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The University of Manchester

Science for Life

The newsletter for alumni and friends of the Faculty of Life Sciences

Issue 1 - Spring 2011

Message from the Dean

Spotlight on:

- Nancy Rothwell
- Healing Foundation Centre

Teaching and learning, then and now

The Faculty of Life Sciences and its alumni

For many graduates the connection with their alma mater may lack real meaning, with few benefits or obligations, but in the Faculty of Life Sciences we want to forge real and valuable links. Our Alumni Relations team is creating an active body of supporters who are interested in and contribute to the Faculty's work, taking part in social, educational and networking activities and acting as ambassadors for the Faculty.

What can we offer our alumni?

- A link with one of the country's most dynamic Life Science faculties
- An opportunity to share in the life of the Faculty, to meet those at the cutting edge of research and join a forum for ideas and debate
- An opportunity to catch up with old friends and acquaintances
- A calendar of activities which reflect our alumni's social and professional interests.

What sort of events and activities do we plan?

- A regular newsletter from the Faculty Dean
- Reunions in Manchester, London and elsewhere
- A projected 'Science for Life' weekend: an opportunity to visit Manchester, meet old friends and attend informative talks and social events
- An alumni circle, allowing alumni and friends of the Faculty to meet its staff
- A Special Interest Group on life sciences, where Faculty alumni can connect with interested graduates from other Faculties.

What will FLS gain from this initiative?

- We welcome input from those with experience and expertise gained outside the University, to help us review and test our teaching practices, research priorities and public engagement and sustainability activities
- As a vital bridge between the Faculty and the rest of society, our alumni can help us contribute to the wider public understanding of science
- Our alumni can support the Faculty in a number of practical ways: initially by helping with recruitment, mentoring, alumni events and reunions and later with our wider programme. Financial contributions - however modest - are always welcome, but are not a condition of active participation as an alumnus.

What would we like you to do next?

- Please respond to the questionnaire enclosed with this newsletter, either by post or by downloading from our web page and emailing to us at the address below. We're keen to build our understanding of our alumni community, so your response is valuable and appreciated.
- Save the alumni web page www.ls.manchester.ac.uk/about/facultyessentials/alumni as a 'Favourite', and look out for the forthcoming alumni programme
- Encourage your university friends to take part in alumni activities and reunions
- Assist in University and Faculty initiatives by providing career details for our 'Alumni Profiles' (see questionnaire)
- Volunteer to co-ordinate a local alumni group, or, if you live in the Manchester area, to help with our developing alumni programme.

The Faculty's new AV Hill Building

In this issue

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Front cover image by Dr Elaine Emmerson and Dr Matthew Hardman (Faculty of Life Sciences) - Fluorescent staining of cultured murine dermal fibroblasts for the matrix component alpha-Smooth Muscle Actin (αSMA) (x40 magnification)

Royal Charter Number RC000797

Message from the Dean

Dear Graduate,

I would like to welcome you most warmly to this first publication of a Faculty of Life Sciences alumni magazine. I hope you find the contents of the magazine interesting and that the articles within trigger fond memories of your time studying in Manchester.

Although some readers will have just graduated from the new University of Manchester, I recognise that many of you will be alumni of UMIST or the Victoria University of Manchester (VUM). The current Faculty of Life Sciences is an amalgamation of the School of Biological Sciences and the Centre for the History of Science, Technology and Medicine from VUM, and the Departments of Biomolecular Sciences and Optometry & Neuroscience from UMIST. It therefore not only contains most of the biological expertise in teaching and research from the precursor institutions, but also claims all of the graduates from founder departments as its alumni.

Post-merger, the Faculty became one of the largest biological groupings in Europe, and it now employs 250 academic staff, teaches 3000 undergraduate students and trains 450 postgraduates. It is also one of the best in the UK for both research and teaching, as judged by its position in the national 2008 Research Assessment Exercise (second) and annual National Student Satisfaction surveys (89% overall satisfaction, and up to 96% in some areas). The Faculty is by far the highest earner of Biotechnology and Biological Sciences Research Council research income of any Higher Education institution in the UK, it publishes around 10 papers per annum in *Nature* and *Science*, and many staff are members of national academies. In the last decade, £170m has been invested in new buildings, 10 spin-out companies have been formed, and our innovations in training and career development for staff have been recognised by the award of *Investors in People* status.

Keeping it in the family: Manchester alumni Martin Humphries (BSc Biochemistry, PhD Biological Chemistry), wife Sandra (BSc Biochemistry, CertEd) and daughter Ashley (BSc Biochemistry with Industrial Experience)

While the Faculty is very proud of its achievements, it also has the extreme ambition of becoming one of the leading Life Sciences faculties in the world. Our strategic plan lays out the route to achieving this aim, and we believe we have the staff, students and facilities to succeed. Our three primary goals cover 'Research', 'Higher Learning' and 'Social Responsibility', and we give equal esteem to each. This reaffirmation of the historic mission of universities will require us to value the contribution that everyone brings to the Faculty, whether through blue skies research, interactions with business and public stakeholders, excellence in dissemination of knowledge or working with schoolchildren and enthusing them about becoming the scientists of the future. In all areas, we recognise the key contribution that our students, past and present, can make through their advocacy and by helping us develop and improve our activities. Engaging with alumni is particularly important to us and the production of this new magazine is one of several strategies we are pursuing.

As you will no doubt have seen and read in the news recently, we are facing a time of unprecedented change in UK higher education and there is still much uncertainty about the future impact of these changes on universities. It is clear, however, that students and parents feel very strongly about the Government's proposals to charge significantly increased tuition fees and pass the cost of HE more substantially onto individuals. We are also concerned about the impact of these proposals, but whatever system we find ourselves operating in, we are determined to drive the Faculty forward, to improve the student experience, and to ensure that our graduates not only leave us with a high quality degree but that they are well prepared for their future careers. We believe alumni are key to this aim and we hope that many of you will want to engage actively with the Faculty, perhaps by passing on your career experiences, being involved in professional networks or returning to Manchester to attend Faculty events.

It is very helpful to us when alumni stay in touch with the Faculty and we have therefore included a short update survey in the magazine that I encourage you to complete and return. I hope you enjoy this magazine, which we intend to publish every six months. If there are specific areas of activity that interest you and you would like to hear more about, or individuals or class groups that you would like to get back in touch with, or if you simply want to tell us what you are doing now, we would love to hear from you.

Professor Martin Humphries
Dean of the Faculty of Life Sciences

Amazon community takes control

The last few decades have seen a substantial shift in the way conservation scientists view the relationship between nature and man. Picture-perfect ideas about nature - once embodied by monuments like Yellowstone National Park in the United States - are no more; instead, there is a realisation that man has played an active part in shaping his environment throughout human evolution. National governments are also now realising that the irresponsible use of natural resources and unprecedented decline in biodiversity is affecting human well-being globally.

Unfortunately there is too little money and time, and too few scientists, to actively measure all the ways we humans are changing our environment. It also seems that government enforcement of environmental laws, particularly in developing countries, does not always work. One possible solution to both problems is to empower local communities to work out what kind of effect they are having on their environment, giving them tools to make informed decisions, take control of their situation and devise solutions that work at a local level.

Dr Richard Preziosi and doctoral students Johan Oldekop and Nathan Truelove recently paired up with the German Development Service in Ecuador to devise a set of workshops, to help local indigenous and rural communities measure biodiversity changes in their forests. The Manchester biologists developed a series of simple ways of measuring biodiversity, based on measuring the number of different kinds of ferns present in tropical forests, and wanted to test how easy it would be for local people to use them.

"For three days we worked with local leaders and development workers to comb the Ecuadorian Amazon jungle looking for ferns," Richard says. "Once these had been counted we took the workshop participants' scores and compared them to our own. The comparisons showed the assessments made by the local leaders were accurate enough to be able to make generalisations about changes in biodiversity in the forests.

"Although the workshops were only designed as a test the results are promising, showing that local communities can learn scientific techniques in very short amounts of time. Although it is too early to say whether these techniques will help local communities to make environmentally-friendly decisions it proves that they can be invaluable allies in the struggle to save biodiversity."

Watching the clock

Soay Sheep - Loeske Kruuk

Many biological systems, including hibernation, seasonal reproduction, feeding and sleep-wake rhythms, are driven by the body's circadian clock, which regulates the pattern of the key timing hormone melatonin. For 10 years Professor Andrew Loudon has been studying how this hormone drives animals' seasonal rhythms, and has recently discovered two genes which are regulated by the melatonin rhythm and drive seasonal reproductive cycles.

Working with scientists from the Universities of Edinburgh and Aberdeen, Andrew screened thousands of genes in Soay sheep, a breed dating back to the Bronze Age whose seasonal body clock is unaffected by cross-breeding. The screening identified two genes which were activated at the same time as hormone levels rose in response to longer days: Thyroid Stimulating Hormone (TSH) and EYA3.

"EYA3 and TSH seem to be part of a 'springtime switch' that drives animals' seasonal rhythms of reproduction and growth," Andrew says. "This switch links the daily circadian clock to the yearly seasonal clock and, being based on day-length, performs reliably even in unseasonable weather.

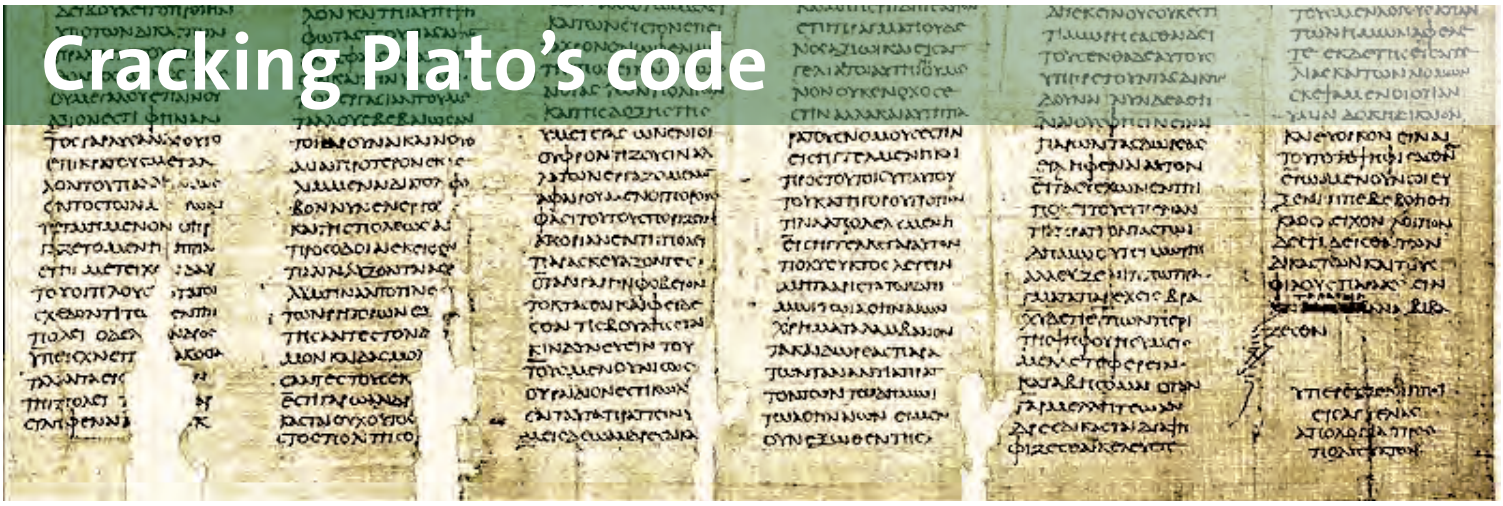
"Seasonal changes in day-length enable animals to anticipate and prepare for changed external conditions, synchronising life events like migration, moulting and reproduction. Our discovery reveals a potential genetic mechanism behind this. The same pathway appears to operate in birds, suggesting that it is an ancient evolutionary timing mechanism dating back at least 300m years."

The team's findings, published in two papers in *Current Biology*, could be crucial in exploring the implications of climate change on strongly seasonal animals, which may struggle to adapt as global warming affects the timing of favourable conditions for growth and breeding. "The evidence is that species in the High Arctic will not be able to adjust their annual clock to match altered local seasons," Andrew explains. "A warmer spring might lead to birds arriving at a feeding area after the peak of food availability has passed for example, to the detriment of their breeding success.

"Defining the molecular pathways underlying day-length synchronisation should allow genetic analyses of the impact of climate change on seasonal species, and may enable us to predict their vulnerability based on habitat and genetic make-up."

NEWS

Cracking Plato's code



Science historian Dr Jay Kennedy has cracked the 'Plato Code' – the long-disputed secret messages hidden in the great philosopher's writings.

Plato is considered the Einstein of ancient Greece and the father of Western culture and science. He founded the world's first university, enabled women to study there, and defended romantic love and homosexuality in his 30 books. "He played a major role in founding Western culture, shifting us from a warrior society to a wisdom society," Jay says. "But his books are mysterious and seem to end in riddles.

"In antiquity many claimed they contained hidden layers and codes, but this was rejected by modern scholars. I've now shown that they are there and managed to crack them, revealing a philosophy which would have seriously threatened Greek religion."

Jay's findings were published in the US journal *Apeiron*, and reveal that Plato used a regular pattern of symbols, inherited from the ancient followers of Pythagoras, to give his books a 'musical' structure. Pythagoras had declared that the formations of planets and stars made an inaudible music, a 'harmony of the spheres', and Jay's five-year study revealed that Plato had imitated this.

The philosopher placed clusters of words relating to music after each twelfth of the text in his books, representing the 12 notes of a Greek musical scale. At the locations of harmonic notes he described sounds associated with love or laughter, while the locations of dissonant notes were marked with sounds of screeching, war or death. "Plato played his readers like musical instruments," Jay says.

The de-coded content indicates that Plato anticipated the Scientific Revolution 2000 years before Newton by uncovering its central idea: that mathematical laws and not gods control the universe. But it also suggests that the awe and beauty we find in nature is evidence of its divinity, and that to discover the scientific order of nature is to get closer to God.

"This is an amazing discovery – like opening a tomb and finding a new set of gospels written by Christ himself," Jay says. "With undetected symbols on all 2000 pages it will take a generation to work out the implications."

Unravelling the pathway to blindness

Professors Tony Day and Paul Bishop have discovered a new cause of age-related macular degeneration (AMD), a condition that affects more than 50 million people and is the biggest cause of blindness in the industrialised world. AMD causes the cells within the macula, the central part of the retina responsible for detailed vision, to become damaged and stop working - and there is no treatment for 90% of cases.

"Several factors, including smoking, can contribute to AMD, but more recently it's been discovered that many sufferers are genetically pre-disposed to it," Tony says, "What was not known was how it was actually being caused, but we unravelled the pathway to show the effect of a common genetic variant."

Five years ago scientists discovered that people with a specific variant of the gene for complement factor H (CFH), a protein molecule responsible for regulating part of the immune system, have an increased chance of developing AMD. It was thought that the CFH resulting from this gene variant may be working improperly within the eye and causing AMD, but the exact reason for this was unknown.

The team studied eyes donated to the Manchester Royal Eye Hospital Eye Bank after removal of the corneas for transplantation, and found that the AMD-related form of CFH was not localising properly in a layer under the retina called the Bruch's membrane. They then discovered that this form of CFH had impaired ability to bind sugar molecules called GAGs within the membrane, which might reduce CFH at the site - this would cause or exacerbate local inflammation, damaging cells in the retina and eventually leading to AMD.

The research was published in the *Journal of Biological Chemistry* in the autumn. "We now plan to study the GAG molecules in the retina in more detail and see if they change with age, and whether this contributes to the progression of AMD," Paul says. "This will provide useful information for the design and development of new therapies to prevent, or at least slow down, the development of this devastating disease."

Professors Tony Day and Paul Bishop

Spotlight on:
Enrique Amaya - Healing Foundation Centre

The Healing Foundation is a national charity that champions the cause of those living with disfigurement and loss of function, funding research into scientific, surgical and psychological wound healing and tissue regeneration techniques. Its partnership with The University of Manchester saw the launch of a 25 year, £10m research centre within the Faculty in 2007, opened by Simon Weston OBE.

Enrique Amaya is Professor of Tissue Regeneration at the Healing Foundation Centre, which is based in the Michael Smith Building. Dubbed 'the Frog Prince' by the *Times* for his research on frog embryos, Enrique is one of five Principal Investigators, each heading up their own lab.

"Our ultimate goal is to identify treatments that will improve the health, well-being and confidence of patients with disfigurements, be they congenital or resulting from accident or disease," he says. "We'd love to find ways of removing any sign of disfigurement for all three types of patient.

"As a first step we're investigating wound healing and tissue regeneration mechanisms at the cellular, molecular and genetic level, using model organisms like frogs, mice and fruit flies."

It is known that embryos from a vast array of species, including humans, can heal wounds quickly without scarring. Enrique's lab is investigating how this takes place by studying embryos of the frog *Xenopus*. His team is also looking at tissue regeneration in frog tadpoles, which can re-grow fully-formed tails within five days.

"Frog embryos are ideal for this kind of study, as they develop outside the mother's body, are fairly transparent and have the majority of genes in common with humans" Enrique explains. "We've seen that they can repair wounds within one or two hours of injury, without scarring, so we have been looking at the genes, proteins and cells involved.

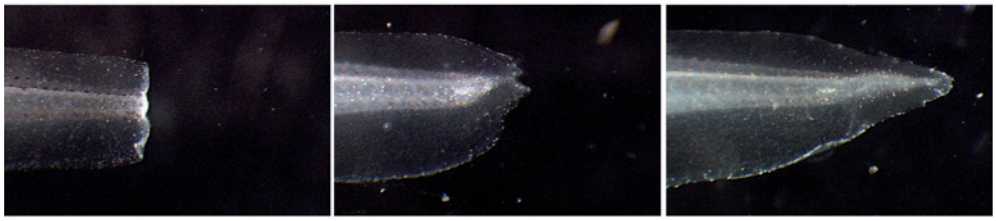
"Inflammatory cells seem to be particularly significant. We've seen that they rush to a wound site but, contrary to what we would expect, do not cause scarring. This over-rules the previous assumption that embryos don't exhibit an inflammatory response to injury, and suggests that a different type of inflammatory cell, which actively helps healing, may be present."

Indeed, Enrique and his team have identified a gene that can drive embryonic stem cells to become inflammatory cells, as opposed to skin or other tissue. These cells can then respond to wounds and fight bacteria, suggesting possible applications in healing treatments.

"A patient's own cells can now be made 'embryonic' and used in treatment, which would remove both ethical concerns and the problem of rejection," says Enrique. "It's very expensive at the moment, but then our work is also at an early stage.

"It's crucial to understand the body's healing and regeneration mechanisms before rushing into treatments, and that's what this Centre is here to do. We have the capacity to double in size and are busy recruiting researchers with common interests, as well as establishing collaborations with clinicians."

www.manchester.ac.uk/hfctr



Tadpole tail-regeneration over five days

Spotlight on: Professor Dame Nancy Rothwell FRS

Professor Dame Nancy Rothwell has been a familiar face at The University of Manchester since 1987. Born near Preston she completed a physiology degree , PhD and DSc at the University of London, before being awarded a Royal Society Research Fellowship and relocating to Manchester shortly afterwards.

Quickly earning an international reputation for her work on obesity and metabolism she was appointed to a Chair in Physiology in 1994, and awarded a prestigious Medical Research Council chair four years later. Her research began to focus on the ways brain cells are damaged as a result of diseases like stroke and Alzheimer's and, in 2003, she was awarded the coveted Pfizer Research Prize.

Already a leading figure across the newly merged campus she was made a Dame of the British Empire in 2005, and, three years ago, appointed the University's Deputy President and Deputy Vice-Chancellor. Now, having served as Vice-President of the Royal Society and President of the Society of Biology and the British Neuroscience Association, Dame Nancy has been appointed President and Vice-Chancellor of The University of Manchester - the first woman leader in its 186-year history.

But, despite the demands of the role and the challenging HE landscape, Nancy is determined to continue with her core research. "I'm sure there are vice-chancellors at some universities who do research, but it's unusual for one of this size," she says. "But I love the process of discovery and it helps keep me anchored; I need to understand the impact of funding changes and the pressures experienced when teaching."

She currently oversees a group of 25 researchers looking at the causes of brain diseases like stroke and brain haemorrhage, which can devastate our ability to move, breathe, think or remember. They are particularly interested in cerebral ischaemia - a condition also present in some cases of vascular dementia, head injury and after heart attacks or major surgery - which starves part(s) of the brain of blood and oxygen and causes cells to die.

Nancy is investigating the role of inflammation, the body's defense-mechanism which sends extra blood to sites of infection, virus and injury and switches on repair and recovery processes. Conditions like obesity and atherosclerosis can also stimulate inflammation and, if over-activated or occurring at the wrong place or time, it can contribute to cancer, diabetes, rheumatoid arthritis and psoriasis and brain disorders including multiple sclerosis and stroke.

"Inflammation seems to be a major cause of the damage or death of oxygen-deprived brain cells following stroke," Nancy says. "We've discovered that the protein interleukin-1 (IL-1), which causes inflammation, is quickly produced by our brain cells after insults to the brain, and acts as a 'killer molecule'. We're trying to understand what makes cells produce IL-1, how it reaches and acts on other cells, how different brain cells interact after damage and how the blood vessels let immune cells into the brain to activate inflammation.

"One key discovery is that a naturally occurring blocker, IL-1RA, stops IL-1 causing inflammation, so can reduce damage to the brain. We've undertaken the first clinical trial of a synthetic form of this blocker, Kineret, in stroke patients, and found it could offer a treatment for stroke and related conditions." Nancy has long experience of working with industry and is keen to further develop partnerships between the University and companies.

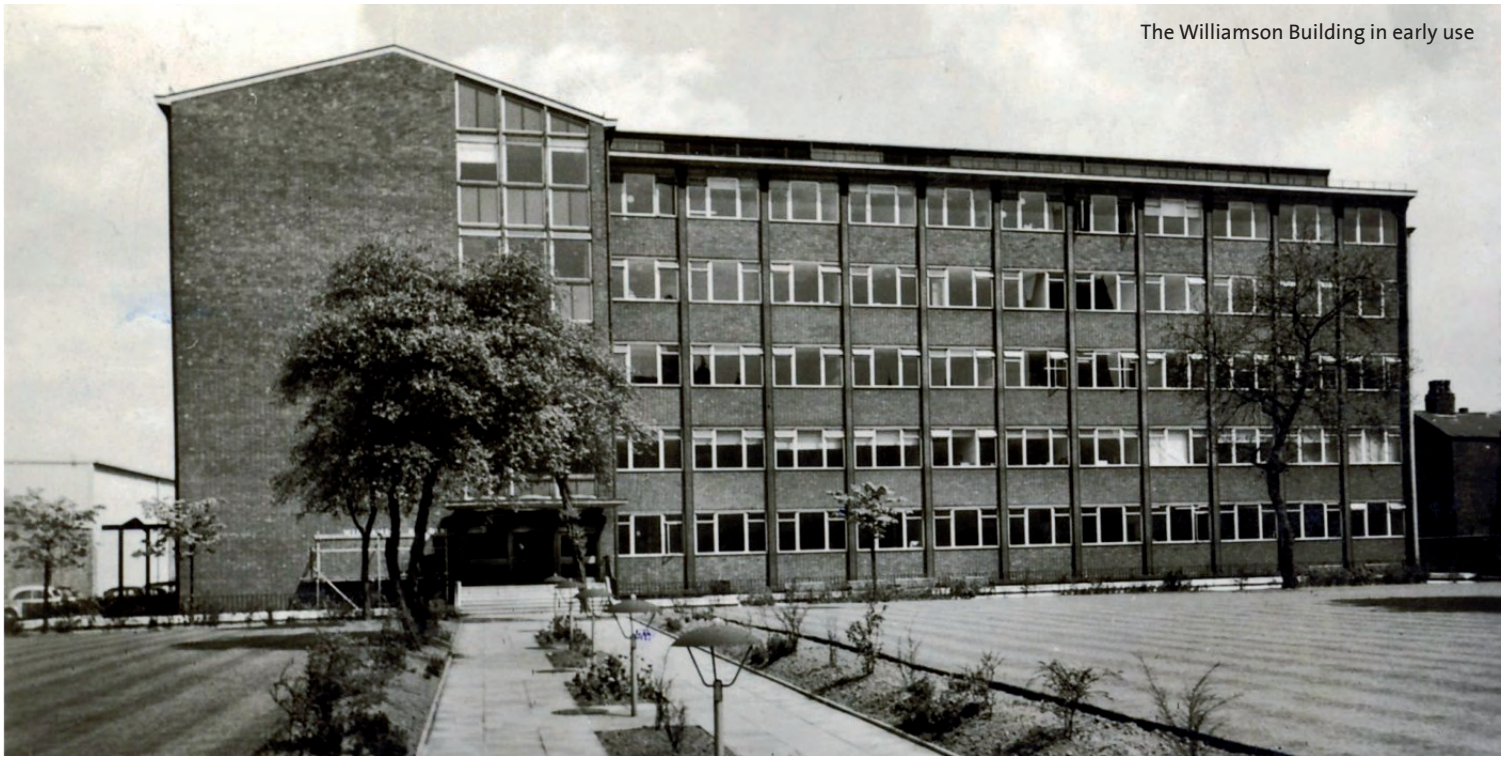
In addition to her own projects, Nancy is determined to boost the quality of research across the University. "We want the best researchers, whether they're young people we nurture, top staff we support or 'stars' we recruit from elsewhere, and we have to give them the best facilities, environment and support," she says. She is equally committed to meeting undergraduates' high expectations, pledging increased personalised support, feedback and collegiate activities.

Off campus Nancy actively supports the public communication of science; her work with adults, schoolchildren and the media including the Physiological Society's annual public lecture in 2010. Social responsibility is also a passion, and she's keen that the University contributes to wider society throughout its research and teaching activities.

"People ask me why I want to take on the role of Vice Chancellor, especially at this difficult time, but I see it as an exciting opportunity to build on the great success of this University," she says. "I'm keen to work with our many partners and stakeholders, locally, nationally and internationally - our alumni are particularly important to the future of the University and I hope that we can involve them in many of our activities."

www.manchester.ac.uk/ls/research/researchgroups/neurosciences

Teaching and learn



The Williamson Building in early use

Like Manchester itself, the University has undergone huge changes over the last 40 years. Returning alumni will notice transformations across the campus, with old landmarks like the Maths Tower and Refectory being replaced by new, state-of-the-art structures, but there have also been significant developments in the structure, facilities and activities of many University departments. Not least among these is the Faculty of Life Sciences, which has evolved from the biosciences disciplines of the Victoria University of Manchester and UMIST since the intuitions merged in 2004.

Back in the 70s Manchester had no unified school or department for the study of biological sciences, with students spread across various VUM and UMIST faculties. Although there was significant unification at VUM in the mid-80s the scope and scale of its School of Biological Sciences bears little comparison with today's Faculty, which is one of Europe's largest biological groupings with an annual undergraduate intake of 750. With over 250 academic staff, 3000 undergraduates and 450 postgraduates from over 40 countries FLS is considered one of the best and most successful teaching and research facilities in the UK, with almost 90% of its students being satisfied with the quality of their experiences in the National Student Satisfaction Survey and the Faculty ranking second in the country in the 2008 Research Assessment Exercise (beating Oxford in terms of research power).

Alumni gather in one of University Place's showcase lecture theatres

Manchester's move away from a traditional, segmented approach to animal and plant biology began in the early 80s, when there was a shift towards genetics, integrated molecular biology and new flexible degrees. This approach was fully realised when a single school, single department structure was created as part of the 2004 merger, combining UMIST's Departments of Biomolecular Sciences and Optometry & Neuroscience and VUM's School of Biological Science and Centre for the History of Science, Technology & Medicine. The integrated approach ensures that there are no barriers to collaboration and communication as the Faculty works to uncover cutting-edge knowledge, which benefits basic, translational and cross-disciplinary research, knowledge transfer and innovation.

Today's Faculty covers the full spectrum of life sciences, from molecule to cell to organism to population, with a strong emphasis on interdisciplinarity; allowing it to offer 20 taught courses as well as over 30 research programmes. It receives far more studentship funding from the Biotechnology and Biological Sciences Research Council (BBSRC) than any other UK university department, and its 20+ research centres, institutes and facilities, including the UK Centre for Tissue Regeneration, NorthWest Embryonic Stem Cell Centre and Manchester Interdisciplinary Biocentre, are internationally renowned.

But what of the day-to-day experience of students of biological sciences then and now? In the 70s the main base for VUM students was the 1959 Williamson Building, which had recently been extended, while UMIST scholars studied in a converted industrial site, The Mill. Today all students benefit from 21st century facilities, with £170m invested in new Life Sciences buildings in the last decade. Most of the Faculty is housed in purpose-built accommodation, including the recent

ing, then and now

£38m Manchester Interdisciplinary Biocentre, 2004 Michael Smith Building and 2009 AV Hill Building (both named after Manchester Nobel prize-winners), with aerial walkways connecting these with the Stopford and Core Technology Facility buildings to create a comprehensive, linked complex.

Inside the buildings students now have access to vastly improved, modern lecture theatres, in both the Stopford Building and the new flagship University Place. In the Stopford Building the undergraduate teaching labs were refurbished and expanded in 2005 and now accommodate up to 700 students, and a dedicated teaching and learning community has been opened to bring together around 13 teaching-focused FLS staff. Where a 1973 brochure boasted of having three computers, today's Faculty computing services provide over 200 PCs and a dedicated eLearning team. In addition, the anatomy facilities offer a full range of dissection, histology and computing resources and dedicated teaching staff. Even the familiar institution of the Manchester Museum has undergone a full modernisation programme, and now offers an innovative conservation centre as well as access to natural history collections of international importance.

Naturally, FLS is proud of its facilities and achievements, and keen to attract students with a wealth of interests and backgrounds. Its widening participation activities include 'Discover Days', allowing local sixth-form students to experience lectures and lab sessions and interact with current students, and Science Stars workshops which bring around 350 year 8 and 9 students into the labs each year. The Faculty regularly runs activities at local schools, museums and science festivals and

The Mill shortly after it became part of the University

A computer cluster in the Stopford Building

is involved in a pioneering foundation programme with nearby Xaverian Sixth Form College, as well as the University-wide Manchester Access Programme which supports local students' entry to research-intensive universities.

Once their study is underway, FLS students are offered one of the most comprehensive and innovative transferable skills training programmes in Europe, incorporating tailored skills-development support for each student. Around 120 student placements opportunities are also available each year, across the USA, China, Japan, Central America, the Mediterranean and Africa - including with the Medical Research Council's Infectious Diseases unit in The Gambia. The first Gambian recipients of the scheme's £10,000 a year BSc studentships graduated from the Faculty in 2010.

Certainly a lot has changed in the biological sciences at Manchester over the last few decades. According to Duncan Wilson, a historian of biology and bioethics in the 20th century based in the Faculty, Manchester perceptibly lagged behind biology at Cambridge, Oxford and the London universities in the 70s and early 80s, but today FLS is considered one of the leading research-led life science faculties in Europe and is in many cases world-leading. The city too is unrecognisable when compared with its 1970s counterpart, whose grim image prompted botany prospectuses to promote it simply as "a cheap place to live" - by the late 80s a growing reputation for music and nightlife had launched Manchester's evolution into the vibrant cultural hub it is today. The University has long received more applications for undergraduate study than any other in the UK, with FLS receiving 4240 applications for its 750 places last year.

"Since the foundation of the Faculty of Life Sciences in 2004 we have spent around £9m on improving our teaching and learning facilities, including £2.5m on expanding practical teaching facilities in the Stopford Building, £6m on relocating Optometry to Dover Street, £150,000 on redeveloping space within the Stopford Building for teaching-focused staff and £250,000 on computers and other facilities," says Associate Dean for Teaching and Learning Professor Richard Reece. "Our sustained excellent results in the National Student Survey suggests that this investment, together with a huge level of commitment and skill from a wide range of staff, has made FLS students some of the most satisfied in the country."

Emma Jolly, who graduated in Biology in 2006 and is now an Editorial Project Manager for Springer Healthcare Ltd, is passionate about her time in FLS. "I really enjoyed my course, in particular the variety of theoretical and practical modules offered, and would absolutely encourage other students to study here," she says, "Not only is it part of a leading university, but the standard of teaching and learning support offered is fantastic. I work in medical publishing and couldn't do without my FLS degree: as well as the theory I came away with presentation-, writing-, communication- and even CV-writing skills, all of which have helped me get a job I really enjoy."

Current optometry student Caroline Fisher feels similarly about her FLS experience. "I love the course and its relevance to my chosen profession, and working in such a well-established international research centre," she says. "The staff/student ratios are great and my timetable is always full; I have to be well organised but I think this course is one of the best - if not the best - in the UK."

The reception area of the Stopford Building in the 70s

One of the refurbished teaching labs

A modernised lecture room in the Stopford Building

Professor Ian Kimber

Associate Dean for Business Development

The University of Manchester's Faculty of Life Sciences is undoubtedly one of the best bioscience departments in the country. With state-of-the-art facilities and over 210 world-class 'Principal Investigators' our collective expertise covers a huge span of biological sciences, from plant sciences, cell and molecular biology to genomics, cancer biology, neurobiology and regenerative medicine.

The depth and breadth of this know-how lies at the heart of the Faculty's strength, reputation and productivity, and it's difficult to identify an aspect of biology where we can't make a contribution. To help us ensure that the fruits of our investments in research deliver real benefits to our industrial partners we have a dedicated Business Development function, focusing on two main tasks.

The first is to constantly seek ways to better align the Faculty with industry, through developing a clear understanding of how our expertise can address issues of importance to our industrial partners.

Times are changing. Universities these days are about more than carrying out research and teaching students: we want to contribute to the health and wealth of the nation. To do this we have to ensure that our know-how is made available to our colleagues in industry. The result is a two-way partnership; we provide know-how and expertise in the biosciences, and in return the Faculty and University gain access to new thinking, new problems and also possibly to resources that are not available here.

Our job is to maintain, expand and extend these partnerships, and make it easy for academics and industry to work together. To this end our infrastructure is constantly developing to support collaborations, and there has been a cultural shift across the University that ensures that partnerships with industry are recognised, valued and rewarded. Most importantly we're constantly talking and listening to industry, to understand what it needs from us.

This approach continues to bear fruit and FLS currently has collaborations with over 60 industrial partners, including healthcare, biotechnology, chemical, oil and food companies of all sizes. Income from collaborations has increased by around 60% over the last 12 months and several major new partnerships are in the pipeline for next year, each providing new opportunities to translate our discoveries into benefits for UK Plc.

The other key aspect of FLS's business development function is commercialising our discoveries and the knowledge we generate. Our research often creates exciting opportunities to develop valuable new products and processes, and we actively encourage academics to seek ways to translate their findings into useful applications; be it via a patent, developmental work with an industrial partner or even a spin-out company.

The University of Manchester is refreshingly enlightened about providing encouragement and incentives for people to commercialise, and this in turn helps us attract some of the world's best researchers. Building close partnerships between universities and industry is something we've been focusing on for some time, and which the Government now recognises as an important responsibility of universities. We believe the research excellence available in FLS can really help the country compete effectively in the global market.

If you're interested in discussing ways of working with the Faculty of Life Sciences at The University of Manchester, please visit

www.manchester.ac.uk/ls/business

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Professor Matthew Cobb

Associate Dean for Social Responsibility

Three of the University's main goals are to produce excellent, world-leading research, provide students with exceptional teaching and a world-class learning environment and be a socially responsible organisation.

The first two goals are clear and we have already made substantial progress on both: the awarding of the Nobel Prize for Physics to Andre Geim and Konstantin Novoselov is just one indicator of our research strength, while the gradual appearance of the new Alan Gilbert Learning Commons building shows our commitment to developing our teaching and learning resources. But 'social responsibility' is a much vaguer goal, and even those of us involved in it spend far too much time discussing what it means.

Paradoxically, that very lack of clarity underlines the importance of social responsibility. The phrase describes our aim to be aware of the importance and impact of the University's place in society: far from living in an ivory tower, we want to relate to our broader communities nearby, nationally and internationally. This means aiming to be the greenest university, providing opportunities for our students to work in the community, opening our buildings and facilities to local people, increasing our student uptake from less traditional backgrounds and explaining our work and its relevance to local schools and communities.

In FLS we're building a strong track record at this kind of work. Two recent examples are the 'Wriggling Rangoli' art project with local Asian women highlighting Faculty research on parasitic worm infestations in the developing world, and our researchers' work to support companies clearing up Britain's polluted waterways. We now need to expand and extend this kind of work to engage with the world community at every level, providing insight and information and driving policy development.

This doesn't mean losing sight of our goals to deliver excellent teaching and research, however. Our aim is that social responsibility will become so embedded in our first two goals and day-to-day work that, within the next decade, it will cease to be an explicit goal at all - it will simply be what we do. In the 21st century The University of Manchester will not only lead the world in teaching and research, it will be an institution that understands its role in society; fulfilling its responsibilities and undertaking striking, novel initiatives to improve conditions for all those it comes into contact with.

If you're interested in discussing ways of engaging with the Faculty of Life Sciences at The University of Manchester, please visit

www.manchester.ac.uk/ls/forthepublic

or contact:

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The 'Wriggling Rangoli' event was fun for all ages

FJF comes to FLS

The Future Jobs Fund is part of the Government's 'Backing Young Britain' campaign, which seeks to help young people into employment by offering six-month placement opportunities. FJF jobs are salaried jobs with normal employee rights, which help build experience, confidence and skills.

The University of Manchester has created over 60 FJF positions during phase one of the scheme, with Life Sciences offering nine placements in areas including Finance, Human Resources, Core Facilities and Education. FLS trainees have been involved in a variety of activities, from using spirometers and transporting gas cylinders to completing risk assessment forms and issuing staff cards.

Early feedback from supervisors and colleagues has been very positive. "We've hit the jackpot with our trainee," says Linda Berry, Technical Resource Manager, "he fits the bill perfectly in terms of knowledge, enthusiasm and competence." The trainees are equally upbeat: "Working within the University has given me a step towards the career I wish to pursue, and confidence and self-belief in achieving my goal," says Jaswinda Singh, a trainee in the Undergraduate Teaching Labs.

The scheme also covers personal development skills like CV-writing, application forms and interview skills, helping candidates re-enter the marketplace with a valuable edge. Many of the FJF trainees have expressed an interest in finding employment within the University, and the Faculty aims to continue to help them build the confidence and skills to facilitate this.

www.manchester.ac.uk/aboutus/jobs

Awards and honours

Postgraduate Research Student of the Year

Dr Elizabeth Pawson has been named the Faculty's Postgraduate Research Student of the Year for 2010/11. Supervised by Dr Natalie Gardiner, Elizabeth has been an exemplary student throughout her time at The University of Manchester, gaining a first class BSc in Biochemistry with German followed by an MRes.

She then undertook a PhD in neuroscience, attracting funding from the Medical Research Council and winning travel awards/fellowships from *Brain* and the Peripheral Nerve Society and conference funding from Manchester's postgraduate conference travel fund which enabled her to present at eight international conferences. Her work resulted in the publication of a high-impact research paper in the journal *Diabetes* in 2009.

Lizz submitted her PhD thesis within three years, further demonstrating her capability, organisational skills and flair for science. But she also found time for collegiality, serving as Postgraduate Representative for her section and a founding member of the Faculty's Postgraduate Society in 2007-8.

Having organised and sourced funding for Professor Bruce Alberts' speech to the Society's inaugural meeting, Professor Alberts asked Lizz to co-author the dossier *Manchester Life Sciences Public Engagement* (with Professor Alan Dickson and Dr Jason Bruce). This built on her work communicating science to the public as an academic tutor on the Manchester Access Programme, and as a volunteer at the 'Challenging Stereotypes and Broadening Horizons' event which encouraged schoolgirls to consider careers in science research.

Lizz Pawson (front row, second from left) celebrates with senior staff and other winners of the University's Distinguished Achievement Awards

Obituary

Professor Elizabeth Cutter

Following a First Class Honours degree from the University of St. Andrews Elizabeth Cutter undertook a PhD at the Victoria University of Manchester, and joined its Department of Botany in 1955. With Professor Claude Wardlaw she established the University as an international centre of excellence in plant morphogenesis, before being appointed a chair at the University of California Davis in 1964.

Elizabeth returned to Manchester in 1972 for family reasons, and resumed her work at the University. In 1979 she was appointed to the George Harrison Chair of Botany, one of only five women holding professorships in the institution.

When the new School of Biological Sciences was formed in 1986, Elizabeth chaired the committee that established its 18 BSc teaching programmes - the University's first modular degrees. Generations of students and staff have benefited from her guidance, sensitivity, kindness and integrity, and four of her graduate students now hold chairs in North America.

Retirements

John Pickstone will retire from his Chair in the History of Science and Medicine in September 2011, having joined the University in 1974. John and his then head of department, Donald Cardwell, quickly had the idea of teaching the history of biology to biology students, and, after a successful trial teaching to staff at lunchtimes, the long-running course 'Foundations of Modern Biology' was born.

Professor John Pickstone

In 1986 John set up the Centre of the History of Science, Technology and Medicine (CHSTM). The local and regional history of science and medicine have long been his key interests, and CHSTM has used Manchester as a 'historical laboratory' to study everything from the politics of hospitals and fevers in the 18th century to the recent exploitation of genomics. John is also known for writings on the various 'ways of knowing' found historically across sciences and technologies.

"Historians tend not to retire," he says, and his ongoing projects include work on science and art and a new history of Manchester's Medical Faculty and hospitals since World War II. He is also keen to continue the public engagement work of 2009's hugely successful Manchester Histories Festival, and to promote the University's appreciation of its history and links with the city.

Professor of Neuropharmacology David Tomlinson officially retired three years ago but has remained with the Faculty in an honorary post. Since leaving his permanent position he has become a semi-professional naturalist, having been a keen birder since he was a teenager.

"On retirement I became a volunteer with the Royal Society for the Protection of Birds, and now have the official title of Biodiversity Officer at the Coombes and Churnet Valley Reserve," David says. "My job is to organise and collate data from surveys of birds, butterflies, moths and anything else that might impact on reserve management, as well as supervising students doing projects at local colleges.

Professor David Tomlinson

"I've continued to be involved with research in the Faculty, working on peripheral nerve disease in diabetes with my former post-doc student Natalie Gardiner. I have also taken up serious digital photography, especially of birds and insects, and my efforts can be viewed online at www.davidtomlinsonphotos.co.uk."

Editorial: Jo Nightingale Communications - www.jonightingale.co.uk