Planning permission granted for new halls

AN important milestone in terms of developing the College estate was reached last month. Westminster City Council agreed to pass the College’s application for planning permission to build two new student halls of residence, on the south and east sides of Prince’s Gardens, in South Kensington, to the deputy prime minister unopposed.

It is hoped that demolition of the Southside building can start this summer, with the new hall being ready for occupation in autumn 2007.

The two new buildings, designed by internationally renowned architects Kohn Pedersen Fox Associates, will provide six halls of residence with a mix of accommodation types, catering for different student needs and budgets. The halls will replace the existing Southside building and, when sufficient funds are made available, Linstead Hall, both of which have suffered ongoing deterioration since being built 40 years ago.

The new building plans have been specifically drawn up to complement existing architecture in the area and were commended by the city council and English Heritage, amongst others. The new buildings will be the same light colour and height as the surrounding 1850s terraces, and therefore lower than the existing buildings.

With the accompanying restoration of the Prince’s Gardens square, not just Imperial staff and students will benefit. Renowned landscape architects Kim Wilkie Associates have designed proposals to restore the square, which although owned by the College, is regularly used by neighbours and members of the public; one of a very few private London squares open in this way.

The planned restoration aims to recapture the spirit of the original gardens, with new London plane trees being planted in open grassland and full restoration of the original railings and central urn.

Over £20 million raised from City tech transfer deal

IMPERIAL and its technology commercialisation company, Imperial Innovations, have jointly raised over £20 million from institutional investors, it was announced this week.

The private placement of shares in Imperial Innovations is the first by a UK university-owned technology transfer business.

The College will use its £10 million from the sale to support its financial strategy of building capital for its academic mission.

It has agreed an exclusive 15-year pipeline agreement with Imperial Innovations, which allows the company to commercialise technology originating from Imperial’s research activity.

The rector said: “This initiative is part of our strategy to build freely disposable capital to support the academic mission. We are very supportive of this placement and we wish Imperial Innovations every success in this new phase of its development.”

Susan Searle, chief executive officer of Imperial Innovations added: “This fundraising was possible because of the combined support of Imperial’s inventors, entrepreneurs and management, together with Imperial Innovations’ management team.”

Innovations has generated revenues of £30 million from spin-outs and licences since 1997. Together with Imperial’s academic inventors it has established equity holdings in 54 spin-out companies and completed a total of 74 licence deals. Over 1,000 jobs have been created through its spin-out companies.

Key target for foot and mouth drug

By Tom Miller

IMPERIAL scientists have recently published a complete picture of foot and mouth disease virus (FMDV) enzyme named 3C protease, researchers from the division of cell and molecular biology and the department of chemistry have taken an important step towards developing protease inhibitors, a class of anti-viral drug that has proved hugely successful in controlling HIV.

The structure paves the way for their development by revealing the atomic details of the key viral enzyme that would serve as a target for drugs.

3C protease’s function is to help the virus replicate itself. A drug that binds and inhibits FMDV 3C protease would stop its spread by blocking its replication and thus its ability to infect a herd.

Before and after views of the halls of residence

Continued on page two...
Full Economic Costing on its way

On the eve of the general election Reporter finds John Green feeling optimistic about the future.

By Kate Fielding and Lorraine Bridges

In September, Full Economic Costing (FEC) will be making big changes to the world of research. It’s a critical time for Imperial and chief coordinating officer John Green is under no illusions about what is ahead. He said: “In some ways it’s quite a daunting scenario that Full Economic Costing is going to be imposed on universities, in academia we often see the black side, the bad side, rather than the good but this is certainly good news. We’re a government-led initiative designed to close the gap between what it actually costs to undertake the research and the funding received. It’s a move that’s set to change the academic landscape and John is embracing it with open arms. He explains: “It’s seriously good news for the support of science. For the first time in a long while the government has recognised that our infrastructure is falling behind and now they are making commitments to redress this.”

John is quick to qualify, however, that there is still some way to go. “Our challenge is to ensure that government departments will follow suit. Charities are also a big part of Imperial’s funding resource and there are some parts of FEC that they are unlikely to meet, indirect costs, for example. But this is undoubtedly going in the right direction.”

Imperial, John says, must do this properly and has put aside £1.5 million in its budget to prepare. “It is organised chaos,” says Dr Washington Ochien of the transport section. “We need to develop a technique to determine accurate ranges from wireless communications signals, and then to get high accuracy, reliable and seamless positioning without false alarms. We will be bringing together all sorts of information from sensors, maps and trajectories to make sure the positioning is accurate and reliable.”

The researchers would like to see London covered with sensor nodes to allow the police to keep track of devices all over the city. The Highways Agency is already considering instrumenting motorways with fixed sensors that could become part of the iPLoT network. The researchers are collaborating with the University of Leeds, and are working with the Home Office Forensic Science Services (FSS), the Police Scientific Development Branch (PSDB) and New Forest Communications Ltd.

Imperial’s wireless network to track stolen goods

By Laura Gallagher

In a few years’ time, chasing a thief down the road might not be the only way to keep up with a stolen mobile phone or laptop, thanks to researchers in civil and environmental engineering. They are developing a system to protect and track property using Bluetooth technology so that a stolen item could be pinpointed long after a thief has vanished from sight.

Many laptops, mobile phones and printers are fitted with Bluetooth, so that they can communicate with each other and make wireless transfers of information. The Imperial system will use this technology, together with small fixed sensor nodes, to create a network that can pinpoint a device’s location.

Researchers are currently working on the design of the system, having already captured the requirements for crime prevention and detection, and other value added services. The prototype system, christened iPLoT (intelligent Pervasive Location and Tracking), should be ready by 2007.

“iPLoT will be ready by 2007. To track a device, the system will calculate the distance from fixed nodes and from other devices whose locations are known, such as mobile phones. If a thief were to steal a laptop from an office, fixed nodes around the room would register its nearest movement and trigger an alarm. As the thief moved onto the street, other Bluetooth-enabled devices, such as the mobile phones of passers-by, would become an ad hoc positioning network to allow the police to track the laptop’s journey.

Determining a device’s position based on moving networks, such as passing pedestrians, is an enormous technical challenge. Because mobile phones and laptops are designed to be used on the move, the researchers are faced with developing a system that identifies only unauthorised movements. Unique ID tags in every device, together with other security-related input information, will enable the system to build up a picture of people’s usual behavioural patterns so that unusual movement can be recognised.

“It is organised chaos,” says Dr Washington Ochien of the transport section. “We need to develop a technique to determine accurate ranges from wireless communications signals, and then to get high accuracy, reliable and seamless positioning without false alarms. We will be bringing together all sorts of information from sensors, maps and trajectories to make sure the positioning is accurate and reliable.”

Foot and mouth

“In an outbreak we would ‘dose up’ the animals and in theory they would be protected immediately,” said Dr Stephen Curry, senior author of the paper published in Journal of Biological Chemistry.

“In contrast, vaccines take several days to have an effect and that allows further spread of the disease.”

“Our work is a very first step in developing an effective drug to do this. We can see what the enzyme looks like and it gives us an idea of what sort of shapes and types of molecule could bind specifically to the enzyme and lock it.”

The Imperial researchers are now designing a molecule to act as an inhibitor. They are working with Professor John Leatherbarrow of the department of chemotherapy, Dr Curry’s team has probed the specificity of the 3C enzyme in the hope of developing peptide-like inhibitors, similar to those successful in tackling HIV. Professor Leatherbarrow is mapping out the key amino acid sequences that the protease snips in-between, a process called ‘peptide cleavage analysis’. “We’ve determined the key features of peptides that are recognised by the FMDV 3C protease. Now we can start working on making the inhibitors,” said Dr Curry.

Protease inhibitors were developed against HIV in the 1980s and 1990s, the first going on sale in 1996. However, interactions between the drugs and the HIV viruses have given rise to drug-resistant strains, reducing the treatment’s effectiveness.

“Although the same strategy is being adopted, Dr Curry does not foresee the same happening with an FMDV protease inhibitor due to the intrinsic differences between the diseases."”

“HIV is a very long term infection, taking 10-15 years to overwhelm the body. That gives the virus plenty of time to develop resistance to anti-viral drugs. FMDV is highly contagious, much easier to get than HIV and has a rapid onset, which is why outbreaks tend to spread so rapidly,” said Dr Curry. “If you wanted to control an FMDV outbreak, you could, in theory, swamp the livestock population with anti-viral drugs for a few weeks and hopefully eradicate the outbreak very quickly.”

The structure took over four years to solve, the start of the research pre-dating the 2001 foot and mouth outbreak. The greatest problems came in making crystals of the 3C protease, so that its structure could be solved by X-ray crystallography—a particularly taxing task for then beginning PhD student and first author of this paper, Dr James Birley. The work was supported by the Biophysical and Biotechnological Sciences Research Council, the Fleming Fund (Imperial College London), and the Medical Research Council.

Imperial hosts first London clean energy roundtable

THE world’s need for cleaner energy was the topic of discussion last month, when senior executives from across the world gathered at Imperial.

Representatives from multinational energy companies, investment banks and finance houses, as well as small technology start-ups, met to discuss the challenges and opportunities as energy systems change.

The event, organised by Dr Tariq Ali, energy and environment officer, Michael Klein, Tanaka business school, and Montreux Energy, took place in the Tanaka business school over two days. A variety of issues were addressed by an invited group of delegates from as far afield as India, China and the United States.

Discussions about innovations in current and future science and technology for cleaner energy systems focused on the future of hydrocarbons, the potential of clean technologies, and the barriers and challenges facing financial institutions considering investing in energy technology.

continued from page one...

2

Image 2

Image 3
Molecular switch could lead to new ways of treating infection

THE discovery of a ‘molecular switch’ could lead to new ways of treating infections, such as MRSA, and inflammatory diseases such as arthritis, writes Tony Stephenson. According to research published recently in Nature, a team from Imperial and the University of California, San Diego, have identified an enzyme called IKKα, which can act as a ‘brake’ on an immune cell pathway responsible for regulating the body’s response to infection and inflammation.

By inhibiting IKKα activity the researchers were able to increase the body’s ability to fight off infection, but at the same time also increased the body’s inflammatory response. They also found that IKKα inhibits activation of immune cells, and inhibits inflammation, a discovery which could lead to new ways of treating diseases such as arthritis.

Dr Toby Lawrence, a Wellcome Trust International Research Fellow from Imperial, based at the Kennedy Institute of Rheumatology, and lead author of the research, said: “The identification of this ‘double-edged sword’ could be of huge importance in how we deal with a number of major health issues, including MRSA. With antibacterial resistance on the rise, this development could provide doctors with a new way to stop infections without resorting to a cocktail of antibiotics.

Although this is only a first step, the discovery could also help arthritis sufferers. By increasing IKKα activity they may be able to stop inflammation, and possibly develop a new treatment.”

Individual healthcare all down to bugs?

SCIENTISTS from Imperial and AstaZeneca have found that the success of personalised healthcare hinges on a better understanding of how microbes in the gut interact with different medicines.

The aim of personalised medicine is to provide the most effective medical treatment, tailored more precisely to an individual, along with a reduced risk of adverse reaction. The researchers believe that gut microbes, which influence both the biochemistry and immune system of the host, could play a key role in modulating how medicines can affect the body. As the community of these microbes varies greatly between individuals, this could have important implications for the development of personalised treatments, as well as drug discovery.

The team have illustrated that gut microbes have a large number of interactions with the body and that changes to their composition could have significant effects, both good and bad, on an individual. They believe the exact composition of these microbes in the gut may lead to variations in the effectiveness of drugs between individuals and populations.

Imperial’s Professor Jeremy Nicholson said: “The discovery that these gut microbes play such an important role means we could have made the first step towards providing patients with personalised, tailored healthcare and medical solutions. For example, in the future it may be possible for your doctor to provide you with a personalised treatment for virtually any illness through the analysis of a blood sample. Similarly, doctors could also spot potential illnesses before they become a problem and take preventative measures.”

Students focus on management

More than 50 students gathered for the Focus on Management course organised by the careers service before Easter.

The event got off to a good start with a session with the Cabinet Office, where participants argued a case for the financing of projects as though they were in parliament. Students then had the chance to visit Masterfoods on a marketing strategy and PriceWaterhouseCoopers in a mock takeover, where they had to apply their scientific minds to the task of deciding how to proceed in this tricky commercial situation.

Finally IFS offered them the chance to trade with software that simulates the typical City trading floor. Teams worked to maximise their profits, judging the right time to buy or sell being the key to success.

Teams included young managers from AstraZeneca, sub-contractors to BAE Systems and blue chip financial services company KPMG. Students gained an insight into what they might be doing two, or more, years into their careers with those companies and learned about the selection criteria to get there.

Richard Marshall, information officer for the careers advisory service, said: “Focus on Management gives hands-on experience of the management skills employers are so keen to discover in CVs and application forms — researching, analysing, negotiating, presenting, team-work and communicating. Most importantly whatever their discipline, end up managing something so it’s never too soon to start. If any students missed the course this year, they can look out for it in March 2006.”

A life on the ocean wave

INSPIRING Devonian Stephen Gratton is planning to take part in the Original Single Handed Transatlantic Race (OSTAR) with the aim of raising £50,000 for research into multiple sclerosis.

Organised by the Royal Western Yacht Club, OSTAR is arguably the most famous race of its kind in the world. For Stephen and his yacht, Amelie, it will involve a month and a half of enduring all that the Atlantic can throw at them on the long journey from Plymouth Sound to Newport, Rhode Island. Although faster yachts will complete the course in under 10 days, Stephen and Amelie will be hard pressed to beat 41 days.

Stephen explains the motivation behind his transatlantic trip: “My brother lives with multiple sclerosis. I am 50 years old this year and love sailing. I considered these facts together and resolved to do something both challenging and worthwhile.”

All funds raised will go towards sponsoring a PhD student for three years of study in Professor Richard Reynolds’ research group. The group at the G看似ing Cross campus focuses on trying to understand the reasons behind the failure of repair processes in the brain and spinal cord, which occur in people with multiple sclerosis.

To find out more about Stephen’s transatlantic trip, and how you can support him, visit www.mx5000.com.

Media mentions

Death and the camera phone

Mourners using camera phones to take pictures of the body of Pope John Paul II have sparked an ethical debate in the pages of BBC News Online. Vatican rules do not forbid taking photos of deceased pontiffs but some commentators have questioned how appropriate such actions are. Daniel Sokol of Imperial’s medical ethics unit takes a different approach. “If they find taking pictures disrespectful, it might be because it is unusual to see a dead body in their culture,” he tells the BBC. “But that is not an argument for saying it is immoral. I think the issue is about context and consent, where the body is, and if people have permission or not.”

End not nigh for turkey twizzlers

Jamie Oliver’s campaign for more broccoli and less takeaways is starting to have a real effect, writes Tony Stephenson. According to research published recently in The Guardian University Guide (19.04.05) which places the College closely behind Oxford and Cambridge and ahead of London rivals SOAS, LSE, King’s and UCL. Imperial is also rated highly in the guide’s subject by subject analysis, especially civil and environmental engineering, electrical and electronic engineering, mechanical engineering, and medicine, which are all ranked top in their subject.

End not nigh for turkey twizzlers

Jamie Oliver’s campaign for more broccoli and less takeaways is starting to have a real effect, writes Tony Stephenson. According to research published recently in The Guardian University Guide (19.04.05) which places the College closely behind Oxford and Cambridge and ahead of London rivals SOAS, LSE, King’s and UCL. Imperial is also rated highly in the guide’s subject by subject analysis, especially civil and environmental engineering, electrical and electronic engineering, mechanical engineering, and medicine, which are all ranked top in their subject.

Molecular switch could lead to new ways of treating infection

THE discovery of a ‘molecular switch’ could lead to new ways of treating infections, such as MRSA, and inflammatory diseases such as arthritis, writes Tony Stephenson. According to research published recently in Nature, a team from Imperial and the University of California, San Diego, have identified an enzyme called IKKα, which can act as a ‘brake’ on an immune cell pathway responsible for regulating the body’s response to infection and inflammation.

By inhibiting IKKα activity the researchers were able to increase the body’s ability to fight off infection, but at the same time also increased the body’s inflammatory response. They also found that IKKα inhibits activation of immune cells, and inhibits inflammation, a discovery which could lead to new ways of treating diseases such as arthritis.

Dr Toby Lawrence, a Wellcome Trust International Research Fellow from Imperial, based at the Kennedy Institute of Rheumatology, and lead author of the research, said: “The identification of this ‘double-edged sword’ could be of huge importance in how we deal with a number of major health issues, including MRSA. With antibacterial resistance on the rise, this development could provide doctors with a new way to stop infections without resorting to a cocktail of antibiotics.

Although this is only a first step, the discovery could also help arthritis sufferers. By increasing IKKα activity they may be able to stop inflammation, and possibly develop a new treatment.”

Individual healthcare all down to bugs?

SCIENTISTS from Imperial and AstaZeneca have found that the success of personalised healthcare hinges on a better understanding of how microbes in the gut interact with different medicines.

The aim of personalised medicine is to provide the most effective medical treatment, tailored more precisely to an individual, along with a reduced risk of adverse reaction. The researchers believe that gut microbes, which influence both the biochemistry and immune system of the host, could play a key role in modulating how medicines can affect the body. As the community of these microbes varies greatly between individuals, this could have important implications for the development of personalised treatments, as well as drug discovery.

The team have illustrated that gut microbes have a large number of interactions with the body and that changes to their composition could have significant effects, both good and bad, on an individual. They believe the exact composition of these microbes in the gut may lead to variations in the effectiveness of drugs between individuals and populations.

Imperial’s Professor Jeremy Nicholson said: “The discovery that these gut microbes play such an important role means we could have made the first step towards providing patients with personalised, tailored healthcare and medical solutions. For example, in the future it may be possible for your doctor to provide you with a personalised treatment for virtually any illness through the analysis of a blood sample. Similarly, doctors could also spot potential illnesses before they become a problem and take preventative measures.”

Students focus on management

More than 50 students gathered for the Focus on Management course organised by the careers service before Easter.

The event got off to a good start with a session with the Cabinet Office, where participants argued a case for the financing of projects as though they were in parliament. Students then had the chance to visit Masterfoods on a marketing strategy and PriceWaterhouseCoopers in a mock takeover, where they had to apply their scientific minds to the task of deciding how to proceed in this tricky commercial situation.

Finally IFS offered them the chance to trade with software that simulates the typical City trading floor. Teams worked to maximise their profits, judging the right time to buy or sell being the key to success.

Teams included young managers from AstraZeneca, sub-contractors to BAE Systems and blue chip financial services company KPMG. Students gained an insight into what they might be doing two, or more, years into their careers with those companies and learned about the selection criteria to get there.

Richard Marshall, information officer for the careers advisory service, said: “Focus on Management gives hands-on experience of the management skills employers are so keen to discover in CVs and application forms — researching, analysing, negotiating, presenting, team-work and communicating. Most importantly whatever their discipline, end up managing something so it’s never too soon to start. If any students missed the course this year, they can look out for it in March 2006.”

A life on the ocean wave

INSPIRING Devonian Stephen Gratton is planning to take part in the Original Single Handed Transatlantic Race (OSTAR) with the aim of raising £50,000 for research into multiple sclerosis.

Organised by the Royal Western Yacht Club, OSTAR is arguably the most famous race of its kind in the world. For Stephen and his yacht, Amelie, it will involve a month and a half of enduring all that the Atlantic can throw at them on the long journey from Plymouth Sound to Newport, Rhode Island. Although faster yachts will complete the course in under 10 days, Stephen and Amelie will be hard pressed to beat 41 days.

Stephen explains the motivation behind his transatlantic trip: “My brother lives with multiple sclerosis. I am 50 years old this year and love sailing. I considered these facts together and resolved to do something both challenging and worthwhile.”

All funds raised will go towards sponsoring a PhD student for three years of study in Professor Richard Reynolds’ research group. The group at the G看似ing Cross campus focuses on trying to understand the reasons behind the failure of repair processes in the brain and spinal cord, which occur in people with multiple sclerosis.

To find out more about Stephen’s transatlantic trip, and how you can support him, visit www.mx5000.com.