

CARDIFF  
UNIVERSITY

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# News

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## Our 'Star' performer

A new focus for Research,  
Innovation and Enterprise

# Introduction

As a research-intensive University which aims to be among the top 100 universities in the world, our commitment to research, innovation and enterprise is crucial.

“ This edition of *Cardiff News* provides a brief insight into this work and our plans for this key area of University activity over the next few years.

In this edition you'll get a snapshot of how our research is already having a major impact. From improving labour relations in world ports to providing the evidence base for a roll-out of health checks for people with learning disabilities.

Professor Jenny Kitzinger from our School of Journalism, Media and Cultural Studies sets out how her pioneering work into decision making for people in a vegetative state is raising greater awareness of this emotive issue and helping inform future practice.

You'll also learn how our growing reputation internationally is helping attract some of the world's best minds to Wales - with the first

appointment under the Welsh Government's flagship *Sêr Cymru* programme and how our world-leading Cardiff expert in the genetics of Alzheimer's has been brought into the heart of Welsh Government to direct science policy.

The University's Vice-Chancellor, Professor Colin Riordan also introduces the concept of the Innovation System and sets out what this means for our future direction.

Investing in some key research areas we are already making a real difference and helping to tackle some of the world's biggest challenges.

However, we simply can't afford to rest on our laurels, which is why as a University we are already looking to the future to ensure we lead the research agenda in Wales, the UK and internationally.

Whether it's positioning Cardiff for the next round of European Funding, setting up new research networks to discover new drugs or collaborating with partners like Bristol, Bath and Exeter to deliver more research income via the emerging GW4

partnership – we are already leading the way.

Finally, one of the major planks of our work is our international outlook.

You'll meet members of our European Office who are working alongside academics from across Cardiff University to make sure that we are positioned as the best and get a fair chance of accessing funding in the next round, as we look towards Horizon 2020.

Cardiff University has set itself the next five years to ensure our research continues to have a global impact by tackling the grand challenges of our time.

To do so, we need a set of actions: being highly selective in where we invest and where we choose to collaborate at a Wales, UK and international level; invest in major infrastructure projects; develop further our exciting plans for an *Innovation System* and build on our Research Institute's specialisms.

It's an exciting agenda and I hope to keep you updated in future editions.”

*Professor Hywel Thomas  
Pro Vice-Chancellor for Research,  
Innovation and Enterprise*



*Professor Hywel Thomas*

*“Investing in some key research areas we are already making a real difference and helping to tackle some of the world's biggest challenges.”*

# Cardiff Innovation System

*“At Cardiff University we want to create an Innovation System that will drive economic growth in Wales.”*

The new concept of an Innovation System is set to form an essential part of the mechanism by which the University will deliver innovation and enterprise. Here, Vice-Chancellor Professor Colin Riordan outlines what the concept means in reality.

*Professor Colin Riordan*

“What are universities for? Everybody knows that universities exist to educate students and help to create a highly educated workforce.

Most people know they're also the place where research is done that ends up in technologies like smartphones, fuel-efficient cars and advanced medical care.

That means universities are a critical part of the innovation process.

Innovation is key to prosperity and improved well being, because it's the invention and adoption of new products, processes, techniques and policies which, in mature economies, drive growth and future prosperity.

The journey from idea to product is not straightforward though. The right conditions are needed.

Silicon Valley was a success because universities - especially Stanford University - and the

computer industry were co-located in California and, supported by government contracts, were a well-spring of innovation that drove the information revolution.

At Cardiff University we want to create an innovation system that will drive economic growth in Wales. I don't mean that we want to try to imitate what happened in Northern California from the 1940s on. But we can create a next-generation innovation system that will help put Wales at the forefront of new developments in technology, services, health, social policy, heritage, the arts and other areas.

To do this we need to create a culture of innovation. Our scientists working in key, close-to-market areas like catalysis, medical instruments, energy, aircraft materials and the like, need facilities where they can work closely with their counterparts in the relevant industries to take lab

ideas to the stage where they can become commercial products.

We need innovation hubs where start-up companies can get affordable space, advice and support so that their companies can grow and become independent. These companies might be university spin-outs, graduate entrepreneurs or local people with bright business ideas. We want students to be closely involved.

We'll create a centre for enterprise education fed from Cardiff Business School. We want undergraduates to become used to innovation as a normal part of university life. We want to create a magnet that will attract businesses and allow them to grow and flourish. We want to add a social science element, so that we always know what's happening in innovation policy round the world and understand how the public is going to view new products,

services and technologies. We can help devise new policies that will work for Wales.

This is not just about technology.

Creative industries are a major growth area here and we'll want a Creative Industries Hub to help drive innovation in that area too. We'll need to work in partnership with the Welsh Government, local authorities and other universities so that the whole of Wales is working together.

Make no mistake, Cardiff University is innovating now. We always have. But we must be strategic and systematic, investing in our Maindy Road and Heath Park sites to ensure that we do everything possible to promote innovation, prosperity and improved wellbeing for the people of Wales into the future. ”

Seminars are being planned for staff to engage further in the development of the Cardiff Innovation System during November and December.

# Shaping science policy

Cardiff University's Professor Julie Williams CBE has been appointed Wales' new Chief Scientific Adviser.

The Chief Scientific Adviser for Wales (CSAW) is responsible for providing independent and top quality scientific advice to the First Minister and his administration across a broad spectrum of topics to support decision and policy making.

"I am honoured and delighted to have been offered this great opportunity to help shape, develop and champion the role that science plays in our society here in Wales and especially to follow in the footsteps of Professor John Harries who did so much work to support science and scientific research in Wales," said Professor Williams, on taking up her new post.

"The Welsh Government has already proved it takes science seriously and is prepared to construct strategies which take us in new directions and I want to play my part in helping that continue.

*"I know a lot of hard work lies ahead but Wales and the Welsh Government have already proved we are prepared to lead the way."*

"Wales has some outstanding scientists working at the cutting-edge of research. Part of my role as Chief Scientific Adviser, will be to build on this strength and expand scientific excellence in Wales. The Sêr Cymru initiative provides a real opportunity to achieve this by supporting and attracting world-class scientists and by establishing new National Research Networks, in priority areas of science and engineering.

"One aspect of my new role which is particularly close to my heart is the need to ensure every child in Wales knows the great opportunities which exist for them within the field of science and that science can be great fun.

"I am also very grateful to Cardiff University for allowing me to continue the research into the genetic

causes of Alzheimer's Disease with the excellent team we have in place.

"I know a lot of hard work lies ahead but Wales and the Welsh Government have already proved we are prepared to lead the way," she added.

Professor Williams took over from Professor John Harries who retired earlier this year and was responsible for developing the *Science for Wales* strategy and introducing a number of initiatives to increase Wales' science capabilities. Professor Williams will build on this, placing a particular emphasis on enhancing the provision of scientific advice in Welsh Government decision making across all its business areas.

Vice-Chancellor, Professor Colin Riordan said: "Professor Julie Williams's career as a scientist at Cardiff University has been

remarkable, progressing as she has from Research Fellow to leading Professor in barely more than 15 years.

"Her discovery of genes that predispose people to contracting Alzheimer's disease was an internationally significant step forward in our understanding of this devastating disease, and I am sure her appointment as Chief Scientific Adviser will be an inspiration to many.

"The Welsh Government can be sure that it will be receiving the highest quality advice from a world-leading scientist who not only comes from Wales, but has made her career here. I am delighted for Julie, and on behalf of everyone at Cardiff University, I wish her every success in this new role."



Professor Julie Williams

## ‘Hidden’ health needs of adults with learning disabilities untapped

More than 40,000 adults in England and Wales with learning disabilities are getting their health needs assessed and treated as a result of University-led research.

Research by Professor Michael Kerr and Professor David Felce from the University’s School of Medicine led to the roll-out of an annual programme of health checks designed to identify and treat what was previously ‘hidden’ illness.

“Adults with a learning disability are a vulnerable group with high morbidity and substantial health disparities compared to the general population. Difficulties in understanding and communication mean that most cannot adequately recognise and report illness,” according to Professor Michael Kerr, who led the research.

“Pro-active health checking was a potential method of uncovering hidden health needs and so we embarked on research which put it to the test,” he added.

As a result, the Cardiff team devised the Cardiff Health Check format and embarked on two seminal studies.

The first on the impact of conducting a health check and the second on the

impact of repeated health checks.

The latter is the most comprehensive study of repeated health checks to date and provides the evidence for health checks to be conducted annually.

The research found that hidden health needs were identified for 51 per cent of patients with 63 per cent having one health need, 25 per cent two needs and more than 12 per cent more than two needs.

Amongst the most serious conditions uncovered included cancer, dementia, asthma and diabetes.

Professor Kerr added: “Wales was the first country in the world to introduce comprehensive annual health checking for adults with learning disabilities as a result of our research and key campaigns by the Disability Rights Commission and Mencap.

“This has been followed by Australia and England. In addition there has been considerable usage of the Cardiff Health Check format in New Zealand.

“Overall there has been sustained, widespread behaviour change amongst GPs who have regular contact with people with learning disabilities.”

## Cardiff model dispels ‘myth’ of the ‘strike prone’ dockworker

A new model which brings employers, trade unions and governments together to discuss proposed changes to working conditions has helped nail the myth that dockworkers are inherently ‘strike prone’ and has helped avoid strikes and industrial action in the world’s ports.

Professor Peter Turnbull from Cardiff Business School has developed a unique model for the International Labour Organisation (ILO) based on social dialogue.

The model brings together employers, trade unions and governments to

discuss key issues for the industry including structural adjustment and private sector involvement.

“Despite the widely held belief, in both academic and practitioner circles, that dock workers are inherently ‘strike prone’ our research finds that this is simply not the case,” said Professor Turnbull, who led the research.

Since the 1980s, port reform has been a key priority of governments around the world, with the privatisation of port services forming a significant part.

Matched by changes in work methods and the introduction of advanced communication technologies, it was feared that these changes would be met with widespread strikes and other forms of industrial action, especially in Europe where plans were drawn up for an ‘open market’ for port services, including cargo handling.

“Initially the plan was to deal with these issues, including the problems that typically accompany strikes such as delayed investment and job losses, through a binding Directive.

“However, through our research we have been able to persuade the European Community that it could not legislate better labour relations in ports. Instead, by fostering social dialogue it could achieve the same end, and in a more lasting form,” he adds.

As a result, Professor Turnbull was commissioned by the ILO to develop new guidelines for social dialogue in ports – which brings together governments, employers and workers to jointly shape policies and promote decent working conditions.

# Leading catalysis research

The Cardiff Catalysis Institute (CCI) is a Research Institute for catalysis within the UK that builds upon the current strengths in research at Cardiff. Its Director, Professor Graham Hutchings FRS – himself a research pioneer in gold catalysis – outlines the importance of its work.



Professor Graham Hutchings

“Catalysis is the centre-point of many chemical processes - from the academic research lab through living systems to the industrial large-scale reactor.

Through a detailed understanding and careful use of catalysis many processes can be made faster, cleaner, more economical and more sustainable.

Cardiff University has established the Cardiff Catalysis Institute (CCI) within the School of Chemistry.

We have established a centre of excellence for catalysis within the UK that builds upon the current strengths in research. Chemistry at Cardiff already has excellence in heterogeneous catalysis, homogeneous catalysis and biocatalysis and we bring these together within a single institute so that they can grow and provide the focal point for interdisciplinary interactions within Cardiff and externally with academia and industry.

The initial years of the CCI have gone extremely well, and staff, both established and new, are committed to the continuing development of a centre of excellence in catalysis

at Cardiff, building on the large number of strengths existing in catalysis, synthesis, theory and surface science.

So what does this mean for our ability to attract vital research funding?

Earlier this year, I was delighted that we received a £3M funding boost as part of a major new hub designed to support economic growth, reduce CO<sub>2</sub> emissions, produce cleaner water and generate more sustainable energy.

The Cardiff team will receive £3.19M to lead the environmental element of the research – to help

take waste products and turn them into useful materials.

We will look at how to take ‘waste’ materials such as carbon dioxide and use them to make useful materials, with specific focus on cleaning up atmospheric pollutants, water purification for re-use, protecting the environment and cleaner manufacturing.”

The UK Catalysis Hub, based at the Research Complex at Harwell (RCaH) in Oxfordshire, will enable scientists to collaborate on projects, share insights, expertise and developments; facilitate world-class research and attract new funding streams. Researchers will work at

*Professor Jenny Kitzinger's research is focused on people's experiences of having patients in a long-term coma and their thoughts on what the patient themselves might have wanted in this situation. Here, she outlines how her research focus was shaped by her own personal experience.*

“ Modern medicine has become very good at saving the body. It is less good at saving or restoring the brain. Many of us will end our lives having long lost the mental capacity to make sense of the world around us and having become unable to make decisions for ourselves.

When thinking about 'loss of mental capacity' many people's first thought is 'dementia'. However, my research focuses on people who are in a prolonged coma, a 'vegetative' state (with no awareness) or in a minimally conscious state (with only minimal and intermittent awareness).

In these cases the loss of mental capacity is sudden (rather than a gradual decline). It may result from, for example, a severe blow to the head falling off a horse, ski-ing, or simply driving home from work.

Such injuries often affect healthy young people – people who have rarely discussed explicitly what they would want in such a circumstance. Once they have lost capacity, decisions about treatment are the responsibility of their clinicians (with input from their families).

How we treat such patients raises profound challenges that are paradigmatic of 21st century medicine.

The reason I started doing this research is a combination of the professional and the personal. My research career, spanning the last 25 years, has focused on a wide range of health and science issues, often with an emphasis on examining emerging ethical and social debates. In the 1980s, for example, I worked around HIV/AIDS, and in the 1990s I examined controversies about human genetics.



It was my own family experience however that made me turn my attention to severe brain injury. In 2009 one of my sisters, Polly, was left in a prolonged coma after a car crash. This was a tragedy that took the whole family on a steep learning curve and confronted me with the fact that the media image of 'coma' is very far from reality.

It also made me realize the need for not just communication research in this area but for a concerted interdisciplinary initiative.

I went on to collaborate with practitioners in neurological care to research how long-term services could be improved and worked with a colleague at Brunel University to explore the use of a novel brain scanning technology on vegetative patients. In 2011 I also organized a Wellcome Trust funded symposium with leading figures in the field to examine what future research was needed.

My sister Celia Kitzinger, a Professor in the Sociology Department at the University of York, also had a long-standing career in health related research – and she too has turned her focus to this topic. Between us we have now interviewed more than 50 family members with a relative in a vegetative or minimally conscious state.

We have shared this data with a network of colleagues from across both universities (including specialists in law, philosophy, medicine, history and literature) and

have established a new cross-university research centre.

Our findings have already been used to inform guidelines for care homes and medical professionals and to create decision-support tools for clinicians and information leaflets for families. It has also informed cultural representations - not just media coverage but even a detective novel!

I also served on the Nuffield Bioethics Council working party on novel interventions into the brain and am on the editorial board of a Royal College of Physician's working party of the vegetative state (the new guidelines will be published in December). In the coming months Celia and I will be delivering on a collaboration with Oxford University to translate the research into web based support for families (Thanks to an ESRC knowledge exchange grant).

Stretching my established ways of working even further we are now also developing collaborations with artists - there is already a set of sonnets based on our research!

My portfolio of research about serious brain injury has been developed from the outset in dialogue with practitioners, policy makers and communities of service users.

For me the 'impact agenda' is not a distortion or distraction from what I do, it is at its heart. ”



different universities, and the RCaH will offer training and research.

Catalysis science is vital for many areas of the UK economy. This investment will provide a focal point for the UK's leading expertise in this area, helping scientists further develop their skills and undertake cutting edge research to drive sustainable growth.

From a Cardiff point of view – it means we're positioned firmly at the heart of this exciting area of research. ”

# Sustainable Places Research Institute

The University's Sustainable Places Research Institute is making new connections in sustainability research and progressing sustainability science. It is finding pragmatic, policy-led, local and place-based solutions for individual cities, regional landscapes and nations.

Founded in 2010, the Institute operates across the three Colleges of Cardiff University developing interdisciplinary research to take a wholly place based approach. Bringing together more than 100

researchers the Institute is moving towards developing solutions rather than simply tackling existing problems, this is being done on the specific requirements of individual places.

Links have been built both here in the UK and further afield, research is progressing in a range of locations around the world including: Canada, China, Brazil, Borneo, Finland and Germany to name but a few.



*Professor Terry Marsden*

## Key developments at the Institute include:

- Theoretical and conceptual research linking different disciplines
- Integrated methodologies for assessing impacts of policy, market and civic actions; and the development of more integrated and multidimensional approaches for assessing sustainable pathways of development
- Development of a series of longitudinal place-based laboratories, like Cardiff City Region, in which to conduct multilayered applications of sustainability research
- International and local collaborations and partnerships with academic institutions, including Bath, Bristol and Exeter Universities and place based organisations such as the Brecon Beacons National Park authority, and the Canal and Rivers Trust
- The extension grant to take forward the ESRC funded Centre for Business Relationships, Accountability, Sustainability and Society, (BRASS) agenda in the areas of: mobilities, food security, sustainable communities and ecosystem services.

## Research highlights:

- The Institute hosted a key conference highlighting Welsh expertise in ecosystem services. The interdisciplinary nature of the Institute team was vital in making the links between biodiversity, ecosystem services and social wellbeing. The conference, organised by the Biosciences, Environment and Agriculture Alliance (BEAA) between Bangor and Aberystwyth Universities and the Wales Environment Research Hub (WERH) explored the research strengths of the St David's Day Group of Universities (Aberystwyth, Bangor, Cardiff, Glamorgan and Swansea), showcasing and highlighting opportunities for collaboration between the Universities and policy makers
- The Institute held a series of workshops, forming the basis of a new 'place' based approach to academic research. Gathering knowledge and views on issues of concern to people in their local area will help to guide the future direction of research linked to that place
- The first Landscape Observatory to foster socio-ecological research on whole river catchments is created. With 5 year support from The Esmee Fairburn Foundation, the Llyn Brienne Observatory in the Welsh uplands, will be the first to assemble more than 3 decades of social and ecological data on 14 catchments to study the role of biodiversity and natural resources in sustaining livelihoods in upland areas
- The Diversity of Upland Rivers for Ecosystem Service Sustainability project (DURESS) received £3 million for new interdisciplinary river research to investigate the role of biodiversity in sustaining ecosystem services. The consortium project is headed by Dr Isabelle Durance, senior research fellow who spearheaded the proposal
- The Sustainable Food City Conference brought together speakers from across the UK, to look at how Cardiff could implement a Food Charter to celebrate and promote a vibrant, diverse and sustainable food culture which will fit with Cardiff's broader aim to become a 'One Planet City'
- The lesser known star of the marine environment, seagrass receives a boost following support from the Darwin Initiative. The award will fund a project, led by Professor Susan Baker and Dr Leanne Cullen-Unsworth that will focus on seagrasses and their role in sustaining marine environments
- Professor Terry Marsden is appointed to the Policy and Advisory Panel of Rural Alliances, an exciting new £10M initiative for rural communities which promote best practice between different EU regions. Helping to further establish the role of the Institute in sustainable place making across Europe
- The Institute hosts the first Cardiff International Conference on Sustainable Place making. It focused on the problem of sustainable place-making; and how integrated thinking can be developed and applied in different places and spaces so as to adapt systems of production and consumption
- Institute researchers join the Food Security Land Research Alliance, a partnership between the Universities of Bath, Bristol, Cardiff, Exeter and Rothamsted Research. The alliance brings together a range of disciplines from biosciences and agricultural sciences to economics and social sciences, to help tackle the world food security crisis
- The Institute launches a new annual Sustainability Science Summer School, a joint venture with the University Graduate College, to provide a unique and high quality research training forum for interdisciplinary doctoral and postdoctoral researchers in the field of sustainability science and place-making
- Dr Roberta Sonnino (Principal Investigator), Dr Ana Moragues Faus and Professor Terry Marsden (co-applicants) are awarded a new EU grant on food security. The four year project will assess the impact of drivers of change on Europe's food and nutrition security.

# A new approach to tackling cancer

Some of the world's leading cancer experts descended on South Wales to hear how a new cancer stem cell approach could better target cancer.

Hosted by Sir Terry Matthews, the international three-day 'Targeting Cancer Conference' was held at the home of the 2010 Ryder Cup, The Celtic Manor Resort in Newport.

The conference was dedicated to the theme of Cancer Stem Cells where the Director of the University's European Cancer Stem Cell Research Institute (ECSRCI) Professor Alan Clarke, unveiled the Institute's new approach to tackling cancer. Sharing the team's latest findings, Professor Clarke outlined how the University's cancer stem cell concept might be used to target cancer, and in the long-term improve the prognosis for patients and develop new cancer therapies.

*"The Research Institute will investigate the possibility that therapies aimed at cancer stem cells alone will offer a better success rate."*

Professor Clarke said: "Cancer stem cells account for only a small proportion of cells in a tumour. However, they could be crucial to the way tumours form, grow and spread.

"The Research Institute will investigate the possibility that therapies aimed at cancer stem cells alone will offer a better success rate for cancer sufferers and will, we hope, markedly improve survival rates."



Professor Alan Clarke

## 'Switch-flipping' stem cell mechanism could lead to new breast cancer therapies

The discovery of a pathway that helps stem cells grow into different types of breast tissue by experts from the University's European Cancer Stem Cell Research Institute could lead the way to new treatments for aggressive breast cancer.

The pathway allows stem cells to flip their orientation of cell division, switching their offspring to form two distinct tissues found in the breast. Some aggressive breast cancers use this mechanism to control the orientation of cancer cell division, so it could be a promising target for future drug development.

Dr Matt Smalley from the European Cancer Stem Cell Research Institute, said: "Current theories suggest that there may be similarities between the behaviour of normal adult stem cells and cancer cells.

"By better understanding the biology of adult stem cells scientists can better understand the behaviour of cancer cells and identify new targets for therapy."

The mammary epithelium consists of two main types of cells: luminal epithelial cells, which line the ducts and form the milk-secreting cells of the alveoli, and basal myoepithelial cells, which squeeze milk along the ducts during lactation.

Basal stem cells are important during early breast development because they generate the different cell types in the mammary epithelium, through the expression of an enzyme called Aurora A. In this study, the researchers investigated how the enzyme Aurora A controls the formation of new cells in the breast.

Dr Smalley's team identified for the first time a link between Aurora A and a signalling pathway known to regulate the behaviour of stem cells,

called the NOTCH pathway. They found that Aurora A was able to control the direction of cell division in the breast by triggering the NOTCH signalling pathway.

The researchers found that for basal stem cells to maintain populations of basal and luminal cells, cell divisions in the basal layer of the breast needed to be parallel, which occurred when NOTCH signalling was blocked. But they discovered that basal cells can also contribute to the luminal layer. Aurora A activated NOTCH signalling in the dividing basal cells, which caused their orientation to switch from parallel to perpendicular.

The researchers were able to chemically control the signalling produced by the NOTCH pathway

in normal cells, changing the number parallel basal cells and perpendicular luminal cells that were produced.

Dr Smalley believes that some aggressive breast cancers have re-activated this mechanism to control the orientation of cancer cell division, and that its discovery could lead to new treatments for breast cancer:

"If we can block this mechanism in breast cancer tumours, this could cause cells to try to divide in multiple directions at the same time, resulting in catastrophic disruption of genetic material and cell death.

"Our study suggests that drugs which can target this signalling mechanism could cause these cells to literally tear themselves apart, leading to better treatments for aggressive breast cancer in the future," he added.

# Taking our research message to Europe

Some of the University's leading experts in neuroscience and brain-related research are heading to Brussels in a bid to position Cardiff as one of Europe's leading institutions in the field and help build new national and international collaborations.

Professor Jeremy Hall from the University's Neuroscience and Mental Health Research Institute will host a seminar at Wales House in Brussels in November.

"Brain and brain-related research is one of Cardiff's key research strengths," according to Professor Hall who will be joined by the

University's latest expert recruit, Professor Yves Barde.

"In addition to UK and international funding, teams from Cardiff have already successfully bid for and secured European funding including the JPND programme – a transnational initiative that aims to address the growing societal

challenge presented by age-related neurodegenerative diseases," he adds.

He will be joined by the Institute's Director, Professor Mike Owen and other key members of the team including Professor Adrian Harwood.

Professor Hall adds: "The seminar is a clear opportunity to build potential

collaborations going forward to Horizon 2020 and the next round of research funding.

"More importantly we see events like this as an opportunity to kick-start a 'neurosciences' sub-cluster as part of the overall health cluster as a means of maximising Cardiff's role in future funding rounds."

The seminar will focus on the themes of: stem cells and animal models.

## Institute secures £5.2M to help solve the mystery of mental illness



Professor Mike Owen

Experts from across the University's Neuroscience and Mental Health Research Institute have secured their largest ever funding in a bid to tackle mental illness.

A team from the University's Neuroscience and Mental Health Research Institute have secured a £5.2M Wellcome Trust Strategic Award to help combine the latest findings in genetics, brain imaging, animal models and stem cells

University neuroscientists, stem cell biologists, psychologists and psychiatrists are set to break down scientific barriers in a bid to solve the mystery of mental illness and help develop new treatments.

"Recent findings in genetics have advanced our understanding of mental illness and major psychiatric disorders in important new ways," according to Professor Mike Owen, who leads the research.

"We now know that disorders like schizophrenia, attention deficit hyperactivity disorder share some of the same genetic risk factors.

"They also point to an important role in these disorders for abnormalities in synapses – the structures through which brain cells communicate with each other.

"The next step in understanding these disorders is to take the genetic findings and trace them into how the brain functions and influences

behaviour by harnessing recent advances in neurosciences and stem cell research," he added.

Cardiff has assembled a team of scientists with complementary expertise in psychiatry and neuroscience from across the Schools of Medicine, Biosciences and Psychology.

By developing a novel approach - combining human, animal and cellular experiments for the first time - the Cardiff team hopes to gain new understanding on how specific genetic risk factors impact on the brain and behaviour.

Dr John Williams, Head of Neuroscience and Mental Health at the Wellcome Trust, said: "Although mental health disorders affect as many as one in four people, we've made relatively little progress in our understanding of these diseases and how to treat them in several decades.

"This project will help us to start to really get to grips with the genetic and biological problems underlying the conditions."

# University lands ‘Star’ stem cell researcher

A world-leading neurobiologist has joined the University as the first appointment under the Welsh Government’s £50M flagship science initiative.

Professor Yves Barde, from Switzerland, is renowned for his research into the way proteins in the brain work and their role in illnesses such as depression.

He was appointed under the Welsh Government’s five-year Sêr Cymru (Stars of Wales) project to expand universities’ research capabilities in the fields of life sciences, advanced engineering, and low carbon energy and the environment.

Professor Barde received international acclaim in 1989 with the discovery of a gene which creates a protein - brain derived neurotrophic factor (BDNF) - which is involved in a number of brain processes including memory.

He has explored the role BDNF plays in healthy brain function along with dysfunction.

Recently his team at the University of Basel focused on how some drugs can increase BDNF levels in specific areas of the brain.

The research helped in the development of new drugs, including the first oral treatment of multiple sclerosis.

Professor Ole Petersen FRS, Director of the School of Biosciences, said: “This is a very exciting moment in the history of the School of Biosciences. Not only have we been able to attract a world class superstar to come to the School of Biosciences but we also have the prospect of seeing some superior science being conducted here. The synergy with Professor Alun Davies FRS is particularly promising.

“Professor Barde is responsible for many important discoveries and fundamental concepts in the field of neurobiology. In addition to his groundbreaking work on BDNF and neurotrophins, Yves has discovered many important developmental principles and molecular mechanisms in the nervous system that were iconoclastic and controversial when first proposed, but are now mainstream.

“To this day, Yves continues to make major advances in the field of neuroscience, such as his recent work on stem cell biology in the nervous system.”

Economy and Science Minister, Edwina Hart, said: “Professor Barde brings a wealth of experience and is a world renowned innovator in the field of neurobiology. He will lead a strong team at Cardiff University and their work will be a great boost to life sciences and health research in Wales.

“A strong science research capability is vital to improving our economic wellbeing and securing a prosperous, healthy and sustainable future for Wales.

“We already have a lot to be proud of in science and innovation in Wales but the Sêr Cymru programme will help us build on that to develop a dynamic and strong base in Wales.”



Professor Yves Barde

# Cardiff leads £14M Welsh drug discovery fund

New drugs to fight a range of diseases could be discovered and developed in Wales with a £14M cash injection.



The National Research Network (NRN) in Life Sciences and Health is part of wider plans to concentrate, connect and boost the Life Sciences sector in Wales.

Led by Cardiff University Professors Chris McGuigan and Malcolm Mason the NRN also brings together expertise in drug development from Aberystwyth, Bangor and Swansea Universities.

“The establishment of this major pan-Wales initiative, with significant funding from Welsh Government represents a serious commitment by the Minister to health and life sciences,” according to the Chair and Scientific Director of the NRN, Professor Chris McGuigan.

“This commitment comes on top of the recent establishment by Welsh Government of the Welsh Life Sciences Fund, chaired by Sir Chris

Evans, to support new and growing life science businesses in Wales, and also plans to open a Life Science Hub at Cardiff Bay by March 2014, which I am currently leading on,” he added.

The NRN is backed by £7.3M from the Welsh Government’s Sêr Cymru programme, which will be matched by industry, academia and charities to create a fund worth £14M.

This will allow the four Welsh universities to support more than 100 PhD students and researchers over the next five years and attract and retain the world’s leading experts to oversee their pioneering work.

Minister for Economy and Science, Edwina Hart, said: “I am delighted to see the launch of this new life sciences research network. We have identified life sciences as one of our

*Professor Chris McGuigan*



# Smarter European Union spending

## Cardiff leads consortium to help countries spend EU funds more strategically

key sectors for economic growth and I look forward to seeing the results of the Network's activities in bringing to pre-clinical stage and clinical trial new and exciting drug compounds.

"The Network will also engage with industry to bring economic benefits and put Wales on the map internationally for drug discovery.

"I am sure the Network will also take advantage of the appointment of Professor Yves Barde as the Cardiff University Sêr Cymru Research Chair in Neurobiology, a research field in which our new Chief Scientific Advisor Professor Julie Williams also has a great interest.

"I look forward to seeing the University and Professors McGuigan and Mason deliver their vision for the Network."

University experts who advise regional governments on making the most effective use of money aimed at reducing regional disparities in income, wealth and opportunities are set to lead a major new EU research project under the Seventh Framework Programme (FP7).

Professor Kevin Morgan and Dr Adrian Healy from the University's School of Planning and Geography will co-ordinate the SmartSpec consortium.

The consortium has two major aims. To explore the scope for and the barriers to Smart Specialisation, the new generation of regional innovation policies in the EU and provide guidance and practical support to regional governments which plan to design and new regional innovation strategies.

In the past year they have advised governments on the design of regional innovation policy in a number of countries – including Wales, England, Northern Ireland, Italy and Spain. Cardiff University is gaining a reputation as a centre of expertise in emerging concepts of regional innovation.

"Despite some 20 years of regional innovation policy experience in Europe, it's fair to say that this policy is poorly understood and unevenly implemented, with the result that it has failed to produce the desired effects of reducing regional disparities," according to Professor Morgan, who co-ordinates the consortium.

"In recognition of this, the EU is looking to regional governments to develop Smart Specialisation Strategies which help better target resources. To support this, they have set-up the EU Smart Specialisation Platform to guide them through the next round of funding," he adds.

The EU Smart Specialisation Platform has been set-up by the European Commission to provide guidance and support to policy makers across Europe.

Dr Healy adds: "As a consortium, SmartSpec will contribute to and support the work of the Platform, helping to develop successful policies across Europe. Members of the consortium have not only analysed and contributed to the evolution of regional policy since it started, but include some of the leading contributors on the concept of Smart Specialisation."

Smart Specialisation is regarded by the European Commission as one of the ten conditions for well-performing national and regional Governments in the EU.

It is proposed that a Smart Specialisation Strategy will become part of future Structural Funds programmes with countries able to show how they plan to spend the money so it responds to economic and societal challenges, helps concentrate resources on innovation and development priorities and stimulate private investment.

*"Working alongside the Platform we will assist regions and Member States in developing, implementing and reviewing regional Smart Specialisation Strategies."*

"Smart specialisation is a new innovation policy concept designed to promote the efficient and effective use of public investment in research. Its goal is to boost regional innovation in order to achieve economic growth and prosperity, by enabling regions to focus on their strengths. Smart specialisation understands that spreading investment too thinly across several frontier technology fields risks limiting the impact in any one area.

"Working alongside the Platform we will assist regions and Member States in developing, implementing and reviewing regional smart specialisation strategies, and help regions identify high-value added activities which offer the best chances of strengthening their competitiveness.

"A smart specialisation strategy needs to be built on a sound analysis of regional assets and technology. It should also include an analysis of potential partners in other regions and avoid unnecessary duplication. Smart specialisation needs to be based on a strong partnership between businesses, public entities and knowledge institutions – such partnerships are recognised as essential for success.

"By coordinating this major project, Cardiff is well placed to play a leading role in the research, policy and practice of the EU regional innovation policy for the next round of European funding," said Professor Morgan.

SmartSpec is funded through the EU's 7th Framework Programme for Research and Technological Development (FP7).

It will provide evidence-based practical advice on spending European funding in the most effective and strategic way by strengthening regional innovation capacity and help the regions to prioritise investment choices to promote efficient and effective use of public investment.

# Meet the Team: The European Office

Ensuring Cardiff gets a fair share – and more – of the next round of European research funding is the primary objective of the University’s European Office.



From left to right: Rebecca Blackwell, European Officer, Keith Sexton, European Officer, Nick Bodycombe, European Office Manager, Chris Matthews, European Officer – Structural Funds, Siân Jones, Administrative Officer

Headed by Nick Bodycombe the team includes four European Officers and one Administrative Officer. It sits within the Research Development group in the University’s wider Research, Innovation and Enterprise Services Department, and is on hand to help steer Cardiff academics through the European funding maze.

“As a team we oversee the whole process for Cardiff academics who want to access vital European research funding,” said Nick.

“From acting as a named contact for the European Commission, we work with academics and research staff to develop project ideas - right through to the delivery of the research project at the other end. We’re also on hand throughout the whole process. To that end work very closely with our colleague Cerys Phillips and her team in the European Research Grants team”, he adds.

It would seem there’s going to be very little let-up for the work of

the team. As one pot of European funding closes – another one is already just around the corner.

“In the latest round, known as Framework Programme Seven (FP7), the University has so far secured funding for approaching 150 projects, with a number of these in the final stages of contract negotiation. Once all these are finalised it will mean over £50M of new research funding has come to Cardiff over the last seven years.

“This has seen Cardiff lead research in cutting-edge life sciences, helping to tackle illnesses like Parkinson’s Disease, to working alongside English Heritage to help construct much more precise chronologies for the Neolithic period in Europe.

“The European Office also plays a significant role in bringing in funding from the European Union’s Structural Funds programme in Wales and through pan-European schemes. “Projects like LCRI and Seren have

resulted in over £38M being awarded to the University during the last funding round. Eevi Laukkanen, who is currently on secondment to the UK Research Office in Brussels, worked tirelessly with our academic colleagues to bring in this funding. In recent months we have been delighted to welcome Chris Matthews into the team as we prepare to move into the new 2014-20 Structural Funds programmes.

“Also, the team is busy looking ahead and planning for the next round of European Framework funding, better known as Horizon 2020.”

The team is keen to encourage as many academics as possible to get in touch and help break down the perception that European research funding is solely focused on STEM subject areas.

“The team here covers all areas of University research and we are keen to ensure that the arts, humanities and social sciences are catered for as we

identify relevant calls and help create as many opportunities as possible for Cardiff to access funding,” he adds.

However, the team’s work does not stop at the University campus.

As Nick explains, it’s also about making sure that Cardiff is positioned as a key player in Europe and developing innovative ways to place us among key collaborators in order to maximise opportunities.

The team is taking a leading role in organisations like Vision 2020, which brings together some of the UK and Europe’s leading universities, research organisations and companies, and is engaging with the European teams across the GW4 universities of Bristol, Bath and Exeter.

Nick adds: “The University’s new strategic direction sets us the task of becoming one of the world’s top 100 universities. Ensuring we work alongside some of the UK and

# Cardiff People - Dr Amanda Jones

Following an undergraduate degree at the University of Liverpool in Applied Biochemistry, I came to Cardiff University to do a PhD in corneal wound healing the School of Optometry and Vision Sciences.



Since 2004 my role has evolved from looking after the research development of one School to becoming the Research Development lead for the College of Biomedical and Life Sciences. The day job is also complemented with my new role - GW4 Programme Manager for Cardiff.

**Dead or alive - who would be your three ideal dinners guests and why?**

Stephen Fry would be first on the list; one of my all-time heroes who appears to know everything about everything. Next would Michael McIntyre for sheer comedy value; however I'm not sure he could sit still for three courses! And finally Roald Dahl, my favourite author as child and someone who has led a fascinating life.

.....

**Describe yourself in three words**

Laughs very loudly (I think my work colleagues would agree!).

.....

**In Desert Island Discs style, if you were cast away alone on a desert island which three songs would you take with you?**

I love all kinds of music so narrowing it down to three is tough. However, it would have to be Snow Patrol, *How to Play Dead* as it reminds me of some highly amusing dive trips with the University dive club. Next, would be Foo Fighters, *Learn to Fly*, especially when played loudly in the car. And third will have to remain a secret as it will be the first dance at my wedding!

.....

Europe's best is just one of the ways we can maximise our impact and help reach this goal."

With some €70BN available over the next seven years of the Horizon 2020 programme, Cardiff is already well placed to be ahead of the game.

"Making the most of Horizon 2020 for Cardiff University is essential – essential for our international standing, our world rankings and attracting the best staff and students from the UK, Europe and internationally.

"In purely financial terms it's a major source of research income – but more than that, it's a real opportunity for the University's best researchers to lead cutting-edge and innovative research that will have a real impact and help us answer some of the world's key economic, social and environmental problems," Nick added.



Dr Amanda Jones

**Who and what inspires you most?**

My family, especially my grandfather, who taught me some valuable lessons in life. I also admired the way he was always smartly dressed even when cleaning the house.

.....

**What makes you smile?**

My kids, especially the things they say with their honest look at the world.

.....

**Tweet or not to Tweet?**

Not to Tweet. My life isn't so exciting that I have to tell everyone what I'm doing every 10 minutes!

.....

**What makes you get out of bed in the morning?**

My children, even on weekend.

.....

**If you could banish one thing into room 101, what would it be?**

Queues, especially the one in the Post Office.

.....

**Who has been the biggest influence on you during your time at the University?**

I would have to say my PhD supervisor, who at the time I thought was being mean but only had my best interests at heart.

.....

**If you were Vice-Chancellor for the day what would you do?**

I would have one day a week where we all go paperless to meetings. The amount of paper we use is huge, and most of it gets shredded following meetings.

.....



*Vice Chancellor, Professor Colin Riordan hosted the first 'Away Day' for key members of the GW4 – a new joint collaboration with Bath, Bristol and Exeter Universities*

## Major boost for next generation of arts & humanities researchers



Cardiff University has jointly won substantial arts and humanities funding to support postgraduate study into our cultural world.

The South, West and Wales Consortium, in which Cardiff University is joined with seven other universities – Aberystwyth, Bath, Bath Spa, Bristol, Exeter, Reading and Southampton, has been awarded £14.2M funding from the Arts and Humanities Research Council (AHRC) over the next five years to deliver postgraduate supervision, training and skills development from 2014.

The Consortium is one of 11 new Doctoral Training Partnerships (DTPs) and seven Centres for Doctoral Training (CDTs) to have been awarded a total of £164M funding from the AHRC.

The South, West and Wales Consortium will offer postgraduate studentships and training across the full range of the AHRC's disciplines, with a strong emphasis on collaboration between the members of the consortium and 19 partner organisations including BBC, Cadw, Welsh National Opera, CyMal (Museums, Archives and Libraries Wales); National Library of Wales, National Museum of Wales; Royal Commission on the Ancient and Historical Monuments of Wales and the National Trust.

Professor George, Boyne, Pro Vice-Chancellor College of Arts, Humanities & Social Sciences said: "I am delighted to see Cardiff involved in the new Consortium. This scheme will be integral to the training and development of the next generation of arts and humanities doctoral students and Cardiff is well placed to use its significant research expertise to nurture this new talent."

The funding, which equates to 200 new studentships, will allow for innovative postgraduate support, including the development of broader skills such as partnership working and language skills, and experience in working outside academia through industry and international placements.

The Consortium's successful bid for funding was praised for its "consistent and convincing strategy for the provision of a very high quality training environment for postgraduates."

For details of the University's postgraduate Open Day 27 November 2014

visit:  
[www.cardiff.ac.uk/postgraduate](http://www.cardiff.ac.uk/postgraduate)  
 @cardiffuniPG

## Cardiff News

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## Stop the Press: Cardiff News has changed

In line with the University's commitment to sustainability *Cardiff News* is becoming an on-line publication. Features like *Meet the Team* and *Cardiff People* will continue - it just means you won't automatically receive a printed copy.

It doesn't mean we're stopping printing altogether – instead, anyone who wants to receive a printed copy will need to tell us. To make sure you receive *Cardiff News* in the format you prefer, please e-mail the Public Relations Team at: [publicrelations@cardiff.ac.uk](mailto:publicrelations@cardiff.ac.uk).

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