University of Dundee

University of Dundee, School of Life Sciences, Annual Report 2020
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In 2019, we identified our key challenges as:

- Balancing our ambitions with the finite amount of PE and research staff resource
- Continued funding and the variety of sources of support
- Partnership working and the need to balance our wants and availability with others
- Maintaining tight strategic focus
- Continuing to drive the sector-wide evaluation story forward

Throughout this report, our case studies will illustrate how we have responded to these challenges over the course of 2020.
What did we do?

One of our strategic goals is to support a culture of active participation in public engagement within the SLS community. We do this by providing training, opportunities to take part in activities, and support for funding. In 2020, we:

- Facilitated over 30 opportunities to get involved in public engagement
- Developed 10 completely new projects

Examples include:

- Self-guided walking tours of Dundee
- Patient and carer engagement work
- New online games
- A science art digital residency
- Digital stories

- Reached 36,850 exhibition visitors through a partnership with National Museum of Scotland

- Helped 25 researchers to connect with Work Experience Week pupils from schools across Scotland

A common factor of many public engagement encounters is that they would not be possible without contributions from many people with diverse skills and roles. The signature outreach event of the Division of Molecular Microbiology “Magnificent Microbes” was established 10 years ago. If this is taken as an example, there are 25 different groups of people involved to allow this long-standing signature public engagement event to achieve its goals.

We co-developed “Science For All Takes Many Hands” with local illustrator Daisy MacGowan, which highlights and celebrates the breadth of the contributions from across the University and beyond. These roles come from estate and buildings, health and safety, finance, contracts, research finance, research innovation services, cleaning services, and many more. It is important to recognise that public engagement by scientists is the result of teamwork.
With our support, staff and students:

- Ran the School as a venue for Wander the World, a nation-wide event run by Girlguiding Scotland. Over 700 girls and young women visited, taking part in activities from our Medicine Maker badge and visiting LifeSpace Gallery.
- Took part in Careers Hive with Edinburgh Science at the National Museum of Scotland, reaching around 2,500 pupils as they made their first subject choices.
- Took part in I’m a Scientist, Get Me Out of Here! online competition, engaging with school pupils from across the UK.
- Presented Parasiteseeing: Departure Lounge at Dundee Science Centre, in a new touring version of our exhibition.
- Worked with Dundee Science Centre to create content about microbes for their Home Learning Programme and Science@Home projects.
- Developed new content for Dundee Science Festival.
- Collaborated with artist Emily Fong to create a series of new works exploring researchers’ lives and work during lockdown.
- Created a totally new collaborative game experience based on trading skills and assets at an online scientific conference.
- Began development on a new medicinal garden, to be sited outside our research complex near to LifeSpace gallery.
- Created 6 curriculum-linked S1 practical science workshops to run at Baldragon Academy, Dundee as part of the ongoing partnership between MRC-PPU staff and students and the school.
- Adapted our Drug Discovery escape room, a puzzle-based educational game, for online audiences.
- Developed new ways of reaching out to carers of people with neurodegenerative diseases.
- Worked with the Dundee Print Collective to launch Translations, a brand-new exhibition in LifeSpace Gallery.
- Developed new content for Dundee Science Festival.
- Created a self-directed walking tour with Museum Services featuring many amazing stories of innovation and discovery in medicine and biology, past and present.
- Ran a workshop in partnership with DJCAD, LifeSpace: Evolution, bringing together artists and scientists for a creative conversation about future developments for the gallery.
- Adapted our Drug Discovery escape room, a puzzle-based educational game, for online audiences.
- Worked with the Dundee Print Collective to launch Translations, a brand-new exhibition in LifeSpace Gallery.
- Developed set of new digital stories, showcasing the people and research within the WCAIR labs.
- Communicated their research through articles in The Conversation, education platforms and writing competitions.
- Reached new audiences with Dundee Women’s Festival at the Family Fun Day with Women in STEM at Charleston Community Centre.
- Successfully applied for competitive public engagement funding.
- Continued our collaboration with Stobswell Forum, facilitating their transition to working online and assisting in running community consultation.
- Reached new audiences with Dundee Women’s Festival at the Family Fun Day with Women in STEM at Charleston Community Centre.
- Developed new ways of reaching out to carers of people with neurodegenerative diseases.
- Worked with Dundee Science Centre to create content about microbes for their Home Learning Programme and Science@Home projects.
- Adapted the Work Experience Week to take place online, reaching a wider and larger audience of senior secondary pupils than ever before.
- Delivered new school and public events at the National Museum of Scotland as part of the Parasites: Battle for Survival exhibition.
- Published our first LifeSpace catalogue, for the Parasiteseeing exhibition.
- Collaborated with artist Emily Fong to create a series of new works exploring researchers’ lives and work during lockdown.
- Created a totally new collaborative game experience based on trading skills and assets at an online scientific conference.
- Began development on a new medicinal garden, to be sited outside our research complex near to LifeSpace gallery.
- Helped primary pupils develop their stop-motion animation skills in Animating Science to make wildly creative films about science topics.
- Created 6 curriculum-linked S1 practical science workshops to run at Baldragon Academy, Dundee as part of the ongoing partnership between MRC-PPU staff and students and the school.
- Devised a range of new online training sessions to respond to new needs in 2020.
- Met with both public and school audiences to deliver the Jalview Visualising DNA, RNA & Proteins workshops.
- Reached local teachers, primary school pupils and families in another successful Magnificent Microbes two-day event at the Dundee Science Centre.
- Developed set of new digital stories, showcasing the people and research within the WCAIR labs.
- Communicated their research through articles in The Conversation, education platforms and writing competitions.
Signs of Success: Changing Times

I was really nervous about being one of the first in my family to go to university but Senga was really reassuring when she answered that question and made me sure that if I got into university, I did definitely deserve to be there.

Work Experience Week 2020 participant

Partnership working has been key. There is no way that the Science Centre could have rolled out these Science @ Home kits without partnership working and without the help and support of local people, local organisations, without funding.

Carlene Cura, Dundee Science Centre

CASE STUDY
Virtual Work Experience Week

PEOPLE INVOLVED: 25 researchers and students from the School of Life Sciences, the School of Medicine, the D'Arcy Thompson Unit, 35 S5 and 6 pupils from 18 schools across Scotland.

WHAT WAS IT? An adaptation of our successful in-person Work Experience Week for senior pupils within Scotland. Over 35 pupils attended the week of activities, which included sessions on animals in research, GMO crops, science in the media and a personal statement writing workshop. A particularly well-received aspect was the Q&A sessions that stretched across the week, allowing the pupils to interact with researchers and postgraduate students and hear about their career journeys and current work.

KEY OUTCOMES: All students reported a more well-rounded understanding of life sciences research careers, with several stating that the week had helped them decide on their university specialisations. A great deal of high-quality content was generated by scientists which can be used in future for similar events.

FUTURE PLANS: We have formed a partnership with colleagues at the University of Edinburgh to merge our work experience efforts and will be offering a bespoke experience across both institutions for S4 pupils in Spring 2021.

CASE STUDY
Emily Fong art project

PEOPLE INVOLVED: artist Emily Fong, Janice Aitken and Tamara Richardson from DJCAD, 8 WCAIR PIs and team members.

WHAT WAS IT? Emily has become WCAIR’s artist in digital residence. We launched this unusual commission as a response to the lockdown living and working imposed by the Covid-19 pandemic. She has been interviewing key people from across WCAIR, writing blog posts and creating visual responses to the conversations. These are being shared on WCAIR’s website as a living work.

KEY OUTCOMES: Emily’s new blog consists of 9 posts on the WCAIR website. These each have a written component and an artistic output. 5 of them are drawings of the people she is engaging with, while 4 are more abstract pieces, like sculptural works. She has also been sharing on social media using Twitter and Instagram. These posts have drawn a new audience through social media and to the WCAIR website. Her blogs on the website have received over 500 hits, while Emily’s Instagram posts from the project have received over 800 likes. Emily’s followers on social media are from a very different corner of the world than those who follow WCAIR.

FUTURE PLANS: We will widen the scope of the project, reaching out to WCAIR’s communities to give them a chance to be heard. We will also explore more ways of sharing the work – this could be in a published format, public exhibition, at conferences and festivals, or some other way. As the work develops, we also hope a title will emerge for it – we have very consciously not named it so far.
Local Communities

What Did We Do?

Our public engagement work is aimed at a diverse range of people, including schools, patient groups, families and adult audiences. Each group allows us to learn from different viewpoints and experiences to make our research more relevant and impactful. 2020 brought a unique set of challenges and opportunities to reach out to our local communities. This year, we have:

- Engaged with over **800 visitors** in the Translations exhibition in LifeSpace Science Art Research gallery
- Reached **350 children** through the Science @ Home kits with Dundee Science Centre
- Run **26 meetings** of the Stobswell Forum, and been a founding member of a cross-city network of community councils and neighbourhood representative structures
- Reached over **200 people** through Teams Live events, including during Dundee Science Festival and a summer event featuring broadcaster, journalist and author Angela Saini

CASE STUDY: Jalview outreach

**People Involved:** Jalview team from Geoff Barton’s research group within Computational Biology including Jalview Training Officer Suzanne Duce, Dundee Women’s Festival, Scottish schools.

**What was it?** The Jalview team have developed a booklet entitled ‘Visualizing DNA, RNA & Proteins Jalview School Workbook’. It contains four practical web-based projects. The exercises allow pupils to view and interact with DNA, RNA and protein sequences and structures for themselves. They can compare protein sequences from different species. Jalview’s split-screen view allows them to view the coding DNA sequence and codons alongside the protein, and in turn identify mutations that are linked to genetic diseases. All the materials required to run the practicals are available on the school page of the Jalview website (https://www.jalview.org/school-resources). During 2020 the web site has had over 2.5K views from 80 countries.

**Key Outcomes:** A visit to Dundee Women’s Festival STEM Family Fun Day at Charleston Community Centre engaged with over 100 visitors, allowing children to try out the ‘dinosaur’ hands-on activity as well as experiments from the schools workbook. The team ran a remote engagement with Elgin Academy, engaging with Higher Biology pupils. Looking into DNA and RNA was featured during the 2020 Dundee Science Festival.

**Future Plans:** Additional resources will be posted on the Jalview YouTube channel.
CASE STUDY
Dundee Science Centre’s Home Learning Programme and Science @ Home kits

PEOPLE INVOLVED: 7 members of Dundee Science Centre, 6 Dundee Science Centre volunteers, 19 members of the University of Dundee, 8 members of the Gate Church Wellbeing Project, 1 person from Action for Children, ChildSmile, Barnardo’s Dundee Bairs and Dundee City Council. Plus, many members of local community groups who collected and distributed the Science @ Home kits.

WHAT WAS IT? Dundee Science Centre instigated two connected projects to bring science learning to primary aged children in the local area during lockdown. The Home Learning Programme is an online platform providing weekly activities themed around different areas of the science. The Science @ Home kits replicated the online programme for children without digital access. We created a week of content on microbes for the projects.

KEY OUTCOMES: This project allowed us through the relationships Dundee Science Centre has with various local community organisations to reach children that we would not usually be able to. The Home Learning Platform had 56,000 online meaningful engagements (April to October) with 1,308 users accessing our content during microbes week. 350 children received Science @ Home kits.

FUTURE PLANS: Plans are in place to create content about Women in Science for Dundee Women’s Festival to be shared on Dundee Science Centre’s website. Beyond this, we continue to work with Dundee Science Centre to create science learning content for the Dundee community.
Creative Partnerships

What Did We Do?

As ever, working in partnership is a vital aspect of good public engagement. It allows us to learn from experts in many different fields, reach new audiences and respond to genuine, well-evidenced audience needs. In 2020:

We continued to build on our formalised partnerships, including with:

- Dundee Contemporary Arts
- NEoN (North East of North) Digital Arts Festival
- Dundee Women’s Festival - joining the DWF committee
- Dundee Science Festival

Our scientists and PE team also contributed to collaborations across the UK, including:

- Gatsby Trust
- I’m a Scientist, Get Me Out of Here
- National Museum of Scotland exhibition and programme of activities

We worked with organisations that underpin the landscape of public engagement nationally, including:

- Scottish Public Engagement Network
- British Science Association’s Inclusive Science Network
- The National Coordinating Centre for Public Engagement
- UK Research and Innovation

CASE STUDY: MRC-PPU Baldragon Academy Partnership

PEOPLE INVOLVED: MRC-PPU staff, students and support staff – 16 for the S3 careers sessions and 21 for S1 Practical Science workshops.

WHAT WAS IT? The MRC-PPU have a longstanding partnership (since 2015) with Baldragon Academy in Dundee, raising awareness of the vital role of science in understanding health and disease and the variety of accessible careers available in science to inspire local pupils. In 2020, it was planned to deliver careers sessions and practical science workshops for pupils.

KEY OUTCOMES: MRC-PPU staff and students created 6 curriculum-linked Practical Science workshops that covered the following topics: cells, reaction times, microbes, blood & immune system, organ systems and blood pressure. These practicals were planned to run over 54 sessions at Baldragon from Feb–May to ensure every S1 pupil took part in each workshop. Due to the coronavirus pandemic, two careers sessions covering the whole S3 year group and the first 10 workshop sessions took place.

FUTURE PLANS: The MRC-PPU is working closely with the Principal Teacher of Biology to continue partnership-working during these challenging times, with the aim of moving engagement activities online. A new ‘Immersive Cell’ project is also underway, in collaboration with a Freelance Artist, to engage science and non-science teachers and pupils with cell biology through art.
CASE STUDY
Dundee Women’s Festival: Family Fun with Women in STEM and Women Making Waves in STEM

PEOPLE INVOLVED: Family Fun with Women in STEM: 20 participants (7SLS, 4SoM, 2SSE, 1LRCFS, 3CAHID, 3Psychology) and almost 100 public (family groups with young children) and for Women Making Waves in STEM, 6 speakers (speakers: 3SLS, 1SoM, 2SSE), 1 MC and 27 public. 4 organisers.

WHAT WAS IT? Dundee Women’s Festival is a city-wide festival that takes place annually during the first two weeks in March. We organised two events for the Festival. The first, Family Fun with Women in STEM, was a free drop in event aimed at families held at Charleston Community Centre. Visitors met women scientists to find out about their amazing research work in STEM and get hands on with activities about their research. The second event, Women Making Waves in STEM, was aimed at teenagers (14+) and adults where women shared their stories of being a woman in STEM. The event was hosted by stand-up comic Susan Morrison.

KEY OUTCOMES: We gathered feedback from the scientists who took part in the events and from members of the public who attended. For the scientists they noted that the training and taking part in the final events increased their confidence in and ability to speak in public. Members of the public learnt about the research and achievements of local women in STEM. For the second event, there was an increased awareness of the challenges women can continue to face in STEM areas, framed in the positive way.

FUTURE PLANS: We will be participating in Dundee Women’s Festival 2021.

CASE STUDY
Parasites: Battle for Survival

PEOPLE INVOLVED: 19 members of WCAIR, along with colleagues from the Universities of Glasgow and Edinburgh.

WHAT WAS IT? This large-scale exhibition was planned as a part of the Wellcome Centre bid from 2016. Running in the Museum's largest free-to-access exhibition space, it was a collaboration between the 2 Centres in Dundee and Glasgow, and Edinburgh Infectious Diseases. It also had an associated programme of events and workshops for schools and public.

KEY OUTCOMES: the exhibition aimed to showcase the scale of challenge the world faces from parasitic diseases, while showcasing the world-leading work going on in Scottish universities. The exhibition saw 36,850 visitors over its 4-month run. Through this time, the Museum ran an extensive evaluation project. This was built using our own evaluation framework, which proved to be very useful. Visitors responded very positively, with excellent feedback. We were also able to develop a new school workshop, and work with partners from other universities. We had hoped to run new events and build a new relationship with Edinburgh Science Festival, but this was curtailed by coronavirus. Our visitor numbers, while reaching pre-planned expectations, likely also would have reached a much higher level had the exhibition completed its run in April as planned.

FUTURE PLANS: We have digital resources and will be receiving physical panels from the exhibition as the Museum completes de-installation. The challenge will be in how we take this work safely onwards to new audiences in the new normal. We will also explore the possibility of another large-scale exhibition with a similar partner for the next round of Centre funding.
Challenges and achievements 2020

2020 brought a new set of challenges, given the unique situation facing the world.

With much of our content shifting from in-person to digital delivery, this posed significant challenges to some key audiences. Creating new online content and then re-adapting it to paper and packs for physical delivery was a considerable piece of work.

Lack of researcher time to do public engagement. This challenge arose from multiple angles, including staff being placed on furlough, and what lab time was available being very precious. Working with new ways of delivering engagement also placed a significant barrier for researchers.

Adapting our existing content to new formats took a great deal of both time and creativity. Finding the best platform for activities such as our escape game and creating a new and functional version took several rounds of prototyping and responding to feedback. We have had to adopt this approach across much of our programme in 2020.

Delivering training, both about and using online tools, became key parts of our work this year. Having done relatively little of either before, there was a steep learning curve for the team.

In spite of these challenges, we had several significant achievements:

- Excellence in public engagement by our researchers was recognised on the national stage with Senga Robertson-Albertyn being awarded the prestigious Royal Society of Edinburgh Innovators Prize for Public Engagement. Senga also won the inaugural Early Career Researcher of the Year award at the University of Dundee’s Stephen Fry Awards for Excellence in Public Engagement for work carried out during the course of her PhD studies.

- The University of Dundee was awarded a Gold Watermark from the National Coordinating Centre for Public Engagement in November 2020. This was the culmination of many months of work, lead in part by Professor Nicola Stanley-Wall from SLS. Paul Manners, Co-Director of the NCCPE, said, “The University is deeply engaged in Dundee and the symbiotic relationship underpins some excellent, sustained engagement programmes. The University has meaningful relationships with community partners who valued their long-standing relationships, collaborative planning and their equitable interactions.” SLS was previously awarded a Gold Faculty Watermark in 2017.

- The aim to sustain our public engagement activities with additional external funding continued this year with the team providing support to researchers to include requests for public engagement within their grant applications. Henry McSorley received public engagement funding as part of a Wellcome Investigator award, and Michaela Omelkova of Daan van Aalten’s lab was successful in her application to the ScotPEN Wellcome Engagement Award for the Care to Share project. This dedicated public engagement funding is a first for the School of Life Sciences.

- Reward and recognition for contributions to public engagement continued in 2020. Over 130 Science for All badges were given to partners and staff and students across the University. Within the School, the annual Brian Cox Awards for Excellence in Public Engagement were given to Miratul Muqit for Engaged Researcher of the Year and the team from the Wellcome Centre for Anti-Infectives Research who created the Medicine Maker Girl Guiding badge for Project of the Year.
Our Aims

We believe public engagement is a vitally important part of what we do:

- It increases the impact and value of our research
- It contributes to a scientifically literate culture
- It helps science remain relevant to society
- It builds trust between communities within and beyond academia
- It diversifies the skills and opportunities available to our staff and students at all stages of their careers

Our work in 2020 was led by our five-year public engagement strategy, which was developed in consultation with our staff and students in 2017. In it, we state four main aims that underpin all our public engagement planning, development and delivery. These are:

- Build on our creative partnerships to deliver a high quality, innovative engagement programme
- Engage a diverse range of people with our research
- Consult with our local communities to widen our reach and meet their needs
- Promote and support a culture of active participation in public engagement within our life sciences community

Goals for 2021

Continue:
- Formalising successful partnerships
- Running events that reach varied audiences
- Supporting our staff and students through training, advice and resources
- Cross-university networks and effective sharing

Build on:
- The range of ways we work with local communities to reflect their current needs
- Reporting, evaluating and assessing impact in all we do
- Sharing knowledge and resources widely

Focus on:
- The diversity of participants and audiences taking part in public engagement
- Audience needs and inputs
- Gaining from the new opportunities and ways of engaging that have arisen during 2020

As the Public Engagement team, we have committed to do the following each year:

- Provide a school-wide support structure for public engagement
- Provide professional support and guidance, including training
- Provide opportunities to get involved with public engagement
- Provide funding and resources for public engagement activities
- Build and maintain relationships with external partners

Our team produces a comprehensive calendar in advance of each year, with events, training, drop-in sessions and other key dates outlined. There is also capacity for flexible, bespoke support for staff and students looking to get involved with the School of Life Sciences’ public engagement programme.
With experience in the world of research, museums, science centres and theatre, the School of Life Sciences’ public engagement team brings a wealth of expertise to the table.

Prof. Nicola Stanley-Wall, Academic Lead for Public Engagement
Nicola is the Head of the Division of Molecular Microbiology and has a leading voice in the School’s public engagement for over ten years. She represents the School at the University-wide Public Engagement Forum and was heavily involved in the University’s Watermark application to the National Coordinating Centre for Public Engagement.

Dr Amy Cameron, Public Engagement and Communications Officer
Amy has a background in academic research as prior to joining the School, she was a Postdoctoral Researcher in the School of Medicine at the University of Dundee. Throughout her research career, Amy participated in public engagement activity and teaching. In the public engagement part of her role in the School of Life Sciences, Amy works closely with public engagement colleagues within the School and across the University to deliver a programme of activity and the process that underpins it such as evaluation frameworks.

Erin Hardee, Schools Outreach Organiser
Erin supports outreach to local schools, builds partnerships and contributes to strategic development of public engagement both within the School of Life Sciences as well as the wider University. Her newest opportunity is a role within the British Science Association’s Inclusive Science Engagement Network, which will be looking at ways to embed good practice and widen participation in public engagement.

Ali Floyd, WCAIR Public Engagement Manager
Ali has a microbiology degree from the University of Glasgow. He has previously worked for Glasgow Science Centre and Edinburgh International Science Festival. Prior to Dundee, he was the Science Engagement Officer at the National Museum of Scotland, leading on biomedical programming and software interactive development for the Masterplan Phase 3 project. With his WCAIR role he has led on science art projects such as Parasiteseeing and the Dundee Print Collective project, creating a new piece of theatre with Dundee Rep: Engage, and community work with the Stobswell Forum.

Ailsa Mackintosh, WCAIR Public Engagement Officer
Ailsa Mackintosh is the newest member of the public engagement team. She joined the Wellcome Centre for Anti-Infectives Research in March 2020 and has been working on the creation and development of a programme of activities and projects for WCAIR. In her previous role as administrator for the public engagement team, she assisted the organisation of events and co-ordinating personnel as well as providing support at events.

Public Engagement Divisional Champions:
- Biological Chemistry and Drug Discovery: Professor David Gray
- Computational Biology: Professor Geoff Barton
- Cell and Developmental Biology: Dr Jens Januschke
- Cell Signalling and Immunology: Dr Sharon Matthews
- Gene Regulation and Expression: Professor Tom Owen-Hughes
- Molecular Microbiology: Professor Nicola Stanley-Wall
- MRC Protein Phosphorylation and Ubiquitylation Unit: Dr Paul Davies
- Plant Sciences: Dr Jorunn Bos
If you would like to discuss our public engagement strategy or forthcoming programme please do get in touch.

Email: SLS-PublicEngagement@dundee.ac.uk

Come to our drop-in sessions the third Tuesday of every month online

#whyengage

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