Responding to a skills gap in the University's research community has led to the introduction of a new fellowships scheme, led by Research and Innovation Services (RIS).

A NEW BREED OF FELLOWS

Researchers are highly skilled experts, leading the way in their fields and uncovering tomorrow's world piece by piece. The next step for that research is to get it out into the wider world for both social and economic benefit, but that can be where it stumbles.

2020 has seen the pilot of a new scheme to tackle this hurdle – Business and Commercialisation Fellowships.

Diana Galpin, Head of Technology Transfer and Impact within RIS, explained: "We have identified that skills development, particularly around intellectual property and commercialisation, is quite a critical need for the research community. We also believe that to be a successful researcher you need to be comfortable engaging with a range of stakeholders, including businesses and industry. These fellowships should help build a cohort of researchers armed with the skills to succeed with business collaboration and commercialisation, who can then be ambassadors to our wider research community."

Four Business and Commercialisation Fellows are currently seconded part-time to RIS. **George Devitt** and **Miguel Massot-Campos** are funded by the University's EPSRC (Engineering and Physical Sciences Research Council) Impact Acceleration Account, and **Jaimie Ellis** and **PK Senyo** are funded by the ESRC (Economic and Social Research Council) Impact Acceleration Account.

"The fellowships are being piloted this year with a view to us honing a programme that we can run in future years," explained Diana. "We're giving them an intensive experience working alongside our Technology Transfer and Business Engagement teams, amongst others, in RIS. We are also giving them access and time to attend externally available training and networking opportunities."

Skills covered by the fellowships include contracts basics; recognising, securing and protecting IP; responsible innovation and ethics; equality, diversity and inclusion; policy influencing; public engagement; licensing versus spinout; and collaborating with industry.

The fellowships are proving a two-way success.

Diana said: "Having the opportunity to really immerse the fellows in understanding the technicalities and challenges in collaborations and commercialisation is fantastic and has been met with real enthusiasm.

"The other element is that we have got voices from the research community directly in our teams. We're learning a considerable amount from them and it's helping us to improve how we explain what we do."

The Impact team is now (December 2020) inviting applications for the next round of EPSRC Business and Commercialisation Fellowships. The scheme is open to Early Career Researchers employed by the University whose work falls within the EPSRC remit. Visit the RIS SharePoint site for more details.

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Diana Galpin
Head of Technology Transfer and Impact

For further information, visit:
www.southampton.ac.uk/ris

George Devitt
Research Fellow in Neurodegeneration

Nationality
British

Where and what did you study?
University of Bath
(BSc Biochemistry and MRes Biosciences),
University of Southampton
(PhD Biophysical Chemistry)

Length of time in academia
Eight years of study, one year of post-doctoral research

Length of time at Southampton
Five years

Career aspirations
For my research to have a societal benefit is very important to me – I am looking to develop expertise in clinical research and enterprise to help translate my research into a real-world clinical setting in the future

IP TO ADVANCE ALZHEIMER'S DETECTION

Filing for intellectual property (IP) will enable George Devitt's research group to take its work on improving the diagnosis of Alzheimer's to the next level.

George, a Research Fellow in Neurodegeneration, has joined RIS' Technology Transfer team as a Business and Commercialisation Fellow for nine months. Through the fellowship, he will understand how to secure IP, in particular patents, to commercialise his research.

He is part of an interdisciplinary research group based in Biological Sciences and Chemistry, with collaborative ties to Medicine.

"We are developing novel methods to improve the diagnosis of Alzheimer's disease and other diseases that cause dementia," George explained. "The work we have done so far has all been in vitro – in the dish. We haven't done anything with human samples yet. We're using new ideas and new techniques, creating the environment of Alzheimer's outside of the body to see if we can detect the proteins that cause the disease and the levels that would be present in biofluids."

Beyond detection, the research project is investigating how to classify the disease at diagnosis.

"We're looking at how to enable Alzheimer's to be classified as Type 1, Type 2 or Type 3, depending how aggressive it is," he said. "Currently, prognosis is not very accurate."

A third element to the project is screening. George, who has been working on the project for five years, said: "One of the biggest problems is that patients initially go to the GP or a clinic once they are already experiencing memory decline, but this is usually about 10 years into having Alzheimer's. There is no screening available – that's another aspect we're interested in."

Led by Principal Investigators Professor Sumeet Mahajan and Dr Amritpal Mudher, the technique George and his colleagues are developing could also inform drugs trials. "Many trials have failed and the biggest reason is selecting the right candidates," explained George. "People are not caught early enough."

Working with RIS
Following his fellowship with RIS, George will be able to ensure the research can be translated to the real world.

He said: "We want our research to deliver real-world healthcare benefits and have a positive impact on society. This secondment will allow me to develop the expertise required to secure IP, to communicate with industry and to commercialise my research so that it can be translated into a clinical service."

Securing IP will help the project, which has been funded by The Rosetrees Trust to date, to attract further funding and to be developed with business or industry.

George added: "The focus time that the fellowship within RIS gives me is invaluable. I wouldn't have time to learn about patents – knowing what and when something can be patented, and the value of it – without the fellowship."

Miguel Massot Campos
Research Fellow in Underwater Robotics

Nationality
Spanish

Where and what did you study?
University of the Balearic Islands (PhD in Information Technology and Communications)

Length of time in academia
During PhD until now, seven years

Length of time at Southampton
Two years

Career aspirations
To become a professor in autonomous systems

Jaimie Ellis
Research Fellow

Nationality
British

Where and what did you study?
Sheffield Hallam University (BA (Hons) Sociology and Psychology and MA Social Science Research Methods), University of Southampton (PhD Sociology)

Length of time in academia
Seven years post-doc

Length of time at Southampton
10 years

Career aspirations
To make a difference on the ground to individuals' health and wellbeing

MAPPING OUT A MYSTERY

Life at the bottom of the ocean remains, in the main, a mystery. Through his research, Miguel Massot-Campos is working on how to unravel that mystery.

He has joined Research and Innovation Services (RIS) as a Business and Commercialisation Fellow to learn how he can commercialise the software he has helped develop for underwater robots that could hold the key to mapping our ocean floors.

Miguel, a Research Fellow in Underwater Robotics, said: "Underwater exploration is something that has not been done on a massive scale. We know very little about the life at the bottom of the sea, and how environments work down there."

He is working on a project called Driftcam, an underwater robotic camera that has no means of self-propulsion and instead drifts with the underwater currents whilst controlling its depth. The aim of Driftcam is to scale-up current capabilities to map the ocean floor enabling long-term deployments of multiple drifters without the need of expert users.

"To know more about the ocean floor, we need to go down there," he said. "Because of how water absorbs light, we have to be very close to the sea floor to be able to retrieve colours and volumes. So we have to dive down, and we have to send a robot because it's too deep for humans."

Current methods are expensive and slow.

The Driftcam device

"It's currently really expensive to map one square kilometre of sea floor," explained Miguel. "Mapping the sea floor around the globe would take decades and isn't economically viable, so we're looking for more sustainable ways that require less human interaction."

Business collaboration

Miguel and his team are collaborating with a company called Sonardyne and are commercialising software called Location Guided Autoencoder.

"The software we are commercialising classifies sea floor images without human supervision," Miguel explained. "It would take months for a scientist to look at all the underwater images and classify them, but it can take a day for a computer to identify patterns in the images and classify them."

Through his fellowship with RIS, Miguel is developing a Proof of Concept and a draft licence for the software.

TACKLING ISOLATION

Addressing loneliness and social isolation is at the heart of Jaimie Ellis' research. She has joined Research and Innovation Services on a 12-month Business and Commercialisation Fellowship to better understand some of the organisations she works with, and to spot opportunities to further her research.

Jaimie, a Research Fellow in Medical Sociology, has been working on a project called PALS – Project About Loneliness and Social Networks – for two years. The project, funded by the National Institute for Health Research, is testing the effectiveness of a user-focused social network intervention.

"We're working across Southampton and Liverpool with community and voluntary organisations to deliver this intervention to people who could benefit," said Jaimie.

Partner organisations including charity groups, housing associations, churches and mosques, and a variety of community groups have put the PALS team in touch with people who could benefit from the intervention. It's a three-stage approach, beginning with a mapping exercise.

Jaimie explained: "First, we ask people to imagine themselves in the middle of their social networks – who is important to their health and wellbeing? They map people out, with those who are most important close to the centre. We ask them to reflect on the map and they sometimes realise there are actually a lot of resources there, but they might also identify people who perhaps have a negative effect on their wellbeing."

PK Senyo
Lecturer in Information Systems

Nationality
Ghanaian

Where and what did you study?
University of Ghana (MPhil in Management Information Systems), University of Reading (PhD in Information Systems)

Length of time in academia
Eight years

Length of time at Southampton
One year

Career aspirations
Become a professor, own a technology company that makes the world a better place and consult for development

organisations such as World Bank, UN and IMF to address 'big' problems such as poverty, social injustice and climate change

TECHNOLOGY TO EMPOWER

Calling on technology to tackle societal problems is at the heart of PK Senyo's research. Financial inclusion, sustainability, fraud and business challenges are some of the areas he focuses on.

PK, Lecturer in Information Systems within Southampton Business School, is spending a year with RIS on a Business and Commercialisation Fellowship to understand how he can commercialise his research.

He said: "My research is focused on the use and adaptation of digital technology to address societal needs, both business and individual needs, focusing on emerging technologies such as artificial intelligence, Blockchain and big data."

Financial inclusion is a particular area of interest for PK.

"Using financial technologies to address the issue of financial inclusion is a passion of mine," he said. "Having access to basic financial services can allow people to overcome financial challenges – having a bank account and access to these services empowers people to be able to do things for themselves."

Understanding the opportunities

PK is planning to use his learnings through his fellowship with RIS to understand the potential for commercialising his research.

"I am keen to learn about how I can commercialise my research and how to engage with business and create a network, plus understanding spinouts, IP and patenting," he said. "I have a few ideas about commercialising my research, around the application of artificial intelligence (AI) in business. For example, using AI to determine a project's success and prescribe solutions to the problems at the beginning.

"I'm also interested in addressing the issue of sustainability – where there are issues regarding product returns, there is a lot of wastage in the system, and AI could be used to address wastage in the supply chain."

Stage two is a questionnaire to find out what's important to the individual, what they find interesting and what they want to do. And stage three uses a database to marry their responses to a map, showing groups or facilities that are local to them, relevant to what they have highlighted in the questionnaire.

"We help people connect to local community resources, such as support groups and services, maybe even online learning, or perhaps the local library," explained Jaimie. "It's about identifying where that individual is at and what's interesting to them, and helping them look at their network map to see who can support them by going along to that first meeting."

PALS was due to come to an end this year, but it has been extended to September 2021 following delays due to the COVID-19 pandemic. The project team is now trialling the intervention online and via telephone.

Discovering opportunities

Through the Business and Commercialisation Fellowship, Jaimie will better understand the organisations she works with, and gain the knowledge to think differently and spot opportunities in future.

She said: "In order to better support these social enterprises and other organisations working in the community, I need to understand how they work. The fellowship is about understanding the world of business – understanding the business cycle, the language and the jargon, and to be able to see opportunities. On top of that, the fellowship is an opportunity to think differently about the impact my research could make."

"Having access to basic financial services can allow people to overcome financial challenges – having a bank account and access to these services empowers people to be able to do things for themselves."

PK Senyo
Lecturer in Information Systems