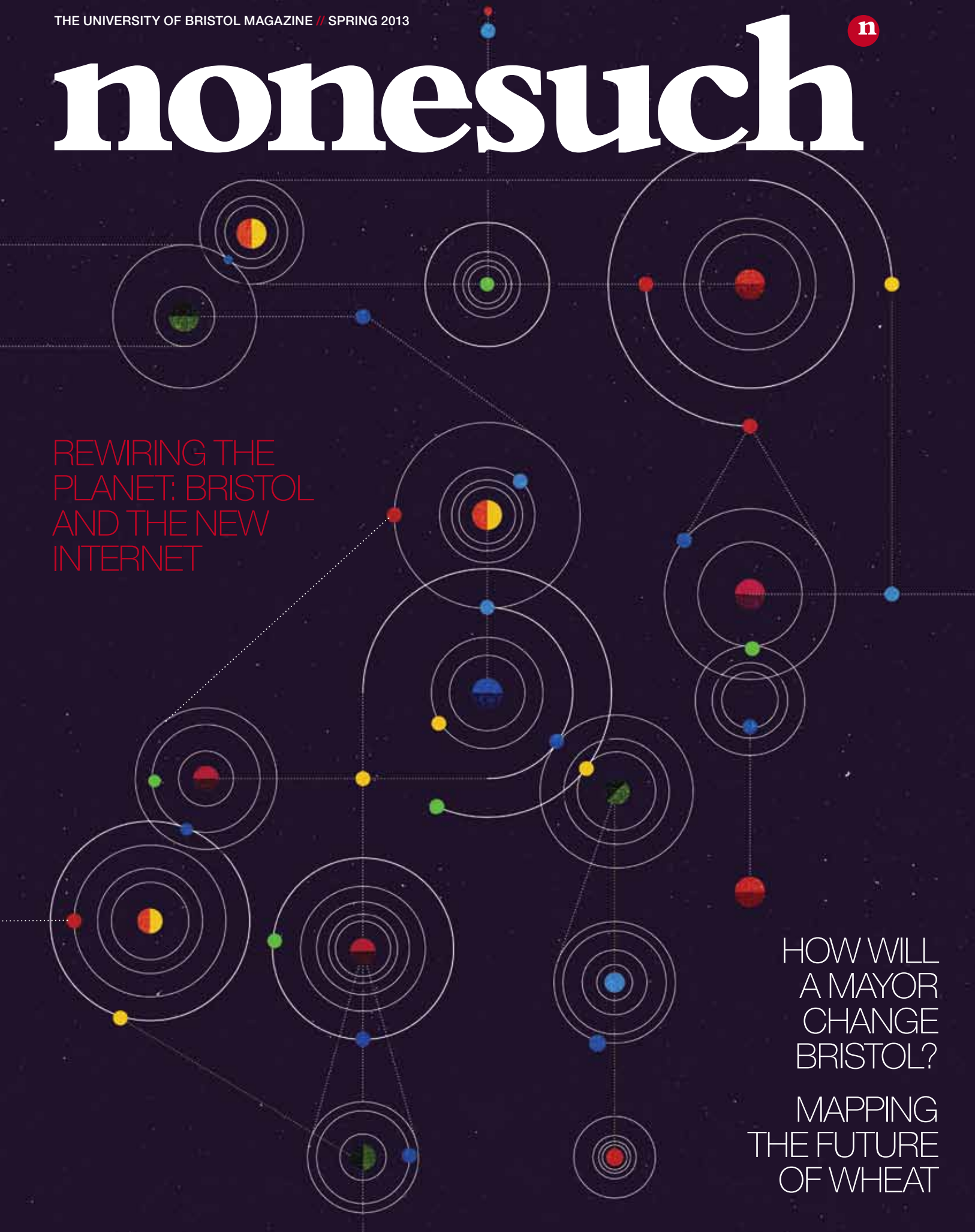
THE UNIVERSITY OF BRISTOL MAGAZINE // SPRING 2013

nonesuch



REWIRING THE PLANET: BRISTOL AND THE NEW INTERNET

HOW WILL A MAYOR CHANGE BRISTOL?

MAPPING THE FUTURE OF WHEAT

Welcome

In a great year for the University, a real highlight was the University's first Graduation Celebration in Beijing.

In April, many University staff, alumni and volunteers worked tremendously hard to make the Graduation Celebration and receptions in Beijing and Shanghai a great success. Building an engaged alumni community brings its own unique challenges in any country, and this was an important step in that direction since Bristol's Chinese alumni now comprise our largest overseas alumni group – having overtaken USA-based alumni in 2012. Numbers keep growing, with over 550 new Chinese students graduating from Bristol every year.

Whether you live in the UK, China, or any of the other 60-plus countries where alumni reside, I sincerely hope to see you in Bristol from 5-7 July for the 2013 Alumni Weekend. Catch up with old friends, revisit your *alma mater* for lectures, lunches, tours and dinners, and see the city that has just been voted the 'best city to live' in England.

This is also the time of year for Bristol alumni to select our Committee Members and representatives on Court. Do go online and exercise your right to vote for the candidates – they will genuinely appreciate your support. I hope to see you at the Alumni Weekend in early July.

Bill Ray (BSc 1975)
Chairman of Convocation,
Bristol's alumni association

alumni@bristol.ac.uk

In the last issue of *Nonesuch*, we spoke about Bristol's expanding undergraduate numbers. This year's recruitment is strong again and we expect to reach our targets, both for undergraduate and postgraduate student entry in 2013.

Student growth has necessitated some physical growth. Our largest building projects include new student housing in Stoke Bishop (see page 15), a new Life Sciences Building (see page 19) on Tyndall Avenue and major updates to the Students' Union (now known as the Richmond Building) – visit bristol.ac.uk/estates for more information.

A rolling programme of improvements in halls, libraries and other public study areas has a big impact on students. Such investment will continue, in part thanks to alumni support. We also have plans for a new large lecture theatre, a maths building, and more.

Bristol constantly asks 'what's next?' for intellectual inquiry. The key, as we consider all opportunities, is to balance Bristol's investment in the buildings where ideas come to fruition, with investment in people and the exciting ideas they generate and inspire.

Professor Eric Thomas (Hon LLD 2004)
Vice-Chancellor

bristol.ac.uk/alumni

Revive 100 Silk is carbon balanced – where the carbon impact has been measured through the production process and an equivalent carbon credit (offset) has been purchased.

Carbon balancing by the World Land Trust tackles climate change through projects that both offset carbon dioxide (CO_2) emissions and conserve biodiversity.

Nonesuch magazine // Spring 2013
Carbon saved 18,112 kg
Land preserved 1,521.41 m^2

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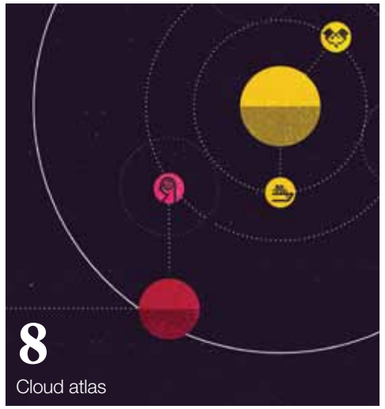

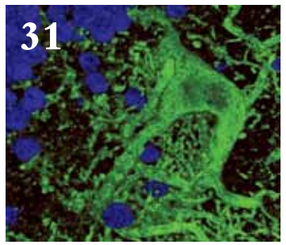

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Spring 2013

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Regulars

Rosebud
Everyday objects with a special meaning

I can trace my interest in the environment to a coin: a 10p piece from the late 1980s while I was in the final years of junior school.

A scientist came to talk to us about the ozone layer. He spoke clearly and passionately about how it protected us from the sun, but was being damaged by gases that humans made. He said that in some places, it was now only the thickness of a 10p coin.

We were stunned. How could the Earth be so vulnerable? How could we have such an effect? What was being done to stop it? We instantly became part of the global conversation about cutting-edge science, and the resulting international agreement, the Montreal Protocol.

That vivid image was the foundation for both my career in climate science and my passion for public engagement. We never know the effect our words have, and which budding future scientists we influence.

Dr Tamsin Edwards
School of Geographical Sciences

The plug
New books

A Story of Six Rivers: History, Culture and Ecology Peter Coates
Relating the biographies of four European rivers (the Danube, the Spree, the Po and the Mersey) and two in North America (the Yukon and the Los Angeles River), this book by Peter Coates, Professor of American and Environmental History, considers the place of rivers in our world. Focusing on change rather than devastation, the book provides an intimate portrait of the way these watercourses inform our lives. (Reaktion Books)

Colour Films in Britain: The Negotiation of Innovation 1900-1955 Sarah Street
The arrival of colour was a controversial topic in the British film industry. Welcomed as an exciting development, colour went on to captivate many British inventors and film-makers, who produced films that demonstrated remarkable experimentation and quality. This illustrated study by Sarah Street, Professor of Film, is the first to trace the history of colour in British cinema, and analyses its use in a range of films, including the work of Powell and Pressburger and David Lean. (BFI Publishing)

Alfred's Birthday (Bill Payne and Alfred the gorilla), 5 Sept 1935 © Evening World

In the city
The University in Bristol

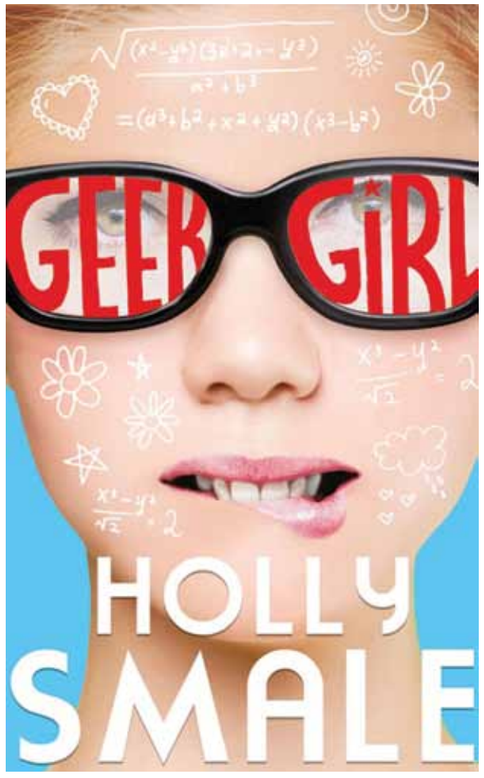
In May 2012, as part of the 'Know Your Bristol' initiative, History postgraduates Andy Flack (BA 2005) and Sarah-Joy Maddeaux headed to Bristol Zoo to showcase their research into animal and social history and give Bristol a glimpse of its zoo's past.

Visitors browsed photographs and film footage dating back to the 1930s and were invited to share their own memories. Among the stories uncovered were that of a zookeeper knocked over by a dead giraffe and of how Alfred the gorilla (pictured left), was kidnapped by students in 1954 – after he'd been stuffed and moved to a local museum. This was just one in a series of free public 'Know Your Bristol' events organised by Professor Robert Bickers (from the Department of Historical Studies) and the Centre for Public Engagement, with funding from the Arts and Humanities Research Council.

Many of the photographs and images of the objects visitors brought to these events will be added to Bristol City Council's 'Know Your Place' project, an interactive website that enables Bristolians to explore their city's heritage.

bristol.ac.uk/public-engagement/events/know-your-bristol

Regulars



Rise of the geeks
Literature

Holly Smale (BA 2004, MA 2006) has secured an international contract with HarperCollins for *Geek Girl*, the first in a series of three novels aimed at teenagers, which was published in February.

Not only does she have a contract for all three books, but the series has already been sold in eight different languages around the world – something most debut novelists can only dream of in the increasingly cautious world of publishing.

Geek Girl tells the story of 15-year-old Harriet Manners, who knows that a cat has 32 muscles in each ear, that a 'jiffy' lasts 1/100th of a second and that the average person laughs 15 times a day. What she doesn't know is why nobody at school seems to like her. So when Harriet is spotted by a top model agent, she grabs the chance to reinvent herself. But soon she begins to realise that the world of fashion doesn't seem to like her any more than the real world did. As her old life starts to fall apart, will Harriet be able to transform herself before she ruins everything?

The Bookseller describes the novel as 'a smart, sassy and very funny debut', while Julia Eccleshare, children's books editor of the *Guardian*, said: 'There's laughter and tears in this hilarious roller-coaster story.'

Young alumna changing the world
Human rights

Mariah Griffin-Angus (LLM 2012) received a Global Changemaker Award in January, in recognition of her active engagement in the promotion of international co-operation and social justice.

Mariah's passion for human rights began when, aged 13, she took part in a field trip to Nicaragua with Free the Children. Back home in Canada she started a local chapter of Free the Children and became committed to national human rights issues.

She organised leadership workshops for students and at-risk youth in her community, and supported a successful campaign by the small community of Cree, one of Canada's largest groups of Native Americans, to build a desperately needed school in Attawapiskat. Later, after her graduate studies at Bristol, Mariah became a Youth Challenge International intern with the Uganda Youth Network as a Governance Officer. Her work supported a small human rights organisation that engaged youth in human rights and good governance issues.

Even with this prestigious award she's not resting on her laurels. She said: 'Seventy eight per cent of Africa's population is under 30, and 60 per cent of the global population is under 30: global change will only happen with the involvement of youth.'

Watching out for BirdLife
Environment

Steve Micklewright (BSc 1983, MSc 1991) has been appointed the new executive director of BirdLife Malta. Steve has previously worked for environmental organisations, including the World Wildlife Fund and most recently was director of the Avon Wildlife Trust in Bristol. 'One of the big challenges we faced was the lack of connection that people, especially children, have with the natural world,' said Steve. 'One of my priorities will be to build on the fantastic work BirdLife Malta does in involving children with nature.'

Illustration © Alberto Antoniazzi

Engineering alumnus wins Shell Innovation Award
Engineering

Dr Nithin Thomas (MEng 2005, PhD 2010) won the prestigious Shell LiveWIRE 2012 Innovation Award for his work in data security.

Nithin was shortlisted from over 800 entries for the Shell LiveWire Awards, launched in 1982 to support and encourage entrepreneurship. As a PhD student, Nithin worked on the scalable encryption of video streams. The University's Research and Enterprise Development provided an Enterprise Development Fund award, along with advice and help from the SETSquared Partnership.

After graduating, Nithin set up SQR Systems Ltd, a cyber security company that provides secure data distribution for private companies and public institutions; it recently signed a contract with the Ministry of Defence through the Centre for Defence Enterprise initiative.

Regulars

Snappy dresser

Technology

Jenny Griffiths' (MEng 2009) final-year coursework on image processing has helped her establish a start-up fashion business that has snapped up a US$100,000 prize.

A must for all fashionistas, Jenny's ingenious phone app, Snap Fashion, lets users upload an image of any item of clothing and search for it online. Drawing on a library of 250,000 items from 120 retailers, shoppers can discover the cheapest outlet for the object of their desire, browse through similar items, and when they've made their final choice they can even click through to buy.

Jenny became interested in computer vision during the second year of her Computer Science degree. In her fourth year she wrote software that could recognise soft objects, such as clothes, and catalogue them. She set up her business in her spare time, using money and expertise from small contests (including Bristol's New Enterprise Competition) to build up the user interface, negotiate with outlets and assemble a team. She's also getting advice from Nokia's former UK vice-president.

Snap Fashion took first prize at the Cisco BIG (British Innovation Gateway) Awards for start-ups.

In brief

Alumni achievements

- **David Walliams** (BA 1992) was awarded the Children's Book of the Year by the National Book Awards for his fifth novel *Ratburger*, the story of a little girl called Zoe and evil burger-chef Burt who wants to turn Zoe's pet rat into a new secret ingredient.
- Five of Bristol's alumnae, and its Chancellor, made BBC Radio 4's *Woman's Hour* list of the UK's 100 most powerful women. As well as **Baroness Hale of Richmond** (Hon LLD 2002), Bristol's Chancellor and a Supreme Court judge (named fourth most powerful woman) the list included: **Professor Dame Carol Black** (BA 1962, MB ChB 1970, MD 1975, Hon DSc 2003), Department of Health's expert adviser on improving the welfare of working people, Cambridge; **Alison Cooper** (BSc 1988), chief executive of Imperial Tobacco; **Clare Foges** (MA 2003), Number 10 speech writer; **Rachel Whetstone** (BA 1989), senior vice president of communications and public policy, Google; and **Jasmine Whitbread** (BA 1986), CEO of Save the Children International.

How-to-kapow your way to the top of design

Enterprise

Howkapow, a new online shop selling design and illustration for homes and kitchens, is being featured in magazines and newspapers across the UK.

Former journalist **Cat How** (BA 2004) and her husband ex-BBC producer **Rog How** (BEng 2004) met while studying at Bristol University in 2002. After graduation they spent time working in both London and Australia, before returning to Bristol in 2010, married and ready to set up a business.

Selling quirky products from independent designers, illustrators and design companies from around the world, their Bristol-based shop Howkapow arose out of a shared desire to nurture Britain's unsung talent. Cat explained: 'We took great satisfaction in slogging it out together at artist markets in Melbourne and London, and met wonderful and exceptionally talented people along the way. Unfortunately, and as is often the case with designers, we found many of these people lacked either the marketing experience or commercial support they need to reach a wider audience. So, when we realised our own adventures had placed us in a unique position to provide that support, we jumped at the opportunity and Howkapow was born.'

The Howkapow shop reflects their belief that investing in bright, new designers with original ideas is how innovation truly flourishes.

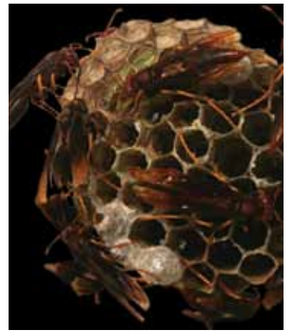
Second taste of student life

Television

Actress and singer **Charlotte Ritchie** (BA 2011) has jumped from student to *The Independent's* 'one to watch', starring as Oregon in Channel 4's award-winning comedy *Fresh Meat*.

Fresh Meat follows six undergraduates forced to live under one roof after they fail to apply for halls on time. Charlotte, the youngest of the ensemble at 22, was cast as English literature student Oregon, who plays down her abilities and hides the fact that she owns a car and a horse in order to impress her peers.

Fresh Meat was nominated for a BAFTA for Best Sitcom, and went on to win Best New Comedy at the British Comedy Awards and Best TV Show at the NME Awards. Since its success in reeling in an average audience of 2.7 million, Channel 4 has announced a third series, likely to air this autumn.



Otter © Bertie Gregory (www.bertiegregoryphotography.com) // Shanghai street © Jane Hayward // Archerfish © Dudley Temple // Flower © Daniel Robert // Wasps © Kathryn Booth

In pictures

Snapshots

Life and work at Bristol

Clockwise from top left:

WILD THING // Photography from Zoology student Bertie Gregory.
bristol.ac.uk/news/2013/9190.html

FLOWER POWER // How flowers communicate using electrical fields.
bristol.ac.uk/news/2013/9163.html

VISION ON // Eye tests reveal how archerfish target their prey.
bristol.ac.uk/news/2013/9252.html

SHANGHAI STORIES // Views of China past and present.
bristol.ac.uk/news/2013/9120.html

CREATING A BUZZ // Research into the social lives of wasps.
bristol.ac.uk/news/2013/9173.html

the big test

We need to redesign the internet. But how? It turns out that Bristol – the University and the city – provides ideal conditions for a large-scale, high-capacity test network. With the arrival of Professor Dimitra Simeonidou's High-Performance Networks Group at the Faculty of Engineering, that network is becoming a reality – and will help to equip Bristol with truly global credentials.

By **Nick Riddle**

When the city of Bristol recently made a successful bid for funding from the Government's Urban Broadband Fund, you could almost hear the final pieces of a thrilling new picture snapping into place. The fine detail in the picture isn't clear yet, but it may well feature a wealth of new technologies and applications, many not yet invented. The picture's canvas is massive – global, in fact – and Bristolians, along with citizens across the world, will feel the benefit.

To understand the background to this larger, faster internet, we need to go underground, where a problem has been lurking. Buried beneath our feet are fibre-optic cables that girdle the planet in ever greater quantities. And they need to, because the internet is no longer a novelty, but increasingly a utility, like water or gas. As with any utility, we now take for granted that this mesh of interconnected pathways will bring us what we expect: in this case, information, communication and entertainment.

But parts of the network are under increasing strain, as more services and applications are launched on the same fibre-optic cables that barely coped when streaming video came along. These growing demands on the 'consumer' side of the network are a drop in the ocean compared to the vastly complex tasks and rapid, high-volume transactions being carried out by research centres, businesses, banks, governments, and the rest.

Grand plans

What could we do with a bigger, faster internet? The ideas are only just getting started.

Barcelona

Long-distance dance
A Danceroom Spectroscopy event (danceroom-spec.com) is planned to run simultaneously in public spaces in Bristol and Barcelona. Special events like this could become truly global affairs.

School skills
Local schools could access the University's High-Performance Computing facility from the classroom to give pupils much-needed experience of state-of-the-art technology.

Streaming brains
In spring 2013, high-definition video of MRI scans made at Cardiff University's Neuroscience and Mental Health Research Institute was streamed to a lab in Bristol's School of Medicine.

Bristol

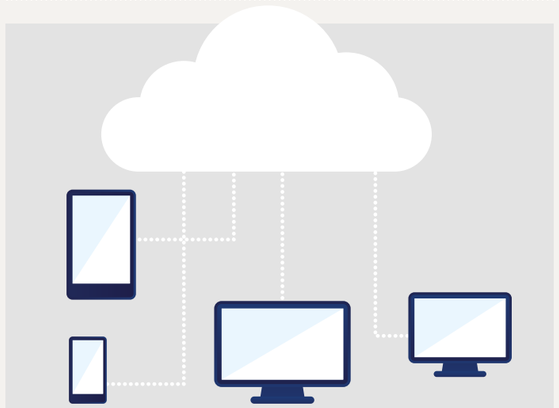
Tokyo

Getting ghosts on board
Plans are being discussed to bring holographic projections to the ss *Great Britain*, so that visitors can walk around the ship with the 'ghosts' of its passengers.

Cardiff

Cover feature

In brief
Clarifying the cloud



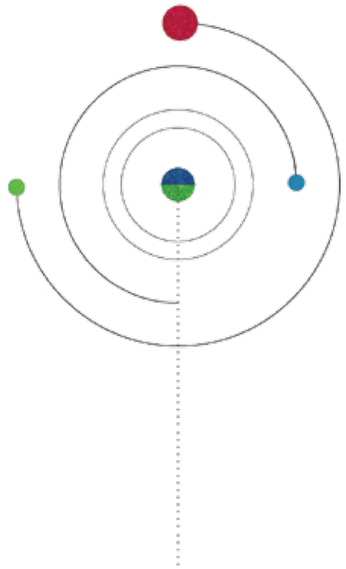
Cloud computing is an integral part of our lives.
Every time you use web-based email or an online file hosting service like Dropbox, you're using cloud computing. Storing your data in the cloud and using cloud-based software enables you to update a file and then access it from a computer or mobile device anywhere in the world.

Factfile
Fibre optics

1840s
Swiss physicist Daniel Colladon discovered the principle behind optical-fibre technology

5,000km
of individual fibres across Bristol network

124,000
miles (approximately 5 times around the world) per second, the speed signals travel along optical fibres



Too much information
It was a wake-up call for many when scientists at CERN in Switzerland started wondering how to handle the massive amounts of data generated by the Large Hadron Collider (LHC) experiments.

'They wanted a way of storing parts of the data in different places: some at CERN, some at a supercomputing facility in Barcelona, and some at other facilities around the world,' says Professor Dimitra Simeonidou. Her group had been working on optical fibre networks that could answer the requirements of big scientific projects such as those at the LHC, and she played a leading role in defining the standards for work such as the CERN project. In the process, the idea of cloud computing at a global scale began to emerge as a real proposition.

Becoming cloudy
The basic idea behind cloud computing is this: rather than simply push data from one computer to another, the internet can itself be used for a lot of the processing that we're used to doing on our PCs. A simple example is Google Picasa, which enables you to upload a photo to its servers and then edit or enhance it using software that sits on the network rather than on your own computer.

Simeonidou's group has demonstrated that using optical fibres to bring together networks and computers makes possible some very advanced processing, such as 'analysing and processing a large amount of scientific data in a network environment'. As collaborative work between institutions continues to grow, and as ever greater quantities of data are produced, the concept of an ultra-fast, global network with almost infinite capacity is an exciting one.

> THE CONCEPT OF A NETWORK WITH ALMOST INFINITE CAPACITY IS AN EXCITING ONE

Going large
But how do you design and test such a thing without inadvertently blowing a gasket in the internet we have now? 'You can't design a new internet in a lab,' says Simeonidou. 'What you need is a very large-scale experimental environment.' Her group began working on exactly that: a dedicated test network that could be used by researchers to run experiments, identify problems, and see what a new, high-capacity internet is capable of.

'We managed to bring communities together – physicists, biologists, radio astronomers – and give them computational resources somewhere else in the world over fibre networks,' she says. 'It's more efficient, too: if you have your own data centre with, say, 1,000 servers, most of the time you're only using 100, and the other 900 are sitting idle unless there's a sudden spike in demand.' Sharing resources across a global network, on the other hand, means that 'you can have parts of your processing running in Bristol, in Barcelona, in North Carolina, and in Rio, because your network can "see" all these devices through very high-speed links'.

> 'YOU CAN'T DESIGN AN INTERNET IN A LAB... YOU NEED AN EXPERIMENTAL ENVIRONMENT'

Simeonidou and her group arrived at the University of Bristol in late 2012, when the scale and complexity of their work began to require expertise outside their own field of optical networking. Bristol's research community includes world-renowned groups and facilities specialising in areas including wireless networks, high-performance computing, and photonics – a full suite of skills and facilities to call on. And it's located in a city ready to take the next step in connectivity.

The city rewired
Gigabit Bristol – the city's successful bid to the Broadband Fund – focuses on providing services to the local community in order to improve the quality of life for city residents, explains James Lancaster in Research and Enterprise Development, who is leading the University's negotiations with its partners. 'But we got together with a number of local groups – the Watershed, IBM, Toshiba, and so on – to argue that this was an opportunity to create something much more ambitious: a city-scale test network. Bristol has microelectronics, advanced manufacturing, environmental and creative communities who are heavily reliant on high levels of computing power and bandwidth connectivity.'

That test network has been adopted as one of the mainstream proposals within the Gigabit Bristol programme. 'In effect, we're giving the local infrastructure a massive upgrade,' says Lancaster, 'to create a network running around the city – to schools, companies, community groups, and both universities – so that people have access to this test network from wherever they might need it.'

> 'IN EFFECT, WE'RE GIVING THE LOCAL INFRASTRUCTURE A MASSIVE UPGRADE'

Illustration © Dan Matutina // Portrait © Jason Ingram

What will this make possible? At this stage, the field is wide open, and the search is on for people and organisations to come forward with ideas for early experiments. Schoolchildren could use the University's medical imaging facilities or its High-Performance Computer via a connection in their classroom; cinemas and theatres could screen events from around the globe in augmented, immersive reality, far beyond 3D; city-wide sensor networks could enable a rapid response to traffic congestion, problems with public utilities or a range of emergencies; complex objects purchased online could be manufactured in the shop around the corner on a 3D printer; musicians could play in real time with other musicians on other continents, the performance relayed instantly to screens anywhere; a local artist could produce simultaneous artwork in different countries.

'Cities across the globe are doing similar things,' says Lancaster, 'and Dimitra's team are working on connecting them up into a high-speed, high-capacity "network of networks".' Again, it's too soon to know what kind of new technologies will develop – although 3D holographic projections are already on the way – but the next generation of designers, engineers and artists will have an almost limitless sandbox ready and waiting for them to play in.

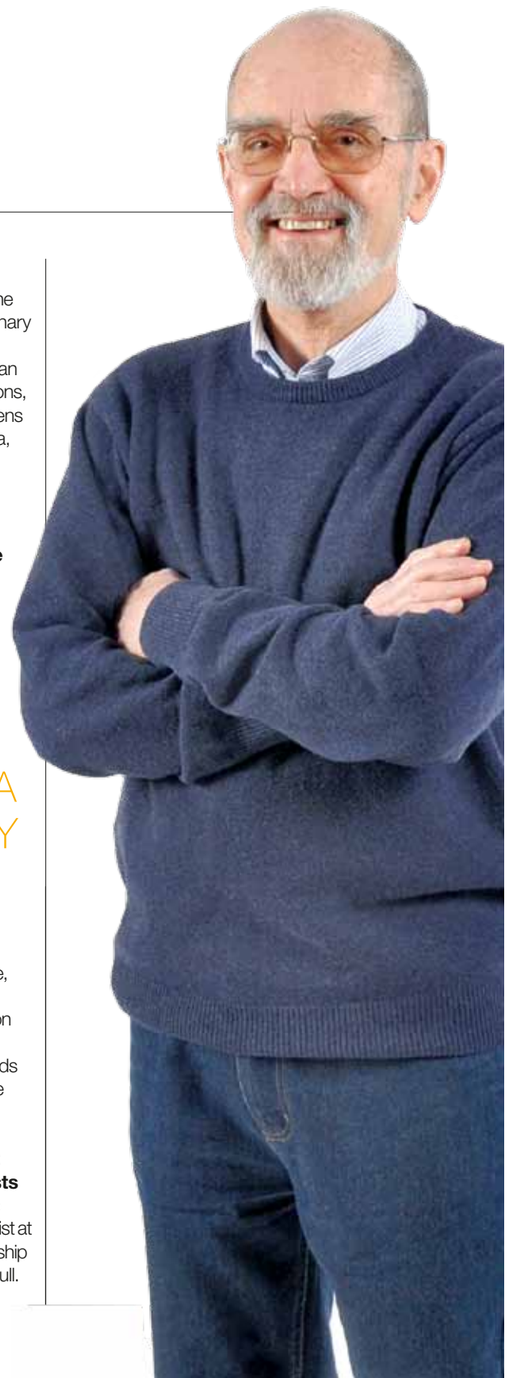
'Make no mistake, this is the beginning of a new internet,' says Lancaster. 'In the UK, there's no better place to try it out than Bristol.'

Left Professor Dimitra Simeonidou and James Lancaster in the High-Performance Networks lab

Regulars

From Bristol to Sweden, Kenya, Paris, Weybridge, Yemen and Nepal

Freya Sterling interviews **Dr Martin Gregory** (BVSc 1961)
Veterinary Epidemiologist



I didn't really want to be a vet; I wanted to do biology. I chose the veterinary course because it offered applied biology, and the Bristol Veterinary School had an excellent reputation as a lively, young, and innovative school. I have never regretted it and the outcome was that I became several different vets in the course of one career.

Bristol gave me a taste of life away from home. During the course we were encouraged to find farming experience. I chose to spend two months in Sweden on a little old farm buried deep in the forest, where my employer knew no English and I didn't know any Swedish. His two-year old son helped me with the language, shouting 'Hoppa' as he bounced on my bed.

After graduation I soon discovered that veterinary practice didn't suit me. When the animal's owner was satisfied, that was that, and then on to the next client. I always wanted to look deeper and go further. So after a spell in practice, I took a two-year contract in Kenya, which changed my life.

Following Kenya's independence, the UK Government bought farms owned by European expats and divided them up between landless Africans. Each was loaned livestock and my job was to keep them healthy and fertile, so their new owners could repay their loans. I learned so much about Kenya's animals, but more about its peoples, their languages, customs, problems and prejudices.

After two years, I moved to Paris to do a tropical veterinary medicine course at Maisons-Alfort. It was 1968, there were riots, and we had to shut the windows to keep the tear gas out. But I got my diploma and went back to Kenya, where I spent four years training field assistants. In my spare time I studied the local hedgehogs – their mange-mites, courtship calls and a still-unexplained transmissible tumour.

It was my research into hedgehogs that helped get me to where I wanted to be: the Parasitology Department at the Central Veterinary Laboratory in Weybridge, where I worked on coccidiosis in sheep. Normally these protozoan parasites do no harm, but in crowded conditions, they can kill. Suprisingly, lambs born in dirty pens did better. They got massive doses of coccidia, which, at that age, caused no disease but conferred some immunity.

After 13 years in Weybridge, I went to North Yemen to organise a countrywide serological survey of the livestock. It was a massive challenge. The job had never been done before. There were no maps and I had to learn Arabic. Six weeks after my arrival, the country tripled in size when it merged with South Yemen, making my job even bigger. But I loved Yemen and the friendliness of the people there.

BRISTOL GAVE ME A TASTE OF LIFE AWAY FROM HOME

I also played a part in the eradication of Rinderpest (Cattle Plague) from Nepal. Rinderpest used to decimate herds in Europe, Africa and Asia but it's now been eradicated from the world. My job was to prove the infection was no longer present, which was not easy. It involved taking blood specimens from thousands of animals to get a statistically valid sample of the livestock population.

I call myself a veterinary epidemiologist except in the company of epidemiologists – then I'm a parasitologist. As a vet, I have enjoyed travelling the world, but I'm still a biologist at heart and, having now been awarded a Fellowship of the Society of Biology, I feel that my cup is full. Well, almost. I have a few stories to tell first.

Feature

Sound and vision

That music you hear as Brian Cox stands on a mountain peak – it doesn't just happen. Somebody has to write, arrange and produce the soundtracks we usually take for granted. The University trains postgraduates in the art, craft and technology of composing music for film and television.

By **Nick Riddle**

It's mid-January, in the main auditorium at the Victoria Rooms. Joe Newton is conducting a professional string ensemble and trying to synchronise his score so that a cello string is slapped at the exact moment an onscreen predator seizes its prey. His music is spiky and percussive, in contrast with his own natural leanings ('I'm a big fan of tunes,' he confesses), but it suits the sequence perfectly. And that, naturally, is the point.

Newton is one of the students on the MA in Composition of Music for Film and Television (MACFTV for short). Each student has a session with the ensemble, conducting from their own score for a live recording-to-film session. It's quite a challenge. And by common consensus, the most exciting 30 minutes of the year so far.

'They hardly have time to look at the visuals on screen,' says Jean Hasse (MA 2006), the course tutor. 'They're too busy looking at their score, conducting to a click track from headphones, and cueing the players. They've also had to prepare a detailed score and separate parts for each musician. And their peers are in the auditorium watching them.' William Goodchild, who teaches the Media Composition class of which this is the culmination, is also assessing their performance.

Downstairs, Jonathan Scott, manager of the Composition and Recording Studios, is running the technical side of the sessions. He has set up the microphones in the auditorium to give the students a good range of options when it comes to mixing the final piece.

Next up is David Muñoyerro (above), who has been assigned a different clip: a tranquil scene featuring a lily and a beetle. Scott starts the click track, and upstairs Muñoyerro leads the ensemble in his score. In contrast with Newton's tense atonality, this is a lyrical piece, leisurely and pastoral with intertwining string parts. Again, his choice of style is a nice fit for the scene.

Cue music

Each year, a cohort of composers with varying degrees of experience, skills and musical sensibilities get a thorough education in the techniques of music composition and production for film, television, and other media.

Think of film music and you're probably hearing a favourite snatch of a title theme, along with some images – a sleigh whipping over the snowy Russian steppes to the strains of Maurice Jarre's 'Lara's Theme' for *Doctor Zhivago*, perhaps. But most music composed for film and television consists of 'cues' – short passages

Feature

intended to heighten the atmosphere of a scene – which aren't designed to be memorable.

'You can't just let your theme grow and grow,' says Hasse. 'The music has to serve a film in many different ways, from enhancing the emotions of a scene to aiding characterisation and supporting the overall structure of the story. Those are all important, tricky things to learn.' The MA offers a thorough study of these and other issues from several perspectives, including theory-based critical analysis, professional composing and advanced orchestration.

'We give the students a broad introduction to composing for media,' says Hasse. 'They get a chance to whet their appetite with a lot of variety, and to find their strengths.' Throughout the year they also work on composition projects for inclusion in their final Media Composition Portfolio, due in September.

MOST MUSIC COMPOSED FOR FILM ISN'T DESIGNED TO BE MEMORABLE

Making tracks
MACFTV alumni

David Hamill (MA 2007)
Composes for award-winning films and documentaries (including *Eliminate: Archie Cookson* and *The High Street*); extensive work in commercials, music editing and orchestration.

Laura Coates (MA 2009)
Composes music and sound designs for TV, film, animation (including work for the BBC and Aardman), and theatre. Also works as a freelance boom operator and sound recordist.

Blair Mowat (MA 2009)
Has composed music for over 50 short films and five feature films, including the Bollywood thriller *7-Welcome To London* and *Electric Man*, which earned him a BAFTA nomination.

Music and mechanics

Before they can think about their portfolio, however, each student must get up to speed on the technical aspects of music production, and their guide for this is Jonathan Scott.

'Given the way the industry works these days and the tightness of budgets, being your own music producer has become a crucial part of being a soundtrack composer,' says Scott. 'A lot of contemporary music for the media is entirely studio-based, maybe with a few live instruments overdubbed. Only a small handful of productions have a music budget large enough to employ a symphony orchestra or equivalent.'

The rise of music production has made it easier for the average user to cobble together a multi-track piece of music, but nobody on the MA is aiming for 'average'. Scott leads them through the techniques of achieving the most effective results, whether from software-based instruments or from a live recording, and combining 'real' and 'simulated' instruments to make them sound as if they belong together. 'Production involves as much of a musical thought process as it does a technical one,' he says. 'It's a musical decision in the end, but it's informed by a lot more science and technology than the compositional process itself. So it's a matter of getting the relationship right between the music and the technical input.'

Scene and heard

An accomplished composer in her own right, Hasse graduated from the course in 2006 and has written a number of scores for films including FW Murnau's 1926 silent feature, *Faust*. She became co-ordinator of the MA in 2008; around the same time, the Music Department began to

receive enquiries from a number of film-makers in London who were looking for soundtrack composers. A timely development, as it turned out.

'We've always worked with the Department of Drama to pair together our composers with film-makers on their courses in Film and Television Production and Archaeology for Screen Media,' says Hasse, 'but finding outside projects to bring in gives our students a much greater range of material to work on and helps them develop contacts in the profession.'

Regular collaborators now include Mountview Academy of Theatre Arts in London, whose students perform in professionally directed films as part of their course, and film and animation students at the University of the West of England and universities in Wales. Closer to home, Hasse also established links with Bristol's Computer Science Department, whose third-year students work in groups to develop computer games, all of which need soundscapes and music. 'It's a very exciting collaboration,' she says. 'It's sometimes a struggle, but similar to what they'll have to do in the outside world.'

Talking pictures

A fortnight later, MACFTV students Aisling Brouwer and Joe Newton are talking about the recording-to-film session.

'That was a highlight of the course so far, no question,' says Brouwer. 'Hearing your music played by professional musicians on live instruments… there's nothing like it.'

How do they find composing to order, rather than starting with a blank sheet? 'That's how I like to work – I've always written music that has a story and characters,' says Newton. 'I naturally respond to someone else's work, like a painting, or I make up my own brief.'

Horses for courses

Fittingly for an MA that emphasises flexibility, its graduates work on commissions far beyond the confines of film and television. Alumni have written music for theatre productions, radio dramas, audiobooks, computer games, smartphone apps, news bulletins, and even dressage events. So you never know; the subtle lift you feel watching a sweeping shot of the Serengeti, an emotional reunion scene, or a well-executed equine trot, may be due in part to the discreet musical enhancements of a Bristol MACFTV graduate. ●

Feature

With undergraduate numbers rising, Bristol is upgrading and expanding its Halls of Residence. New developments at Hiatt Baker, and a renewed focus on pastoral care at all residences, are examples of the University's efforts to provide each new Bristol student with a welcoming home away from home.

Building a new home

Main image: David Muñoyerro conducts the ensemble © Dimitra Christofidou // This page © Nick Smith

Feature

For most undergraduates, university years are their first substantial time away from home. This means that Halls of Residence, and their Wardens, play a vital role in providing students with a sense of security and support as they start university life. Bristol provides housing for most undergraduates and many overseas postgraduates in their first year, helping to ease transitions into independence (or, for overseas postgraduates, into a whole new country). The University of Bristol acts as *alma mater* in the truest sense of the word.

AS STUDENT NUMBERS RISE IT BECOMES MORE CHALLENGING TO ENSURE A WELCOMING COMMUNITY

With student numbers expanding now, the University is building new foundations. Bristol's existing halls of residence have had a rolling plan of investment in recent years, which will continue going forward. Contracts have been agreed with private providers of student housing throughout Bristol, with pastoral care (including university Wardens) embedded in each. The biggest project of all is the creation of 327 new bedrooms as part of Hiatt Baker Hall in Stoke Bishop, at a cost of over £20.7 million.

As student numbers rise, it becomes more challenging to ensure that today's freshers find a welcoming community when they arrive in Bristol, just as Bristol students have for decades. The new Hiatt Baker developments, which mimic townhouses, are designed to encourage small cohorts of friends in a self-catering environment with the larger benefits of hall experiences still on students' doorsteps. Improved transport connections, including a dedicated bus line, are already helping all Stoke Bishop students feel better connected to the university precinct and city centre.

Building work began in Stoke Bishop last year, and foundations were laid in February 2013. Work will be completed for students arriving in 2014.

Statistics
Residences

3,476
2011 home/EU first-year intake

4,118
planned 2013 home/EU first-year intake

25
Total number of residences

4,304
Total places in University residences

Hiatt Baker Hall
New features

Self-catered accommodation will be split between shared three- and four-storey townhouses, housing nine to 12 students, and cluster blocks. The cluster blocks will have eight to ten en-suite rooms on each floor, and students will share a large communal dining and kitchen area, similar to those in Goldney Hall's newer blocks.

The new buildings are designed to achieve high standards of accessibility, and four rooms are adapted for disabled people.

A new transport hub will replace the existing bus stop on Saville Road, catering for students living in all six Stoke Bishop halls of residence.

Hiatt Baker's main reception building will be refurbished to improve and extend facilities including the student bar, cafés and the library, as well as security.

Bat/bird boxes will be installed on retained mature trees, along with swift and sparrow terraces on new buildings, to encourage wildlife.

The new site will include a heat-recovery system, high-spec insulation, LED lighting with presence detection, recycling facilities and solar panels.

Above Existing accommodation in Hiatt Baker Hall

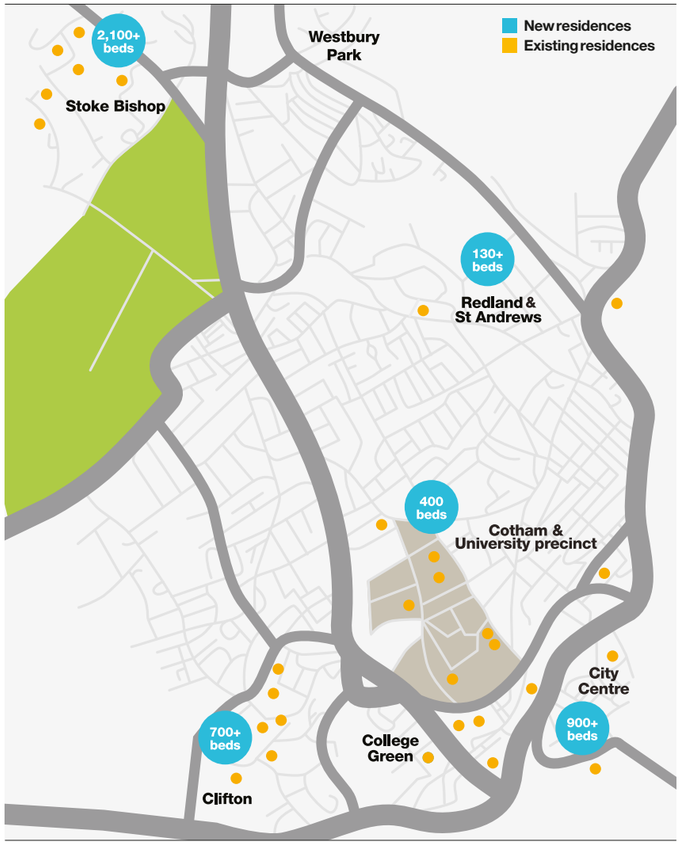
Above Architects' impression of the new landscaping outside the reception building

Above Architects' impression of the new buildings overlooking the main courtyard

Above Layout of a typical floor in one of the self-catered cluster blocks

Above Members of the capital project team with Hiatt Baker Hall's construction crew

Feature



Refurbishment of halls

In the past few years, over 300 bedrooms have been refurbished and modernised in the University's historic halls, including: 130 at Manor Hall; 70 at Churchill; 68 in Wills Hall, 92 at the Hawthorns and 23 in the Holmes. The maintenance work is essential and has replaced boilers, pipes, windows, rewiring and redecorating throughout. Residential improvement work is continuous; the rolling programme ensures that the University's residential estate is maintained with minimal disruption to students.

Profile

Dr Tom Richardson
Warden, Clifton Hill House

How long have you worked as a Warden?
This is my third year, working as part of a vibrant team to help our students make the most of their time at the University of Bristol.

What is so special about being in halls?
To me, the Hall is a real community, and one in which students and staff play a vital part to help support the transition between home and university life.

Why did you choose to become a Warden?
As a Senior Lecturer I have the ability to see a real difference that an enjoyable, academic, residential environment can make to the performance of a student on the whole. It is one of the reasons I became a Warden in the first place.

What do you enjoy most about the job?
It's important to me to promote and support academic endeavour alongside a wide range of extracurricular activities. Being a Warden is a position that I very much enjoy, and I hope to continue with it for many years to come.

Build a better Bristol

Students' university experience is multi-faceted, from classroom content to student housing, from laboratories to cafeterias, from extracurricular offerings to the quality and quantity of rowing machines in the gym… what could be improved?

If you want to know how best to spend £20,000 of alumni donations on improving the University who better to ask than the students themselves? The shortlist created by the Students' Union includes ideas ranging from new minibuses, to an improved student radio station. Find out what Bristol students prioritised at: bristol.ac.uk/buildabetterbristol.

New equipment for Burst Radio

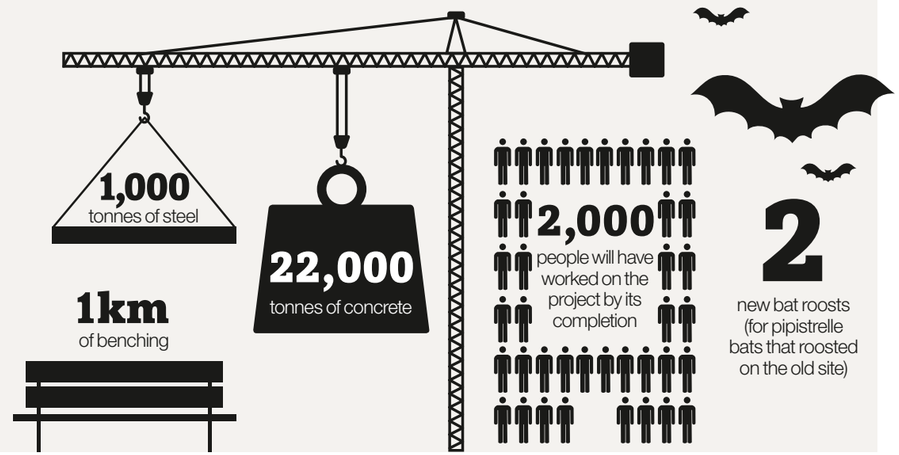
Free and accessible sport classes

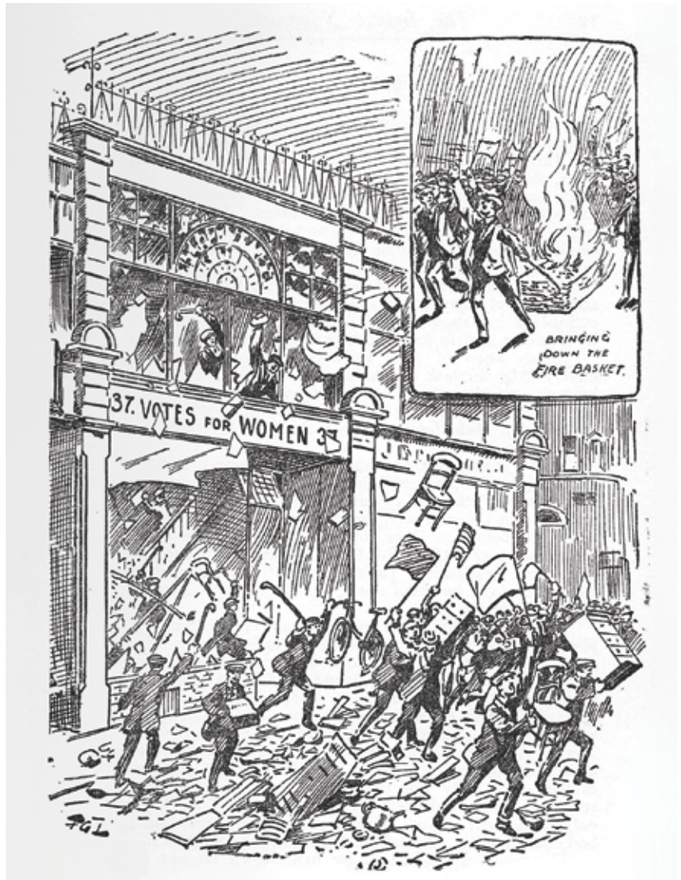
Illustration © Valero Doval

Regulars

Numbers
The Life Sciences Building

The University's new, £54-million **Life Sciences Building**, which will house the School of Biological Sciences, is taking shape on the site of the old Children's Hospital at the top of St Michael's Hill. It is due for completion in late 2013.





© University Special Collection

Cartoon of the attack from *Nonesuch* December 1913

What happened when…
…arson sparked revenge

Early in the morning of 24 October 1913, a group of women set fire to the University's sports pavilion at Coombe Dingle. They were all members of the Bristol branch of the Women's Social and Political Union (WSPU), a movement founded in 1903 by Emmeline and Christabel Pankhurst that soon became better known as the Suffragettes.

Retaliation was swift: later that day a group of some 300 students descended on the Votes for Women shop at 37 Queens Road, rampaging through the premises 'like a band of Wild Indians anxious for scalps' according to one frightened woman. Within a few minutes the shop and WSPU office upstairs had been wrecked. Onlookers applauded, the police confined their actions to crowd control, and the *Western Daily Press* later described how a bonfire on the street, fuelled by the shop's literature and furniture, 'made an effective spectacle in the failing light'. The University let the incident pass without comment.

Students celebrated the shop attack with verses and drawings, and in the December 1913 issue of *Nonesuch*, they made their retaliation motives clear in a cartoon entitled 'The University Alphabet'. 'A is for Arson' depicted the Suffragettes, and 'R for Revenge' showed a sketch of the counterblow.

Mockery didn't dampen the resolve of the Suffragettes, who continued with their arson campaign until the outbreak of the First World War, when many women joined the war effort and the movement's energy was redirected to national survival. But what was for many a dramatic distraction had a significant legacy, paving the way for partial enfranchisement of women in 1918 and equal voting rights with men in 1928.

Thanks to Lucienne Boyce (lucienneboyce.com), author of a more detailed account that appeared in the Spring 2003 edition of *Nonesuch*.

seeds of change

Feature

Wheat, once the king of crops, is losing its yield crown to young pretenders like rice and maize. Now the wheat genome project, involving Professor Keith Edwards and Dr Gary Barker, is speeding up the development of new, more robust varieties that can stop this decline and help us meet the challenge of feeding the world's growing population.

Feature

By **Juliet Giles**

Deep in the heart of the University of Bristol's experimental glasshouses Keith Edwards, Professor of Cereal Functional Genomics, is tending what he calls his 'space' wheat. 'Apogee' is a variety of dwarf wheat that has been specifically bred to thrive in the confined area of a space capsule. Not that anyone is planning to start growing wheat in space any day soon – although one day 'Apogee' might help ensure a manned mission to Mars doesn't run short of toasted soldiers. But the idea we might eventually have to resort to vast *Silent Running*-style glasshouses floating around the solar system if we're to feed our ever growing population is starting to look less and less fanciful. We haven't run out of farmable land just yet; but we might not be that far off.

The world's population has already tipped the seven billion mark, and by the year 2050 it's predicted to have grown by almost half again. Exactly how we're going to feed those three billion extra hungry mouths is a dilemma exercising the minds of policy makers and academics alike.

There are no easy answers. Using more land might seem the simplest solution, but cutting down swathes of rainforest to grow more crops will only make climate change, and agriculture's attendant woes, worse. If we want to ensure that everyone has access to enough food for a healthy diet, we need to make the farmland we have work harder. And that means increasing the yields from crops, especially wheat.

'FIVE YEARS AGO YOU WOULDN'T HAVE CONTEMPLATED THIS KIND OF PROJECT'

Cream of the crop

Up until now, one barrier to developing higher-yield wheats has been the complexity of its genome. *Triticum aestivum*, or common bread wheat, is what's known as a hexaploid, meaning it has six sets of chromosomes (three times that of humans), and its genome is also around five times bigger than our own. Now a team of scientists that includes Professor Edwards and Dr Gary Barker (PhD 1995) from Bristol's School of Biological Sciences, has succeeded in deciphering this complex genetic code.

'Five years ago you wouldn't have contemplated this kind of project,' says Edwards, who led the Bristol team. 'It was a technology change called next-generation sequencing that made it possible. Instead of sequencing one or two genes it could sequence 10 or 20 million genes in one go. Now there are machines that will do 200 to 300 million genes at a time.'

The task of sequencing the genome – of determining the exact order in which pairs of nucleotide bases, adenine (A), thymine (T), guanine (G) and cytosine (C), appear in a segment of DNA – was carried out by the team at the University of Liverpool. The Bristol team is now taking that data to the next stage. 'What we're doing in sequencing,' explains Barker, 'is working out how the words are spelled. We've gone from taking individual letters, which made no sense at all, to being able to make sentences. Now we want to put those sentences into the correct order.' To do this they're comparing Liverpool's sequencing of the 'Chinese Spring' wheat with other varieties.

'IN SEQUENCING WE'RE WORKING OUT HOW WORDS ARE SPELLED'

They're looking for sequence differences, known as single nucleotide polymorphisms or SNPs (pronounced snips), that define the variations in all species including humans. SNPs explain why some of us have blue eyes while others have brown; we all have the same complement of genes but the versions of those genes are slightly different.

'If we have the sequence of one variety versus another we can see what SNP differences there are,' says Edwards. 'We then can identify those that are responsible for disease resistance or for growing in drought. Breeders can then use that information to screen hundreds of thousands of lines for those that have particular SNPs that define disease resistance, or increased yield, or whatever they're interested in.'

Searching for SNPs is no easy task. To find just one can mean sifting through around half a terabyte of data and separating the genes from vast amounts of non-coding data. It's a task made slightly more manageable by Bristol's Illumina sequencer, which can plough through data ten times faster than the machine used at Liverpool. The software to do this was written by Barker, who modestly describes himself as 'a computer-savvy biologist', though his biology-specific programming expertise means he more technically deserves the title of bioinformatician.

Reaping rewards

All this data crunching is helping identify the molecular markers that can help breeders screen precisely for desirable wheat characteristics. As well as comparing different varieties of wheat they're also comparing wheat to its close relatives, such as rye, and to versions of the diploid (two sets of chromosomes) and tetraploid (four sets of chromosomes) grasses that combined some 10,000 years ago to produce modern hexaploid wheat. 'Luckily, wheat is very promiscuous,' says Edwards. 'So it will cross with a very large number of species, including its original progenitors.'

One of those species is a grass called Agropyron, which grows in extremely arid and salty conditions. By locating the gene that allows Agropyron to thrive with little water, it may be possible to develop a drought-resistant wheat that could survive in areas where water is scarce. Genes from other grasses could make wheat more resistant to diseases, or even improve our own health – and all of these improvements can take place without any need for genetic modification. By locating the molecular markers, Edwards and Barker are simply allowing breeders to carry out a conventional cross, just with a lot more certainty that they're crossing the genetic parts they want.

Locating all of these markers is the ultimate aim of the wheat genome project, but it is already reaping results. 'What we've got are the individual pieces of the puzzle and we're starting to piece those together,' explains Edwards. 'We know we've got all of the pieces and we know they will all fit, but we don't know exactly how.'

The day that final piece can slot into place is getting closer. Already a team at Oxford University is developing technology that can theoretically sequence 100,000 bases continuously. That, says Edwards, will turn what is now the equivalent of a 20 million-piece jigsaw puzzle into a more manageable 2,000-piece. But while mapping the entire genome may be the Holy Grail for academics, it's not vital for breeders.

It was a condition of the funding grant from the Biotechnology and Biological Sciences Research Council (BBSRC) that all the data collected was made publicly available, and Bristol's molecular markers have already been adopted as industry standards. 'Now they're used by hundreds of groups on thousands of projects across the world, which is fantastic,' says Edwards. 'Our website, where all of the data is available and downloadable, is one of the most accessed websites for wheat genomics in the world. We even have a collaboration with a genotyping company called KBioscience that will undertake wheat genotyping on people's behalf if they don't want to do it in their own laboratories.'

Against the grain

For Edwards, who spent more than a decade working for ICI and its successor Zeneca before moving into academic research, such collaborations between academia and industry seem both natural and necessary, and he welcomes this move towards sharing data from the wheat genome project.

'It seems crazy to think that even in the UK there are people who are doing duplicate work: somebody might be funded by the BBSRC and somebody might be funded by the Wellcome Trust to do the same work, simply because the person who's doing the work first hasn't been willing to share it' he says.

Better communication between scientists – and between science and industry – may go some way to feeding a growing population but it can only go so far. Science and technology can't solve the problem in isolation; we already have more than enough food to feed the world, but a billion people still go hungry because they can't afford to buy it. Ensuring everyone gets their fair share of future food stocks is going to require social and economic change, not just technical advancements. In the meantime, painstaking scientific endeavour, from the likes of Edwards and Barker, will continue to improve the productivity of agriculture, and ensure that the day our daily bread comes from outer space remains strictly in the realm of science fiction. ●

Wheat
In numbers

21
chromosomes

16bn
base pairs of DNA

5x
bigger than human genome

96,000
estimated number of genes

Above: Dr Gary Barker (left) with Professor Keith Edwards

Portrait © Jason Ingram

Growing awareness

The idea that problems such as securing food supplies can't be solved in isolation comes as no surprise to Bristol's Cabot Institute.

Since its inception it has brought together academics from across the University's six faculties to take a multidisciplinary approach to tackling problems such as climate change, food security, energy security, water access and natural disasters.

When volcanic ash grounded flights around the world three years ago, Cabot's natural-hazards researchers helped the UK Government evaluate the risks. Its global change researchers have built some of the most sophisticated earth-system models, and contribute their findings to the Intergovernmental Panel on Climate Change.

Cabot is also helping researchers within the University to find funding for a range of potential multi-disciplinary projects, such as a joint project between researchers at Bristol and the University of Exeter to look at how plants stabilise soil erosion.

bristol.ac.uk/cabot

Feature

Rethinking the city

It's all change for local government in Bristol; with an alumnus now the city's first elected mayor, the University of Bristol is keeping a close eye on his progress.

By **Chris Wraight**

Here in Bristol we like to do things differently. When England's 11 largest cities were asked in November 2012 whether they wanted a directly elected mayor, almost all said no. In that referendum, Bristol was the only one to change from a system of council leaders to a mayor elected by popular vote. In November, George Ferguson (BA 1968, BArch 1971, Hon MA 1999) was duly sworn in on an independent ticket, beating candidates from all the mainstream political parties as part of the biggest shake-up of local government in a generation.

'I'm an establishment rebel,' says the new mayor in an interview with *Nonesuch*. 'Somebody who comes from the establishment, but massively questions the way it operates.' Ferguson certainly has a long and varied association with Bristol – as an alumnus of the University, an architect, a social entrepreneur, even a Liberal councillor – but doesn't think of himself as part of the political consensus. 'I don't even regard myself as a politician,' he says. 'I'm just somebody who is passionate about his city and sees different ways of making it better.'

The road to City Hall

Bringing dynamic leadership to the city was one of the aims of introducing directly elected mayors, but will the switch bring the benefits promised by its advocates? That's the question occupying researchers on the Bristol Civic Leadership Project (BCLP), a joint endeavour run by the University of Bristol and the University of the West of England.

Directly elected city mayors are relatively common in other countries, particularly in Europe and the USA. There's little tradition of it here, despite plenty of debate over the weakness of local governance. The first and most high-profile of UK mayoral appointments was that of Ken Livingstone as Mayor of London in 2000. Although his election hardly led to a rush of mayors elsewhere: to date only 17 UK cities have opted to replace their council leaders, and some of the biggest cities, including Birmingham and Manchester, have continued to resist the change.

Bristol was seen by some as being particularly suitable for reform, with its reputation for political non-conformism and a perception of historically unstable council leadership. Until the November referendum, though, it was far from certain which way the city would go: then-council leader Barbara Janke argued that Bristolians were 'palpably apathetic' about the proposed change.

The BCLP was instrumental in changing perceptions. 'We ran public debates,' says Dr David Sweeting, lecturer in Urban Studies in the School for Policy Studies and one of the research team. 'We had somebody setting the case for, and somebody setting the case against. They were widely reported on and resulted in a substantially raised media profile for the referendum.'

The team also ran workshops bringing together elected councillors, council officials and representatives of the business and community sectors. The results of these, combined with detailed surveys on leadership in the city, were published in March. 'We found that councillors tended to be optimistic about leadership before the election of the mayor and pessimistic about it afterwards,' says Sweeting, 'whereas everybody else was pessimistic before and optimistic afterwards.'

Following the Yes vote in the referendum and the election of Ferguson in May, the theoretical arguments are now being put to the test. 'We now have an independent mayor in a council full of party councillors,' says Sweeting. 'It'll be interesting to see how the new arrangement works out.'

'OUR RESEARCH IS ABOUT EVALUATING THE IMPACT THAT A MAYOR MAKES... THE ONUS IS NOW ON HIM TO DELIVER'
Dr David Sweeting

Above George Ferguson, Bristol's first directly elected mayor **Left** Dr David Sweeting

'I DON'T EVEN REGARD MYSELF AS A POLITICIAN'
George Ferguson

Calling the shots

The change should certainly shake things up. One of the BCLP's key findings was that Bristolians were disillusioned with 'invisible' leadership: a constant churn of relatively anonymous council leaders from the major political parties. Mayor Ferguson claims that the situation is now much improved.

'I'm not at all exercised about whether I get re-elected in four years' time,' he claims. 'That's different to a leader of a party who is always looking over their shoulder, always having to

Feature

The debate: Directly elected mayors

Pros

- A directly elected mayor, rather than one appointed by councillors, strengthens democratic accountability.
- Mayors have a fixed four-year term, giving stability to the administration and allowing time to enact reforms. Previously, council leaders in Bristol changed frequently.
- Due to regular elections, it's very clear who the city's leader is, and who is accountable for major decisions.

Cons

- Elected mayors without additional powers from central government hold no real advantage over traditional council leaders.
- Under the present system there's no recall process, meaning that poorly performing mayors could stay in office for a long time with no means of removing them.
- Decision making may become over-concentrated in the mayor, making it difficult to open policies to proper scrutiny.

Ballot Box

Above City Hall and environs from above

ask whether something is OK or not – I can take the decisions, free of this business of worrying about the next election.'

Ferguson certainly has plenty in his in-tray, not least ensuring that the city does as well as possible out of the new settlement. 'Increasing the number of powers that Bristol has is a big issue,' he says. 'I would like to see more devolution of resources, such as funding from the Homes and Communities Agency, so that we don't have to spend our time negotiating to get hold of our share.'

Other pressing issues for Bristol are urban renewal and that perennial bugbear, transport. With his background in architecture and urbanism, Ferguson has grand plans for both, though he's keen to build consensus from local communities. 'You need people who are really driven to lead regeneration,' he explains, 'not the big house builders, not the supermarkets, not the office builders; they're not the regenerators. The regenerators are the passionate people in the community who get up and do something.'

'On transport, we've got to be quite radical,' he adds. 'We've got to look at working towards a universal residents' parking scheme, and we've got to be prepared to look at congestion charging so we get more people on the buses.' Here, he identifies some good role-models close to home. 'By far the best bus service in this city is provided by the universities, so I hope better buses in Bristol are going to be led by their example.'

Holding to account

As the new dispensation beds down, academics at the BCLP will be closely following progress. 'Our research is about evaluating the impact that a mayor makes,' says Sweeting. 'We want to help the city to avoid some of the problems associated with mayors in other places.'

That means an ongoing series of surveys and workshops, keeping tabs on perceptions in the city and tracking changes as they happen. 'We've got a research advisory board containing people from the council, and also people from the great and the good of Bristol – the voluntary sector, the private sector, from the Chamber of Commerce. Ferguson is keen on saying that the new system is a kind of experiment, and I'd agree with that. The onus is now on him to deliver.'

> 'WE HAVE HUGE INTELLECTUAL CAPITAL IN THIS CITY AND SHOULD MAKE THE MOST OF IT'
>
> George Ferguson

The BCLP's research is a prime example of academic work feeding into the realm of practical policy-making. 'Academic institutions need to make their research relevant to society,' says Sweeting. 'This is relevant in direct ways: we're reporting to the city council – and the public – on issues of real importance. And this won't only have an impact in Bristol: we'll be contributing to the debate at the national level as well, feeding back lessons and ideas for other cities that are thinking of having, or already have, directly elected mayors.'

It's a sentiment that Ferguson shares: 'I've always thought that universities should be somewhere near the centre of government in a city,' he says. 'There's a powerful triumvirate of the two universities and the city: we have huge intellectual capital in this city and we should make the very most of it.'

Between now and the next election in 2016, Bristolians will have plenty of opportunity to make up their own minds about whether the change in leadership has brought the benefits promised by its advocates. Until then, academics at the city's two universities will continue to play an active role in shaping the debate. ●

David Sweeting portrait © Jason Ingram // George Ferguson portrait © Chris Bahn, Bristol City Council // Cityview © Lisa Gault

Listings

Calendar May – December 2013

Unless otherwise stated, more information and booking details are available from **bristol.ac.uk/alumni/events** or by calling **+44 (0)117 331 8204**. The events programme is always being updated, so keep an eye on the website for the latest event news.

If you're organising an event for alumni and would like our help publicising it, please email alumni@bristol.ac.uk

May

Wednesday 22 May
Convocation Lecture // Bristol

The 43rd Annual Convocation Lecture will be given by Dr Hans Friederich (PhD Hydro-chemistry 1982), European Regional Director for The International Union for Conservation of Nature.

July

Friday 5 – Sunday 7 July
Alumni Weekend 2013: Best of Bristol // Bristol

Come back to Bristol, officially one of the best cities in England, and catch up with old friends and rediscover your old haunts. There will be special anniversary celebrations for those who graduated in 2003, 1993, 1983, 1973 and 1963 and earlier. The full programme of events (which includes the Convocation Annual General Meeting) is available online and highlights are shown below.

Friday 5 July
Alumni Weekend 2013: Best of Bristol // Bristol

An evening boat tour of Bristol harbour, followed by a drinks reception at the Watershed.

Saturday 6 July
Alumni Weekend 2013: Best of Bristol // Bristol

Celebratory reunion lunch in the Great Hall of the Wills Memorial Building, followed by an afternoon lecture from Dr Bradley Stephens on *Les Misérables*. Hall dinners will take place in the evening at Churchill Hall and Wills Hall.

Sunday 7 July
Alumni Weekend 2013: Best of Bristol // Bristol

There will be a full day of events organised by the Wills Hall Association; more information and booking forms are online.

September

Friday 27 – 29 September
Eastern Canada Reunion // Toronto

Alumni in Eastern Canada are invited to attend the 11th annual reunion: join us for the whole weekend, just for dinner, or for any other event. Information and booking forms are online.

Saturday 28 September
Cambridge Branch Annual Dinner // Cambridge

This enjoyable evening, organised by volunteers, will take place at Queens' College Cambridge.

October

Wednesday 9 October
Pioneers' reception // London

This is an invitation-only event for our Bristol Pioneers. Become a Bristol Pioneer at bristol.ac.uk/pioneers.

November

Saturday 16 November
Officer Training Corps Annual Dinner // Bristol

The Alumni Association of the Bristol University Officers Training Corps invites all former Bristol members and their guests to the 4th Annual Dinner, AGM and drinks reception.

December

Thursday 5 December
Convocation Annual Reception and Student Awards // Bristol

You will meet outstanding current students, members of Convocation and senior University staff. Learn more about current student life at Bristol today.

Cast your Convocation votes by 5 July

Alumni now have a chance to elect those who will represent Convocation in the University forum. Elect your Deputy Chair of Convocation; Convocation Committee and Convocation Representatives on Court.

The Convocation Committee is a dedicated group of volunteers who liaise with the University on your behalf. Convocation Representatives on Court meet once a year at Court to learn about and comment upon the developments and strategy of the University. To view profiles of those standing, and to vote, please visit: bristol.ac.uk/alumni/take-part.

Paper ballot forms can be requested from the Clerk to Convocation, Campaigns and Alumni Relations, Senate House, Tyndall Ave, Bristol, BS8 1TH, +44 (0)117 331 8210, alumni@bristol.ac.uk. Electronic and postal voting closes at midday on Friday 5 July. You can also vote in person at the Convocation AGM in Bristol on Saturday 6 July 2013.

Calendar illustration © Alberto Antoniazzi

Listings

The University extends its sincere condolences to the friends and families of those listed below for whom we have received notification of death.

In order of degree date

Sir George Jefferson
(Hon -) died September 2012, aged 91

Vera Smith (née Apter)
(BA 1933, Diploma 1934)
died December 2012, aged 101

Sir Alfred Lovell
(BSc 1934, PhD 1936)
died August 2012, aged 98

Francis Elgar
(BSc 1936, Diploma 1937)
died March 2012, aged 96

Harold Pike
(BSc 1937, Cert Ed 1939)
died January 2012, aged 95

Louis Tuffin
(BA 1938, Diploma 1939)
died October 2012, aged 96

Edward Wilmot-Morgan
(BSc 1939) died November 2012, aged 94

Dr Francis Walley
(BSc 1940, MSc 1948, PhD 1968)
died October 2012, aged 93

Colonel John Fitzjohn
(BSc 1941) died September 2012, aged 92

Dr Aitken Couper
(BSc 1941, PhD 1950)
died August 2012, aged 92

Hugh Homfray
(BSc 1942) died April 2012, aged 90

Dr Jean Shooter (née Wallace)
(MB ChB 1942)
died November 2012, aged 94

Frederick Warren
(BDS 1942) died January 2013, aged 95

Dennis Ward
(BSc 1944, Diploma 1945)
died June 2012, aged 88

Thomas Coombs
(BSc 1945) died July 2012, aged 87

John Wigg
(BSc 1945) died March 2012, aged 88

Roger Newport
(BSc 1946) died July 2012, aged 92

Dr Stephen Tonkin
(BSc 1947, PhD 1980)
died August 2012, aged 86

Marjorie Hughes
(BSc 1947, Cert Ed 1948)
died August 2012, aged 86

Ernest Beynon
(BSc 1947, Cert Ed 1950)
died October 2012, aged 86

Geoffrey Prime
(BA 1948, Cert Ed 1949)
died October 2012, aged 84

Dr John Norris
(MB ChB 1948)
died November 2012, aged 89

Roy Brimacombe
(BSc 1948) died 2012, aged 85

Patricia Willford (née Bick)
(BA 1948) died November 2012

Henry Page
(LLB 1949) died July 2012, aged 86

David Salkeld
(BSc 1949) died 2012, aged 84

Alec Bell
(BA 1949, Cert Ed 1950)
died October 2012, aged 91

René Bourion
(PhD 1949) died July 2012

Dr John Cowie
(BSc 1950, PhD 1953)
died January 2013, aged 93

Dr Joan Ashley (née Walker)
(MB ChB 1950)
died November 2012, aged 86

Kenneth Morgan
(BA 1950, Cert Ed 1953)
died September 2012, aged 83

Thomas Fowler
(BSc 1950) died 2013, aged 91

Arthur Hand
(BA 1950, Cert Ed 1951)
died January 2012, aged 85

Dr John Hepworth
(BSc 1950, MSc 1953)
died 2012, aged 93

Wing Commander Stanley Page
(BSc 1950) died 2012, aged 91

Emeritus Professor James Fletcher
(BDS 1951) died 2013, aged 85

Suzanne Morse
(BSc 1951, Cert Ed 1952)
died December 2012, aged 82

The Rev Mr Douglas Hare (BA 1951)
died September 2012, aged 85

Peter Meyer
(BSc 1952) died October 2012, aged 87

Professor Emeritus Nancy Millis
(PhD 1952) died 2012, aged 90

Joan Morgan (née Smith)
(BA 1952, Cert Ed 1953)
died November 2012, aged 82

Professor Ranjan Daniel
(PhD 1953) died 2012, aged 89

George Grigg
(BA 1953) died August 2012, aged 79

Muriel Hackett (née Crowther)
(Testamur 1953) died 2012

Dr Raymond Glaister
(BSc 1954, PhD 1958)
died May 2012, aged 80

Keith Lye
(BA 1954) died November 2012, aged 79

The Rev Ruth Rann (née Webber-Taylor)
(BA 1954) died May 2012, aged 79

Murray Bell
(LLB 1955) died August 2012, aged 78

Dr Christopher Bowler
(BSc 1955, PhD 1960)
died June 2012, aged 80

Dr Ian Keil
(BA 1955, PhD 1965) died 2012, aged 79

Dr Nancy Mercer (née Baxter)
(MB ChB 1955) died 2012, aged 81

Dr Jeffrey Neilson
(MB ChB 1955) died August 2012, aged 79

Peter Stanford
(BSc 1955) died June 2011, aged 78

Donald Lawson
(BSc 1956) died December 2012, aged 77

Dr Terence Morley
(MB ChB 1956)
died September 2012, aged 83

Joy Bolton
(BA 1956) died 1981, aged 46

Pauline Tait (née Notley)
(BA 1956) died 2012, aged 77

Helen Brandt (née Floyd)
(LLB 1957) died April 2012

Jennifer Haskins (née Hocking)
(BA 1957) died 2012, aged 76

Dr David Mahy
(MB ChB 1957)
died December 2011, aged 79

Peter Young
(PGCE 1957) died January 2012, aged 81

Dr John Burchill
(MB ChB 1958)
died February 2012, aged 77

Dr Hugh Leather
(MD 1958) died April 2012, aged 86

John Tully
(BSc 1959, Cert Ed 1960)
died May 2012, aged 74

Dr Carole Diffey (née O'Driscoll)
(BA 1960, PhD 1965)
died August 2012, aged 73

Derek Walker
(BA 1960) died January 2013, aged 76

Christopher Joslin
(BA 1961) died September 2012, aged 73

David Trowbridge
(BVSc 1961) died October 2012, aged 74

Brian Hall
(LLB 1964) died August 2012, aged 69

William Parker
(BSc 1964, Cert Ed 1965) died November 2012, aged 75

Dr Maria Danuta Siala (née Piorkowska)
(MB ChB 1964) died June 2012, aged 74

Michael Stammers
(BA 1966) died January 2013, aged 69

Michael Gregory
(BA 1967) died February 2012, aged 65

Elizabeth McMeekan
(BSc 1968) died October 2012, aged 65

Alan Bull
(LLB 1969) died November 2012, aged 65

Jill Reynolds
(BSc 1969, Cert 1970) died 2012, aged 64

Peter Galpin
(BA 1973) died October 2012, aged 62

Professor Nicholas Goodrick-Clarke
(BA 1974) died 2012, aged 59

Christine Cogger
(LLB 1975) died July 2012, aged 58

Andrew Stephens
(BSc 1975) died April 2012, aged 57

Barbara Fielder (née Spark)
(BDS 1978) died 2012, aged 59

Alan Stephenson
(BSc 1980) died November 2010, aged 53

Antony Wardell
(BSc 1980) died July 2012, aged 53

Dr Jennifer Morgan (née Ealand)
(MB ChB 1981) died October 2012, aged 55

Shelagh Holland
(BVSc 1982) died May 2012, aged 52

Dr Robert Scott
(BSc 1982) died September 2012, aged 51

Professor Mbong Udofot
(PhD 1985) died January 2012, aged 71

Helen Bridges (née Manley)
(BSc 1988) died 2012, aged 45

Darren Tostevin
(BEng 1990) died October 2012, aged 44

Frances Stevenson
(BA 1990) died 2013, aged 45

Hayder-Aly Thanawalla
(BSc 1995) died July 2012, aged 38

Sir Gabriel Horn
(Hon DSc 2003) died 2012, aged 85

Alistair Chalmers
(BA 2004) died June 2012, aged 31

Joe Surtees
(BSc 2010) died August 2012, aged 23

Alexander Ward
(MEng 2011) died July 2012, aged 23

John St Joseph
(BSc 2012) died January 2013, aged 22

Leondis Gammack
(Chemistry 2012-)
died January 2013, aged 18

Due to an administrative error, the death of **Franklyn Bovey** (BA 1956) was mistakenly announced in the Autumn 2012 edition of *Nonesuch*. He is alive and well, and we apologise for any concern caused.

Because of incorrect historical records, **Kenneth Matthews**' degree date and age were recorded incorrectly in the Autumn 2012 edition of *Nonesuch*. Kenneth Matthews graduated in 1949 and died at the age of 87.

Please email any notifications of death to **alumni@bristol.ac.uk**

Feature

Fighting fatigue

Chronic fatigue syndrome in children is one of the last underexplored illnesses. Dr Esther Crawley has made it her special area, as both clinician and researcher, and her work is beginning to improve the lives of children suffering from chronic fatigue.

Dr Esther Crawley in consultation with a young client

By **Nick Riddle**

If you were relying on certain parts of the media for your information, it might seem that chronic fatigue syndrome (CFS) – also known as myalgic encephalomyelitis (ME) – sprang into existence in the 1980s, tagged with the dismissive nickname of 'yuppie flu'.

But its history extends much further back, to at least the 19th century, when outbreaks featuring strikingly similar symptoms – extreme fatigue, muscle and joint pain, headaches – were diagnosed and newly named as 'neurasthenia'. It had other names, too, including the facetious 'Americanitis', referring to its reputation, even then, as a disease of the wealthy.

'Like most illnesses, chronic fatigue is actually more common in situations of social deprivation,' says Dr Esther Crawley, Reader in Child Health in the School of Social and Community Medicine. 'But it's mostly the richer families who go to the doctor, hence the misperception.' The true picture of chronic fatigue has also lacked another important element: its incidence in children. Crawley has made it her mission to put this right.

'WE BEGAN TO REALISE HOW LITTLE WE KNEW ABOUT CFS IN CHILDREN'

Out of the shadows

It was during her training in paediatric rheumatology that Crawley worked with a group of children suffering from chronic pain. She found that many of these children also suffered from chronic fatigue, and that the NHS had no services for them. So she applied for Department of Health funding to set up a paediatric CFS/ME service, which is based in Bath.

'We began to realise how little we knew about chronic fatigue in children: how common

Feature

it is, who it affects, how you can treat it,' says Crawley. She was able to begin addressing these questions when the National Institute of Health Research (NIHR) awarded her a Clinician Scientist Fellowship in 2009. Subsequent work resulted in a series of research publications, including the first paper to describe CFS in primary schools. Crawley's team also began to subdivide the condition into types and trace possible areas of overlap with other conditions, such as chronic migraine.

Counting the cost

Crawley's research on chronic fatigue in children has uncovered some startling statistics: Up to 1 per cent of secondary schoolchildren are missing a day a week of school with chronic fatigue syndrome, and around 2 per cent of 13-year-olds are probably affected to a lesser degree. Worrying figures for a condition we know almost nothing about.

'In paediatrics it's kind of the last unknown illness,' says Crawley. 'Its impact on families and society is huge: the child misses loads of school and may well end up bedridden at some point. We know almost all of them get better, but we don't know how long it takes, and we know hardly anything about treatment.'

Each paper published by Crawley and her team – on links to socio-economic background and stress in pregnancy, access to services for adult sufferers, the cost to the economy, and much else besides – helps to clarify another part of the picture. Meanwhile, the clinical side of the work aims to improve that picture.

Of the 300 or so children referred to Crawley's clinic every year, around 17 per cent are too unwell to attend school at all. Part of her clinical work involves visiting those so severely affected that they're unable to leave the house. 'I try to establish whether it's chronic fatigue or something else,' she explains. 'Often they have fatigue with something else, but it's very difficult to do research without making their condition worse. But we need to understand more about the illness, and why these children become so severely affected, before we can look at ideas for treatment.'

1% OF SECONDARY SCHOOLCHILDREN ARE MISSING A DAY A WEEK WITH CFS

Early intervention

Not all aspects of Crawley's work are so fraught with difficulty. Catching the condition early is proving particularly effective in preventing a vicious circle from developing.

Sleep is a good example, she says: 'If you feel very tired, you tend to sleep longer, but over-sleeping reduces the restorative part of your sleep, so you feel more tired, and you sleep for longer. Some children in my clinic are sleeping 20 hours a day and still feeling terrible.'

Hence her clinic's emphasis on sleep restriction: the children are encouraged to sleep for only as long as is normal for their age. That simple strategy has drastically reduced the amount of medication the clinic had been prescribing to improve sleep. Not only that, says Crawley, but when she gave similar advice to schoolchildren early in their illness, 'some of them came back to us later and said "I did what you said, and I'm completely better". So early intervention really is the key.'

Who makes that intervention was a question that Crawley took to a patient advisory group at the Centre for Child and Adolescent Health. 'I thought we could get a therapist or a doctor to go into a school and talk to the kids who are missing school with fatigue,' she says. 'The teenagers in the advisory group liked it, but they didn't want a professional coming into school – they said "everyone would think I was a complete nutcase. We go to see the school nurse about cool stuff like contraception and smoking, so if we go to the school nurse, no one will know why we've gone".'

The school nurse it was, then. Having completed feasibility testing in Bath to see whether school nurses could deliver the intervention, the next step is to get funding to run a larger trial across the UK.

Mobile ME

'Managing chronic fatigue is especially tough for children,' says Crawley. She created activity monitoring charts, but many children hated colouring them in. After the team had tried different ideas – energy 'debit' cards, even marbles – a friend suggested an iPhone app. So Crawley worked with the Royal National Hospital for Rheumatic Diseases, the Northern CFS/ME Clinical Network and Indigo Multimedia to develop ActiveME, which helps patients monitor their activity and energy levels. The app won a Bright Ideas award from NHS Innovations North.

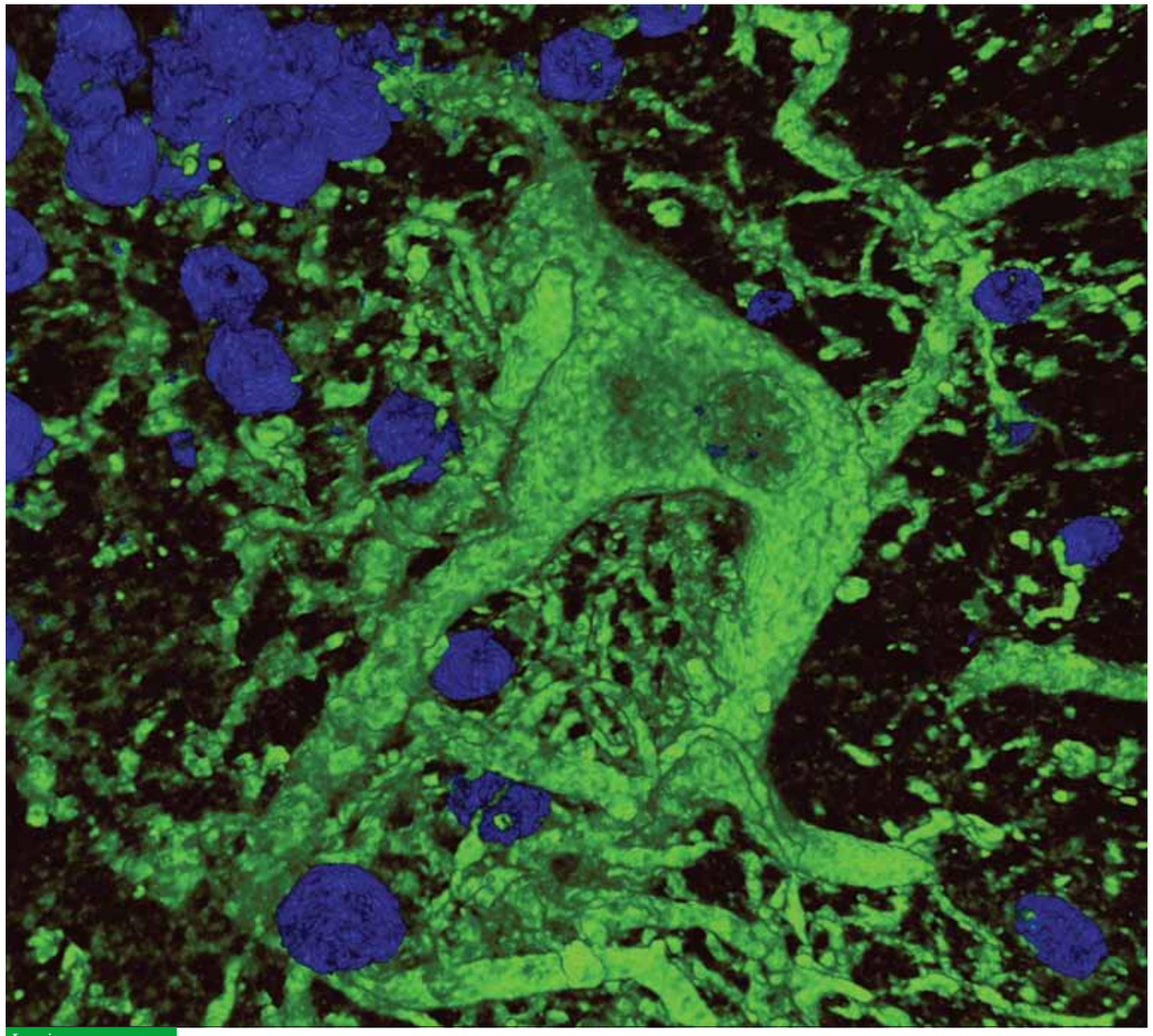
Priorities

There are plenty of research avenues to choose from, all at varying stages in the funding application process: studying cognitive problems using MRI brain scanning; examining more closely the condition's links with maternal anxiety and depression (using data collected via the University's Children of the 90s project); and setting up a global bio-resource of patients' DNA, blood and urine, together with details of their symptoms, in order to study the varieties of chronic fatigue and their mechanisms. This is all important work; but the priority, Crawley emphasises, lies in helping patients as soon as possible.

'The aim of my fellowship is to improve the diagnosis and management of children with chronic fatigue syndrome,' she says. 'That's what I'm about. I always think that if I was involved in a car crash, and my femoral artery was gushing blood – sorry, that's a doctor thing – and I knew I only had five minutes left, I would hope I'd say "At least I made a difference to kids with chronic fatigue".' ●

Dr Esther Crawley's research is funded by NIHR, the Linbury Trust and the Ashden Trust, Research for Patient Benefit and Action for ME.

Portrait © Jason Ingram



In pictures

This image, taken using one of the microscopes in the **Wolfson Bioimaging Facility**, represents a milestone: the publication of the 500th research paper to include data acquired in the Facility.

The image shows detail of a single Purkinje cell (a kind of neuron, here labelled green using immunofluorescence) in the brain of a patient with multiple sclerosis (MS).

The paper, by Dr Kevin Kemp and colleagues in the School of Clinical Sciences and published in the journal *Brain*, used confocal microscopy to show for the first time how circulating bone marrow cells infiltrate and fuse with Purkinje cells to form heterokaryons (cells with two distinct nuclei) in the MS patients' brains.

The researchers' hypothesis is that this formation is a natural strategy to introduce healthy nuclei or functional genes into aged or degenerating cells. The prospect of enhancing this inbuilt mechanism could open up an exciting new avenue for treatment of inflammatory brain disease as well as a wide range of neurodegenerative conditions of the cerebellum.

The Facility's extensive range of advanced light and electron microscopy systems supports a broad range of biomedical and physical science research projects throughout the University and beyond.

bristol.ac.uk/biochemistry/wbif

Helping future generations

'We remember with pleasure and gratitude our own times at Bristol studying first as undergraduates and then as postgraduate scientists. We notice that recent political and economic pressures are driving universities to work first and foremost on teaching, and only on research when it is aimed at a demonstrable benefit to humanity. Research where eventual outcomes, uses and impact are completely open and unmapped, but which has historically yielded exciting breakthroughs, is now the poor relation, and is threatened with extinction. We give what we can now, but by specifying that our legacy to Bristol University be used for blue skies research, we are able to make a contribution to rectify this unwelcome trend beyond our lifetimes.'

Dr Ted Moss (BSc 1966, MSc 1968, PhD 1971) and **Dr Catherine (Kitty) Moss** (BSc 1964, Testamur 1965, PhD 1970)

bristol.ac.uk/centenarycampaign/how/legacies

Exempt charity number: X1121

If you would like to know more about leaving a gift in your Will, please contact Laura in confidence either on the phone, via email or through the post and she will be delighted to get in contact at your convenience.

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