Festival of Research
14th & 15th November 2019
Welcome to the Heriot-Watt University Festival of Research

Professor Garry Pender  
*Deputy Principal Research and Innovation, Heriot-Watt University*

I am delighted to welcome you to the first Heriot-Watt Festival of Research. Our research excellence is founded on our ability to answer challenging scientific questions and tackle major global challenges. We couple this with our interdisciplinary approach and close collaboration with the communities we serve. The Festival of Research on our Edinburgh campus offers staff and students the opportunity to share in the celebration of this success, develop your own knowledge and skills and build networks across the wider Heriot-Watt community.

In participating in the Festival, you can find out about the cutting-edge research taking place across the University. I also encourage you to attend the career and skills development sessions on offer during the event. There are fantastic opportunities to see the state-of-the-art infrastructure that underpins our research and meet the staff who support the experimental work that is vital to its success. Perhaps most importantly please take the time to speak to other participants to learn and share ideas on how we can further enhance our research culture.

There is a whole range of interesting and exciting events to take part in at the Festival. I look forward to seeing you there.

Dr Ruth Neiland  
*Head of the Research Futures Academy, Heriot-Watt University*

The Research Futures Academy provides continuing professional development for the entire academic community at Heriot-Watt University with the aim of further developing our research excellence and culture, and of maximising the career potential of our researchers. In particular, we work to support academic leadership and collaborations so as to inspire novel research ideas’ generation, build interdisciplinary research activity, and share best practice amongst peers.

The Research Futures Academy has been pleased to design and coordinate Heriot-Watt University’s Festival of Research as a way to celebrate just some of the exciting, topical research which is being undertaken at our institution, and to showcase the diversity of researcher support offered by colleagues within Professional Services, especially the new ‘Research Engagement Directorate’ (RED).

I hope that everyone who attends the Festival of Research takes away some new ideas and contacts from the events you choose to attend, and that our research staff and students feel inspired about what your research could achieve, the training and development you could access, and the collaborations you could build to enhance your research opportunities and impact in the future.

We look forward to meeting you during the Festival!
**Strand A: Pioneering Research**  Pg 8

From discovery to application, our pioneering research delivers impact, helping to transform society, stimulate economic growth and change lives. Find out more about the award-winning, pioneering research being undertaken at Heriot-Watt University and why it is attracting academic and innovation interest worldwide.

**Strand B: Research Development**  Pg 14

Looking to win more funding for your research and to enhance the impact of your publications? Be guided through the changing landscape of research funding in the UK and explore how your research could become more visible via astute publication and citation strategies.

**Strand C: Research Careers**  Pg 16

Gaining a PhD should equip researchers with skills, knowledge and connections to help them progress to their next career stage. Explore different career options within academia and other sectors, and focus on maximising your profile, networks and opportunities to help enhance your career development.

**Strand D: Research Culture and Community**  Pg 18

The research community at Heriot-Watt University comprises people from multiple academic disciplines, at different stages of their career, and with varying experience of engaging with different sectors. Initiatives to promote equality, diversity, public engagement, interdisciplinarity and innovation, operate to foster an inclusive, collaborative and vibrant research culture. Be inspired by our research community developments and celebrate their progress in further enhancing our research culture and impact.

**Strand E: Research Labs and Facilities**  Pg 20

Heriot-Watt University hosts some unique laboratories comprising specialised equipment which enable world-leading, experimental research to be undertaken at different scales. Take the opportunity to visit some of our Labs and hear from their researchers about the research enabled by these scientific facilities.
<table>
<thead>
<tr>
<th>Time</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td></td>
</tr>
<tr>
<td>09:30</td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td></td>
</tr>
<tr>
<td>10:30</td>
<td></td>
</tr>
<tr>
<td>11:00</td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td></td>
</tr>
<tr>
<td>12:00</td>
<td></td>
</tr>
<tr>
<td>12:30</td>
<td></td>
</tr>
<tr>
<td>13:00</td>
<td></td>
</tr>
<tr>
<td>13:30</td>
<td></td>
</tr>
<tr>
<td>14:00</td>
<td></td>
</tr>
<tr>
<td>14:30</td>
<td></td>
</tr>
<tr>
<td>15:00</td>
<td></td>
</tr>
<tr>
<td>15:30</td>
<td></td>
</tr>
<tr>
<td>16:00</td>
<td></td>
</tr>
<tr>
<td>16:30</td>
<td></td>
</tr>
<tr>
<td>17:00</td>
<td></td>
</tr>
<tr>
<td>17:30</td>
<td></td>
</tr>
<tr>
<td>18:00</td>
<td></td>
</tr>
</tbody>
</table>

**Strand A: Pioneering Research**
- North Pod, EBS
- Marine Ecosystems
- Manufacturing and Construction Revolutions
- Energy Transitions

**Strand B: Research Development**
- UK Research: Would you like to know more? [SR214]
- Introduction to Aid Funded Research [Craig Room]
- Elsevier - Publishing World Leading Research [WA111]

**Strand C: Research Careers**
- Building Your Professional Profile and Network [Careers Centre]
- Representing Yourself [Careers Centre]
- Beyond the Ph.D [Careers Centre]
- Beyond the PhD [Careers Centre]

**Strand D: Research Culture and Community**
- Exhibitions throughout
- Exhibitions throughout

**Strand E: Research Labs and Facilities**
- Robotarium
- Robotarium

**Heriot-Watt University Festival of Research, Thursday November 14th, 2019**
Heriot-Watt University
Festival of Research, Friday November 15th, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Strand A: Pioneering Research</th>
<th>Strand B: Research Development</th>
<th>Strand C: Research Careers</th>
<th>Strand D: Research Culture and Community</th>
<th>Strand E: Research Labs and Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>South Pod, EBS</td>
<td>Showcasing Research on Pure [MBG22]</td>
<td>Careers in Academia [North Pod, EBS]</td>
<td>Campus Walking tour (James Watt Statue)</td>
<td>Pioneering Research</td>
</tr>
<tr>
<td>09:30</td>
<td>Robotics</td>
<td></td>
<td></td>
<td>Research Culture</td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td></td>
<td></td>
<td></td>
<td>3MT</td>
<td></td>
</tr>
<tr>
<td>10:30</td>
<td></td>
<td></td>
<td></td>
<td>RED Hub Open - Doors</td>
<td></td>
</tr>
<tr>
<td>11:00</td>
<td>Enhancing Lives Through Social Science</td>
<td></td>
<td></td>
<td>RED Hub Open - Doors</td>
<td></td>
</tr>
<tr>
<td>11:30</td>
<td></td>
<td></td>
<td></td>
<td>Lyell Centre (Lyell Reception)</td>
<td></td>
</tr>
<tr>
<td>12:00</td>
<td>Scottish Crucible Networking Event</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:00</td>
<td>Latest Updates from the Funding Landscape (North Pod, EBS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Day 1: Thursday 14th November
Edinburgh Business School, North Pod

10:00 – 11:30: Energy Transitions
Chaired by Mr Roger Murray, Governor of Heriot-Watt University; formerly BP Reservoir Management

Professor Sebastian Geiger
Geosciences and Decarbonisation
The UK has set a target of net-zero carbon emissions by 2050. Over the same time, however, global oil and gas production is predicted to increase to meet rapidly growing energy demands. Utilising subsurface geological reservoirs more efficiently and effectively is critical to decarbonise energy supplies while ensuring that there is sufficient affordable and sustainable energy available for all. In this presentation I will discuss how we can adapt and advance established technologies for characterising, developing, and managing oil and gas reservoirs to accelerate the deployment of low-carbon energy sources, be it CO2 storage combined with hydrocarbon production, geothermal energy for heating, cooling, and electricity generation, or the intermittent storage of energy produced from wind and solar.

Professor Phil Greening
Critical energy transitions in the freight sector.
Road freight is inherently difficult to decarbonise as it is primarily concerned with moving heavy weights long distances. Electrification (the only feasible pathway to net zero emissions) will introduce new constraints concerning energy and time. These new constraints will ultimately result in a radically different freight system. Our current research is considering the transition from the status quo to a very different future for the transportation of freight by road.

Dr Bing Xu
Flying towards greener skies with sustainable aviation fuels
The aviation sector is growing rapidly but is regarded as the form of transport most difficult to decarbonise. An option to reduce emissions is to develop “drop-in” sustainable aviation fuels (SAFs) which could substitute fossil fuels without modifying existing aircraft technology. Our research introduces a new type of SAF which is synthesised from a unique combination of three separate technologies to achieve high levels of emission reduction. Our policy and public engagement work provides a holistic view on key barriers that affect the commercial development, deployment and consumption of SAFs, and discusses how policy can be shaped to support future SAF production.

Book to attend via the Research Futures Academy page on Eventbrite
12:30 – 14:00: Manufacturing and Construction Revolutions

Chaired by Professor Garry Pender, Deputy Principal Research and Innovation, Heriot-Watt University

**Professor Duncan Hand**

*Ultrafast laser technology to transform manufacturing and design.*

A revolutionary new method to successfully weld glass to metal has been developed by the £5.6M EPSRC CIM-Laser Centre at Heriot-Watt University. Using an ultrafast laser system to create a miniature plasma volume inside the materials which fuses them together, the technique aims to significantly enhance manufacturing and design flexibility, and create new products in industries such as aerospace, defence, optics and healthcare. The project is co-funded by Innovate UK and partners in Industry.

**Professor Gabriella Medero**

*Brick by Brick – Innovative building materials to reduce waste*

The construction and demolition sector is the largest contributor of waste globally. In the UK alone, over 30% of the UK’s landfill waste and 45% of total carbon emissions come from construction and demolition. The British construction industry is under increasing pressure to reduce waste and meet national targets of 70% of all building waste to be recycled from the year 2020. To address this challenge, Prof Medero’s civil engineering research has created a brick made of 90% recycled waste which requires just one tenth of the energy to manufacture compared to traditional bricks. It has led to the formation of a clean technology business, Kenoteq, winner of the Converge Challenge competition in 2018 and the Scottish Resources award in 2019, which is now manufacturing a commercial product called “K-Briq”.

**Dr Theo Lim**

*Levelling Up – I, Me, Mine Interfaces*

Game-based innovation can potentially bridge certain knowledge gaps, and the adoption of alternative modus operandi for industries. Gamers in the U.K spend an average of 7.15 hours each week on video games. Can humanity benefit and prosper when gaming meets virtual continuums? The recent EU H2020 project BEACONING is intended to explore and offer insights and understanding in problem-solving and decision-making scenarios with enhanced and immersive user experiences.
Dr Mark Hartl
*Monitoring microplastic contamination in Scottish intertidal sediments*

Microplastics, defined as pieces of plastic of < 5mm, are commonly found in the marine environment and originate either from consumer care products and plastic production plants or from the disintegration of larger pieces of litter. Our research has found similar concentrations of microplastics in intertidal sediments in both the central belt of Scotland and at relatively remote locations such as Orkney. This finding received extensive media coverage and was used as a case study in a parliamentary debate on “Stopping the Plastic Tide”. The Scottish Government has since implemented policies to reduce plastic litter which will also require better monitoring of microplastic contamination. Our latest research in the Firth of Forth highlights innovations and limitations in microplastic sampling and what that could mean for contamination prevention in the future.

Dr Alastair Lyndon
*Magnetic Attraction? Impact of electromagnetic fields on marine organisms.*

Offshore development, such as that related to renewable energy generation, is increasing the numbers of electrical cables on the seabed. These generate electromagnetic fields (EMF) which could potentially affect the behaviour and physiology of marine organisms. Our research on the commercially important brown crab, *Cancer pagurus*, has found adults being attracted by EMF but also potentially stressed by them. Observed alterations to egg development rates and increased deformity of larvae near EMF may have negative consequences on recruitment to the crab fishery. The effect of EMF on bacterial biofilms is also being investigated in a pioneering attempt to understand whether EMF could be used as an anti-fouling mechanism for cables and other man-made materials in the marine environment.

Dr Dan Harries
*Flame Shells and Fan-worms - rewilding Scottish reef habitats.*

Reefs, such as those in Scottish waters built by Flame Shells (*Limaria hians*) and Fan-worms (*Serpula vermicularis*), are regarded as being of conservation importance due to their rarity and the high levels of biodiversity associated with them. But significant deterioration of biogenic reef habitat (extent and condition) has been recorded at various sites over the last decade, potentially caused by both environmental and anthropogenic factors. Natural regeneration of the reefs appears to be possible but only over protracted timescales. Our research seeks to explore the potential for ‘rewilding’ of reef sites by intervening to promote and accelerate the regeneration of reef habitats, thereby ensuring conservation action for these unusual marine habitats.

Dr Andrew Want
*Biofouling and antifouling in the offshore renewable energy industry.*

The seas around Britain are being targeted for deployment of offshore renewable energy (ORE) devices, i.e. wave, tidal, and offshore wind technologies, as part of UK governmental plans to decarbonise electricity generation. The performance of such structures may be negatively affected by biofouling, and they may also encourage the transfer of invasive aquatic species. The BioFREE project (a Heriot-Watt University/ European Marine Energy Centre collaboration), has developed a novel system for monitoring biofouling in any chosen depth within the water column at high-energy wave and tidal areas. It has provided detailed characterisations of biofouling communities from multiple locations in Orkney (UK), as well as at partner test sites in Chile, Japan and the USA. In future the system may be used to provide site-specific guidance to regulating bodies and the ORE industry regarding anti-fouling strategies.
Day 2:  
Friday 15th November  
Edinburgh Business School, South Pod

10:00 – 11:30:  
Robotics  
Chaired by Professor Julian Jones, Vice-Principal, Heriot-Watt University

**Professor Helen Hastie**  
*Robots in dangerous places*  
The EPSRC ORCA Hub is a large, multi-million pound project that Heriot-Watt is leading with 4 other UK universities. The key research objective is to develop robotic technologies that enable reliable, robust and certifiable asset inspection in offshore environments. In order for such autonomous, decision-making systems to be adopted commercially, the human operators involved must understand, at all times, what the systems are doing and why. Plus they must trust their robotic systems to do the job safely and efficiently. Prof. Helen Hastie will discuss issues around human-robotic teaming and how to enable such trusting relationships to form through intelligent multimodal interfaces.

**Professor Lynne Baillie**  
*How can we design robots for health and wellbeing*  
Research in robotics has come a long way since the early days when the term “robot” typically referred to machines on factory assembly lines. The current definition (Oxford English Dictionary) describes a robot as “a machine … capable of carrying out a complex series of actions automatically”. While today’s robots may or may not resemble humans, the social element of our interactions with these machines is gaining importance. For example, there is growing interest within the field of Human-Robot Interaction (HRI) in bringing innovations to the challenging ‘assistive health’ domain (e.g. for elderly or disabled people). Our research explores what design and adaptations need to be considered to maximise the effectiveness of assistive robots for human health and wellbeing.

**Dr Ioannis Konstas**  
*Alana: Advancements in conversational Artificial Intelligence*  
‘Alana’ is a highly sophisticated, artificial intelligence (AI) software created at Heriot-Watt University and capable of understanding and responding to human conversation in a socially intelligent manner. As an open-domain, spoken dialogue system, it aims at maintaining a fun, engaging and informative discussion with its human users. Alana consists of an ensemble of bots, combining rule-based and machine learning systems, and works by leveraging information from heterogeneous sources (e.g., News, Wikipedia, Reddit) and a large knowledge base (WikiData). Alana was awarded 3rd place in a global competition – the Amazon Alexa Prize Challenge - for both 2017 and 2018, with the awards announced at a ceremony held in Las Vegas, USA.
Professor Jemina Napier

*Sign of the Times: Citizenship, deaf sign language users & jury service*

One aspect of civic duty for any citizen in countries with an adversarial court system is to be ready to serve as a juror when called upon. Historically, deaf sign language users have been excluded from jury service. But a social view of deafness regards civic participation through sign language interpreters as a civil right. A ten-year programme of four related studies, funded through the New South Wales Law Reform Commission and the Australian Research Council, has found that there is no impediment to deaf sign language users serving as jurors. The linked studies have led to confirmation of jury participation as a human right by the UN Committee for the Convention on the Rights of People with Disabilities and law reform in several countries.

Professor Alan Gow

*Beyond brain training*

As we age, we might experience some changes in our thinking, reasoning and memory skills. As the extent of these changes vary from person to person, identifying the factors that promote better brain health in old age is a global research priority. While ‘brain training’ has generated a lot of attention, there is still limited evidence of the effectiveness of these relatively focussed approaches. Our research at Heriot-Watt is taking a more engagement-based approach, exploring how novel learning in real-world settings might be beneficial for our thinking skills as we age. Our 3-year project has been shortlisted for the Nature Research Awards for Driving Global Impact to be announced in November 2019.

Professor Kate Sang

*Intersections of gender and disability*

While the poor representation of women in senior positions in universities is well established, far less is known about other oppressed groups. Disabled people are particularly marginalised in society, with disabled women standing at the intersection of two forms of disadvantage. Drawing on research across multiple projects, Kate’s talk will explore highly skilled careers and the experiences of women and disabled people, highlighting recent work gynaecological health at work.
15:00 – 16:30: Health Innovation and Technology

Chaired by Mr Graham Watson, Executive Chairman, Scottish Health Innovations Ltd, Member of Court.

**Professor Marc Desmulliez**

*Sonopill – Minimally invasive gastrointestinal diagnosis and therapy.*

Winner of the National Instruments ‘Global Humanitarian Engineering Impact Award, 2019’, this EPSRC-funded project is a collaboration between Heriot-Watt, Glasgow and Dundee Universities. Sonopill aims to relay ultrasound images from inside the body after being swallowed by patients, thereby removing the need for uncomfortable endoscopic exams. According to the Wellcome Trust, “Sonopill could revolutionise the way gastrointestinal diseases like cancer and Crohn’s disease are diagnosed and treated”.

**Dr Maiwenn Kersaudy-Kerhoas**

*Is cancer therapy working?*

One in two people in the UK will be diagnosed with cancer in their lifetime. To ensure improved survival outcomes, the future of cancer healthcare must prioritise earlier detection and diagnosis of the disease, and seek to utilise the most effective treatments for individual patients. This EPSRC Healthcare Technology Challenge Award (£1.3M, 2018-2022) aims to develop a new device that can extract DNA from blood and help test whether cancer therapy is working.

**Dr Helinor Johnston**

*Employing alternative, non-rodent models to investigate the safety of nanomaterials*

The use of nanomaterials is pervasive in multiple different sectors including pharmaceuticals, cosmetics, textiles, food, electronics, construction, and agriculture. Despite the increased prevalence of nanomaterials in the marketplace, there are uncertainties surrounding their potential to have a detrimental impact on human health. Rodent models are typically used to predict the human response to nanomaterials but there is a growing desire to reduce the reliance placed on rodent testing for ethical, financial and legislative reasons. Our recent research explores the use of alternative, non-rodent models (such as zebrafish embryos) to assess the toxicity of nanomaterials.
Day 1: Thursday 14th November
Venues throughout campus

09.30 – 11.00
SR214, Scott Russell Building

UK Research: Would you like to know more?
Experts from across the Research and Engagement Directorate make themselves available to discuss the research policies and structures in the UK, and answer questions about the often unfamiliar practices and terminology.

13:00 – 16:30
WA111, William Arrol Building

Elsevier Publishing Workshop
Professionals from Elsevier Publishing are holding a workshop for academic staff to enhance their skills set and strategies around writing and submitting journal papers. Followed by a panel of Heriot-Watt Editors and published experts.

14.00 – 15.30
Craig Room, James Watt Centre

Introduction to aid-funded research
This Introduction to Aid Funded Research will give you 45 minutes of basic training around development funded research: the Newton Fund and the Global Challenge Research Fund. This will be followed by a 45 minute session for people already considering applying for the funding, to help them refine their applications.

16.30 – 18.30
Craig Room, James Watt Centre

So this is CODI
The Cabaret of Dangerous Ideas (CoDI) provides an informal but high-profile platform for researchers to discuss their work with members of the public. Come along to this relaxed information session to find out more about what performing at the world’s biggest art festival involves, ask some questions and meet the team.

Book to attend via the Research Futures Academy page on Eventbrite
Day 2:  
Friday 15th November  
Venues throughout campus

9:30 – 10:30
Mary Burton Building, MBG22

Showcasing your research on PURE
Most researchers at Heriot Watt know that by adding their outputs to Pure they increase their dissemination options, but this workshop will explore what else you can gain from the system. There are other aspects to Pure over and above adding outputs, such as activities, data and impact. This workshop is aimed at people with existing Pure profiles.

11:30 – 15:00
Craig Room, James Watt Centre

Scottish Crucible Alumni Network Event
The Networking Event offers an opportunity for participants to meet with other Cruciblist colleagues from different Universities and disciplines to exchange their latest research news and updates. Participants will also engage with specially invited representatives about future research strategies and addressing UKRI opportunities. Guest speakers at this Scottish Crucible Alumni Networking Event will include:
Dr Stuart Fancey, Director of Research and Innovation, Scottish Funding Council
Prof Rory Duncan, Director of Talent and Skills, UK Research & Innovation (UKRI)
Kirsty Grainger, Director of Future Leaders Fellowships, UKRI
Dr Linda Galloway, Defence and Security Accelerator (DASA)

14.00 – 15.30
North Pod, Edinburgh Business School

The Funding Landscape – Latest updates
This session will explore the changes in UK funding over the recent years and months, and explore what the new research councils and funding bodies expect from academic proposals.
Day 1: Thursday 14th November
Venues across campus

10:00 – 11:00
Careers Centre, Hugh Nesbit Building

Beyond the PhD:
Keith Kilgore from the Careers Service will hold a session for postgraduate students about their career path options after completing their doctorates, and will look at how to begin the search for career opportunities, both inside and outside of the academic environment.

11:00 – 12:30
Craig Room, James Watt Centre

Building your Professional Profile and Network
Professor Heather McGregor from Edinburgh Business School will talk to early career researchers about how to represent their research and widen their network in this taster session.

12:00 – 13:00
Careers Centre, Hugh Nesbit Building

Representing Yourself to Employers:
Keith Kilgore from the Careers Service will talk to postgraduate students about new ways of thinking about their skills and experience, and will look at the psychology behind identifying and communicating their accomplishments in a way that puts them at the front of the queue in the job hunting process. By the end of the session, students should have a better understanding of the recruitment process and how to positively catch an employer’s attention.

Book to attend via the Research Futures Academy page on Eventbrite
Day 2: Friday 15th November
Venues across campus

10.00 – 11.15
North Pod, Edinburgh Business School

Careers in Academia
This interactive session will feature a panel of current Heriot-Watt staff to discuss careers in academia. They will give an overview of their career paths in academic and discuss the highs and lows of their day-to-day jobs, before passing on some advice on how to succeed in the academic world. Speakers include Prof Gill Hogg, Deputy Principal for Staff Development and Engagement, Heriot-Watt University.

The session will cover:
What is an academic career? What is expected?
What happens after your PhD? How to get your first postdoc and progress to a Fellowship
Developing your research niche: finding funding, applying for and winning a fellowship
What are recruiters looking for when hiring a postdoc?
The importance of networking and collaborating in academia
Exhibitions Throughout the Festival:

**The Carnegie Room**

**Women in Science in Scotland**
The Royal Society of Edinburgh has put together an exhibition of 26 portraits celebrating some of the exceptional women scientists across Scotland. Some are from Scotland, others have chosen to base their research and make their homes here; all of them are making a positive contribution to society by shaping our understanding of the world, supporting a more sustainable use of resources and securing advances in healthcare. Some of our own esteemed Heriot-Watt scientists are included in the exhibition, come and see if you recognise anyone you know!

**The James Watt Centre Café**

**Science In Situ: A Window into the Biomedical Lab**
This photography exhibition takes a unique peek inside the diversity of Health and Medical Technologies research taking place in laboratories across Heriot-Watt’s Edinburgh based campus. The series of photographic works opens up a window into the biomedical research labs, uncovering the practical side of the lab work that feeds into the vast amount of scientific data being generated at Heriot-Watt.

**SUPA film**
Learn about ‘Research Pooling’ via this 6 minute video describing the Scottish Universities Physics Alliance (SUPA), made earlier this year at the invitation of the American Physical Society and shown throughout the 2019 APS March Meeting in Boston (the largest physics conference in the world), under the theme of “successful collaborations and partnerships”.

**The Link Bridge**

**Research Photo Competition**
We challenged our researchers to capture and share their research through visual storytelling. Now we are looking for your help to choose a winner. Have a look and vote for your favourite on: https://www.hw.ac.uk/research/engage/year-of-health/entry.htm

**The Postgraduate Centre Café**

**EPS PhD posters**
Some of the winning posters from this year’s Engineering and Physical Sciences postgraduate research student celebrations will be on display. It’s a great opportunity for PGR students from other schools to understand what research is being undertaken by their peers in EPS.

**Stands in Carnegie Room**

**Research Futures Academy**

**Policy, Strategy, and Impact**

**Defence and Security Accelerator**

**Gender Equality**

**Open Research**
Research Culture

Day 1: Thursday 14th November
Venues across campus

11:00 – 11:45
The James Watt Centre Café

The Use of Poetry in a STEM-dominated Research University (Booking not required)
Poetry is a very popular form of communication; concise, innovative and flexible it is able to convey meaning and feelings in an efficient way for today’s busy lifestyles. In this poetry moment, we will reflect on poems used to communicate science and the (sometimes) loneliness of the PhD journey.

12:00 – 12:30
The James Watt Centre Café

Three Minute Thesis 1 (Booking not required)
3 Minute Thesis (3MT) is an exciting global academic competition celebrating the innovative research undertaken by PhD students. In this event, four 3MT participants will present their research in a three minute talk aimed at a non-specialist audience, using one slide with the aim of developing students’ academic, presentation and communication skills.

Day 2: Friday 15th November
Venues across campus

09:30 – 10:30
James Watt Statue

Campus Walking Tour (Booking required)
Come and join Robbie Fraser for a tour of Heriot-Watt University’s beautiful Riccarton Campus to discover a little bit about the university’s history and landscape. We hope that there will be something of interest for all. The tour will last for around one hour and will depart from the James Watt statue on the piazza.

11:00 – 11:30
The James Watt Centre Café

Research Culture Grant (Booking not required)
In 2019 the Research Futures Academy (RFA) launched the Research Culture Grant to support research postgraduates and staff develop new student-led or post-doc-led initiatives, designed to enhance research culture and embody the Heriot-Watt values of Inspire and Collaborate.
Come and hear from a representative from the Postdoc Forum, and two of the awardees of the Research Culture Grant.

12:00 – 12:30
The James Watt Centre Café

Three Minute Thesis 2 (Booking not required)
In this event, as with the 3MT event on the Thursday, four new participants will present their research in a three minute talk aimed at a non-specialist audience, using one slide with the aim of developing students’ academic, presentation and communication skills.
All Day Thursday and Friday
RED HUB Welcome Tour

The ‘Research Engagement Directorate’ (RED) has recently moved to a specially designed location, the RESEARCH ENGAGEMENT HUB on the 1st floor of the Hugh Nisbet Building (above Café Brio). Throughout the Heriot-Watt Festival of Research on 14th and 15th November, RED is welcoming any staff who would like to visit our new premises for a self-guided tour and find out more about the services provided by the different divisions within RED:

- **Research and Business Development** (Research Development; Global Challenges Research Fund; Research Grants Office; Business Development)
- **Policy, Strategy and Impact** (Research strategy and policies; public engagement impact, REF 2021)
- **Legal** (research contracts and intellectual property)
- **Research Futures Academy** (researcher development, collaboration and culture).

Academic and Professional Services staff are invited to pop in anytime between 09:30 and 16:00 on Thursday 14th or Friday 15th November 2019 (booking not required). We look forward to welcoming you!

Day 1: Thursday 14th November

Venues across campus

14:30 – 15:15

Robotarium

Meet the robots from Edinburgh Centre for Robotics during a 30 minute tour of the Human Robot Interaction lab which will showcase some of the cutting edge research work being carried out in the Centre:

- **Pepper**: which is being used for cognitive impairment and stroke.
- **Miro**: which is being investigated as a falls alert system
- **Flash**: which is being used for assisting young adults with autism

Also hear from Founding Director, Prof David Lane, CBE, FREng, FRSE, about the innovative opportunities that will be produced via the new, National Robotarium

---

Book to attend Lab tours via the Research Futures Academy page on Eventbrite
Day 2: Friday 15th November
Venues across campus

11:30 – 12:30
Institute for Infrastructure and Environment (IIE) Heavy Structures Lab

IIE are offering a tour of their Heavy Structures Lab, where experiments on today’s infrastructure performance lead to tomorrow’s solutions. Come and see how IIE researchers use large-scale equipment to apply massive forces to whole sections of railway tracks and foundation structures. Their specialist facilities, such as GRAFT II with its hydraulic capacity of 200 tonnes, and GeoTT with its six independent hydraulic rams capable of applying hundreds of kilonewtons, are used to mimic decades of wear in much shorter timescales.

14:00 – 15:00
Lyell Centre Aquariums and Labs

The Lyell Centre is an exciting joint collaboration between Heriot-Watt University and the British Geological Survey (BGS) that focuses on interdisciplinary (geo) scientific research in marine and terrestrial environments. The Lyell Centre has been outfitted with new state-of-the-art lab facilities, which are available to interested members of staff at cost of operation, if possible. The tour will discuss available instrumentation, lab facilities and expertise, illustrated by current applications and research projects taking place at the Lyell Centre; this will include an overview of the following:

- **Organic/Isotope Geochemistry** (e.g., gas chromatography; mass spectrometry)
- **Aqueous Biogeochemistry** (e.g., absorbance and fluorescence; ion chromatography)
- **Environmental Microbiology** (e.g., qPCR; digital PCR; microbial-culture enrichment)
- **Marine and Benthic Ecology** (e.g., flow cytometry; nutrients analysis; isotope enrichment)
- **Palaeoceanography** (e.g., microfossil identification and imaging; trace metal cleaning)
- **GeoEnergy** (e.g., permeability; porosity; gas sorption)
- **Wolfson Aquarium** (e.g., growth chambers; climate-control facilities; culturing)
Upcoming Research Futures Academy Workshops

Back by popular demand!

Staff:
Creating the “Seven Secrets of Highly Successful Research Students”

28th February (am)

PGR students:
The Seven Secrets of Highly Effective Research Students

28th February (pm)

Postgraduate Students

Writing your thesis
19th November

Preparing for your viva
28th November

Personal time management strategies
3rd December

Viva: Performing on the day
10th December

Conference talks
4th February

How to be an effective researcher
11th February

Research and Academic Staff

Getting Grant Funding: from Preparing Proposals to Submission
13th November

Introduction to Project Management For Staff
28th November

How to Network
12th December

Enhancing your Supervisory Practice
23rd January

Leadership in a Research Environment
18th February

Book online at https://pdms.hw.ac.uk
**PGR Personal Development Plan (PDP)**
Research Futures Academy has developed a structured Personal Development Plan for PGR students, to help focus discussion with their supervisor. The PDP will enable PGR students to review and set development goals as they progress through their research degree. Many of the skills developed by research degree candidates are also required in careers outside of academia, so planning training needs and undertaking relevant and timely training will enable timely completion of their research degree and will stand them in good stead for a career in academia and beyond. Find out more:

www.hw.ac.uk/services/research-futures/tools-and-resources.htm

**Getting Started Workshops for Doctoral Students**
These workshops are tailored for new PGR students and should be completed within 6 months of starting a research degree to develop key skills required. Book online at pdms.hw.ac.uk/.

**Citing and referencing (ONLINE)**
18th November

**Working with your supervisor**
21st November

**Managing your research data (ONLINE)**
25th November

**Introduction to critical thinking**
5th December

---

**AN 80,000 WORD THESIS WOULD TAKE 9 HOURS TO PRESENT. THEIR TIME LIMIT.... 3 MINUTES.**

**THREE MINUTE THESIS COMPETITION**

Applications opening soon
For more information, visit www.hw.ac.uk/services/research-futures.htm
For more information and for a full description of events, please visit:
www.hw.ac.uk/researchfutures

Please note: Places are limited on some Lab Tours/workshop sessions. Please book beforehand by visiting www.eventbrite.com and search for ‘Research Futures’.

British Sign Language translators are available for all of the Pioneering Research, Research Development, and Research Careers strands. If you would like to book these services, please contact Marion Fletcher: marion.fletcher@hw.ac.uk