People need forests

Better futures with data science
Education for all and building opportunities
Regenerative medicine for cardiac patients
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Welcome

The University of Edinburgh is brimming with assets: a vibrant, international student population; world-leading thought and study; the vital research that is directly affecting the world we live in; and an evolving campus in a beautiful city that manages to marry the traditional with the very modern.

And the common factor to be found across all of these? People.

In these pages you will read not only about the ground-breaking projects that have made the past year one of the University’s most ambitious – including major new developments for environmental research and combating heart disease – but you will also hear from the people who are making it all possible. Staff, students, alumni and supporters are now more than ever before working together as one community to ensure the success of our work both locally and globally.

Take the Edinburgh Futures Institute led by Lesley McAra, our Assistant Principal for Community Relations (interviewed on page 10). At a time when the world is facing the growing challenges of inequality, artificial intelligence and big data, the Institute is leading the way in bringing together great minds, corporate entities, government bodies and the public to generate ideas and tools for the common good. Edinburgh is ideally placed to achieve this.

You will also hear about our progress in outreach work, taking the University beyond its traditional realms to engage with the immediate community and, in particular, those who may not have believed that studying here was an option. The relationship between students and alumni is strengthening, too, with our Local and Global Insights initiative bringing the two together in an exchange of knowledge and ideas (see our special feature on page 29).

And on page 14 we look at the role data driven innovation will play in creating new solutions, both here in Scotland and around the world, as a team of highly-skilled and innovative scientists takes on the task of deciphering and utilising big data and for the benefit of society as a whole. People are at the centre of every achievement and project outlined in this magazine – and that includes you. Without the support of our alumni and friends, much of this would not be possible. Thank you!

Chris Cox
Vice-Principal, Philanthropy and Advancement
Executive Director of Development and Alumni
Milestones

Our review of the past academic year, showcasing projects that have been funded by the philanthropic support of individuals and organisations

1. Support for science outreach

The Darwin Trust of Edinburgh has pledged more than £280,000 to support the School of Biological Sciences’ outreach work. The School continues to extend a programme of activities to engage school pupils, teachers and the wider public with biology, biotechnology and the natural sciences. Find out about other outreach programmes on pages 24-27.

2. Lighting up a city icon

Reverend Dr Robert Funk, who studied at the School of Divinity in 1963, has funded a floodlighting and sign project at New College on The Mound. Rev Dr Funk is a long-time supporter of the University, particularly through his contributions to student scholarships and the New College Library.

3. Mastercard scholars arrive

The third cohort of the Mastercard Foundation Scholars has arrived, the largest group so far. The programme provides full scholarships and transformative leadership training to educate and support bright, young African students with a deep, personal commitment to changing the world around them. Aisha Janki Akinola, student and Mastercard Foundation scholar, said: “Getting this scholarship means that I am the first of my 10 siblings to study at a university outside of Nigeria. I’m looking forward to improving my leadership skills, learning new things and, above all, developing my career path so I can make a real change in the African continent.”
4. **Resident artists for Talbot Rice Gallery**

The Talbot Rice Gallery has been awarded funding of £375,000 from the Freelands Foundation for a new artists programme to be delivered over five years. The Foundation’s mission is to support artists and cultural institutions, to broaden audiences for the visual arts, and to enable all young people to engage actively with the creation and enjoyment of art. The programme will begin with five resident artists. Rosie O’Grady, Talbot Rice Resident Artist, said: “The Talbot Rice Residents Programme will provide a welcome opportunity for critical discussion with peers and vital financial support to enable a focused period of research and development. I am delighted to be participating in the inaugural programme, and look forward to working alongside the other artists, and with staff at Talbot Rice and Edinburgh College of Art.”

5. **£100,000 gift to tackle endometriosis**

The MRC Centre for Reproductive Health has received a grant of £100,000 from the Charles Wolfson Charitable Trust to support a post-doctoral researcher. Their work will specialise in drugs to safely treat the main biological process underlying endometriosis pain.

Read more on page 30.

6. **ECA Printmaker in Residence**

Politics graduate and long-time supporter of student initiatives, Mark Astaire has now funded a Pilot Printmaker in Residence programme at Edinburgh College of Art to allow a printmaking practitioner to spend between eight and 12 months at the University of Edinburgh. Scottish visual artist Claire Barclay joins ECA as the first Printmaker in Residence.

Mark said: “Edinburgh College of Art is an amazingly creative environment, with many talented students and an array of brilliant teachers. Having a talented Printmaker in Residence, especially an artist of the calibre of Claire Barclay, will hopefully be a boon to the whole of the College, not just to the printmakers. I am thrilled to be able to support this initiative.”

Andrew Horne and his research team are conducting vital research into endometriosis.
7. Bank group funds internships

Santander has confirmed a further £50,000 to support internships within the SME sector. The banking group already funds a number of scholarships for Edinburgh students.

8. Purple Day fundraiser

Together, 28 eateries and numerous bake sales raised more than £2,000 for the Muir Maxwell Epilepsy Centre as part of the Purple Day fundraising initiative that encourages participants to wear, eat and bake something purple in aid of research into epilepsy. The money will go directly towards helping the Centre to find causes, better treatments and ways to address the psychosocial aspects of childhood epilepsy.

Dr Richard Chin, Director of the Muir Maxwell Epilepsy Centre, said: “Food is a central and important part of our lives. Naturally occurring purple foods are delicious, great for our health and lots of fun. Our Purple Food for Purple Day combined our passions for good food and good health, and all aimed at raising awareness about epilepsy.”

9. Pathway to Enlightenment completes

The McEwan Hall Pathway to Enlightenment has been completed with an additional 270 names of supporters added to the striking Victorian concourse. The initiative has raised more than £300,000 in support of current students.
10. Court papers go digital
The University has received a £15,000 grant from the Pilgrim Trust to preserve, catalogue and digitise the Scottish Session Papers project in the Centre for Research Collections. These are the case papers of the Scottish Court of Session, covering the period 1710-1850, and with approximately 250,000 items, they represent one of Scotland’s most significant, yet unstudied, printed source for the history, society and literature of Scotland from the immediate aftermath of the Union of 1707 through the Jacobite wars, the Enlightenment, the agricultural and industrial revolutions and the building of Walter Scott’s Edinburgh.

11. Distillery fundraises for MND
The Euan MacDonald Centre for Motor Neurone Disease Research received a £54,000 donation from a fundraising evening and auction hosted by Arbikie Distillery in January. This is one of the biggest single gifts ever received by the University through community fundraising.

12. New Equine Hospital unveiled
HRH The Princess Royal, Chancellor of the University, opened the new Equine Hospital facility at the Royal (Dick) School of Veterinary Studies in May. This has transformed the facilities for the diagnosis, surgery, treatment and recovery of horses. The Chancellor also unveiled a striking new sculpture at the entrance to the new facility. Canter is by artist Andy Scott, who also sculpted the famous Kelpies in Falkirk.

Professor David Argyle, Head of the Royal (Dick) School of Veterinary Studies, said: “The opening of the new expanded Equine Hospital represents a major step change in how we treat horses. We are also delighted with Canter by Andy Scott, an incredible piece of art and fitting for a veterinary school that was originally established to support the treatment of working horses.”
The University is set to revolutionise how data, the arts, science and the humanities, can be harnessed for greater social benefit through the launch of two new centres of expertise.
The Edinburgh Futures Institute is where the University’s world-class interdisciplinary expertise in social and data science, the arts, and humanities meets the external organisations that are tackling society’s most pressing needs.

**Professor Lesley McAra** thinks about the Edinburgh Futures Institute – its potential, its challenges, its moral duty – all the time. Her role as its director, she says, is a vocation.

On holiday this summer, waist-deep in a Highland river, between casts of her fishing line in search of a salmon that never arrived, she found herself contemplating the humanity that lurks behind every slice of data.

“We think of data as just numbers,” she says, “but it is more than that. It is oral histories, it is visual data – there’s a multiplicity of what it could be. When we talk about the benefits around data, it’s not just number crunching. It’s about benefits for global health, planetary health, wellbeing, and human flourishing.

“It’s not just 1s and 0s. It’s about people and what it means to be human. Every stat is a person – never forget that.”

Lesley is explaining her vision for the Edinburgh Futures Institute (EFI) – a project that has both the digital and the human at its core – a few weeks after her break, back on dry land, minus the waders.

She took over leading the embryonic EFI earlier this year. This idea of finding practical applications within society for data – be it in social services, in banking, in schools or in the local theatre – is central to what she believes it should do.

“For me, EFI is about harnessing the data, digital and artificial intelligence revolution for social benefit,” she says. “It’s that social benefit part of it that I find really exciting.”

Fitting, then, that EFI sits at the heart of Edinburgh.

In 2015, the University purchased the city’s Old Royal Infirmary, a category A-listed building at the heart of the Quartermile development. Its refurbishment has been aided by a £10 million donation.

After serving the city since 1879, with generations of locals passing through its doors, the magnificent Scots Baronial building had lain empty since 2003.

Generations of locals will have passed below a Latin motto, hewn in stone above the main doorway: Patet Omnibus. Translated, it means ‘Open to all’. When EFI moves into its new home in 2021, it aims to revive this civic-minded spirit.

“We want to genuinely co-produce research and education with industry and communities,” says Lesley. “We are building in a democratic manner, in a collaborative way, so that it is a benefit to others. If done properly, it could be quite radical.”

This is one of EFI’s big ideas. Community groups, local and national governments, industry and artists will be invited into the Institute to work with each other and the University’s academic community.

Experts from different parts of the University will collide, collaborate and create.

Together, Lesley says, they can better tackle some of society’s stickiest problems, both locally and globally.

“There is something very exciting about how a doctor, a social scientist, an
artist and an ethnographer might look at the problem of children moving from primary to secondary education.

“Different subjects and different methodological approaches challenge each other. A lot has been written about wicked problems – stubborn, complex and messy issues that seem intractable – so perhaps what we need is messy methodology.

“In academia, theories get traction if they can be expressed simply on one A4 slide. But they don’t tell you much about the real world, which is complex. We need complex things to understand them. That complexity will be what EFI will do, and at scale.”

Another foundational principle is that data and new digital technologies will underpin everything that EFI does.

Wedding social science with data science is potentially transformational, says Lesley. She gives the example of the “sticky” issue of parts of Scotland that suffer from issues of multiple deprivation.

“It doesn’t matter how much investment there is, no matter how much community activism there is, things don’t change. But with EFI, we can see if we can rethink the problem and unstick it.

“Very often people who are living in those particular areas are known to a multitude of agencies for different reasons. They might not pay the electric bill, they didn’t pay council tax, they are in trouble with the police for shoplifting, they are in trouble with the school because their kids are truanting.

“There are lots of agencies that know they are a problem, but they don’t know the extent of the problem. Now, we can use data from these different agencies, do big data analytics and see if there are cohorts of people with similar kinds of issues.

“It means we can fully profile problems, rather than only treat one part in isolation. We can maybe rethink what we provide as public services and how we deliver it.

It’s not just 1s and 0s. It’s about people and what it means to be human. Every stat is a person – never forget that.
“There’s a real possibility here to support – and provoke – governments to start thinking that way.”

The University can already point to concrete examples of success in this area. Experts are already using data to enhance and develop healthcare in the DR Congo and India.

Of course, for this to work, EFI needs to win the trust of agencies, industries and governments to share its valuable data sets. Lesley believes the University of Edinburgh is uniquely well placed to provide such a safe haven for this information.

Firstly, it has the hardware for the number crunching. Edinburgh is home to one of the UK’s supercomputers, a key part of the institution’s world-class data infrastructure. Cyber security is also of the highest standard.

And in an age when data’s use is under intense scrutiny, EFI will do what the University has done over the past several centuries: create a space to interrogate the ethical underpinnings of how we apply this vital resource.

“Data ethics and integrity is really important,” says Lesley. “We will look at how governments and corporations use data. We will look at surveillance capitalism and ask how we might better regulate that. If we don’t get the ethics of data right, it won’t work.”

Add the “theoretical and intellectual imagination” that EFI will apply to data and, Lesley believes, “you can get more use of that data here than you would elsewhere”.

To that end, EFI is already in discussions with major financial, cultural and governmental institutions on how they can engage with its potential.

The Arts and Humanities Research Council has recently pledged millions of pounds to support EFI’s work in boosting and transforming the city’s creative industries through data-driven innovations.

EFI is equally ambitious when it comes to teaching. Programmes will be project based and focused on practically engaging with an issue. A suite of scholarships is planned to ensure it is as accessible as possible.

Students are already engaged. As a way of visually explaining its ethos, EFI sponsored Trading Zone, a recent exhibition at the University’s Talbot Rice Gallery. It challenged student collaborations between artists, geographers, dancers and architects, with dazzling results.

What, then, should success look like for EFI? Lesley’s answer is in keeping with the radical sweep of the project.

“I think it will have failed if it hasn’t changed Edinburgh,” she says. “It should change the University.

“For me, judging the success of EFI over time is whether it has genuinely led to a transformation in terms of economic growth and social benefit. It needs to make a difference in the real world. It can’t be research for its own sake. It needs to be applied and have a beneficial effect. That’s how I would judge it.”

For more information, visit www.efi.ed.ac.uk
In 1872, architect David Bryce, famed for his work on Edinburgh’s Fettes College and the Bank of Scotland headquarters, was asked to design a new Royal Infirmary.

The innovations of Florence Nightingale were central to his plans. The nursing pioneer advocated that new hospitals be built with wards three storeys tall and with large windows. Bryce’s building is riven with cavernous wards and epic corridors. The increased space and light, it was believed, prevented germs spreading and reduced mortality rates.

“With the Edinburgh Futures Institute, we are disrupting this original idea,” says Professor Lesley McAra, EFI Director. “We are going to make it much more contagious and porous. We are going to use the architecture to spread ideas.”

The wards and corridors are being opened up and converted into flexible spaces capable of hosting meetings, exhibitions, workshops and events. A new piazza will be created facing Lauriston Place.

The transformation is being overseen by architects Bennetts Associates.

“Industry will rent space, labs will be held with academics, makers will be coming and going, the public will be visiting the new café,” says Lesley. “There will be encounters in the corridors and spaces. Those moments of connection are where knowledge makes the biggest leap.”

It is a space in keeping with both the University and former hospital’s principles of enquiry, progress, and inclusivity. Lesley describes it as “Enlightenment architecture”.

“Being in it just makes you think,” she says. “It has a soaring quality, almost like a church. There’s one wing that has the most magnificent ceiling with Gothic wooden frames.

“There’s something about it that opens up thought, not closes it down. Soaring architecture frees up thinking. It’s such a remarkable space.”

**THE BUILDING**

There’s something about the building that opens up thought, not closes it down
First breaking ground more than a decade ago, the opening of the new Bayes Centre this autumn completes the transformation of a forlorn car park near McEwan Hall into a modern mix of buildings bursting with creative minds. But, most importantly, it signals the University of Edinburgh’s determination to use world-leading data science in solving society’s greatest challenges.

At first glance, it may seem odd to name a new innovation centre after an 18th-century Presbyterian minister. Yet that is exactly what the University has done with the Bayes Centre, a hub where scientists and students from several data-focused disciplines will work together with external organisations to develop digital solutions that benefit the economy and society.

Almost 300 years ago in 1719, Reverend Thomas Bayes enrolled at the University. Though his main intention was to study divinity and prepare for the ministry, Bayes also immersed himself in mathematics and logic – a foundation that most likely led to the publication of his eponymous theorem after his death.

Bayes’ theorem, which is actually a generalisation of Bayes’ work by Pierre-Simon Laplace, essentially states the statistical probability of an event happening based on prior knowledge. “His revolutionary idea of refining the confidence you have in a judgment in the light of new observations in a precise, rational way serves as our inspiration for how we can solve challenging problems using data and computer systems,” explains Dr Michael Rovatsos, Director of the Bayes Centre.

The Bayes Centre is the first of five data hubs the University and its partners are establishing to help realise the Data-Driven Innovation (DDI) agenda that aims to establish Edinburgh and the surrounding region as the data capital of Europe. The £600 million DDI programme is one of the largest parts of the wider Edinburgh and South-East Scotland City Region Deal – a £1.3 billion investment from the UK and Scottish Governments, local authorities, universities and colleges, in activities designed to accelerate economic development and inclusive growth.

Building on the University’s unique strength in Informatics – the largest computing department in Europe – and top-ranked expertise in computer

“This support puts us in a unique position to develop a new, outward-looking University of the future”

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Building on the University’s unique strength in Informatics – the largest computing department in Europe – and top-ranked expertise in computer
science, mathematics, design and engineering, the Bayes Centre will create technology to power the interaction of people, data science and systems. Achieving this aim will require the fusion of two seemingly disparate scientific strands – design Informatics and artificial intelligence.

“It started over 10 years ago as a unique experiment, but we have surprised ourselves with how well it works,” explains Michael. “Designers are problem-solvers who approach gaps in experience from a strongly human-centric perspective and develop imaginative new solutions, while computer scientists and AI experts have the skills to not only supply the technological components that can support these solutions, but also identify new challenges based on the futures that creative minds contrive.”

Crucial to grounding such future-focused research in reality are research partnerships with a range of experts, from startups to corporate Research & Development teams. “We’ve already come a long way from being an academic ivory tower,” says Michael, “but we view hubs like the
Bayes Centre as a ‘Petri dish’ for new data-driven solutions, where external parties bring their challenges to us, and we mobilise the breadth of disciplines we have to offer to develop new propositions that put technology at the service of society.

“Our new building will house up to 200 people from private and public external institutions – the first time the University will collaborate in situ with such a broad mix of practitioners.”

In addition, philanthropic support from the Bayes Global Scholar Fund – to which Mozilla has already donated £100,000 – will serve as a beacon for the best and brightest PhD students from around the world to come to Edinburgh. “I think this puts us in a unique position to produce real-world impact from academic and industrial research and to develop a new, outward-looking University of the future,” says Michael.

For more information visit: www.bayes.ed.ac.uk
ONE GIANT STEP FOR MANKIND...

One of nine organisations to be housed in the Bayes Centre, the Edinburgh Centre for Robotics (ECR) has its hands on a rare NASA Valkyrie robot – one of the most advanced humanoid robots in the world. Though ECR researchers are contributing to the overall long-term scientific mission of sending these types of robots to Mars, they are also using Valkyrie and other robots to explore how we control robots in nuclear decommissioning, emergency response and any other places dangerous for a human.

The main challenge in this endeavour is building algorithms that allow a robot to cope with an environment it knows nothing about, and the only way to do this is laborious field testing. But with the bottom two floors of the Bayes Centre being dedicated ‘living labs’ – where data can be captured in a space where humans and robots can interact – ECR researchers will be able to deliver highly realistic simulations that remove a lot of physical trial and error, accelerating research and bringing safe inspection of hazardous environments – and perhaps humanoid robots on Mars – a step closer to reality.

GOOD DEEDS
SHAPE DIGITAL APP

Another University organisation moving into the Bayes Centre is the Centre for Design Informatics (CDI).

With a playful and creative approach to designing experiences with new technologies, CDI aims to help people understand, and importantly harness, data-driven innovations like the internet of things, blockchains, robotics and social computing.

“We build experimental experiences that allow people to engage with what is beginning to happen to their children now, and to them and their bank accounts in the next five years,” summarises CDI Director Professor Chris Speed.

A perfect example of the Centre’s work is Project Mercury, a year-long collaboration with Tesco Bank to help think through what the corporation’s products and services might be in the near future by approaching financial technology (fintech) from a design perspective. After a series of workshops, lectures and internships, the project culminated in three prototype experiences showcased at this year’s Edinburgh Fringe Festival.

One of these, Deedit, was an app encouraging people to carry out good deeds.

“We were trying to take tiny deeds – like turning down a plastic straw today or helping a tourist find their way across Edinburgh – and transforming them into smart contracts,” says Chris. “We wanted to help the public think about how the digital economy could contribute at a social level rather than just at an economic level.”

For more information visit: www.designinformatics.org
People need forests

A new Centre for Sustainable Forests and Landscapes at the School of Geosciences is set to promote and support ground-breaking studies into changing ecosystems around the world, including a major study of the impact of reduced woodlands on people in poverty in rural Mozambique. The Centre’s establishment underlines the University’s commitment to tackling some of the 21st century’s most pressing issues
Africa is a continent of awe-inspiring vistas – home to the world’s largest desert as well as vast swaths of lush rainforests. In central and southern Africa, woodlands are an integral part of the landscape, dominated by native miombo and mopane trees. These woodlands are made up of shrubland, savannahs and grasses and are home to a wide range of wildlife as well as a significant human population.

Ecosystem services – benefits that people can yield from the natural environment – from southern woodlands support an estimated 100 million rural people in Africa. In recent years, miombo and mopane woodlands have undergone major changes due to a variety of political and economic factors, with much of the area now deforested. An international study, co-led by Dr Genevieve Patenaude at the University’s School of Geosciences, is shining a light on the impact of changing ecosystems on the livelihoods of local peoples living in Mozambique.

“Many people associate deforestation with forest loss from cutting down trees, but it is much more than that. Deforestation is a lasting change in land use, for example, from woodlands to agriculture or urbanisation,” says Dr Patenaude. While deforestation in itself is not necessarily negative and can provide vital economic support for local people, the speed and intensity of deforestation has stepped up in many ecoregions across the globe. In some places, this is in response to factors such as increasing populations, ineffective policies and increasing demand for meat and palm oil.

Abrupt Changes in Ecosystem Services and Wellbeing in Mozambique Woodlands – or ACES – is examining how intensified woodland loss is affecting the lives of people living in rural poverty. The project – funded by the Ecosystem Services for Poverty Alleviation programme, supported by the Department for International Development, the Economic and Social Research Council and the Natural Environment Research Council – involves an international collaboration of scientists from South America and Europe, as well as local practitioners and scientists in Mozambique.

To build a comprehensive picture of the impact of deforestation, field teams collected biodiversity data...
Dr Patenaude is a Senior Lecturer in Forests and Carbon Management in the University’s School of Geosciences.
Dr Patenaude organised workshops for community groups in Mozambique affected by deforestation.

Visit the Edinburgh Friends website where Professor Dave Reay, the University’s Chair in Carbon Management and Education, explains why the time is right for the alumni community to unite in its support of our planet’s health: www.ed.ac.uk/edinburgh-friends

PEOPLE NEED FORESTS
Mozambique still has an extensive woodland resource (70% of the land cover), albeit with a high rate of deforestation. Miombo and mopane woodlands support the livelihoods of 100s of millions of the world’s poorest people, and are the dominant vegetation types in southern Africa.

and surveyed 1,700 households in more than 25 villages in Mozambique, garnering responses from local people about a wide range of issues including socioeconomic and household circumstances. A key focus of the project is the charcoal industry – an important ecosystem service across southern Africa that provides income for local providers with an annual market value of approximately £300 million.

Scientists from the ACES team have shown that while smallholdings benefited the wellbeing of local people, intense production and a lack of community management can disadvantage poor communities, widening inequality. In some places, long-term charcoal commerce was found to have depleted the availability of wood suitable for future charcoal use as well as construction and firewood.

These findings have generated an abundance of academic data as well as high-impact policy recommendations to strengthen the role of community management and install practices to ensure the charcoal trade operates in an inclusive and sustainable way.

The new Centre for Sustainable Forests and Landscapes will support and extend the impact of vital projects such as ACES. Directed by Professor Jaboury Ghazoul, the Centre is based at the School of Geosciences, rated top in the UK Research Excellence Framework for research power in geography, earth systems and environmental sciences. The Centre’s focus is addressing the global challenge of changes to forest ecosystems in ways that can support the economic and societal wellbeing of local people. As well as hosting world-leading research, the Centre will be a hub of learning, training the next generation of practitioners working at the coalface of these changing ecosystems.

Dr Patenaude believes that the Centre is an exciting place to strengthen and develop working networks and nourish collaborative projects. “Twenty-first century challenges can only be addressed using multiple lenses and team efforts across disciplines. Whether we are addressing pest and diseases – issues that are affected by trade and market forces as well as biology – or resilience of forests to climate change, teamwork across subjects will be key to making progress. The establishment of the Centre is a really positive opportunity to encourage interdisciplinarity.”

The Centre promises to deliver world-leading research into the complex relationship between humans and ecosystems with potential impact for rural communities across the globe. In the meantime, for us as consumers, making small tweaks to our habits could reduce the impact on intensive land changes. “To encourage sustainability, we might want to increase our recycling, limit our meat and dairy consumption and try to cut out processed foods heavy in palm oil”, says Dr Patenaude. Food for thought.
Breaking down barriers, building opportunities

Outreach and support programmes are giving young people who may think university education is out of their reach an insight into the possibilities open to them.

The Easter Bush Science Outreach Centre

Also working with schools, as well as the wider community, the Easter Bush Science Outreach Centre (EBSOC) is the first of its kind in Scotland. It’s designed to give everyone – from primary school children to community groups – access to hands-on experiences and learning in science.

“We want to increase the understanding of science across the community, and to help people understand that we all have the skills it takes to be a scientist,” says Jayne Quoiani, the EBSOC Education Officer.

“That’s why the Centre is purpose-built for visitors, for delivering hands-on understanding of what goes on in a science lab.

“We use real equipment and our visitors interact with real scientists and clinicians. We’re the only facility in Scotland that offers that kind of experience.”

Since opening in January, EBSOC has welcomed more than 1,200 visitors from schools, community groups and the wider public. It also participates in community events, such as the Midlothian Science Festival, to increase awareness of its work and encourage more people to get involved, and to help people to realise that university and a career in science can be for everyone.

Nicola Stock, Public Engagement Officer at The Roslin Institute and Project Lead for EBSOC, says: “Our main aim is to connect visitors from all backgrounds with researchers here at the University, who share details of their lives – at work and outside – as well as their experiences of studying science at school and university.

“By bringing visitors into our world and engaging them with real-life science, we can break down barriers and preconceptions about science, and show people that scientists are people too! Our visitors leave excited and inspired – and we believe they’re more likely to engage with the University and with science as a result.”

If you’d like to know more about EBSOC, visit the website at www.ebsoc.ed.ac.uk
The Digital Centre of Excellence at the new Newbattle High School Community Campus opened in June 2018. “The council and the school wanted to give children the skills to access higher-paying jobs or consider a university career,” explains Judy Robertson, Professor of Digital Learning at Moray House School of Education.

“We worked with the school as they created the Centre of Excellence, and advised on facilities that would help them achieve their aim.

“It’s a great partnership. We help the school by, for example, working with teachers to look at how to teach subjects like data science. The shared learning space that connects us with the school helps our student teachers see how methods work in practice.”

The Centre also supports wider ambitions, such as the Edinburgh and South-East Scotland City Deal, which aims to make Edinburgh and the surrounding region the data capital of Europe. The University is a key partner in the data-driven innovation programme designed to achieve that aim, and the work done with Newbattle is vital to its success.

“If we’re going to make that ambition a reality, we’ll need people with the right skills,” says Judy. “That’s why we must bring these subjects into schools. And that’s what makes initiatives like Newbattle so important.”

The Alwaleed Centre Summer School
The Edinburgh Alwaleed Centre is part of a unique network of six centres in universities around the world. It’s designed to foster a better understanding of Islam and Islamic culture through research and outreach projects, and to create closer links and cross-cultural dialogue between the Muslim world and the West.

The Centre’s Ambassadors of Peaceful Dialogue Summer School is part of a programme of events designed to achieve this aim. It offers an annual cohort of 70 high school students from Saudi Arabia the opportunity to be part of a three-week intercultural programme hosted by the University.

“The students take part in various activities and workshops alongside University students and young people from across Edinburgh,” explains Outreach and Projects Manager Tom Lea. “The idea is to bring these two cultures together so we can openly and honestly explore differences, while also celebrating everything that unites us.

“We pride ourselves on being a global university. This summer school is one way of extending our global influence and building our international connections. It also shows young people from distinctly different cultural backgrounds that these kinds of connections offer exciting opportunities.

“Fundamentally, the Summer School – and the work of the Alwaleed Centre as a whole – makes a significant contribution to the strong, sustainable future of our University as a truly global institution.”
THE SCOTLAND SCHOLARSHIP IN ACTION

Ali Khan moved to Scotland from the Pakistani city of Lahore in 2010. After gaining permanent residency, he resumed his studies, choosing the University of Edinburgh’s Chemical Engineering course. Ali has been supported by the Scotland Scholarship available to Scotland-domiciled undergraduate students, and funded jointly by the University and the generosity of alumni donors and other supporters. Here, he explains what that has meant to him.

“When I applied to the University, I didn’t know how much funding I’d receive to keep me here,” he said. “My parents can’t provide financial support, so the Scotland Scholarship, as well as my student bursary, have relieved a lot of strain. I’ve never had to worry about pursuing any of the opportunities the University has offered.

“Right now, for example, I’m doing an internship in London. I’ve found places to stay with friends and so on, so the costs haven’t been too high. But I wouldn’t have been able to take it on with confidence without the financial support that I have.

“I can plan ahead and budget properly. I pay my rent in advance. I bought a bike to keep travel costs down. I’ve bought some books, of course, but share a lot with my flatmate. I’ve been able to attend events, such as one at the Royal Academy of Engineering, without worrying about how to finance them.

“I can’t tell you how much that means. You can’t quantify the relief you experience knowing that you don’t have to think about financial constraints. I’ve been able to focus on my studies, which has given me a lot of success. That’s priceless.

“Alumni donations have helped to make my university career possible. Their collective contributions support the scholarship, and that’s life-changing. I’m so grateful. I would never have been able to succeed as I have done without the financial support they made possible.”
INSPIRING INSIGHTS

The University is proud of the strong links it maintains with its alumni – and rightly so. Their contributions – financial or otherwise – help support work that nurtures and develops the new talent that comes to study with us every year.

Our Insights programme is open to students who have already overcome financial and social barriers to access a University education. It gives them the opportunity to benefit from alumni knowledge and experience. Fully funded to allow as many students as possible to participate, it pairs alumni with undergraduate students as they take their first steps into work experience and start planning their careers.

Global and local
Covering London, Brussels, New York, Washington and Toronto so far, the global strand of the programme sends small groups of students to meet with alumni groups in their professional environments and business locations.

Locally, the programme offers two to five-day experiences across central Scotland.

Both help highlight the opportunities and career option open to graduates, and provide invaluable experience and insights into what to expect from the world of work.

Networking and new perspectives
Insights experiences not only help launch and support careers, they also create connections with new talent. Alumni perspective is invaluable to the students taking part, but their perspectives on life and work offer a fresh look at how things are done – and that’s a valuable insight too.

If you think you can offer inspiration and support to a young person just starting their professional career, we’d love to hear from you. Drop us a line at insights.programme@ed.ac.uk

Briana Pegado and Blair Rankine (left) are participants on the University’s Insights programme.

Briana is a 2014 graduate of Sustainable Development and former president of the Edinburgh University Students’ Association. She has been offering advice and guidance to current students who are considering careers in the creative industries.

Blair is a current student of Politics who has been taking advantage of the unique support the Insights programme offers.

Briana and Blair spoke with Edinburgh Friends about their experiences, and you can watch their interviews online at: www.ed.ac.uk/edinburgh-friends
An Edinburgh team is conducting vital research into how to improve the lives of more than 170 million women globally affected by endometriosis, a debilitating condition that often goes undiagnosed.

**Hidden suffering**

80 per cent of adults are familiar with diabetes, fewer than 20 per cent have heard of endometriosis.

That startling figure, provided by Endometriosis.org, emphasises one of the reasons why it is such a difficult condition to research, and why developing better management and treatment remains a challenge.

At least 176 million women of child-bearing age across the world are affected. In the UK, the figure is about 1.5 million, with an estimated 125,000 of them in Scotland, many of them undiagnosed.

Here, Professor Andrew Horne, co-director of EXPPECT (Excellence in Pelvic Pain and Endometriosis Care and Treatment) at the Royal Infirmary of Edinburgh campus, explains how a £100,000 donation from the Charles Wolfson Charitable Trust will support their vital research into the condition, in partnership with NHS Lothian.

**What is EXPPECT hoping to achieve?**

We want to improve the quality of life for women with chronic pelvic pain and endometriosis by developing novel, personalised treatments.

We formed EXPPECT Edinburgh in 2014 to bring together individuals involved in clinical care with discovery scientists to establish a hub within which new and innovative approaches to treatment can be developed in collaboration with women with endometriosis and commercial partners.

**What is the clinical expertise at EXPPECT?**

We have a multi-disciplinary team that provides state-of-the-art, high-quality, evidence-based patient-centred treatment for the management of all grades of endometriosis.

It is one of only two British Society of Gynaecological Endoscopy (BSGE) accredited centres in Scotland.

**Why does such a widespread problem struggle to identify funding for research?**

Part of the problem is that endometriosis is a “hidden” condition and still has a certain taboo around it.

There remains some gender prejudice, I suspect. Diagnosis and management can be disjointed, leading to sub-optimal treatment.

We are drawing together those different elements so that we have a much fuller and more co-ordinated picture.

**You have spoken of “repurposing” existing drugs. What does that mean?**

It can take 25 years to bring a new drug to market. What we are doing is identifying novel drug targets to explore possible ways forward by repurposing compounds for other conditions.

We know that endometriosis cells behave in a way similar to cancer cells. It may be that
existing cancer drugs, for example, could be modified to treat endometriosis.

We have developed a human tissue/fluid biobank with samples from women with chronic pelvic pain who do or do not have endometriosis. Collecting and archiving samples, according to rigorous protocols, has allowed us to collaborate with other research internationally and to gain new insights into disease related pathology.

We are looking at the repurposing of drugs developed for other indications that we have tested in our specially developed unique preclinical models of endometriosis, as well as fresh approaches based on new insights gained from studies on disease aetiology.

We are working with a range of pharmaceutical companies to increase the range of compounds.

What about funding?
We have managed to secure £10 million in research funding for endometriosis from a range of sources, which is a great show of support for our work and what it can achieve.

Of course, an ongoing research project like this constantly needs more funding, and every grant and donation is hugely important to us.

The £100,000 from the Charles Wolfson Charitable Trust will cover the cost of bringing on board a research scientist who will be working closely with us to identify potential new drug targets that could lead to a better way of managing the pain and related symptoms – or even cure – for women with endometriosis.

That is crucial work if we are to improve the lives of millions of women across the world.

Visit the MRC Centre for Reproductive Health website at www.ed.ac.uk/centre-reproductive-health

READ MORE
Professor Andrew Horne and Carol Pearson’s book, Endometriosis: The Experts’ Guide to Treat, Manage and Live Well with your Symptoms, is available now.

DEBILITATING DISORDER
Endometriosis a condition where tissue similar to the lining of the uterus (the endometrial stroma and glands, which should only be located inside the uterus) is found elsewhere in the body (endometriosis lesions).

The lesions can be found anywhere in the pelvic cavity: in the ovaries, on the pelvic side-wall, on the bowel or bladder. It can even be found in scar tissue from a caesarean section.

Sufferers can experience debilitating pelvic pain and infertility, leading to time off work or study, low mood and a breakdown in relationships. There is no cure as yet. Surgery to remove the endometriosis may bring some relief, but the symptoms often return. Simple painkillers can help, as can hormone treatment, usually in the form of the birth control pill. However, at a time in their lives when younger women are most likely to want to conceive, taking that course of action is not an option.
Stem cells are a cornerstone of regenerative medicine, potentially one of the most revolutionary areas of 21st-century biomedical science, harnessing the power of a patient’s own cells to help failing organs heal. A groundbreaking new project taking place at the University is showing promise in helping heart attack patients avoid future heart failure.

The majority of cells in the body are specialised, meaning they have developed into a distinctive cell type – for example, brain, lung or bone cells. In contrast, stem cells are unspecialised and have a remarkable ability to transform – or differentiate – into specialised cell types.

Stem cells also have the ability to self-renew, continually dividing to produce copies of themselves when needed. This ability to self-renew could hold the key to repairing damaged organs in the body and, in the last 20 years, scientists have begun to explore and exploit the extraordinary potential of stem cells to aid tissue repair.

Edinburgh has an enviably strong history in stem cell research, notably as the home of the world’s most famous sheep, Dolly – the first mammal derived from an adult cell. Born in 1996 at the Roslin Institute, Dolly was a pioneering marvel and heralded a new era in science.

The researchers who created Dolly, led by Professor Sir Ian Wilmut, proved that adult cells could be reprogrammed to behave like embryonic cells, a crucial step towards laying the foundations for a pioneering technology, known as induced pluripotent stem cells (iPSC). iPSC allows scientists to take cells from the skin or blood and reprogramme them into any other cell type, including brain cells.

Across the city, the Medical Research Council Centre for Regenerative Medicine is expanding this pioneering work, with an exciting range of projects aimed at repairing damaged tissues. The Centre is playing a leading role in exploring the potential of iPSCs to regenerate damaged organs, and its researchers are making significant advances in understanding how these cells function and how they can be used therapeutically.

Edinburgh Friends is proud to support the work of the Medical Research Council Centre for Regenerative Medicine, and we encourage you to explore how you can support this vital research in the future.
Medicine (CRM), based at Edinburgh Bioquarter, recently celebrated its 10th birthday. A world-renowned centre of excellence in stem cell research, the Centre has led numerous cutting-edge studies, shedding light on a wide range of life-threatening conditions including liver disease, Parkinson’s disease and brain cancer.

An ongoing study at the University’s British Heart Foundation Centre of Research Excellence exemplifies how important stem cell and regeneration could be in changing patients’ lives. Improvements in medical care means that more people are surviving heart attacks, but consequently, more people are now at risk of heart failure as attacks leave lasting damage on heart muscle.

Heart failure – a condition in which the organ can no longer pump blood around the body as effectively as it should – seriously impacts on quality of life, limiting physical activity and causing shortness of breath.

The study – supported by the French company CellProthera and led in the UK by Professor David Newby – is harnessing the power of stem cells to reduce the risk in patients who have recently had a heart attack.

The treatment being trialled exploits the capacity of stem cells that are circulating in a patient’s blood, focusing on CD34+ stem cells, which are important in supporting new blood vessels. People taking part in the trial have five daily injections to stimulate the production of stem cells and a sample of blood is then sent to a lab to boost the number of 34+ stem cells by 20 times. The trial is testing the effects of delivering stem cells directly into the patient’s heart using a novel corkscrew-shaped injection system close to damaged tissue.

Early results from the study show that, 10 years after treatment, six out of seven patients have remarkable improvement in their heart health, with some showing near-normal heart function. If proven successful, the team hopes that one day the approach could reduce the need for heart transplants.

Professor Newby, an expert in cardiology, cautions that the study is ongoing and may not be suitable for all patients who have had a heart attack. “We are very optimistic with these findings, but the results have to be replicated in a larger clinical trial,” he says.

“We are some way off this being used in routine care; however, if the results from a large trial are positive, it could have huge implications for people who have had heart attacks.”

Last year, ground was broken on what will be the Centre for Tissue Repair (CTR), which promises to enhance the work done at CRM when it opens in 2020. Together, CRM and CTR will form the Institute of Regeneration and Repair, ensuring that the site continues to be a global hothouse for regenerative medicine.

A recent legacy gift is set to support a Chancellor’s Fellowship in stem cell data science at CRM, a crucial commitment to a young researcher’s career that will allow them to blaze a trail in cutting-edge studies. In addition, the legacy will fund a stem cell biologist, tying into the University’s commitment to nurturing early research careers and ensuring that the Centre continues to attract talented researchers.

It may be some time until stem cell therapies are used routinely in healthcare, yet results such as those from Professor Newby’s trial and investment in regenerative medicine offer hope to people living with debilitating conditions. Thanks to the determined efforts of researchers and clinicians, stem cell research looks set to have a bright future in Edinburgh.

For more information visit the Centre for Cardiovascular Science website: www.cvs.med.ed.ac.uk
As well as the impactful donations received by the University for major projects and world-class research, gifts received by the Edinburgh Fund – our general pot of unrestricted funds that is channelled into areas of greatest need – along with the efforts of our army of community fundraisers, are vital to the ongoing enhancement of learning, teaching, research and the student experience at Edinburgh.

**THE EDINBURGH FUND**

The Edinburgh Fund is made up of unrestricted gifts to the University, meaning the University can channel them into areas and projects with the greatest need. This year, the Fund has raised £821,372, which has supported these four areas.

Find out more at www.ed.ac.uk/giving/edinburgh-fund

**SCHOLARSHIPS**

89 have been funded this year. 89

**INNOVATIVE TEACHING AND LEARNING**

21 innovative projects have been funded as part of the Principal’s Teaching Awards scheme, providing staff and students enhanced teaching, learning and assessment opportunities. 21

**RESEARCH AND COMMUNITY IMPACT**

73 Student Experience Grants were funded by alumni. These grants support innovative projects and initiatives that will enhance students’ social, academic, intellectual, entrepreneurial, sporting or cultural development. 73

**GLOBAL EXPERIENCES**

25 projects and programmes that offer students an international experience have been funded. 25

**FUNDRAISE YOUR WAY**

The University has received £298,401 from the efforts of our 156 community fundraisers who have been encouraging their friends, families and workplaces to fundraise on behalf of one of University’s many research centres and funds. These include:

1. Euan MacDonald Centre for Motor Neurone Disease Research
2. The Fiona Walker Fund for research into brain tumours
3. The Anne Rowling Regenerative Neurology Clinic
4. The Anatomy department
5. The Anne Forrest Fund for Oesophageal Cancer Research
6. Research into late onset retina degeneration
7. Centre for Dementia Prevention
8. The Muir Maxwell Epilepsy Centre

Supporters have raised money in many ways, including collection cans, parties, sporting events, sales, theatre performances, film screenings, dinners and firewalks.

Find out more at www.ed.ac.uk/giving/fundraise-way
Leadership team

Chris Cox
Vice-Principal, Philanthropy and Advancement and Executive Director of Development & Alumni
chris.cox@ed.ac.uk
+44 (0)131 651 5955

Kate Brook
Director of Services, Development & Alumni
kate.brook@ed.ac.uk
+44 (0)131 650 6315

Chloe Kippen
Director of College Advancement and Health Philanthropy
chloe.kippen@ed.ac.uk
+44 (0)131 650 2232

Liz Reilly
Director of Philanthropy & Donor Relations
l.reilly@ed.ac.uk
+44 (0)131 650 2234

Grant Spence
Director of Alumni Relations
grant.spence@ed.ac.uk
+44 (0)131 651 1411

Philanthropy team

Chris Allen
Head of Philanthropy, Science and Engineering
chris.allen@ed.ac.uk
+44 (0)131 650 9168

Roy Biddle
Head of Philanthropy, Trusts and Foundations
roy.biddle@ed.ac.uk
+44 (0)131 651 4364

Martyn Dempsey-Caddick
Head of Philanthropy, Arts, Humanities and Social Sciences
martyn.dempsey-caddick@ed.ac.uk
+44 (0)131 650 9737

Lucy Gabe
Supporter Engagement Manager
lucy.gabe@ed.ac.uk
+44 (0)131 650 2236

Alana Tubasei
Head of Philanthropy, London
alana.tubasei@ed.ac.uk
+44 (0)7557 489 459 (mobile)

James Gauthier
Head of Philanthropy, North America
james.gauthier@ed.ac.uk
+1 603 443 0361 (US mobile)

Amani Roland
Head of Philanthropy, North America
amani.roland@ed.ac.uk
+1 314 435 5835 (US mobile)

Legacies

Morag Murison
Legacy Manager
morag.murison@ed.ac.uk
+44 (0)131 650 9637

Donor relations

Cathy Anderson
Donor Relations Manager
cathy.anderson@ed.ac.uk
+44 (0)131 651 4406

To find out more about how you can support the University, visit www.ed.ac.uk/giving

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