Discovery Days 2019

Wednesday 9 January
15:00 – 16:30

Thursday 10 January
11:00 – 16:45

Friday 11 January
09:00 – 16:30

University of Dundee
“It is ultimately right that the public that funds this great institute should see University projects that impact the community, the wellbeing, the hopes, the quality of life and the benefit of the whole world.”

Stephen Fry
At the inaugural University of Dundee Stephen Fry Award for Public Engagement, January 2012

Welcome to the University of Dundee’s sixteenth annual Discovery Days.

Discovery Days are a tremendous opportunity to hear from our new professors, award-winning teachers and communicators as we learn more about their discoveries and the benefits of these discoveries to us all. The work of our staff transforms lives around the world and raises the profile of the University, propelling us towards our goal of becoming Scotland’s leading university. The aim of the Days is to showcase research and insight that has been generated within the University and that can have a positive impact across society.

The annual Discovery Days began in 2004, as a celebration of the work of our newly appointed academic leaders. Since then we have heard and discussed the work of 240 new Professors at the University of Dundee, as they showcase their ideas to the public and our University community. At Discovery Days 2019, we will welcome a further fifteen new Professors, talking on subjects as rich and varied as health and wellbeing, modern politics, energy security, and ground breaking science.

The Discovery Days also host three presentations from our leading learning and teaching practitioners. They will share with us insights into new and innovative teaching methods and technologies.

The achievements of our staff and students, and their extensive work with the public, will be recognised in a presentation from the Global Health Challenge ‘University of Dundee against Poverty’ team and the presentation of the two Stephen Fry Awards for Excellence in Public Engagement with Research.

For the first time, Discovery Days opens with a public session, with the University of Dundee’s Chair of Court, myself as Principal, and the President of DUSA with a unique chance to hear from members of University Court, and ask them your questions.

Discovery Days 2019 promise to be a fascinating whirlwind tour through the outstanding achievements and future plans of our staff and students. I hope very much that you will join us on this voyage of discovery.

I look forward to seeing you there.

Professor Andrew Atherton,
Principal and Vice-Chancellor
Session 01: 15:00 - 16:30

Chair: Ronnie Bowie,
Chair of University Court

Annual Public Stakeholder meeting
of University Court

Ronnie Bowie • Chair of University Court
Professor Andrew Atherton • Principal and Vice-Chancellor
Sofia Skevofylaka • President of Dundee University Students’ Association

The session will see the University’s governing body, the University Court, hold its first annual public stakeholder meeting – with representatives of the governing body, including the Principal, present to give an account of the University’s performance and answer questions. Following on from an opening address from the Principal, the Chair of Court will present an overview of the role of the Court and its business over the last year.

After questions from the audience, the Dundee University Students’ Association (DUSA) President will give a short presentation on the role and responsibilities of DUSA, the relationship with the University in terms of supporting and enhancing the student experience, and recent activities/future goals.

Drinks Reception follows
Thursday 10 January 2019
Session 02: 11:00 - 12:30
Lunch break: 12:30 - 13:30

Chair: Professor Andrew Atherton, Principal & Vice-Chancellor

→ Enabling Others - Easier or Harder Than You Think?
   Professor Lynn Kilbride • Chair of Nursing

A nurse by background, Prof Lynn Kilbride believes passionately that nurses and midwives improve the lives of the people they engage with. Her clinical research is centred on diabetes and brain tumours, however she has a long and successful experience in developing education packages for the next generation of healthcare workers, at home and overseas. In this talk she will discuss how effective leadership in research and education can improve the lives of others.

→ The Vascular Impact of E-cigarettes
   Professor Jacob George • Chair of Cardiovascular Medicine and Therapeutics

E-cigarettes are gaining popularity as an alternative to traditional cigarettes. However there is a lack of evidence of its effects, beneficial or otherwise on cardiovascular health. Through the British Heart Foundation funded VESUVIUS study, our team in Dundee will look at the early effects of switching to e-cigarettes on blood vessel health compared to regular smokers. This is the largest study of its kind to date looking at this important aspect of cardiovascular disease.

→ The Vulnerability of Learning
   Brenda Keatch • Winner of Best Advisor or Personal Tutor and Outstanding Commitment to Student Welfare - Student-Led Teaching Awards

It is well recognised that creating the right conditions for learning is an important factor in successful learning outcomes. In higher education we are dealing with already successful learners, and it is easy to overlook their vulnerabilities in learning. Whilst the quality and content of teaching at University is crucial, the pastoral care of our students enables the process of learning to be much deeper and create independent, confident learners who have the resilience to apply and diversify their learning to future situations.

→ Being Together: The Social Psychology of Pilgrimage
   Professor Nick Hopkins • Chair of Psychology

People's experience of participating in large-scale collective events can be very different. In some situations being surrounded by others can be unpleasant and claustrophobic. However, being in a crowd can also give rise to positive experiences. Our research investigated some of the social psychological processes underlying the experience of participating in one of the world's largest religious mass-gathering - the annual month-long Hindu Magh Mela at Allahabad (Uttar Pradesh, India). It focused on how pilgrims' relations with others shaped their experience of what is an arduous undertaking.
How Do Cells Decide What Protein to Make?
Professor Victoria Cowling • Chair of Biology

There are many different types of cells in the body; which proteins these different cells make determines how cells function. For example, nerve cells make proteins which allow them to communicate with other nerve cells, cells in the gut make proteins which digest food. In Dundee we investigate how cells choose which proteins to make, and how this process goes wrong in different diseases. We aim to develop new therapies to control which proteins are made, in order to treat diseases such as cancers and immune disorders.

Reducing Infections from Medical Implants
Professor Qi Zhao • Chair of Materials Science & Engineering

Modern medicine is increasingly using medical implants such as pacemakers, stents and artificial joints, placed inside the body. Infections related to implants are common and are associated with increased hospital visits and death rates. To combat infections, silver, which is known to kill bacteria, is widely used on the surface of biomedical implants. However, silver coated implants haven’t reduced infection rates as studies showed that bacteria stick to the silver-coated surfaces. To overcome this issue the Dundee team, led by Prof Qi Zao, have developed a range of new “non-stick” antibacterial coatings for biomedical devices and implants.

The Middle Class in Russia: Agent of Social Change?
Professor Cameron Ross • Chair of Politics and International Relations

In December 2011, a volcano of social activism that had long been dormant started to erupt in Russia. Mass protest movements swept through the capital and then engulfed scores of Russia’s regions, which came as a great shock to the Russian leadership. After decades of the passive acceptance of the status quo it appeared that civil society was at last wakening up, and members of a rising middle class were at the forefront of the protests against the regime. But have the recent mass demonstrations in Russia really been a revolt of the middle classes? Or have occupational, demographic and geographic divisions weakened the solidarity of the Russian middle class and its role as a catalyst for democratic change?
Session 04: 15:15 - 16:45

Chair: Wendy Alexander, Vice-Principal (International)

Learning Science in New Frontiers
Professor Samia Khan • Chair of Education

How can people use readily available digital technologies to learn science? Hear how new technology such as mixed reality, when virtual reality is used with real physical components and computer simulations, can influence learning on topics like earthquakes and climate change.

License to Kill: Destroying Proteins with Small Molecules
Professor Alessio Ciulli • Chair of Chemical and Structural Biology

Inside the cell, proteins talk to each other all the time, by means of ‘protein-protein interactions’. Following these ‘conversations’, proteins can destroy one another, an important natural process. This talk will describe how we are designing synthetic molecules that can license proteins to kill by bringing them into artificial proximity, and how we are exploring their potential as new medicines.

Identifying Atomic-Scale Imperfections in Materials
Professor David Keeble • Chair of Condensed Matter and Materials Physics

Materials used in electronic devices, solar cells, lasers, and even certain aircraft materials, need to be produced to a stunning level of atomic scale perfection.

Nevertheless, defects such as missing atoms, atoms in the wrong place, and the presence of foreign atoms are often present. These can influence, and sometimes control, key properties such as solar cell efficiency and the ability to conduct charge. At Dundee we have developed a new test to analyse these atomic imperfections.
If you think of any of the major societal challenges that we confront today, from financial crises and increasing inequality to climate change and an ageing population, the social sciences provide key insights into the individuals and institutions caught up in these ‘wicked problems’. But the social sciences also help develop those key social values that make society possible. Trust, tolerance, a sense of identity and belonging are all essential to building strong and cohesive societies. Through its research, teaching and wider engagement, the School of Social Sciences plays a vital role not only in helping us understand complex social issues but also in developing those social sensibilities which contribute to a better society.

For anyone who has been out of the education system for a long time, enrolling at University can be a bit daunting. This project supported the learning journeys of a group of crime writers who needed to combine academic study with creative practice. Some of the courses we offered them combined History and Creative Writing, which meant that we too embarked on a journey to learn how to design and assess between the two disciplines.

Infectious tropical diseases have a huge effect in terms of mortality and ill health, and have substantial economic impact in countries where they are present, due to extra healthcare costs and days of work lost. The people most at risk from these diseases are predominately amongst the world’s poorest. Current available drugs are inadequate for the majority of these diseases and there is an urgent need for new treatments. The Drug Discovery Unit, with the support of Wellcome, has been established to discover new drugs to treat some of these diseases. Exciting progress has been made to date in delivering novel, potent, oral drug candidates for treating malaria and visceral leishmaniasis, now entering clinical trials.
Our School of Medicine is testing a new model of education for medical students that links their learning to the experiences of patients that they see. This is a change from learning linked to illnesses. In this model, students spend a year attached to a GP and follow their patients into hospital services. We are running a pilot study of the model; exploring the views of the students, their supervisors and NHS staff; looking at their performance over time to see how effective this way of learning is and, in the longer term, seeing if it increases recruitment to general practice careers in Scotland.

Learning is constant and every day; a process of continual modification and change. Sometimes learning is dramatic, but most of the time it isn’t. This talk will share my interest in the moments of interaction that run through the learning process and recognising the importance and significance they can have to individual students.

The Global Health Challenge is now in its third year and brings students from across the University together to design innovative solutions for tackling inequities in health and wellbeing. Last year one team worked with Faith in the Community, an organisation that works with the poorest communities in Dundee to tackle deprivation and build capacity in local communities. This session explains the formation of Dundee University against Poverty (DUAP) a student society which seeks to actively involve the student community to find ways in which they can help tackle poverty and exclusion in the city.

How do we make sure that resources like energy are distributed fairly and lawfully in the future? In this talk Raphael Heffron will look at how governments will secure and guarantee low-cost energy supplies for domestic and industrial consumers. We will explore new developments in infrastructure projects, the movement to a low-carbon economy and how energy affects our day to day lives, including our health and wellbeing.
Although being able to feel pain is important in protecting oneself, poorly managed chronic and cancer pain has a major impact on people. Globally, chronic pain conditions top the list in terms of chronic disease burden. Despite this, understanding of the mechanisms of pain and how to manage it effectively remains limited. In Dundee we are developing a translational pain research group, with partners, to address these problems. Areas of particular interest include pain assessment, neuropathic pain, and opioid medications in chronic pain.

The immune system is essential in order to combat infection. However, if not appropriately controlled, it can also cause many diseases including autoimmunity, cardiovascular disease and diabetes. We are interested in understanding how the immune system is controlled at a cellular level in order to try and identify new drug targets for immune diseases.

The United Nations’ Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice. This talk will demonstrate how the UN Sustainable Development Goals and international climate change action became the drivers of a global, lawfully regulated energy system that is sustainable for all, and what that means for my research at Dundee.
Healthy Lungs for Life

Professor James Chalmers • Chair of Respiratory Research

The lungs are the main interface between the human body and the environment. We all inhale about one million bacteria every day as well as atmospheric gases including air pollution. This talk will discuss the amazing ways in which the lungs clean themselves to protect us and how these defences go wrong in patients with lung diseases like COPD (Chronic Obstructive Pulmonary Disease) and asthma.

Presentation of the Stephen Fry Awards for Excellence in Public Engagement with Research

- Public Engagement Project of the Year
- Engaged Researcher of the Year

Drinks Reception follows

Session 08: 15:15 - 16:30

Chair: Professor Andrew Atherton, Principal & Vice-Chancellor
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