

ISSUE ONE

2018

# RESEARCH

PUTTING A FOCUS ON RGU RESEARCH

## Transforming RGU Research

Find out about the university's research investment and discover how it will transform the research focus at RGU

 **ROBERT GORDON**  
**UNIVERSITY ABERDEEN**  
CHANGE OUR TOMORROW



# Transforming RGU Research

By Professor Paul Hagan, Vice Principal for Research

## In-Depth

### Overview

RGU's Board has endorsed an ambitious plan to support research excellence with the largest research investment ever made by the university. The phased release of up to £27m over the next ten years will be used to build critical mass in targeted areas where we have established research leadership.

Building on the success of Professors David Gray (Sustainable Transport), Richard Laing (Built Environment Visualisation), Linda Lawton (Industrial Biotechnology), John McCall (Smart Data and Artificial Intelligence) and Derek Stewart (Pharmacy Practice), the plan aims to stimulate excellence in interdisciplinary research by recruiting additional research leaders to strengthen their groups and add value and diversity to their ground-breaking research programmes.

RGU's research will remain focused on delivering innovative research solutions for business and industry that provide economic, societal, environmental and cultural benefits.

The expanded research teams will be supported with cohorts of postdoctoral research assistants and postgraduate research students. A 'pump-priming' fund will be available to support interdisciplinary projects and integrated training programmes for postgraduates and early career researchers will help embed interdisciplinary working in our next generation of researchers.

The investment is expected to deliver an increase in the volume and scale of successful external grant awards, an increase in publications in quality journals and an improved international reputation.

Recently, RGU's Board of Governors approved the phased release of up to £27m for investment in research. Over the next ten years this targeted investment will help transform our research activity and strengthen the culture of research within the university.

### The Research Investment

Our research base is characterised by some very high quality researchers who are distributed across a number of academic disciplines. This enables us to work effectively within disciplines and provides a network of able researchers, who have the potential to work collaboratively across traditional research boundaries. By harnessing their expertise and recruiting research leaders with complementary skills, we'll build larger and more powerful interdisciplinary teams of researchers, who are capable of delivering novel solutions to the many challenges facing society, especially as the fourth industrial revolution gathers pace.

Our aim is to:

- Build critical mass, foster excellence, exploit new research and knowledge exchange opportunities and increase funding by leveraging our existing strengths in key areas;
- Stimulate excellence in interdisciplinary research and knowledge exchange with a societal and economic impact by appointing leading or rising researchers, supporting them with postdoctoral researchers and research students;
- Support the development of researchers, allowing them to be adaptable and flexible in an increasingly diverse and global research environment, by providing mentoring, researcher training and open-access publication support;

- Build on the establishment of the pan-university Graduate School to offer high quality, integrated training programmes for postgraduates and early career researchers, embedding interdisciplinary working in our next generation of researchers;
- Develop further strategic collaborations through national and international academic and industrial research and knowledge exchange alliances.

The research investment will provide the platform for this by allowing us to:

- Build critical mass through external recruitment of complementary expertise in areas where we have established research leads;
- Provide targeted internal support for postdoctoral research assistants to support both established and up-and-coming researchers;
- Target cohorts of funded research students across these groups to stimulate new developments in interdisciplinary research;
- Release internal competitive proof of concept funding for small-scale research and knowledge exchange projects that will generate preliminary data for large scale grant applications to external funders.

The intention is to retain some flexibility around the split of funding for academic staff, postdoctoral fellows, postdoctoral research assistants, postdoctoral research students and proof of concept 'pump-priming' funding, but clearly any commitment of funds in the early years would decrease flexibility in the later years of the investment. Funds will be used strategically, with the intention of leveraging additional external grant support.

So, when researchers are bidding for external funds it may be possible to commit a research assistant or research student to the project at the application stage with the funding being released for the post if the application is successful and external funding for the project is secured. This is an effective way to ensure such early career researchers are working in groups on well-supported research projects.



## Potential Benefits

Such an investment will be expected to yield significant tangible and non-tangible benefits. The non-tangible benefits will be the impact on the research culture at RGU.

The injection of a new cohort of academic staff and postdoctoral researchers will alter the dynamics of research activity at RGU by providing an immediate boost to the numbers of staff whose primary focus is on the delivery of high quality research.

We should see significant growth in research activity from those recruited and also from the opportunities afforded to others to extend their engagement with research, including more interdisciplinary collaboration leading to more and larger research grant applications, outputs and impacts.

A stretch target has been set for an increase in externally funded research grant awards of £2.5m per annum. The expectation is that the additional awards will be secured in part by the newly recruited Professors and from the increased activity of other research active academic staff. The funds secured would come from a mixed portfolio of awards, such as UKRI, EU (if the UK remains eligible for funding), major charities (eg Wellcome), Knowledge Transfer Partnerships, and other industrial contracts.

We'll expect to see an increase in outputs, primarily publications in high quality journals, with at least an additional 80 articles per year (a 40% increase on current output levels), an ambitious but achievable uplift.

The effect of the investment on impact is harder to predict but we envisage that the increased research activity, much of that in applied areas, would lead to a wider range of impacts on business and industry, health and wellbeing and on government policy.

The focus of this investment is on the transformation of research at RGU, rather than on our submission to the Research Excellence Framework 2021 (REF2021). However, the increase in volume and quality of research will certainly contribute to RGU's submission to REF2021.

This will likely have two major effects: securing an increase in the Research Excellence Grant from the Scottish Funding Council (SFC), and boosting our national and international reputation, in itself increasing additional opportunities to secure research income from around the globe. However, we're looking beyond REF2021 to see the wider and more significant changes the investment is intended to deliver.



## Support Available

Here are some further details of the investment support for research.

### Pump-Priming Fund

This funding will be offered to support largely interdisciplinary projects designed to secure preliminary data that would provide support for significant research grant applications to Research Councils and other major charities. Projects with relevance to business or industry will be encouraged. Up to £30k could be requested for any project and only in exceptional cases would more than £30k be awarded to any project. Most projects will be supported at a lower level of £5-10k.

Our research activities on Orkney will be supported through the pump-priming fund.

The funds could be used in a variety of ways, to support staff, equipment or consumables; provided there was a strong case that this would lever additional funding, either directly or through the generation of outputs or data that would help secure major grant funding or research contracts from external funding bodies. It's envisaged that each year up to £300k will be available for pump-priming activities.

### PhD Studentships

There's an initial commitment to provide a minimum of five PhD studentships per annum for ten years. These would be allocated on a competitive basis to the best students and projects. The number of studentships might be doubled if matched funding (50:50), could be secured from industrial, or other partners. A preference would be given to interdisciplinary projects co-supervised by academics from different disciplines. Projects co-supervised by leading academics working with early career researchers would be encouraged.

### Postdoctoral Research Assistants/Fellows

Over the course of the investment we'll appoint Postdoctoral Research Assistants or Fellows, each with a five-year contract in the first instance. They would be assigned to support high-performing researchers and in some cases, promising early career researchers. It's envisaged that their expertise will be offered as institutional support for major grant applications to external funding bodies, or to reward those who secure such awards.

Postdoctoral Research Assistants/Fellows will be encouraged to apply for their own externally funded fellowships. Any who succeed in doing this will be considered for permanent appointments at RGU, once their Fellowship funding comes to an end.



### Professorial Appointments

To add to research leadership within the university, several new professorial appointments will be made with the view to adding to our existing research strengths. Each of the professors will be eligible for start-up funds in year one, and from years two to five an allocation towards research expenses to help them establish their research activity here at RGU. Each of the professors will have access to the Postdoctoral Research Assistants/Fellows and PhD studentships covered by the investment. All appointed professors will be set challenging discipline-specific research income targets with research income expected to flow into RGU from year two of their appointment. They will also be set output targets relevant to their discipline.

### The First Phase

The investment funding will be released over a ten year period, with the release of funds in the later years being contingent upon success in the earlier years.

The initial investment will be targeted to support leading researchers. So, we'll build on the current success of David Gray (Sustainable Transport), Richard Laing (Built Environment Visualisation), Linda Lawton (Industrial Biotechnology), John McCall (Smart Data and Artificial Intelligence) and Derek Stewart (Pharmacy Practice). Discussions are underway about the desired profiles of those we would seek to recruit to add value to these research strengths.

# The Global Challenges Research Fund (GCRF)

By Professor Paul Hagan, Vice Principal for Research

The Scottish Funding Council's (SFC) strategy for world-leading research includes an ambition to increase the global reputation and standing of Scotland's universities and international connections and collaborations.

SFC receives funds from The Department of Business, Energy and Industrial Strategy (DBEIS) and these funds are from the Global Challenges Research Fund (GCRF). This funding is distributed across the universities.

The GCRF is a £1.5 billion fund which, over five years, will support cutting-edge research that addresses the challenges faced by developing countries. It'll do this by encouraging disciplinary and interdisciplinary research; strengthening capacity for research and innovation within both the UK and developing countries; and providing an agile response to emergencies where there is an urgent research need.

The RGU strategy for development related research activity is built around the study: Transforming Our World: The 2030 Agenda for Sustainable Development. This was adopted by the United Nations (UN) General Assembly in September 2015.

RGU's high-level development objectives are to support excellent research; stimulate innovation; build capacity and capability; and promote the economic development and welfare of our partner developing countries.

Our strategy addresses the five interlinked priority areas that come from the study:

<b>People</b>	Ending poverty and hunger and fulfilling potential.
<b>Planet</b>	Protecting the planet from degradation, including sustainable consumption and production, sustainably managing its natural resources and action on climate change.
<b>Prosperity</b>	Ensuring prosperous and fulfilling lives with economic, social and technological progress in harmony with nature.
<b>Peace</b>	Fostering peaceful, just and inclusive societies free from fear and violence.
<b>Partnership</b>	Building global solidarity, focused on the needs of the poorest and most vulnerable.



In delivering our strategy to address these five priorities over the next three years, RGU will direct its efforts on a subset of the seventeen Sustainable Development Goals. This list will be reviewed annually and the approach modified, incorporating additional Sustainable Development Goals and associated targets, if appropriate.

## Sustainable Development Goals targeted by RGU for 2018-2021

The resources available to RGU through the GCRF will need to be targeted to deliver any significant impact for our partner countries. So, RGU will further focus its activities to address a specific subset of the targets set by the UN for each of these selected goals.

The RGU effort will be focused in areas where the university has an established track-record of excellent research and where it has promising, or already established, cooperative partnerships with researchers and other stakeholders in the partner countries with which we propose to engage. Some of these areas have been recipients of RGU's allocation of the GCRF in the past two years.

Our aim is to build mutually beneficial long-term partnerships that can be sustained, at least in part by sources other than the GCRF.

The projects to be supported are:

### **The Cultural Heritage of the Former Yugoslavian Republic of Macedonia**

Dr Jon Blackwood

*The Former Yugoslavian Republic of Macedonia*

### **Smart Data Technologies for Industrial Growth and Efficiency in DAC Countries**

Professor John McCall

*Mexico*

### **Sustainable Construction and Sustainable Planning and Overcoming Barriers to Societal and Industrial Adoption**

Professor Richard Laing, Dr Marianthi Leon

*St Lucia*

### **Intelligent Health Interventions for Self-Management of Chronic Diseases**

Professor Nirmalie Wiratunga, Dr Stewart Massie,

Dr Kay Cooper

*Sri Lanka*

### **Ensuring Social Wellbeing in Climate Change Adaptation Through Ecosystem Management**

Dr Leslie Mabon, Dr Natascha Mueller-Hirth,

Dr Chris Yuill

*Vietnam*

### **Safe Drinking Water and Health**

Professor Linda Lawton, Dr Christine Edwards,

Dr Radhakrishna Prabhu

*Sri Lanka and India*

# Snapshots

Learn about some of the research projects ongoing across the RGU community.



## Sustainable Transport

Professor David Gray, The School of Creative and Cultural Business

RGU is the lead beneficiary on G-PaTRA (Green Passenger Transport in Rural Areas). It's a three year, €3.6 million, Interreg North Sea Region (NSR) Programme project that will promote green transport and mobility in remote, rural and island areas.

Rural public transport is carbon intensive, requires substantial subsidy support and struggles to provide an alternative to the car. Urban transport carbon reduction strategies are rarely transferable to rural areas, while the unique territorial challenges of rural areas have received limited attention from funders.

G-PaTRA will enhance the capacity of transport authorities to reduce CO<sub>2</sub> from personal transport through demonstration pilot projects. These projects will increase the use of zero emission public transport vehicles in rural transport networks, use smart technology to better optimise available public transport resources (including vehicles and drivers), and promote car

sharing and other ways of increasing private car occupancy. Business cases will also be developed to demonstrate the potential cost effectiveness of generating carbon savings from zero emission ferries and trains in rural and island areas.

The project comprises 13 partners drawn from Scotland, England, Flanders, the Netherlands, Denmark, Germany and Norway. Partners range from local and regional transport authorities to universities and strategy and innovation consultants. Solutions will be developed transnationally as this is a key feature of Interreg NSR projects. Other Scottish partners include the Highlands and Islands Regional Transport Partnership (Hitrans) and Aberdeenshire Council.

G-PaTRA is unique in having an extremely focused approach to maximising impact. Each partner country is required to identify and engage with five key influencers (e.g. government ministers, executives from transport operators, NGOs, civil service, industry bodies, etc.) who have the power to ensure that project innovations are adopted within their national and regional jurisdictions.



! Five European port cities are involved in PORTIS: Klaipeda, Lithuania; Aberdeen, Scotland; Antwerp, Belgium; Trieste, Italy and Constanta, Romania.





## Pharmacy Practice

Professor Derek Stewart, The School of Pharmacy and Life Sciences

We're focusing on innovations in pharmacy practice, particularly looking at sustainable models of integrated multidisciplinary care and the use of medicines, their effectiveness and safety. While we're involved in a number of fields within these two topics, one of our core focus areas is promoting the appropriate use of medicines in older people.

Older people with multiple clinical conditions are likely to be prescribed numerous medicines. Scottish prescribing data shows that one fifth of those with two clinical conditions are prescribed four to nine medicines. This rises to almost half in those with six or more clinical conditions.

We've recently reported the findings of a study funded by the European Commission and led by the Scottish Government which involved eight European countries. The study, Stimulating Innovation Management of Polypharmacy and Adherence in the Elderly (SIMPATHE), involved a systematic review of all available guidance on better prescribing practices. It also reviewed case studies of medicine management in different countries.

The findings were validated through an EU-wide consensus study and the culmination of the study was the development of a reference text, Polypharmacy Management by 2030: a Patient Safety Challenge. This text

was launched at the European Parliament by Shona Robison MSP, Cabinet Secretary for Health and Sport. Further work is planned to research the impact of the reference text.

In a related programme of work, we're also researching the use of multi compartment compliance aids (MCAs, sometimes called blister packs). MCAs are repackaging systems for tablets and capsules which are removed from manufacturer's original packaging and repackaged into the MCA. Our research has demonstrated that they may actually perpetuate inappropriate prescribing in older people. We're now seeking funding to develop and test a better system so that they are better used by the most appropriate individuals, contain appropriate medicines and are supplied and monitored effectively and efficiently.



*"Older people with multiple clinical conditions are likely to be prescribed numerous medicines."*



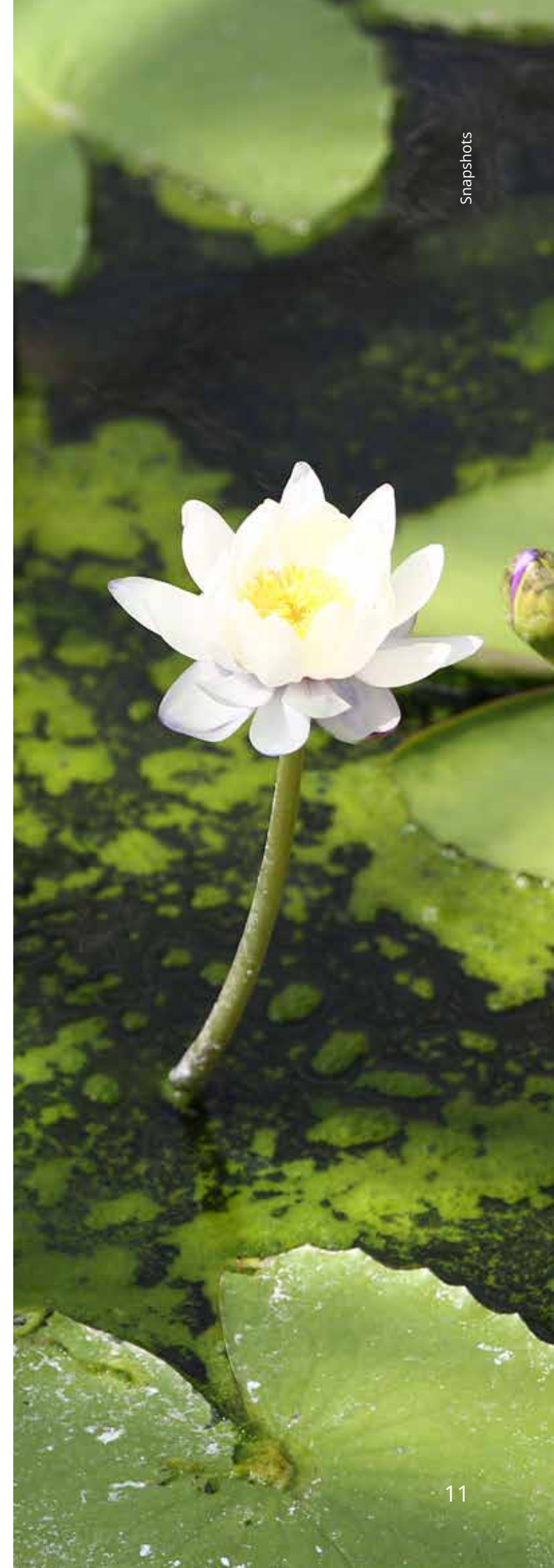
## In-reservoir Destruction of Blue-Green Algae and Their Toxins

Professor Linda Lawton, School of Pharmacy and Life Sciences

One of the greatest global challenges facing human-kind is access to safe and clean drinking water. Water levels and quality in drinking water reservoirs across the globe are seriously depleted, with the United Nation predicting that 1.8 billion people will suffer serious recurrent water shortages by 2025. Of the water that remains in depleted reservoirs, nutrient (nitrate and phosphate) levels from agriculture, industry and domestic waste are found to be high, resulting in the mass growth of blue-green algal blooms along with the production and release of dangerous toxins.

At RGU, we're world experts on these toxins which can cause acute and chronic symptoms in humans and animals resulting in ill-health, fatalities and cancers. For many years we've worked on innovative water treatment to eliminate these problems. This has seen us collaborate with Professor Peter Robertson, Queen's University Belfast, using light and a simple catalyst (TiO<sub>2</sub> photocatalysis).

Last year, we successfully won funding from the Global Challenges Research Fund and the Engineering and Physical Sciences Research Council (EPSRC) to tackle problems with drinking water. Our current project sees us collaborate with Professor John Irvine, St Andrews University, who brings world leading expertise in catalyst modification and characterisation along with electro-optimisation. Dr Christine Edwards, RGU, and I have led the field in the production and detection of cyanotoxins and we'll also collaborate with leading scientists in Brazil (Professor Capelo and Professor Azevedo) where reservoirs are currently extremely depleted and suffering from significant blue-green algal blooms. On completion of this research we'll launch a fully scalable in-reservoir water treatment system to eliminate hazardous blue-green algal blooms, other pathogens and a wide range of toxic pollutants.







## Intelligent Systems

Professor Nirmalie Wiratunga, School of Computing Science & Digital Media

The overall goal of our research is to develop intelligent systems to address real-world problems. Research interests include both the theoretical and practical aspects of machine learning, with a particular focus on Case-Based Reasoning (CBR). Using these methods we address the question of how to extract context-aware knowledge from data including time-series, text or multimedia, to support decision making. Similarly we've developed deep embedding and semantic knowledge discovery algorithms to enable rich content representations that transform experiential content into actionable knowledge for decision support systems.

Our recent work has developed deep learning algorithms that extract features from sensor data. In health, these have been used to recognise human physical activity, monitor achievement of activity goals and deliver interactive notifications to motivate users in the self-management of chronic diseases. The activity recognition algorithms are capable of generating personalised models that don't require large amounts of data during training. These algorithms are transferable to other domains where reasoning from streams of sensor data is important to support decision making, and crucial for edge computing architectures where computation takes place near the source of the data. Further progress in this direction is the development of algorithms that can operate in the absence of noisy and missing sensors in multi-sensing environments.



*Context-aware computing refers to a class of mobile systems that can sense their physical environment and adapt accordingly.*



## Hybrid Composites

Dr James Njuguna, School of Engineering

We're looking at the next generation of composite materials used for load bearing structures in the automotive, aerospace and energy sectors. This research is multidisciplinary, bridging materials, chemistry and engineering.

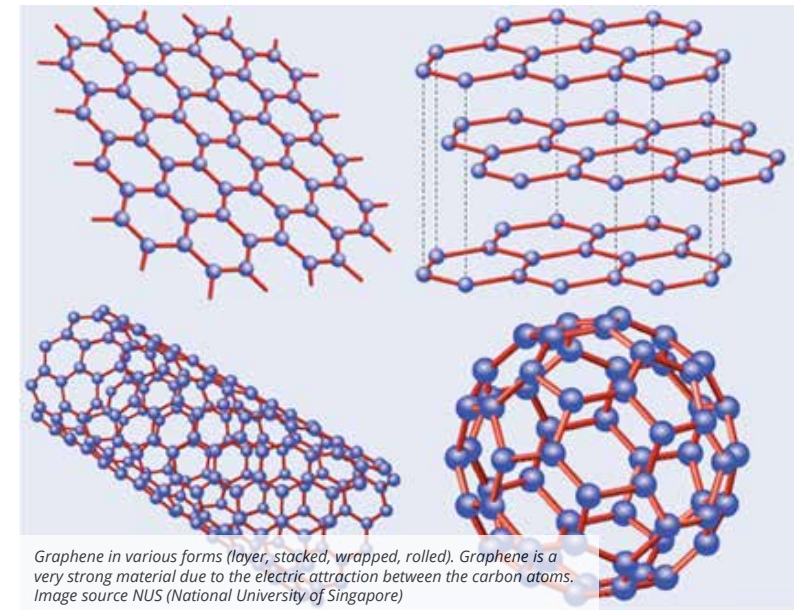
A key goal of our polymer composites research is to develop multifunctional lightweight composites with potentially superior properties, such as mechanical, rheological, electrical, self-healing and thermal. Specifically we're trying to develop molecular and structural features that affect the mechanical and physical properties of the new materials. This allows for increased toughness, fibre-matrix strength, interface, impact resilience and a better understanding of the cause of failure.

Here are two examples:

### Polymer Nanocomposites and Hybrid Fibre-Reinforced Composites

Adding micro-sized fillers is a common method used to increase mechanical properties yet the addition of these micro fillers usually reduces ductility. Using nano-sized fillers has been shown to significantly reduce stress concentration regions, maintaining and sometimes improving ductility and toughness. As nano- and micro-sized fillers can reinforce polymer properties differently, combining both hybrid composites is increasingly considered as a promising solution for future light-weight structures.

Our research is working to understand the process and structure-property relationship and this is coupled with material design to achieve the best composite structures performance. We're focusing on addressing toughness, ductility and durability for thermoplastics (composites, elastomers, foams) and a selection of thermosets such as epoxy and polyester.



Graphene in various forms (layer, stacked, wrapped, rolled). Graphene is a very strong material due to the electric attraction between the carbon atoms. Image source NUS (National University of Singapore)

## Green Composites

Natural fibre-reinforced composites are fast emerging as a viable alternative. Despite many advantages, bio-composites are challenging from a design perspective as their inherent properties vary significantly within natural environment factors (such as when and how long the crops grow). Research is focused on bio-sourced resins and foams (e.g. polylactic acid, tannin, polyesters, polyurethanes) and natural fibres such as flax and hemp. We're investigating the performance related features such as compatibility, reinforcement, toughness and interfacial strength of these composites. A good example of this work is a recently awarded Innovate UK collaborative project on basalt fibre composites for autostructures.

We're also looking at using the raw materials recovered from the waste materials of drilling fluids, plastics, composites and electronic waste. The research is aimed at releasing these for commercial use and has significant positive human and environmental health benefits.





## Sustainable Urban Environments and Mobility

Professor Richard Laing, The Scott Sutherland School of Architecture and Built Environment

For many years, we've been undertaking collaborative work with local authorities. This has often concentrated on the ways in which people live and travel in the city and its hinterland. It has been particularly interesting to explore how cities from across Europe have tried to find ways to allow people to live sustainably while enjoying a high quality of life. Indeed, whilst many of the cities we visited did contain examples of sustainable design and 'low carbon' transport, what was often most notable was that the urban environments felt comfortable, appeared attractive and seemed to have a vibrancy to the ways in which people behaved and interacted.

Among our current research projects is that of PORTIS, part of the EU Civitas initiative. It's the latest in a long line of collaborations between myself and Professor David Gray, and benefits from the expertise of Dr Elizabeth Tait, School of Creative and Cultural Business and Caroline Hood, the Scott Sutherland School. Through the research activities, which includes partners from four other European port cities, Aberdeen and Aberdeenshire will undertake initiatives to significantly extend cycling, walking, collective travel, efficient freight and the use of 'smart' data within travel. These areas all connect with strategically important research themes for the university. Furthermore, our role as the local evaluation partner enables us to undertake innovative long-term assessments

of the effects of measures on behaviour, perception and the environment. The project has supported us to work as part of an exciting local consortium, including alongside the University of Aberdeen, and we feel that deeply embedding collaboration as part of the research effort is an essential part of creative working.

The goal of this research is to work with local partners to help realise a better environment and higher quality of life for the community. That we are able to do this in an applied academic environment is very much within the spirit of the university, and is a great demonstration of how the work is valuable to, and valued by, a wide constituency.



*Context-aware computing refers to a class of mobile systems that can sense their physical environment and adapt accordingly.*



## Environmental Social Science

Dr Leslie Mabon, School of Applied Social Studies

We're interested in how we as a society can make decisions about complex environmental issues in a way that is both scientifically appropriate and socially desirable. Issues such as responding to climate change and renewing our energy systems require urgent action supported by a robust scientific evidence base. However this must not divert our attention from wider societal processes, such as inequality and exclusion, which mean some people are at greater risk from environmental change than others.

At the moment we're focusing on working out what this all means in the context of adapting to the effects of climate change at a local or regional level. Through current projects funded by the Wellcome Trust, the Royal Society of Edinburgh and the Ministry of Science and Technology in Taiwan, we're evaluating how decision-makers in the city are trying to bring questions of equity into climate change adaptation processes alongside the natural science knowledge.

Working with collaborators from Taiwan, Japan and Vietnam, we explore these problems in the contexts of Taipei (Taiwan), Fukuoka (Japan), Glasgow (Scotland) and Hanoi (Vietnam). Through British Academy and GCRF grant funding, we've also completed a more focused project looking at ecosystem health and social wellbeing in Nam Dinh Province in Vietnam.

Climate change in cities has become a hot topic recently and there are lots of voices trying to shape the debate. Ultimately, we want to be known for showing that social science isn't just about finding out what society thinks about climate change. It also has a critical role in reflecting on who gets to define what the problems and solutions are, and how these decisions affect parts of society in different ways.







## Smart Data

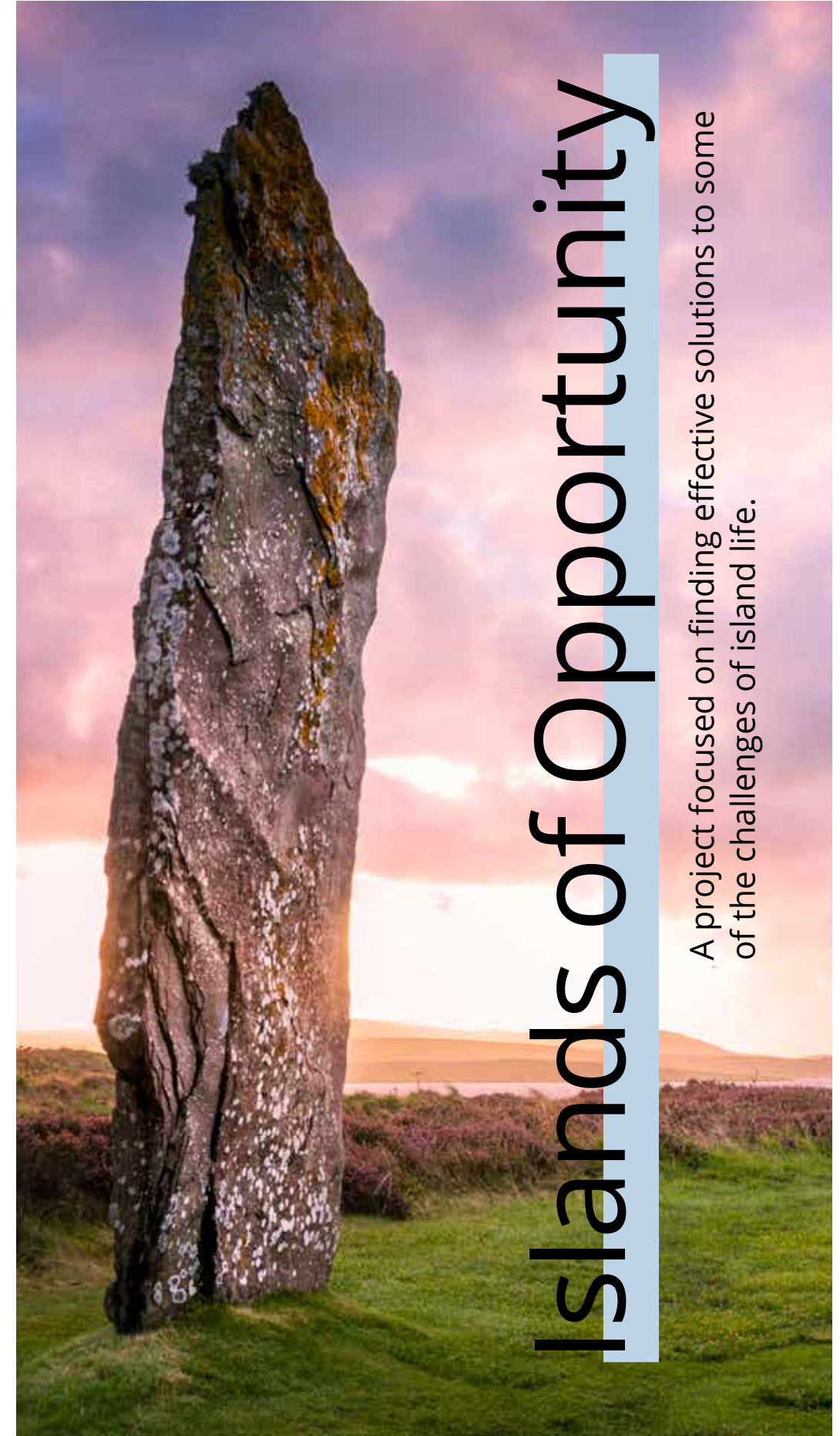
Professor John McCall, School of Computing Science & Digital Media

Currently, my research involves using data and harnessing artificial intelligence to drive efficiency improvement across the oil and gas industry through streamlined optimisation and scheduling. This is in collaboration with the Oil and Gas Technology Centre, logistics managers from six operators and the north east haulier ARR Craib. It aims to have a significant economic impact on the industry, which requires a transformational change to reduce costs in order to prosper, ensuring the sustainability of the UK Continental Shelf.

I've researched computational intelligence for over twenty-five years, making novel contributions to a range of naturally-inspired optimisation algorithms. For instance, Genetic Algorithms, Swarm Intelligence, and Estimation of Distribution Algorithms and their application to difficult real-world learning and optimisation problems.

I'm also Director of the Smart Data Technologies Centre which specialises in applications of optimisation, machine learning and data science to complex real world industrial problems. The focus is on adding intelligent components to existing commercial software or creating new software tools for optimisation and decision support. Key application areas of the Centre's research are telecommunications and energy, particularly in oil and gas. Furthermore, smart data applications are of particular interest to decision support for process control, logistics, operations management, staff rostering and scheduling, predictive modelling, medical treatment optimisation and bio-control.

I've got strong industry links and the Centre attracts substantial industrial research funding. Collaborators include large global corporations in telecommunications and energy as well as small to medium sized enterprises. I'm also a founding director of Celerum, which provides consultancy and optimisation services, and PlanSea, which focuses on optimising marine logistics.



# Islands of Opportunity

A project focused on finding effective solutions to some of the challenges of island life.



RGU's work in Orkney is truly multidisciplinary, seeing the involvement of many individuals from across our institution, both from academia and the professional support departments.

## Why Orkney?

There are a number of reasons why RGU has decided to focus on delivering solutions in Orkney.

"Importantly, there's a real entrepreneurial and innovative spirit on Orkney and this is actively supported by local authorities and regional bodies," says Kelly Fraser, Research Funding Manager.

"There are also a number of challenges facing the islands such as depopulation, an ageing population, increasing social isolation, energy inefficient housing, difficulties in delivering social and health care and the increasing cost of providing services between towns, the rural Mainland and the outer Islands. On a much more positive note, there is an abundance of cultural heritage and a strong sense of community and identity. Orkney is a place where we can see RGU's research offering fitting well, and by working closely with local partners, we can deliver transformational and meaningful results."



Kelly Fraser, Research Funding Manager



Elsa Cox, Orkney Project Development Manager

## The Plan

Working in partnership with Orkney Islands Council (OIC), Highlands and Islands Enterprise (HIE) and the local community, the Orkney Project will establish a transformational research hub in Stromness to drive and support collaboration and innovation.

"We're working with local and regional stakeholders to develop grant proposals, generate research funding and explore other revenue generation opportunities," says Professor David Gray, Academic Lead for the project. "We'll also establish a presence at the £6m Research and Innovation Campus, currently under construction in Stromness, alongside Heriot-Watt University and the University of the Highlands and Islands. We're looking forward to collaborating with colleagues from both of these institutions which already have an active presence in Orkney, delivering solutions that will greatly benefit the islands."

Research activities will be grouped into three broad clusters: smart islands, creative innovation, and sustainable quality of life.

"These clusters combine existing RGU expertise with the strategic needs of the Orkney stakeholders," says Elsa Cox, Orkney Project Development Manager. "I'm originally from Orkney so it's great to be based there once again. I'm able to engage directly with the community and hear about their needs and challenges upfront. This is invaluable and makes sure that RGU's research impacts on, and delivers in, the areas which will be of most benefit to the Orkney islanders."



Orkney is 16km north of the coast of Caithness and is an archipelago comprising around 70 islands, 20 are inhabited, and covering 990km<sup>2</sup>. Around 20,000 people call the islands their home.

## Proposed Projects

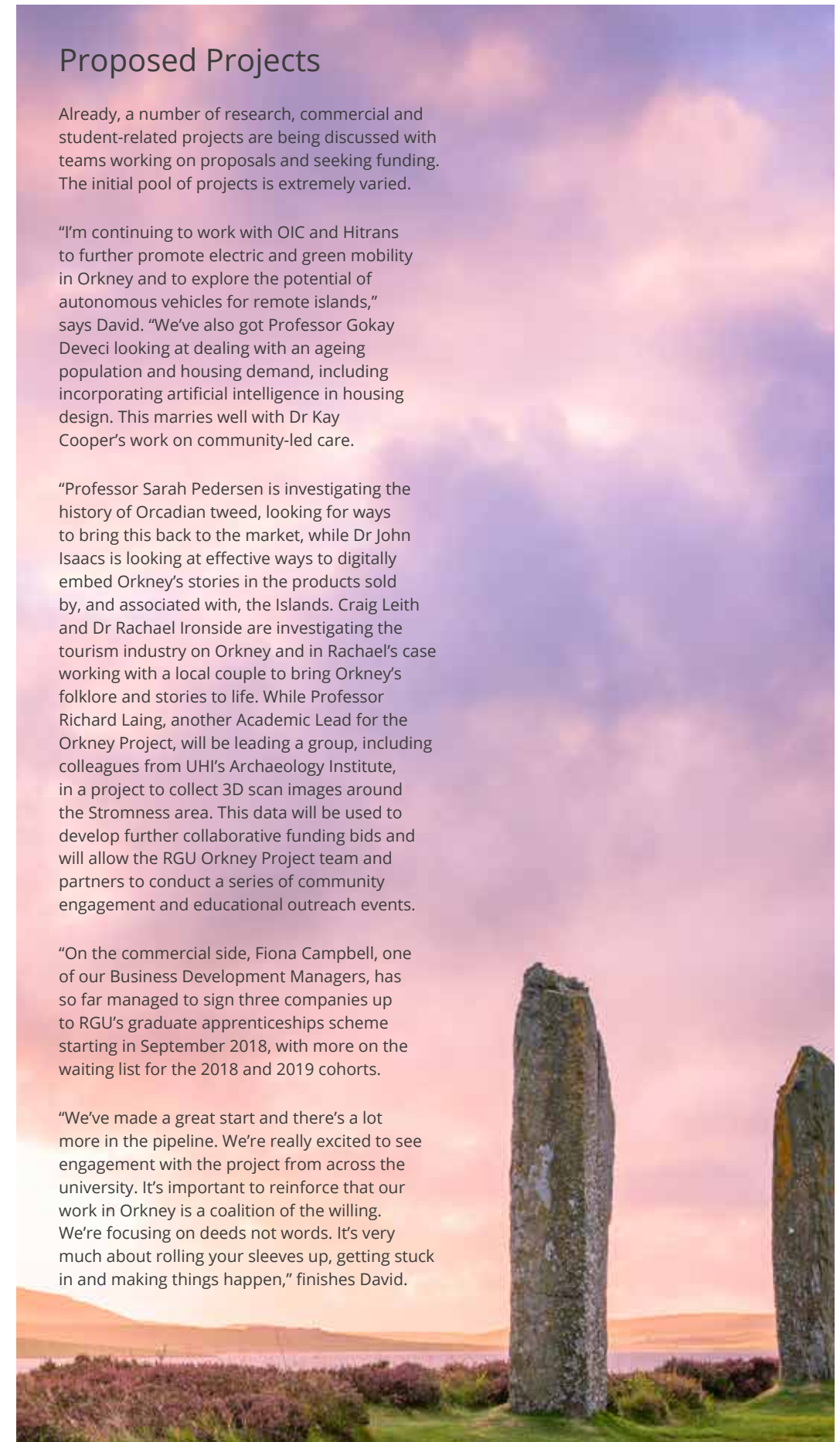
Already, a number of research, commercial and student-related projects are being discussed with teams working on proposals and seeking funding. The initial pool of projects is extremely varied.

"I'm continuing to work with OIC and Hitrans to further promote electric and green mobility in Orkney and to explore the potential of autonomous vehicles for remote islands," says David. "We've also got Professor Gokay Deveci looking at dealing with an ageing population and housing demand, including incorporating artificial intelligence in housing design. This marries well with Dr Kay Cooper's work on community-led care."

"Professor Sarah Pedersen is investigating the history of Orcadian tweed, looking for ways to bring this back to the market, while Dr John Isaacs is looking at effective ways to digitally embed Orkney's stories in the products sold by, and associated with, the Islands. Craig Leith and Dr Rachael Ironside are investigating the tourism industry on Orkney and in Rachael's case working with a local couple to bring Orkney's folklore and stories to life. While Professor Richard Laing, another Academic Lead for the Orkney Project, will be leading a group, including colleagues from UHI's Archaeology Institute, in a project to collect 3D scan images around the Stromness area. This data will be used to develop further collaborative funding bids and will allow the RGU Orkney Project team and partners to conduct a series of community engagement and educational outreach events."

"On the commercial side, Fiona Campbell, one of our Business Development Managers, has so far managed to sign three companies up to RGU's graduate apprenticeships scheme starting in September 2018, with more on the waiting list for the 2018 and 2019 cohorts."

"We've made a great start and there's a lot more in the pipeline. We're really excited to see engagement with the project from across the university. It's important to reinforce that our work in Orkney is a coalition of the willing. We're focusing on deeds not words. It's very much about rolling your sleeves up, getting stuck in and making things happen," finishes David.







# What is REF?

By Dr Emma Gillibrand,  
Research Strategy Manager

UK research is supported by a dual grant system. There's competitive grant funding for individual research projects and a long-term, block grant allowing universities to invest strategically. This block grant is driven by an assessment of research quality so there needs to be a method for assessing past performance. In Scotland the block grant funding is known as the Research Excellence Grant (REG) and in 2016/17 RGU's share of REG was just under £1.5 million, around 0.6% of the total grant on offer. The new £27m research investment will result in an increase in volume and quality of research at RGU and will contribute to our submission to REF2021.

You may have heard the term Research Excellence Framework (REF) uttered throughout the university and essentially this is the way research quality is assessed. Replacing the previous Research Assessment Exercise, REF is run every seven years by the higher education funding bodies of the four devolved nations of the UK (led by Research England) and was first carried out in 2014.

During REF2014 staff were submitted within subject areas (units of assessment), alongside up to four research outputs per person, case studies of impact and a textual section about each subject areas' research environment. In 2014, RGU submitted to nine (out of 36) subject areas; a total of 101 full time staff, 387 research outputs and 20 impact case studies.

In 2016, Lord Stern undertook an independent review of REF which made recommendations on its future operation. The review sought to make the REF exercise more cost effective while still identifying excellent research. The primary recommendation of this report was that all research active staff in higher education institutions should be returned within a university's submission.

To be eligible for submission in the next REF exercise (REF2021) staff must be an independent academic with a substantive connection to RGU, be in post on 31 July 2020 and be on a minimum 0.2fte Teaching & Research or Research only contract. As a modern university in Scotland (awarded university status after 1992), RGU is not able to accurately to identify staff with significant responsibility for research from their contracts alone. So, we're currently developing our Code of Practice to identify those who are eligible for submission and have significant responsibility for research.

# RGU Research Support

## Meet the team

In October 2016, following the university restructure, the Research Strategy and Policy (RSP) team was created. Reporting directly to Professor Paul Hagan, Vice Principal for Research, the team has three core responsibilities: supporting academic staff in preparing research proposals for submission to external funding bodies; coordinating the university's submission to the Research Excellence Framework alongside HR, the Library and Finance; and overseeing other reporting activities including the research aspects of the Outcome Agreement to the Scottish Funding Council (SFC).

## Get in touch

The research team is led by Dr Emma Gillibrand, Research Strategy Manager while the RAMP project team is led by Jane Williams, Project Lead.

On the next page, you'll see the Research, Strategy and Policy function organogram. It details who is in the team and how to contact them.

*Research, by definition, is the systematic work undertaken to increase knowledge of a subject. It can confirm and reaffirm facts, solve new or existing problems, support theories or develop new theories.*

*RGU's research generates improvements in the quality of life, helps support more innovative businesses, unlocks cultural creativity and contributes towards a more successful and sustainable economy. In short, our research makes a difference.*



# Library Support

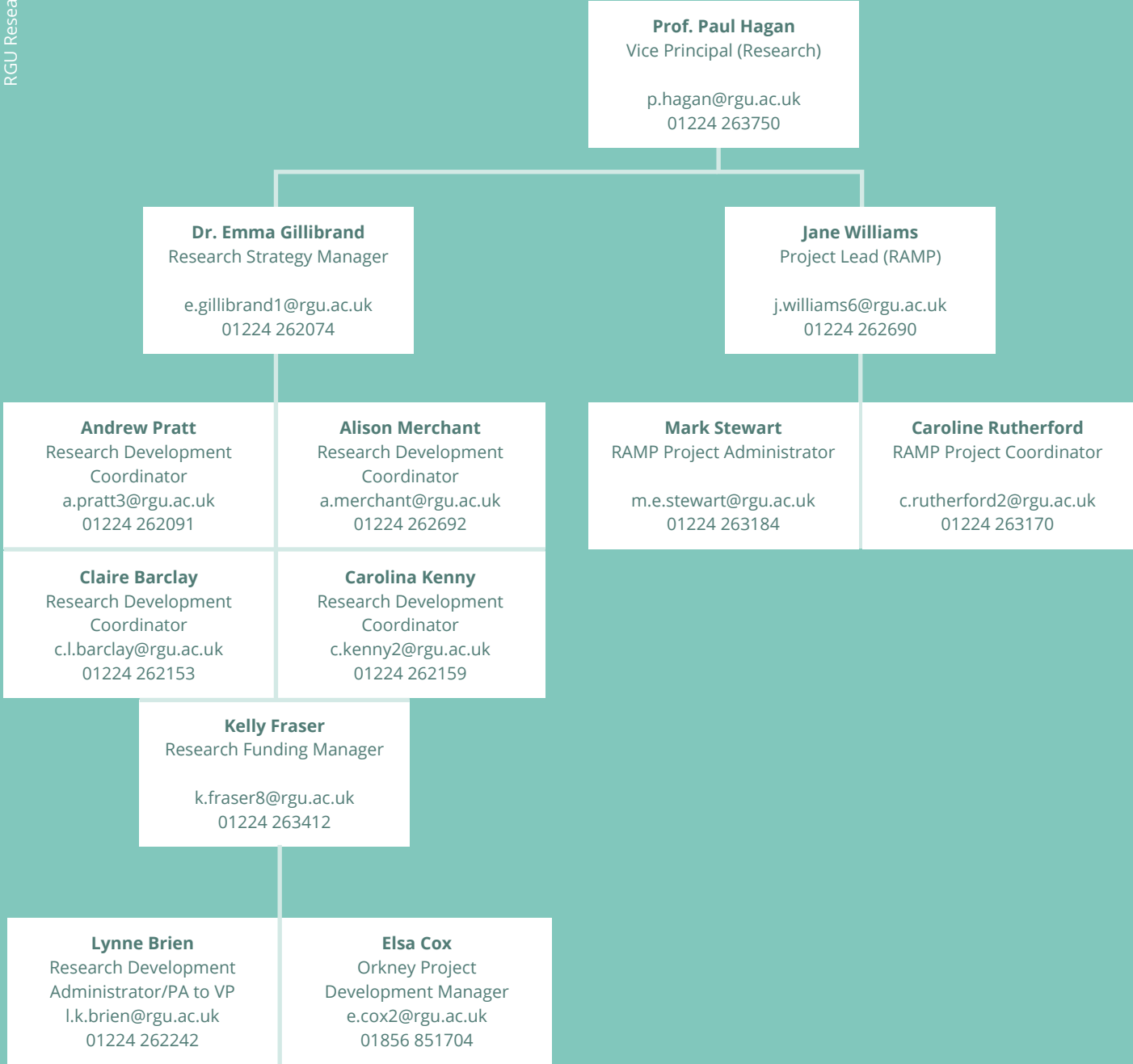
The Library Service offers a range of support for researchers, particularly in relation to Open Access and measuring impact through publication metrics.

The Publications Team maintain OpenAIR@RGU, the university's institutional repository, which helps researchers to share their work worldwide. The repository includes over 2,700 outputs from across the entire spectrum of disciplines researched at RGU, with particular strengths in business, engineering, computing and pharmacy. As of May 2018, OpenAIR has delivered over 356,000 downloads, including almost 15,000 downloads during April 2018 alone. The Publications Team also help researchers to meet the open access requirements of various funding bodies, including the criteria for REF2021.

In addition to this, Colin MacLean is the library's Research Support Liaison Librarian and assists researchers in making the most of their outputs through impact analysis tools such as SciVal and Web of Science. He also provides guidance on finding suitable venues for publication, as well as consulting on many other ways in which researchers can make use of the library's resources to improve their research.

Please get in touch with any of the library team ([library@rgu.ac.uk](mailto:library@rgu.ac.uk)) to discover what they can do to best support you.





*In January 2018, RGU submitted 16 proposals totalling £12.7 million. In January 2017, 27 proposals were submitted totalling just £1.7 million. This shows that we're focusing on the impact of our research rather than the number of projects we're carrying out.*

# Research Asset Management

By Jane Williams, RAMP Project Lead

As we focus more strategically on research, we've taken the time to review the support tools we have in place and make some changes.

The Research Asset Management Project (RAMP) will oversee and implement an investment of £500,000 over three years to support research at RGU. There are two main strands; rolling out a research information system called Worktribe, and providing infrastructure to manage, share and store research data.

## Manage

Worktribe is RGU's new research information system, replacing RESonline. It provides academics, schools and administrators with information about proposals and awards and contains information about academic profiles, outputs and research impact. It also has feeds from other systems to provide information about research student supervisions and project spend against budget plus the capability to automatically harvest research outputs from the internet. Linking to RGU's business information suite, Worktribe will be one of the tools we use to compile our REF2021 submission.

## Share

In preparation for Worktribe implementation and for REF2021, it's important that all academics keep their ORCID profiles up to date and well populated. ORCID is the only research profile tool we recommend as it's required by most publishers, for depositing PhD theses and is a requirement of REF2021.

Although other online profile services have been popular in the past, and are still widely used at RGU, they are less secure, information is less verifiable and they have more in common with social media services. For more information on ORCID, try the ORCID libguide, or contact Mark Stewart, RAMP Project Administrator (m.e.stewart@rgu.ac.uk).

## Store

Most researchers and research students at RGU should now have access to an R:\drive. R:\drives are limited access storage areas for research data and are designed as "filing cabinets" for data to be safely stored and shared with colleagues at RGU.

We are working on solutions that will enable academics to safely share data with colleagues outside RGU, taking into account the new Data Protection Regulations which have come into force.

We also plan to provide tools and facilities for sharing larger, more complex volumes of data which need more than just a "filing cabinet" solution.





# Early Career Researcher Network

The Early Career Researcher Network enables early career staff to network across the university and forms part of the university's researcher development provision.

Any staff member who identifies themselves as an early career researcher and wishes to find out more should contact [ecrn@rgu.ac.uk](mailto:ecrn@rgu.ac.uk) to sign up to the network mailing list.

Below is a programme of the network's upcoming events. These are open to the wider RGU Research Community.

Training Event	Academic Year 2018/19
Time Management	October 2018
Collaborative / Cross Disciplinary Research – How To Get Involved	November 2018
Public Engagement	February 2019
REF Impact	March 2019
Academic CV Writing	April 2019
How to Manage a Research Team	May 2019

Please note that Research Strategy and Policy intend on hosting the following events, all of which will be open to the whole RGU research community:

Effective Peer Review
Working With Industry
Specific Reviewers Perspective
How to Build International Networks

# What's on?

The Research calendar of events

These events are open to the wider RGU Community.

Research Elevator Pitches 3	Fri 7 September (AM)
Research Speed Dating	Fri 7 September (PM)
SFC GCRF Annual Conference	Thur 13 September
Help Us Help You	September 2018
RGU Orkney Project Update	January 2019
Research Elevator Pitches 4	May 2019
RGU Research Week	June 2019



# INTERACT

Keep an eye on the Research Matters blog for regular news and information about research at RGU at [rguresearchblog.wordpress.com](http://rguresearchblog.wordpress.com)

Follow the team on twitter at **@RGUResearch**

Visit the Research Strategy & Policy RGYoU page to learn more about the team

Email the team at **res-research@rgu.ac.uk** to find out about funding, for assistance drafting a research proposal, for advice on developing your project or final costings

For all Early Career Researcher Network matters, email **ecrn@rgu.ac.uk**