th January 2008

Gran Melia Don Pepe Hotel,Marbella, Spain

The assessment of novel therapies in pulmonary arterial hypertension: A review of acceptable and information endpoints

For conference cost and reservations contact:Susan Brickland at s.brickland@kent.ac.ukTelephone: +44 (0) 1226 726312

Lunchtime Teaching and Learning Discussion

Cecilia Vargas

Academics across the departments are invited to join the Lunchtime Teaching and Learning Discussion Group that meets in the Computing Laboratory from midday until 1pm every other Friday. The discussion is based on a reading selected by a group member in advance which is circulated amongst other group members. The group member then makes a short presentation and the discussion takes place over lunch.

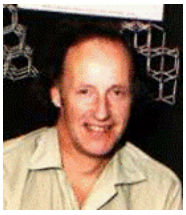
The group welcomes everyone interested in issues of teaching and learning. Last year one of the readings was the book "How People Learn" http://books.nap.edu/html/howpeople1/, and the group worked through one chapter per session.

The Discussion Group resumes meetings in January 2008 in Cornwallis SW102 and membership of the group is free. For further information and the date of the first group meeting, please contact Cecilia Vargas ext. 3823.

Kent Scientists Abroad

In January 2008 Peter Clarkson, Professor of Applied Mathematics at the Institute of Mathematics, Statistics and Actuarial Science has been invited to give a lecture entitled 'Asymptotics and Connection Formulae for the Painleve Equations' as part of the AMS-SIAM Special Session on 'Asymptotic Methods in Analysis with Applications' at the Joint Mathematical Meeting in San Diego, California. During the meeting, Peter will also attend the Editorial Board meeting of the journal Proceedings of the American Mathematical Society for which he is the Coordinating Editor for Applied Mathematics, Probability and Statistics and the only member of the Editorial Board who is not based in North America.

Dr Jing Ping Wang, Lecturer in Applied Mathematics at the Institute of Mathematics, Statistics and Actuarial Science has been invited to visit the Division of Mathematics, Faculty of Sciences, Free University Amsterdam, The Netherlands from December 17 to 22. She is co-supervisor of a Phd student Esmaeel Asadi. The research is financed by Netherlands Organisation for Scientific Research (NWO).



Professor John Dore, Emeritus Professor in Condensed Matter Physics in the School of Physical Sciences has been invited to be co-Chair of the European Science Foundation conference in Austria in December. The title of the conference is 'Water Interfaces in Physics, Chemistry and Biology'. The main objective of this conference is to develop a multi-disciplinary presentation and discussion that focuses on the properties of water (and ice) in proximity to different types of interface. Interfacial water/ice covers a wide range of subject areas and is an emerging field of topical interest. The participating scientists will be drawn from areas of physics, chemistry and biosciences where water plays a significant role in the behaviour of the local and intermediate range order, characteristic of the assembly. A particular feature of the meeting will be the exchange of views and current research developments in the experimental study of water in various environments, incorporating both hard and soft substrates. The subject material will span from synthetic mesoporous solids to biological systems such as protein surfaces and membranes as well as living cells. The programme will address a number of highly topical aspects of this emerging research area to progressively emphasise the role of water in biological processes, particularly in a European and international context.

Dr David Oliver, Honorary Senior Lecturer, Kent Institute of Medicine and Health Sciences and Consultant Physician in Palliative Medicine, Wisdom Hospice, Rochester, flies to Toronto in December to be one of the invited speakers at the three-day 18th International Symposium on ALS/MND (Amyotrophic Lateral Sclerosis/Motor Neurone Disease) starts on Saturday, December 1. The event is organized each year by the UK-based Motor Neurone Disease (MND) Association and hosted this year by the ALS Society of Canada and will be attended by scientists and clinicians from 15 different countries.

On 7th November Professor Fritz Mühlschlegel, Professor of Medical Microbiology in Biosciences flew to Jena (only recently Jena was awarded Germany's "City of Science" title for 2008) were he was invited to speak at a meeting of the DFG (Deutsche Forschungsgemeinschaft)- Priority programme "Colonisation and Infection by Human Pathogenic Fungi".

Papers Recently Presented at Conferences

Institute of Mathematics, Statistics and Actuarial Science

A.N.W. Hone and H.A. van den Berg, Modelling a cytokine network, Proceedings of the 2007 IEEE Symposium on Foundations of Computational Intelligence (FOCI 2007), IEEE (2007) 389-393.

Electronics

P. Lee, A. Evagelos. An Implementation of a Multiplierless Hough Transform on an FPGA Platform using Hybrid-Log Arithmetic (January 2008) SPIE Conference on Real-Time Image Processing 2008, California, USA - Accepted for oral presentation.

L.T. Walczowski, M.K. Ellis. A Learning Management Portal for E-Learning 2.0: a Teacher's and Developer's Perspective (October 2007), Proceedings of E-Learn 2007. World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, Quebec, Canada, 7424- 7429.

Recent Published Papers

Institute of Mathematics, Statistics and Actuarial Science

Stéphane Launois, Tom Lenagan. The first Hochschild cohomology group of quantum matrices and the quantum special linear group (2007), Journal of Noncommutative Geometry, **1** , 281-309.

Stéphane Launois, Samuel Lopes. Automorphisms and derivations of U_q(sl_4^+)* (2007), Journal of Pure and Applied Algebra **211**, 249-264.

Stéphane Launois, Tom Lenagan. Primitive ideals and automorphisms of quantum matrices (2007), Algebras and Representation Theory **10**, 339-365.

A.N.W. Hone. Singularity confinement for maps with the Laurent property (2007), Physics Letters A **261**, 341-345.

A.N.W. Hone. Laurent polynomials and superintegrable maps (2007), Symmetry, Integrability and Geometry: Methods and Applications 3 **022**, 18 pages.

A.N.W. Hone. Sigma function solution of the initial value problem for Somos 5 sequences (2007) Transactions of the American Mathematical Society **359**, 5019-5034.

A.N.W. Hone and H.A. van den Berg. Mathematical Analysis of Artificial Immune System Dynamics and Performance, (2007) Silico Immunology (eds. D.Flower & J.Timmis), Springer 351-374 (This is a contribution to an edited book).

Biosciences

Peter J. Ellis, Robert A. Furlong, Sarah J. Connor, Jackson Kirkman-Brown, Masoud Afnan, Christopher Barratt, **Darren K. Griffin** & Nabeel A. Affara. Coordinated transcriptional regulation patterns associated with infertility phenotypes in men (2007), Journal of Medical Genetics. **44**, 498-508.

D.J. Cole, **M.S. Ridout**, **B.J.T. Morgan**, **L.J. Byrne** and **M.F. Tuite**. Approximations for expected generation number (2007), Biometrics **63**, 1023-1030.

Robert C. King, **M. Bashir-Uddin Surfraz**, **Stefano C.G. Biagini**, **Philip J. Blower** and Stephen J. Mather. How do HYNIC-conjugated peptides bind technetium? Insights for LC-MS and stability studies (2007), The Royal Society of Chemistry, 4998-5007.

Agnes Grallert, Rebeca Martin-Garcia, Steve Bagley and **Daniel P. Mulvihill**. In vivo movement of the type V myosin Myo52 requires dimerisation but is independent of the neck domain (2007), Journal of Cell Science, **120**, 4093-4098.

Alan T. Bull and James E.M. Stach. Marine actinobacteria:new opportunities for natural product search and discovery (2007), Trends in Microbiology, **15**, 11.

Byrne L.J., **Cox B.S.**, **Cole D.J.**, **Ridout M.S.**, **Morgan B.J.T.** & **Tuite M.F.** Cell division is essential for elimination of the [PSI+] prion of yeast by guanidine hydrochloride (2007), Proceedings of the National Academy of Sciences of the United States of America, **104**, 11688-11693.

Electronics

L.H. Peng, Y. Zhang, **Y. Yan**. Characterization of Electrostatic Sensors for Flow Measurement of Particulate Solids in Square-Shaped Pneumatic Conveying Pipelines (2008) Sensors and Actuators A: Physical, **141**, 59-67.

L. Low, R.J. Langley, **J.C. Batchelor**. Modelling and Performance of Conformal Automotive Antennas (2007), IET Microw. Antennas Propag., **1**, 973-979.

Y. Liang, **R.M. Guest**, **M.C. Fairhurst**, J.M. Potter. Feature-Based Assessment of Visual-Spatial Neglect Patients using Hand-Drawing Tasks (2007), Pattern Analysis and Applications, **10**, 361-374.

Z. Cao, H.X. Wang, W.Q. Yang, **Y. Yan**. A Calculable Sensor for Electrical Impedance Tomography (2007), Sensors and Actuators A: Physical, **140**, 156-161.

L. Xu, **Y. Yan**. An Improved Algorithm for the Measurement of Flame Flicker Frequency (2007), IEEE Transactions on Instrumentation and Measurement, **56**, 2087-2093.

C. Wang, X.C. Qian, X.Y. Wang, H.X. Wang, **Y. Yan**. Multi-Frequency Based Measurement of Bioelectrical Impedance (2007), Chinese Journal of Scientific Instruments, **28**, 961-965.

G. Gilabert, G. Lu, **Y. Yan**. Three-Dimensional Tomographic Reconstruction of the Luminosity Distribution of a Combustion Flame (2007), IEEE Transactions on Instrumentation and Measurement, **56**, 1300-1306.

Kent Institute of Medicine and Health Sciences

Oliver D., Campbell C., (palliative care physician form Scarborough), Wright A., (specialist registrar in palliative medicine – previously at Pilgrims Hospice, Margate), Palliative care of patients with motor neurone disease (2007), Progress in Palliative Care, **15**, 285-293.

Oliver D., Bell J., Gallagher D., Newton J., Rackham C., Swannick J., Thompson S., Development of a pathway to facilitate gastrostomy insertion for patients with MND (2007), International Journal of Palliative Nursing **13**, 420-429.

Oliver D., Connecting Diversity – 10th Congress of the EAPC (2007), European Journal of Palliative Care, **14**, 196.

Oliver D., Foreword in Autism and Loss (2007) by Forrester-Jones R, Broadhurst S., Jessica Kingsley Publishers, ISBN: 9781843104339.

Oliver D., Palliative Care (chapter) In Kiernan M.C. (ed), The Motor Neurone Disease Handbook (2007). Sydney, Australasia Medical Publishing Company, ISBN 978 0 9775786 3 4.

Recent Grants Awarded

Clive Birch-Biosciences £1,366.00 from Ancon Technologies Limited for a mechanical workshop.

Gavin Topley-KITC, Computing Laboratory £1,175.00 from The Royal School for Deaf Children Margate for KITC support.

Clive Birch-Biosciences £1,896.29 from Nanomet Ltd for a mechanical workshop.

Winston Waller-Electronics £1,100.00 from Pinpoint Systems (UK) Limited for supervision of a sponsored MSc project.

Gavin Topley-KITC, Computing Laboratory £1,160.00 from Text-A-Car Limited for the development of an SMS Windows/Linux application.

Dr Jim E Griffin-IMSAS £11,451.00 from EPSCR for a project entitled 'Managing the data explosion in post-genomic biology with fast Bayesian computational methods'.

Dr Olaf Chitil-Computing £1,160.00 from the Royal Society for The 5th ASIAN Symposium on Programming Languages and Systems (APLAS 2007).

Gavin Topley-KITC, Computing Laboratory £880.00 from SEA Limited for KITC Support.

Dr Gavin Mountjoy-SPS £3,982.00 from The Royal Society for a project entitled 'Enhancing application of X-ray absorption spectroscopy to new oxide materials'.

Winston Waller-Electronics £18,500.00 from Micro Flight Systems Ltd for a project entitled 'PoCKet Project with Micro Flight'.

Clive Birch-Biosciences £395.00 from Turning Points for a project entitled 'Soundscape'.

Professor Yong Yan-Electronics £70,000.00 from British Coal Utilisation Research Associate (BCURA) for a project entitled 'Dynamics and movement behaviors of biomass/coal flow'.

Dr Olaf Chitil-Computing £1,160.00 from The Royal Society as a Conference Grant to attend the The Fifth ASIAN Symposium on Programming Languages and Systems (APLAS 2007) in Singapore.

Professor Mike Geeves-Biosciences €30,000 from EMBO for a 2008 course grant for the application of transient kinetics methods to biological macromolecules.

Kent, Warwick and Cambridge secure £263,000 for Project

Dr Jim Griffin, Lecturer in Statistics, has been jointly awarded £263,000.00 for a new project. The project entitled "Managing the Data Explosion in Post-Genomic Biology with Fast Bayesian Computational Methods" is funded by Engineering and Physical Sciences Research Council.
It will be run with David Wild at the Systems Biology Centre at the University of Warwick and Zoubin Ghahramani in the Department of Engineering at Cambridge University. The award is to fund two post-doctoral students. One will be based at Cambridge, one based Warwick and Kent).
The project is due to commence in March 2008.

Dr Jim Griffin

Café Scientifique Meetings December and January

Café Scientifique
Ye Olde Beverlie,

St Stephen's Green,

Canterbury at 7pm.

Tuesday December 11, 2007
Professor Mark van Vugt:
Evolutionary Psychology: A theory about sex, shopping, and warfare

Evolutionary psychology is the scientific study of the brain as the product of evolution through natural selection. It is a novel field with many interesting applications. Here I argue that the human brain is primarily social. This social brain enabled human ancestors to solve many important social problems such as finding a mate, caring for offspring, sharing food, negotiating status hierarchies, and coordinating groups to fight rival groups. Unfortunately, our Stone Age minds are sometimes ill prepared to cope with the many challenges of modern society. For instance, we are more afraid of spiders and snakes than of cars and electricity, although the latter are far more deadly. In this talk I will discuss various examples of a mismatch between modern and ancestral human environments creating problems related to sex, shopping and warfare.
There are further readings on evolutionary social psychology available on my website:

http://www.kent.ac.uk/psychology/department/people/van-vugtm/personal

Professor Mark van Vugt

Dr Jon Williamson
2007 Young Researcher of the Year
Times Higher Educational Supplement Awards

Tuesday January 15, 2008
Dr Jon Williamson:
Machines that Reason

In this talk I'll try to convey some of the importance of work on artificial intelligence for philosophy and vice versa. I'll distinguish two kinds of AI - psychological and logical - and focus on some interesting connections between the latter and research on reasoning in philosophy. I'll also discuss my own interest in this area: causal and probabilistic reasoning and its automation.
There are further readings available on my website:
http://www.kent.ac.uk/secl/philosophy/jw/

Café Scientifique in 2008

February 12, 2008
Professor Mark Burchell: Life in Space and how will we find it
March 11, 2008
Dr. Andy King: Tick-bites and odd-bods: Using science to hack computer systems
April 8, 2008
Professor Fritz Mühlschlegel: Staying healthy in the hospital
May 13, 2008
Dr. Sarah Johns: Risk, Reproduction, and Teenage Motherhood: An evolutionary approach
June 13, 2008
Dr. Arnaud Wisman: Facing Death: How do we regulate the awareness of our own mortality
http://www.cs.kent.ac.uk/people/staff/dfc/site/CS/

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