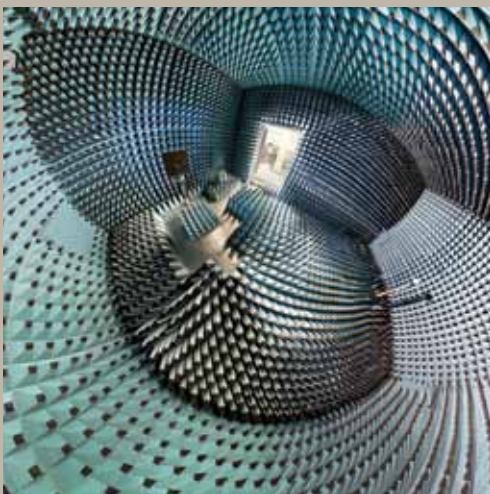
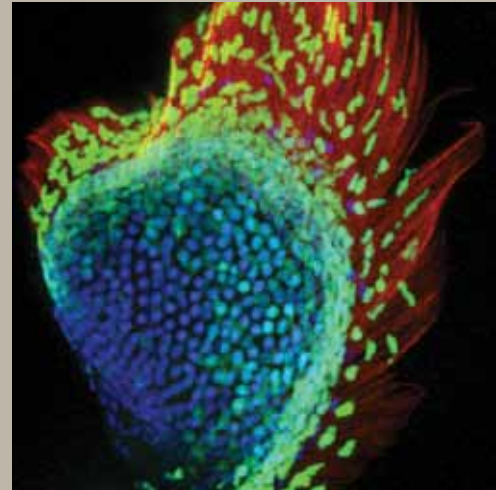


Review



Research is at the heart of what we do



Introduction

The University of Bristol's Research and Enterprise Development (RED) division works with academic, student and entrepreneur communities both within and outside of the University. Our multidisciplinary teams of professionals use their expertise and experience to provide advice and support across the broad and fascinating landscape of research and enterprise activities carried out at Bristol, as well as to projects that are external to the University; including partnerships with other world-leading universities nationally and internationally.

RED supports scholars, researchers and innovators throughout the many stages of their endeavours, but perhaps our greatest focus is in helping to maximise and accelerate the impact of their discoveries and the new knowledge that they create.

Typically this can include the co-ordination of large collaborative bids for resources to support world class research; managing highly complex interdisciplinary projects; ensuring research complies with regulations and absolute best practice; brokering collaborations with funding agencies, charities, Government and businesses of all sizes; developing future innovations and innovators, and the commercialisation and protection of intellectual property.

Whether you are an organisation or individual entrepreneur, a world leading or early career researcher, or a student entrepreneur with exciting ideas, you will find that RED has the experience and expertise that you need.

David Langley
Director of Research and Enterprise Development
University of Bristol

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REF2014: research 'user' panels and impact are new key features

With the Higher Education Funding Council for England's (HEFCE) REF2014 framework taking shape from 2009/10 onwards, planning for the University of Bristol's submission is now well underway.

The 'expert panels' that will carry out the Research Excellence Framework 2014 assessment have been recruited from the UK and international academic communities – as in past exercises. However, a new feature this time around is the inclusion of many more research 'users' on each of the assessment panels. These have been drawn from a range of stakeholders appropriate to each panel's subject area, and they will play a significant part in assessing REF2014's new 'impact' element. The University of Bristol is well represented, with 15 staff across all faculties serving as members, plus two sub-panel Chairs – Professor Alexander Bird (Philosophy) and Professor Andrew Pollard (Education).

Following a pilot in 2008/9, impact assessment is now formally incorporated into the framework. This will carry a weighting of 20 per cent, with research outputs accounting for 65 per cent and research environment 15 per cent. With planning for University of Bristol submission development starting in earnest in 2011, Directors are now working to identify the impact case studies that will form the majority of the assessment. Working within REF2014 rules, we expect to submit over 100.

Additional support for our academic community in developing case studies comes from an Impact Expert Team. Although this draws primarily on the expertise of a significant number of RED staff, the team also includes colleagues from the University of Bristol Centre for Public Engagement and Public Relations Office.

REF2014
Research Excellence Framework

Research is at the heart of what we do

A key responsibility for me is to ensure that research is at the top of this committee's priorities and factored into all relevant policy making.

Day in the life of a research director

Alexander Bird is Faculty of Arts Research Director and Professor of Philosophy with a special interest in the philosophy of science.

Having arrived at my Woodland Road office at around 8.30 am, I generally do my own research until 10.30 am – without starting up my email program! It's then that I can start thinking about teaching and other responsibilities, such as my role as Faculty of Arts Research Director.

My day might proceed with one of our weekly or fortnightly Faculty Planning and Resources Committee (FPARC) meetings. These involve all heads of school and the directors of teaching and learning. A key responsibility for me is to ensure that research is at the top of this committee's priorities and factored into all relevant policy making. I have to balance the teaching/research 'see-saw' in changing times – currently, for example, in the light of higher fees and the raised profile of the National Student Survey.

It's also important in the FPARC arena to think about how faculty admin structures relate to research – so that they facilitate rather than hinder it. Making sure research is properly resourced is another priority. For example, I'm developing a 'reward' mechanism for grant success that benefits academics in terms of extra research time.

Later in the morning I might catch up with our RED Research Development Managers, Valerie Aspin and Jean Pretlove. This could involve discussing particular funding programmes and how we might support people to apply for them. Or, it could be to plan collaboration at counterpart HEI faculties such as at Exeter, Cardiff and elsewhere. RED connections make it easy to collaborate with other institutions – a relatively new way of operating for the Faculty of Arts.

Other contact with RED might be through a lunchtime meeting of the Research Excellence Framework (REF) Impact Working Group – for example supporting how we're developing impact case studies for the new REF. This is a really helpful way of exchanging impact ideas with others.

Once a month, much of the afternoon is taken up with a meeting of the University Research Committee. This includes the Pro Vice-Chancellor for Research and Enterprise Guy Orpen, faculty research directors and RED's Director, Dr David Langley, and Head of Research and Enterprise Policy, Lesley Dinsdale. This is the forum in which the University's research strategy is developed at its broadest level. Faculty research directors can articulate to RED where we see our faculties' needs arising, so it will know how to service our needs and those of the University over the next three, four or five years.

We might also explore REF developments – such as what's likely to be required and strategies for making sure the University

Alexander Bird (right)

One thing about yourself we didn't already know? Rowed twice for Oxford and lost twice. So moved to Cambridge to win!

Hobbies and interests? Rowing, rugby and music. As a composer 'manqué', I love composing for my children.

is fully prepared, for example through developing an online tool for recording our research impact data.

The Research Committee also helps develop major external collaborations such as the Faculty of Arts' recent collaboration with the University of the West of England, Exeter and Cardiff. This saw us successfully bid for large scale funding of more than £4 million from the Arts and Humanities Research Council to establish a Creative Economies Knowledge Exchange Hub. This would have been impossible without RED's support for bidding and negotiating processes with which we've hitherto been inexperienced in the Faculty of Arts.

Early evening could see me taking a London train for a panel meeting to help draw up the REF consultation. I'm chair of the Philosophy sub-panel and also sit on Main Panel D for all arts and humanities subjects. This is a useful way of passing on understanding of how the REF operates – and raising the University of Bristol profile.



Research is at the heart of what we do

760+

Number of live research projects across the University which the Governance Team supported in 2010/11

Our priority is always to find an approval pathway that gets studies off the ground as quickly as possible.

Research Governance Team

Head of Research Governance Birgit Whitman explains her team's work overseeing quality assurance and risk management for all University research projects that involve human participants, their data and/or tissue – often with national and international collaboration.

At its simplest, this might involve working with postgraduates to ensure a questionnaire conforms to University policy and procedure on ethics. At its most complex, we could be conducting risk assessments surrounding a new medicine or piece of medical equipment, or ensuring a study's compliance in multiple countries and jurisdictions. Our priority is always to find a compliance pathway that gets studies off the ground as quickly as possible.

The five-strong team includes the new post of Research Ethics Co-ordinator, who recently joined our Research and Human Tissue Specialist, part-time Research Governance Officer and Senior Project Manager. The Senior Project Manager liaises with regulators, the Department of Health and other bodies to help us stay on top of UK and international governance frameworks by feeding into the consultations that shape new regulations and policies. We support the research community in a number of ways – the first being training. This includes specialist sessions for MSc



Above: The Research Governance Team

students covering ethics and governance. We also deliver tailor-made training for University-wide research groups, as well as regular staff courses offering a basic introduction to ethics, human tissue regulations and NHS research governance. We suggest further e-learning and face-to-face courses if needed. We're now in our third year successfully running ethics seminars for faculty ethics committees involving a number of our South West research partners such as Exeter, Bath, Cardiff, UWE and Gloucestershire.

Key for achieving good quality and compliant research are effective monitoring and auditing – such as we conduct on

behalf of the University's Human Tissue Working Group. This ensures that the University as a licence holder complies with the Human Tissue Act and that the Designated Individuals (DIs) who are legally responsible for Human Tissue Authority licences are supported.

We prepare for Human Tissue Authority inspections by basing our internal audits on actual inspection practice to identify what we're doing well and what we could do better. The information they generate provides risk-assessed information for Heads of Departments, Deans and the Pro Vice-Chancellor for Research. In addition, we monitor about 10 per cent

of the 760 studies currently active using trained monitors from the University Hospitals Bristol NHS Foundation Trust. Risk-based monitoring will help us to support our researcher community and to ensure research is undertaken within the approved protocol framework.

'Early engagement' is another important activity for us – working closely with researchers at application stage, and as soon as funding has been awarded, to expedite the regulatory approval process. This is excellent for enhancing our understanding of the pressures on the research community and ensuring the service we offer is constructive and supportive.

We're also active at a strategic level. For example, we've established a Faculty Ethics Officers Working Group and are rolling out an online ethics tool across all faculties supported by our new Research Ethics Co-ordinator. We've recently worked on the ethics and risk management aspects of the new jointly managed Clinical Research Imaging Centre (CRIC) and are extending our training to Bristol Health Partners (BHP) from May 2012.

The future? Ultimately, we want to remove as many unnecessary barriers to research approval as we can through collaborative working – locally, with South West partners, nationally and internationally. We see this as the way forward to helping our researchers to succeed.

Birgit Whitman, The Research Governance Team

One thing about yourself we didn't already know?

Currently working two days a week as the Quality Assurance Lead for the national NHS Abdominal Aortic Aneurysm Screening Programme. This takes me to all major hospitals in the country to ensure compliance with national standards.

Hobbies and interests?

I love sailing – and got married on a sailing boat in the Azores.

Bristol set to continue its European funding success

Bristol has continued to build on previous successes through FP7 funding over the last 12 months by winning many more grants from the European Research Council (ERC) and other FP7 schemes. To date, the University has secured over 150 FP7 grants with a total value of around €68 million. This includes the award of 44 Marie Curie Fellowships since FP7 began.

The University's track record securing grants from the ERC has been particularly impressive. This includes the award of ten ERC Starting Grants and ten Advanced Grants between 2007 and 2011 representing a total value of almost €33 million. ERC statistics place Bristol firmly in the top 10 of total ERC grants awarded to European universities. In fact, within the UK, only Cambridge, Oxford, Imperial and UCL are above Bristol.

With FP7 beginning to come to a close, we are already starting to look forward to 'Horizon 2020', the European Commission's next funding framework, which is due to start in 2014 and run until 2020. We expect that successful schemes such as the ERC and Marie Curie Actions will continue to thrive and also enjoy increased budgets. We also hope that this new programme will be significantly simplified, as strongly recommended by all EU member states and associated countries.

European funding continues to look promising for the long-term future – and Bristol is most certainly well placed to benefit from it.

Research is at the heart of what we do

The Centre's themes of nuclear futures, advanced research and applied research will enable the NRC to focus on fundamental research, as well as tackling emerging topics.

Bristol-Oxford collaboration creates new Nuclear Research Centre

RED has been working with key academic community members to position the University for significant high level skills and research opportunities expected to emerge over coming years in the nuclear sector.

With nuclear power forecast to provide up to 24 per cent of global electricity by 2050, experts see it as a major contributor to world energy requirements. Civil nuclear energy is set to revive in the UK following Government announcements to back 'nuclear new build'. Bristol is well located to proactively support the research needs for proposed new power plants in the South West, at Hinkley Point and Oldbury.

The value of investment over the next decade is estimated in the £10s of billions. The scale of the new infrastructure will demand suitably qualified people and high quality research to ensure the continuing safety of existing nuclear plants whose lives are being extended to fill energy gaps.

The University has worked closely with nuclear sector organisations for many years. We are well placed to support the high value and specialist skills needed, as well as undertake fundamental research to underpin both existing and new technologies.

A RED Project Manager has been maintaining a 'watching brief' on the nuclear sector for several years. More recently, the division has been pivotal in assessing our capability, researching developments, facilitating collaborations and provision of bid support, alongside managing relationships and research programmes with key stakeholders such as EDF Energy and AWE, both established University partners.

In the past year, the focus has been on setting up the Bristol-Oxford Nuclear Research Centre (NRC), a collaboration between the Universities of Bristol and Oxford with a combined nuclear research portfolio of £20 million and 100 academic and research staff.

The NRC was officially opened on November 8, 2011 by Charles Hendry, Minister of State for the Department of Energy and Climate Change. Its aim is to conduct leading-edge research to support the design and safe operation of current and future generations of nuclear power systems. The Centre's themes are applied research, advanced research and nuclear futures – the latter designed to support the requirement for long range planning, environmental sustainability and low carbon futures. Involving the Cabot

Institute, our School of Policy Studies, and the influential Oxford Martin School, these themes offer exciting prospects for interdisciplinary research.

Speaking at the NRC launch, Professor David Smith, Bristol Co-Director of the NRC said: "With a community of over 100 world-class people in nuclear research, the new Centre will ensure the continuity of the nuclear community and safeguard expert knowledge. It will also provide leading-edge research to support the nuclear business community."

Teamwork right across these two top universities will continue to be critical, with RED proactively encouraging greater integration in approach. Our work has highlighted the future need for integrated research to support the sustainability of the UK's electricity supply. It is also complemented by a thorough understanding of future nuclear safety and systems assurance.

With funding applications submitted since the NRC's launch already exceeding £10 million, the future looks bright!

As an internationally leading research university, we understand the importance of working with strategic global partners to meet the demands and complexities of the 21st century.

Professor Eric Thomas Vice-Chancellor

Bristol and Kyoto join forces to tackle 21st century global challenges

A strategic, bilateral partnership involving Bristol and Kyoto universities is set to promote world-class research opportunities in disaster prevention, medicine and more.

In 2012 delegates from the University of Bristol travelled to the University of Kyoto – one of Japan's most prestigious institutions and highly-regarded for its academic excellence – to sign a Memorandum of Understanding (MoU) which formalises collaborative research by the two partners into the future.

The agreement was the culmination of three years' detailed work which began with an earlier MoU between RED and its equivalent at Kyoto University, SACI. Dr David Langley, Director of Research and Enterprise Development, University of Bristol, commented: "Our relationship with Kyoto University began three years ago and RED has been instrumental in supporting the wider relationship between the two universities, our academics and the activities that have developed as a result."

An institutional MoU opens the door to innovative research opportunities in many areas of shared interest. These range from catalysis, chemistry, quantum photonics and computing to nanoscience and materials, vision, translational medicine, robotics, social sciences and earthquake engineering.

Disaster prevention and translational medicine: two early priorities

Reflecting recent challenges from the natural world, initial priority areas include volcanology, flood risk management and geotechnical earthquake engineering. All are being coordinated by the Cabot Institute and Kyoto's Disaster Prevention Research Institute.

Translational medicine, the transformation of laboratory findings into new ways to diagnose and treat patients, has also been an early focus – enabling both universities to share knowledge, techniques and help to improve patient treatment.

Kyoto partners visit Bristol

A top-level delegation from Kyoto, led by Professor Kiyoshi Yoshikawa, Executive Vice-President for Research, visited Bristol in 2011 and saw how the University's National Composites Centre is putting the region at the forefront of innovation in high-tech materials, and is a leading example of collaboration between universities and industry. The Kyoto visitors were impressed by the groundbreaking work being carried out by the Cabot Institute, which is developing risk and resilience



Above: Professor Guy Orpen, Pro Vice-Chancellor for Research and Enterprise, University of Bristol, and Professor Kiyoshi Yoshikawa, Executive Vice-President for Research at Kyoto University

models for major catastrophes, linking the environment, critical infrastructure and the insurance industry.

Professor Yoshikawa said: "Kyoto University is delighted and honoured to have this opportunity to further expand our collaboration with the excellent people at Bristol University. The agreement aims to contribute to the realisation of a safe and peaceful world through enhancing our understanding of health and the environment. We are very excited, therefore, to conclude this MoU with the world-class University of Bristol."

Professor Guy Orpen, Pro Vice-Chancellor for Research and Enterprise added: "This partnership aims to tackle some of the life-changing challenges that are likely to have a major impact on the future of the planet. The importance of working with academic colleagues elsewhere in the world has never been more apparent."

Research is at the heart of what we do

It's a genuine joint effort. SARTRE's role is to push the translational science – RED's has been to help us achieve it.

Professor Lars Sundstrom

Bio-E: bringing physical science and clinical communities closer

Professor Lars Sundstrom, Director of the Severnside Alliance for Translation Research (SARTRE) set up by Bristol and Cardiff universities, and RED Research Development Associate Patty Holley explain how an innovative project to develop regional links in medical technologies is breaking new ground.

What is the Bio-E initiative?

Lars Sundstrom: At SARTRE we've been pushing translational research – namely projects focused on a clinical benefit – either taking research into the clinic or getting clinical input into basic science projects. We realised, though, that we weren't engaging enough with the physical sciences community, those in material sciences, engineers, for example. So to kick-start this we came up with Bio-E.

What's different is that the idea aims to bring together people with solutions looking for problems – and vice-versa. And although initially we ran it across Cardiff and Bristol

universities, we discovered that both Bath and Exeter were also keen to collaborate in a regional bio-medical engineering cluster. Each university is excellent in its own right – we're trying to make the sum of the parts greater.

How did RED contribute to the process of bringing Bio-E to fruition so quickly?

Lars Sundstrom: We pooled some of our devolved funding across the universities and to use this we needed to move fast. So it's thanks to Patty from RED, who joined us part-time, that the Bio-E initiative which started in October 2011 saw seven projects funded and up and running by January 1st 2012. RED already had strong, established links with other university support officers, and ensured buy-in at the top, so that we experienced a seamless roll-out. It's been a genuine joint effort. Our role is to push the translational science. RED's has been to help us achieve it.

Patty Holley: My role as RED Research Development Associate is to promote multidisciplinary collaborations, by introducing academics to potential partners to encourage interdisciplinary approaches to research questions. So it's been a natural fit to support SARTRE's work with Bio-E – to exploit the high concentration of biomedical and engineering expertise within the South West and South Wales. We're excited that the first call for Bio-E projects was so successful, generating such high quality applications.

What kind of bio-engineering projects is Bio-E funding so far?

Lars Sundstrom: There are currently seven projects involving experts from the four partner universities in innovative new Bio-E combinations. For example, Dr John Day of the University of Bristol Interface Analysis Centre is now working with Prof. Randal Mrsny, Prof. Jonathan Knight and Dr William Wadsworth of the University of Bath to better understand how proteins diffuse through sub-cutaneous injections, using micro fibre optics. A project involving Dr Amber Young of North Bristol NSH Trust, Dr Toby Jenkins of the University of Bath, Prof. Peter Windlove and Dr Stephen Green at the University of Exeter is developing a graphene-based electromechanical sensor to detect septic shock – a problem that costs the NHS up to £3 billion each year. What's interesting is that nearly all funded collaborations involve people who hadn't worked together before.

What is Bio-E 2? And how will it develop the concept further?

Lars Sundstrom: Working with SETSquared and RED, we're already planning to see how Bio-E 2 can also involve the business community. This would create a bigger regional network – stretching beyond Cardiff and Bath, possibly down to Southampton. If we do that, we'll have about 10 per cent of the UK's research base.

Patty Holley: Bio-E has already attracted the attention of funders, as well as other institutions. So we plan to continue developing stronger links with regional businesses interfacing with health and life sciences in the academic sector to secure funding for Bio-E 2.

What does Bio-E highlight about future ways of working for academics, universities and private sector partners?

Lars Sundstrom: Universities need to work more collaboratively to compete with major centres such as in the USA and Far East. Bio-E 2 will therefore go beyond the classical model of commercialising ideas based on existing research – instead identifying needs and creating an appropriate consortium in response. It's clearly a compelling approach and we believe its time has come.



Above: Professor Lars Sundstrom, Patty Holley

The brightest of minds – the best of ideas



Jimmy Wales, founder of Wikipedia visited the University in January 2011 as part of Wikipedia's 10th anniversary

In just six weeks the Beermat Challenge attracted almost 260 ideas and more than 23,000 votes.

Ideas on a beermat, please!

In October 2010, RED's Enterprise Education team dreamt up a new challenge encouraging students to capture their business ideas on the backs of beermats, both real and virtual. Businesses had to be described in fewer than 140 characters and were then subjected to an online public vote to find the most popular.

The three winning ideas included: a Trip Advisor-style system for rating student landlords (Oliver Brown, 3rd year Chemistry);

a service to redistribute household items discarded by students at the end of the year (Mosalam Ebrahimi, PhD Computer Science); and fitting gym machines with dynamos to generate power for the gym itself (Howard Chu, 2nd year Medicine). The winners received prizes including a net book, a digital camera and an Xbox.

In just six weeks the Beermat Challenge attracted almost 260 ideas and more than 23,000 votes. It not only generated significant student attention and highlighted the University's support for student business ideas, but also flushed out a few would-be entrepreneurs that we were then able to support and champion into the future.

The challenge was a warm-up activity for the annual New Enterprise Competition in which the best business plans (as opposed to the most popular ones) can win up to £35,000. The competition is being run again as a teetotal variation on a theme to be called the Coffeemat Challenge.



New Enterprise Competition 2011

Bristol's answer to Dragon's Den saw innovative ideas compete for a share in a £35,000 prize fund. Students, staff and recent graduates were battling not just for the money to advance their ideas, but also free advice and managed office space at the Bristol SETsquared Centre to help bring their winning ideas to the marketplace.

The overall winner was Avishek Banerjee, a teaching assistant in the Department of Mechanical Engineering whose prize totalled £12,750. Avishek's business idea SunHub aims to provide sustainable lighting to the poorest communities in rural India. Small solar panel charging stations set up in communities can provide enough electricity to charge low power LED lanterns. This solution delivers higher quality lighting to customers at a lower price than the kerosene lamps normally used.

Avishek said: "I'm thrilled to have won. Just writing the proposal made the competition worthwhile, but the fact I won is great."

In second place was Spyglass Technologies which has developed a novel, low-cost and user-friendly Atomic Force Microscope (AFM). This is considerably cheaper than its nearest competitor and requires no special training to operate.



In joint third place were William Goodwin, a final year civil engineer, and Mark Caldwell, a final year computer scientist. William's idea, EventBand, uses Radio Frequency Identification (RFID) wristbands to provide proof-of-identity and cashless payment systems for festivals. Mark's brain-child, ChirpID, is a smartphone application that uses novel technology to identify bird species from audible birdsong.

This year's New Enterprise Competition entries were judged by a panel of industry experts from sponsoring organisations including Bristol City Council, Deloitte, EADS, Jones Lang LaSalle, IP Group, Motorola, Osborne Clarke, Santander, SETsquared Business Acceleration Centre (Bristol) and Wyvern Seed Fund.



Top: The Spyglass Technologies team, from left to right, Dr Loren Picco, Research Assistant, School of Physics, University of Bristol; Jeremy Richards of Jones Lang LaSalle – sponsors; Oliver Payton (studying for a PhD) and Professor Mervyn Miles, Professor of Physics, School of Physics, University of Bristol

Working with Wikimedia

Following a hugely popular talk at the University in January 2011 by Wikipedia founder Jimmy Wales as part of Wikipedia's 10th anniversary, the Enterprise Education team met with the UK Chapter of the Wikimedia Foundation to discuss a whole host of interesting and socially enterprising ideas.

As a result, during summer 2011, RED funded Physics undergraduate Samuel Knight to work part-time exploring a range of possible projects of joint interest, supporting him through the Basecamp student start-up office.

Sam generated examples of Wikimedia tools being used to teach in both schools and universities, as well as exploring the value of Wikipedia for assessing research impacts. He also studied the use of Wikipedia-based events to allow students to contribute to the public understanding of their subject, and set in motion a forthcoming project using students to help local museums connect their collections via digital media and provide more interactive museum experiences.



The brightest of minds –
the best of ideas

The A-level Chemistry LabSkills product is now in every secondary school in the UK, as well as sold worldwide in over 30 countries.

LabSkills and the Dynamic Laboratory Manual take online science teaching to the next level

2011 saw the University recognised internationally as the leader in web-based practical science teaching with expansion of the LabSkills series.

The School of Chemistry began working with the staff of what was to become Learning Science Ltd in 2005, to create the first Dynamic Laboratory Manual (DLM) – a key element of the HEFCE-supported ChemLabS Centre for Excellence in Teaching and Learning. The DLM is now an award-winning interactive resource that transforms the student learning experience through video, interactive simulations, tutorials and assessment exercises.

Undergraduate DLMs have been developed in Biochemistry, Physiology and Pharmacology, and in Cellular and Molecular Medicine. Plans are also in the pipeline for other sciences, as well as Engineering. The concept is so successful that it is an important feature in the University's EPSRC-funded Doctoral Training Centres: Chemical Synthesis and Functional Nanomaterials.

Even more impressive is the DLM's impact in secondary education. The School of Chemistry and Learning Science Ltd developed A-Level Chemistry LabSkills as a product which, through a Government and Royal Society of Chemistry initiative, is now in every secondary school in the UK, as well as sold worldwide in over 30 countries. An agreement with an international publisher will see Chemistry LabSkills for US college freshmen published in 2012, bringing both reputational and financial benefits to the University. LabSkills for A-Level Biology and Physics are also planned.

RED staff have been closely involved at all stages of LabSkills' development and growth – nurturing business relationships, as well as helping to negotiate revenue sharing and the use of the University's intellectual property (IP) and brand.

KWS BioTest Ltd

University of Bristol spin-out KWS BioTest Ltd specialises in drug efficacy trials for inflammatory and infectious diseases. This fast-growing contract research organisation (CRO) not only directly benefits the University, but aims to inspire staff and students too. Professor of Immunology Neil Williams – KWS' founder and chairman – traces the company's journey since launch in 2004.

How did KWS come about?

Having joined the University as a lecturer in 1991, I'd patented novel human therapies by the mid-90s. I was then successfully supported by an embryonic RED to find a pharmaceutical industry partner – unexpectedly sparking interest in our drug-testing models on the way. Companies started asking us to test their own anti-inflammatory drugs. This was difficult to do properly within the University, as our PhD students were there to work on their projects, rather than for clients!

This inspired me to set up KWS as a CRO in 2004 with co-founder Professor Michael Day, a pathologist at Bristol Veterinary School. We appointed Dr Trevor Langley as managing director, who has a wealth of commercial pharmaceutical experience. Investment came from the University Challenge Seed Fund. The fund and the University of Bristol retain stakes in KWS – as do I and the other founders.

The brightest of minds – the best of ideas

KWS offers a commercially-managed environment with dedicated staff – enabling industry to access extensive expertise in drug discovery.

What differentiates KWS in the pre-clinical marketplace?

KWS offers access to academic expertise – but in a commercially-managed environment with dedicated staff who can respond to clients quickly and professionally. We can therefore understand what clients are aiming to do, advise on the problems they face and provide bespoke solutions for them to see if their drugs actually work.

This means that we become real partners for our clients rather than simply offering off-the-shelf testing, as some of our competitors do.

Who are KWS' clients?

We started working with biotechs that weren't big enough to test drugs themselves. But recently we've attracted more and more big pharma companies who recognise that in-house testing is no longer cost-effective. Around half our clients are big pharma, with 80 per cent of our client base evenly split between the UK and Europe. The balance is in the USA.

What have been the most significant developments since launch?

Recognising that we needed to sell to grow. So we've employed a marketeer, business development staff and invested in trade shows and conferences. We've also built successful partnerships with companies such as Quotient BioResearch and Porsolt & Partners in France.

With massive current interest in our services, we're now aiming to maximise growth. Having doubled turnover since 2010, we plan to double staff and turnover again over the next three years. This will inevitably have implications for our current location in the Medical Sciences building and our structure. We hope that we can maintain our close association with the University as we grow.

How does KWS benefit students?

In infection and immunology, we recognise that the next generation of academics and students needs a better understanding of translating science into medicines. That is exactly what KWS does. We're always happy to help and advise academic colleagues and are aiming to incorporate elements of the KWS experience into MSc programmes – including entrepreneurship and the translation of new knowledge into useful applications.

Where next for academic/industry collaboration?

In the bio-medical arena, there's never been a better time to secure early stage funding to prove translatable ideas for treatments and diagnostics. The challenge remains how to find ways of funding those ideas to the next stage and persuade a risk-averse big pharma to take them on board. By providing access to models and experience, KWS is just one example of how the academia/industry gap can successfully be bridged.



Working with businesses

Making the most of Knowledge Transfer Partnerships

RED's Frances Frith and Andrew Wray provide support to set up and run Knowledge Transfer Partnerships (KTPs). This involves considerable time and effort – so why do we pursue them?

Previously, Government schemes for industrial collaboration did not always meet academics' agendas quite as well as those of their industrial partners. However, a redesign of KTPs in recent years has placed greater emphasis on their benefits for participating universities. Bristol KTPs have not only brought valuable extra income to the departments concerned, but have also advanced the research programmes of the academics involved. They have also opened up opportunities to extend relationships well beyond the KTP.

Of particular current relevance, KTPs are also an excellent way of demonstrating impact. A KTP proposal requires a detailed business case showing the anticipated benefits to the business. We can then demonstrate that companies not only develop new products and processes – acquiring additional knowledge and capabilities on the way – but may also see significant ongoing increases to their overall profits.

Dr Russell Garland and Professor Neil Williams lead a current KTP involving ImmunoBiology Ltd, which needs a low-cost, effective vaccine candidate against *Streptococcus Pneumoniae*, and the School of Cellular and Molecular Medicine.

ImmunoBiology is gaining knowledge from the academics, as well as access to equipment and samples, that will help to generate supportive data for vaccine translation into early phase clinical trials. The academics, meanwhile, have gained useful exposure to commercial drivers during the course of the project. Understanding the constraints and the need to reach milestones, keeping adequate records that may be needed for regulatory purposes, and considering the applied/translational outcomes of the work are extremely useful foci in the light of the current impact agenda.

The ImmunoBiology collaboration has resulted in a paper to be published shortly, work being used as the basis for two final year dissertations, and the production of a project poster. Both ImmunoBiology staff and Bristol's academics are keen to collaborate again in future.



Working with businesses

£4m

One of four UK hubs to receive funding from Arts and Humanities Research Council

70

collaborative projects to be produced between 2012 and 2015

The aim is bring about a transformation in arts-driven economic and social impact, by combining demand from the creative economy with Arts and Humanities research excellence.

Creative industries benefit from £4 million funding boost

The University of Bristol is playing a key role in a new Knowledge Exchange Hub established to boost the region's creative economy.

REACT (Research and Enterprise in Arts and Creative Technologies) is one of four UK hubs supported with £4 million from the Arts and Humanities Research Council. A partnership comprising the University of the West of England (UWE), the universities of Bristol, Exeter, Bath and Cardiff, and Bristol's Watershed (a cross-artform venue and producer), REACT also involves a wide range of creative industry partners from the broadcasting, media, digital technology, library, gallery and heritage sectors.

The REACT project reaches across two dynamic UK areas, the South West and Wales, embracing two languages and creative economies. The aim is to bring about a transformation in arts-driven economic and social impact, by combining demand from the creative economy with Arts and Humanities research excellence.

Between 2012 and 2015, the partnership will produce 70 collaborative projects covering eight themes using Watershed's Sandbox process. Projects will span heritage, broadcasting, digital media, publishing and more. The first – Heritage Sandbox – launched in December 2011 and is exploring new experiences in heritage.

Co-Director Professor Robert Bickers of the School of Humanities leads the University of Bristol's involvement, while the Hub's Director is Professor Jon Dovey of UWE's Digital Cultures Research Centre.

To find out more about REACT – including how to take part – visit www.react-hub.org



Technology Strategy Board secondment furthers understanding of university and SME relationships

Innovating through collaboration with small businesses has long been integral to the University of Bristol and remains an important part of RED's remit. RED Project Manager Mustafa Rampuri spent a six-month part-time secondment to the Technology Strategy Board helping it to understand better the relationships that Small and Medium Sized Enterprises (SMEs) have with the organisation and with universities.

The study set out to examine the motivations and drivers of both academics and SMEs, and to establish the critical factors that enable relationships between them to flourish – so delivering growth for the businesses and research impact for the universities. Mustafa's work included mining the Technology Strategy Board's data warehouse, analysing survey responses from 800 academics and 1900 SMEs, as well as holding interviews and meetings with a representative cohort. Surveys were also sent out with a Technology Strategy Board newsletter to over 20,000 network members.

This is the first time that the Technology Strategy Board has conducted such a large survey of the SME-university relationship and it yielded some interesting insights. For example, SMEs identified low levels of bureaucracy, timely delivery of results and accessibility as key factors in a positive relationship with universities. These are important learning points for the university sector as it explores how it can increase support for small business innovation.

This type of activity is highly valuable and rewarding for the University – raising its profile and enabling it to become a more knowledgeable institution. It also enhances its ability to influence the strategic direction of Government policy and, more importantly, helps to grow the economy.

Working with businesses

8,500m²

Size of NCC facility

200

plus staff at full strength

I bring substantial industry experience in applying new technology to real products, together with a huge commitment to Bristol and the UK.

Introducing Peter Chivers: CEO of the National Composites Centre

Peter Chivers is Chief Executive of the National Composites Centre based at the Bristol and Bath Science Park. This cutting-edge, publicly funded facility is owned by the University of Bristol and brings together companies and academics to develop new technologies for high-performance composite products.

The NCC premises were handed over in July 2011. How's the project progressing?

Our 8,500m² building was completed in less than a year, a tremendous effort by the University Estates team and interim managers. Ultimately we'll have around 200 people based at the centre including teams from partners Airbus, GKN Aerospace, Rolls-Royce, Agusta Westland, Umeco and Vestas. The entire Airbus composites team (70 people) recently relocated to the NCC.

How does the Centre work?

The NCC is a collaborative environment where multi-industry teams can access state-of-the-art composite manufacturing

facilities and expertise, and share new knowledge. We can take ideas and develop them to prototype solutions – ideally encouraging partners to work with us. If it's simply time required on specialised equipment, such as our unique £2.6 million twin robotic fibre placement machine, we can provide that too.

One of the biggest benefits comes from pooling half of each partner's annual contribution for collective research. This offers a 6-to-1 leverage on the investment, with the knowledge and IP that emerges available for everyone.

What attracted you to the NCC's top job?

I've been in aerospace my entire career – recently in senior jobs with Airbus and GKN – and returned to the UK in 2010 after a spell in Toulouse. Having been impressed by how other countries commercialise their research investment, I joined the NCC steering committee. I became very enthused that we were creating the kind of facility Hermann Hauser described in his influential 2010 report *The Current and Future Role of Technology and Innovation Centres in the UK*. When the CEO position came up, I applied to help add value to the UK economy.

As part of the £200 million High Value Manufacturing Catapult Centre network, we now have the funding to take a long-term view and grow technology into new sectors and stay at the cutting edge.

What skills do you bring?

Alongside enthusiasm, I'm a pragmatic engineer with board experience who knows what businesses need when maturing technology. Costs, quality, training, repeatability, system performance – these are not issues typically addressed in purely academic environments often focused on proof of the science. I bring know-how applying new technology to real products, together with a huge commitment to Bristol and the UK.

What's next for the NCC?

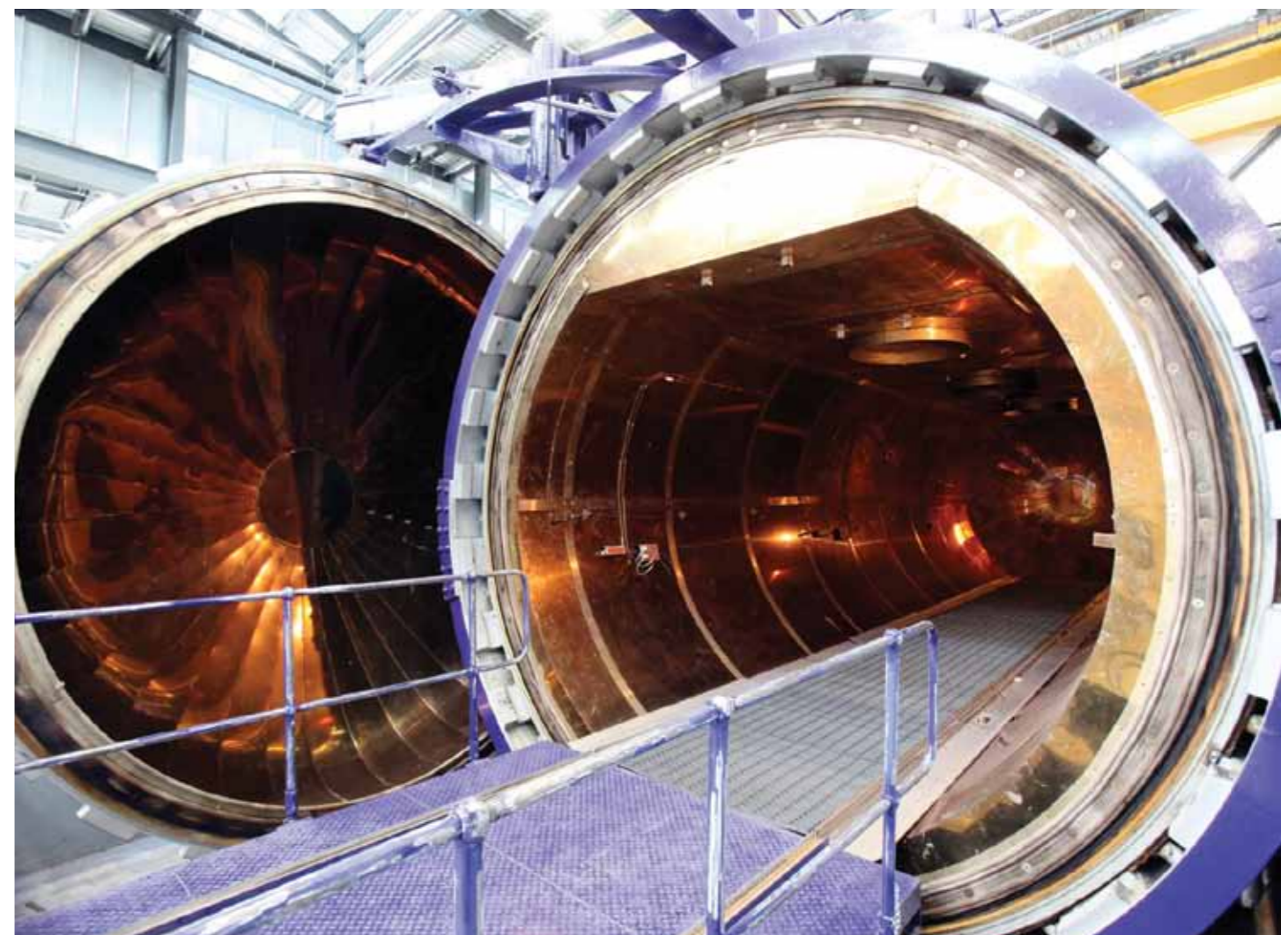
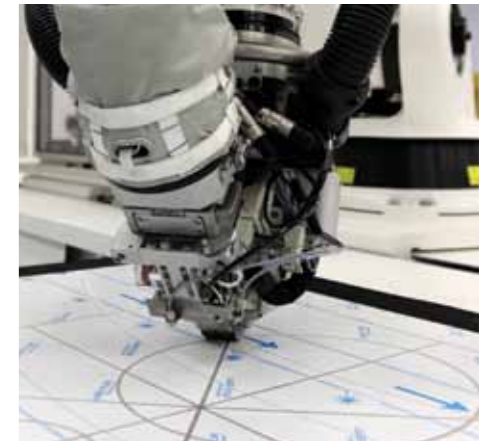
In areas such as aerospace and wind energy we'll be working to reduce composite costs and increase rate of manufacture. Elsewhere we'll be breaking into areas such as new automotive applications which were previously too expensive or slow to produce. We'll also be making the most of our connection with the Nottingham-led Centre for Innovative Manufacturing in Composites programme, partnered by the University of Bristol. It means more joined-up thinking and a sharper demand focus to convert great ideas into real commercial and economic value – not just for the region, but the wider UK.



www.nationalcompositescentre.co.uk



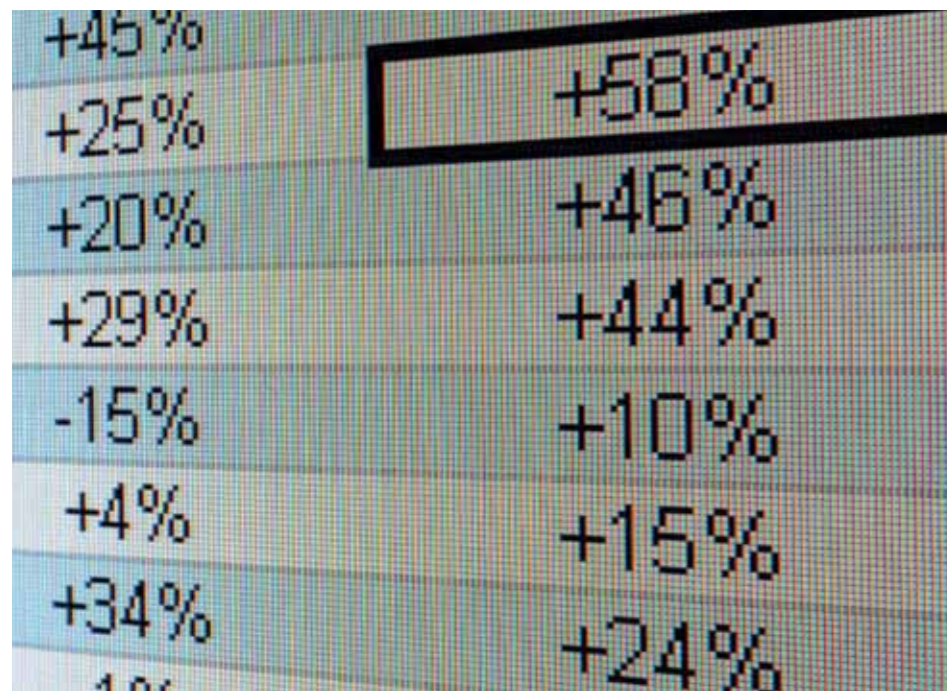
Above: Peter Chivers, Chief Executive, NCC



Working with businesses

300%
revenue growth
during 2010

The most important benefit has been SETsquared's world-class mentoring, with a team of mentors always on hand as we've made any important decisions.



Brightpearl: a SETsquared success story

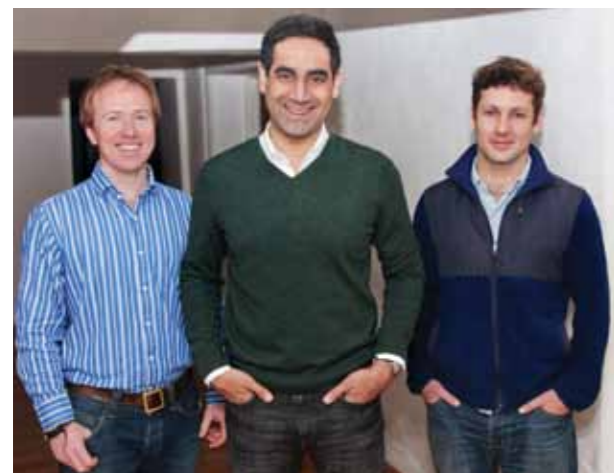
Andrew Mulvenna – co-founder and General Manager USA – charts Brightpearl's rapid growth over 18 months from six to 45 employees and a new office on the US West Coast.

What does Brightpearl do? And what differentiates it?

Brightpearl provides small to medium sized businesses with the type of software normally reserved for large corporations with deep pockets. Using a single cloud-based solution, SMBs can efficiently manage e-commerce, accounting, CRM, inventory, point of sale – even the helpdesk. We're a powerful but affordable alternative to software giants Sage, Quickbooks, and more expensive solutions such as Netsuite.

Where did the idea come from?

Brightpearl emerged from my co-founder Chris Tanner's frustration with the cost and limitations of existing software when growing his first company Lush Longboards. Lush was the skateboard business Chris launched when we were both studying Computer Science at Sheffield University, and where I also worked. After graduating, Chris sold Lush as a Top 5 name in world skateboards to focus on developing Brightpearl. I returned from working for a global IT company to partner with Chris and launch Brightpearl.



Left: Andrew Mulvenna (co-founder and General Manager USA), Salman Malik (CEO), Chris Tanner (co-founder and VP Product)

Having operated for three years from Bristol, we're now opening an office in San Francisco to support a rapidly growing customer base in North and South America. There's a huge opportunity in the US for small businesses to become more efficient and take their business to the cloud. The San Francisco Bay Area tech hub is great for business development and integration partnerships. We have another major US resource – our CEO Salman Malik, a Silicon Valley entrepreneur, who joined us in October 2010.

What's made the SETsquared route attractive over others?

SETsquared offers world-class advice, guidance and mentoring. Although the Government offers some small business initiatives, none could provide what we needed as a fast growing, high value internet company. Private sector business advisory services are prohibitively expensive, as well as limited.

What next for Brightpearl?

Taking full advantage of the millions of potential new customers out there. A big focus now is on investing in our marketing and go to market strategy.

Any advice for companies with a good idea that needs backing?

Get a sales track record first – then secure investment on the basis that the product sells and works. And network with the many people willing to share their experience. Don't, though, hire expensive consultants – unless you've exhausted your network!

www.brightpearl.com

How long, and in what ways, has Brightpearl been working with SETsquared?

We started working with SETsquared after six months trading in 2008 when we already had six employees and a Bristol office. Although we hadn't needed help starting the business, we had big ambitions and knew we'd need guidance as the company grew.

SETsquared has supported us in four significant ways:

- Monthly reviews with SETsquared Director Nick Sturge helped us to step back from selling and to see the business from a director's perspective – so we could develop a strategy and monitor our plans against it.
- We were helped to refine our business case and produce an investor pack – a brand new area for us. Grev Commins, SETsquared's Entrepreneur in Residence, taught us what investors look for in a business, what language they speak, and what documentation they want to see.
- SETsquared also facilitated presentations and investor pitches that led to us raising a seed round of £1 million from two investors – Eden Ventures and Notion Capital – who have since invested a further £3 million.
- Perhaps the most important benefit has been SETsquared's world class mentoring, with a team of mentors always on hand as we've made many important decisions.

Where is Brightpearl in 2011?

Our revenues grew 300 per cent during 2010 – the same throughout 2011 – and we'd grown to 45 employees by summer 2011.

SETsquared partners with South West Angel and Investor Network (SWAIN) to kick start local economy

SETsquared, the collaboration between the Universities of Bath, Bristol, Exeter, Southampton and Surrey that supports new business activities through spin-outs, licensing and incubation, formed a new partnership with South West Angel and Investor Network (SWAIN) in July 2011 to accelerate regional investment.

Early-stage companies have struggled to raise investment during the recession and high-tech companies have suffered particularly badly. The new partnership aims to double angel investing activity in the Bath and Bristol area over the next year by combining the expertise of the expanding SETsquared Business Acceleration Centres with that of SWAIN angel investors.

A dedicated SWAIN office at the Bristol SETsquared Centre sees SWAIN operating as a Funder-in-Residence, from which it is also working with SETsquared to deliver new, hi-tech-focused investment forums.



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