

EASTBIO ANNUAL SYMPOSIUM 2021

BEYOND THE LAB: SCIENCE'S IMPACT ON SOCIETY

Online (via Teams), 17-18 June 2021

GUEST SPEAKERS

BIO	
<p>Dr Massimiliano Baldassarre (Institute of Medical Sciences, University of Aberdeen)</p>	<p>Massimiliano is Lecturer at the University of Aberdeen. He grew up and graduated in Italy where he studied the intracellular membrane trafficking. He then moved to Yale University (New Haven, CT, USA), where he was involved in setting up a pooled shRNA screening facility for high-throughput identification of novel oncological targets and then to Aberdeen. His current scientific interests are the molecular mechanisms underlying bacterial infections, focusing in particular on typhoid fever. By studying the molecular processes that occur at the host-pathogen interface, he aims to identify novel cellular pathway that protects from bacterial infections.</p>
<p>Dr Abdellah Barakate (Cell and Molecular Sciences, James Hutton Institute)</p>	<p>Abdellah joined The James Hutton Institute in 2015 to join its Cell and Molecular Sciences department. Prior to this, he was based for 18 years at the University of Dundee after his first postdoc at Imperial College, London. He was born and educated in Morocco and gained his master's degree and PhD from the University of Joseph Fourier, Grenoble, France. Abdellah has three decades of experience in Plant Molecular Biology and has worked mainly in the areas of cell wall and plant DNA repair and recombination. Over the years, he has accumulated extensive knowledge of gene manipulation tools, including CRISPR-based gene editing. Abdellah uses molecular biology techniques to study and validate the function of selected genes and his gene manipulation toolbox ranges from RNAi to CRISPR/Cas9 system.</p>
<p>Professor Verity Brown (Pro- vice Chancellor for Impact and Innovation, University of East London)</p>	<p>Professor Verity J Brown, FRSE, has been Pro-Vice Chancellor (Impact &amp; Innovation) at the University of East London since 2019. Before that, she spent 25 years at the University of St Andrews in a variety of roles including Lecturer; three terms as Head of the School of Psychology &amp; Neuroscience; Provost of St Leonard's Collage (the 'graduate school'); and Vice-Principal (Enterprise and Engagement). She was seconded to Merck Research labs as a Royal Society Industry Fellow for four years (2007-12). Her research field is behavioural neuroscience, with her main research interest being to elucidate the cognitive impairments associated with</p>

	<p>psychiatric illnesses and to identify potential pharmacological strategies to alleviate these.</p>
<p>Dr Amy Cameron (School of Life Sciences, University of Dundee)</p>	<p>Amy Cameron is the Public Engagement and Communications Officer in the School of Life Sciences at the University of Dundee. In the public engagement part of her role, Amy works closely with members of the School public engagement team to formalise public engagement practice and procedures in the School. This includes developing a School PE strategy that has an aligned evaluation framework. Amy works alongside PE colleagues (School and across University) and School staff and students to deliver a programme of public engagement activity. She was a member of the School team awarded a Gold Engage Faculty Watermark from the National Co-ordinating Centre for Public Engagement in 2017.</p> <p>In the communications part of her role, Amy works closely with colleagues in the University's Directorate of External Relations ensuring a coordinated approach. She assists in sourcing interesting stories, develops content for publicity and marketing, ensures a strong flow of information across the School, and helps co-ordinate events. She is also responsible for the maintenance and development of content on the SLS website and manages the School's social media accounts.</p> <p>Amy has a background in academia as previously she was a Postdoctoral Researcher in the School of Medicine at Dundee.</p>
<p>Dr Sara Chan (Usher Institute, University of Edinburgh)</p>	<p>Sarah is a Reader in Bioethics at the Usher Institute, University of Edinburgh; she is currently a Deputy Director of the Mason Institute for Medicine, Life Sciences and Law, and an Associate Director of the Centre for Biomedicine, Self and Society. Previously, from 2005 to 2015, she was a Research Fellow in Bioethics at the University of Manchester, first at the Centre for Social Ethics and Policy and from 2008 the Institute for Science Ethics and Innovation. Sarah's research focuses on the ethics of new biomedical technologies, including gene therapy and genetic modification; stem cell and embryo research; reproductive medicine; synthetic biology; and human and animal enhancement. Her current work draws on these interests to explore the ethics of emerging modes of biomedicine at the interface of health care research, medical treatment and consumer medicine, including population-level health and genetic data research; the use of human biomaterials in both research and treatment; and access to experimental treatments and medical innovation.</p>
<p>Emma Cook (Senior Manager for Impact Evidence, UKRI BBSRC)</p>	<p>Emma recently joined BBSRC, starting this role at the beginning of December 2020. The previous 18 years were spent working for We The Curious (previously At-Bristol Science Centre), spanning multiple roles, but ending with Evaluation &amp; Experience Developer. The primary aim of this role was to understand and quantify the impact of the science center, using the experiences from her Churchill Fellowship in 2016.</p>

	<p>Her research asked what impacts science centers could achieve beyond the traditionally quoted educational 'gains' – research that took her to the USA, Finland, the Netherlands and Denmark to understand more about the best practice in this area for cultural and educational venues.</p> <p>She began with a degree in Zoology and followed that with an MSc in Science Communication but those are just the formally recognized qualifications. It is the learning on the job that has helped her understand the multiple ways we can make a difference through science.</p>
<p>Professor Dominic Moran (Global Academy of Agriculture and Food Security, The Royal (Dick) School of Veterinary Studies and The Roslin Institute, University of Edinburgh)</p>	<p>Dominic is Professor of Agricultural and Resource Economics. He joined the University of Edinburgh in 2018 after a period of 18 years with SRUC, prior to which he was a government economist and in private consulting. His research focuses on applying economics to environmental management and the development of interdisciplinary approaches to resource allocation problems in agriculture and global food security. Most recently, his work has focused on the challenges of reducing greenhouse gas emissions from agriculture and food supply chains, and the problem of antimicrobial use and resistance in agriculture. Dominic has worked in over 30 countries and has published more than 100 refereed journal papers. He has been in continuous receipt of funding from EU, ESRC, NERC or BBSRC since 2000 for his research on climate change and agriculture, and has supervised 20 PhD students.</p>
<p>Dr Helen Nickerson (Science and Strategy Manager, MRC Human Genetics Unit, University of Edinburgh)</p>	<p>Helen is the Science and Strategy Manager at the MRC Human Genetics Unit, University of Edinburgh. She supports strategy, development and operation of the Unit as well as leading an communication and public engagement team. She completed her doctorate in molecular biology at the University of Cambridge, and postdoctoral research at Cornell and Columbia universities in New York City, where her work focused on the cyclin family of proteins in development and cancer. From 2006-2015 she developed research strategy and oversaw programs at JDRF International, an international research charity focused on Type 1 Diabetes, first as a Programme Manager, and later as Director of Translational Research. These programs supported research to prevent and treat the complications of diabetes and improve glucose control, translating basic science into drug targets and therapies and biomarkers for both within academic research groups and in partnership with industry.</p>
<p>Dr Vicky Sleight (University of Aberdeen)</p>	<p>Vicky is in love with evolution and development – aka "evo-devo". Through a range of undergraduate, postgraduate and postdoctoral experiences she has found her way to marine invertebrates and seashells as an inspiring and powerful system to understand fundamental questions in animal evolution and development. Vicky earned a B.Sc. (Hons.) in Marine Biology from the University of Plymouth and a Ph.D. in Marine Biology from Heriot-Watt University and the</p>

	<p>British Antarctic Survey. She held a Junior Research Fellowship from Wolfson College in the Department of Zoology at University of Cambridge (2017-2020) and two Whitman Center Fellowships at the Marine Biological Laboratory in Woods Hole, USA (summers 2018 &amp; 2019).</p>
<p>Prof. Alan Raybould (University of Edinburgh)</p>	<p>Alan joined the University of Edinburgh in 2019 as Professor of Innovation in the Life Sciences. His research focuses on the use of science to inform decision-making, particularly improving the efficiency and effectiveness of regulation of products of new technology in agriculture and food production.</p> <p>Following a PhD in genetics at the University of Birmingham, Alan became a Principal Scientific Officer at the Centre for Ecology and Hydrology. He joined Syngenta at Jealott's Hill in the UK in 2001. He led preparation of environmental risk assessments as part of worldwide regulatory submissions for Syngenta's genetically modified crop products. Alan moved to Syngenta's headquarters in Basel, Switzerland in 2014. He was a Senior Science &amp; Technology Fellow working on risk assessment and societal acceptance of agricultural products of new technology, including insect-control sprays based on RNA interference, and crops bred using gene editing.</p>
<p>Professor Steve Yearly (Co-Director of SKAPE and Director of IASH, University of Edinburgh)</p>	<p>Steve has worked at the University of Edinburgh since 2005 and is based in the "Science, Technology and Innovation Studies" subject area. He has a mixed background in the natural and social sciences and his research work focuses mostly on the public credibility of scientific knowledge and on the role of science in policy-making, specifically in environmental areas. Since 2017, he has been seconded to the post of Director of IASH, the Institute for Advanced Studies in the Humanities which has a focus on postdoctoral and early-career fellowships in the arts, humanities and social sciences. During the last decade he also co-founded SKAPE, the centre for the study of Science, Knowledge and Policy which links studies of science in society to work in politics and international relations and in social policy. SKAPE has focused on topics including the impact agenda, the use of indices and metrics in government, and studies of expert decision making.</p>

## TALKS SUMMARIES

<p>Emma Cook The Impact of Bioscience Research,</p>	<p>In this short introductory talk, Emma Cook the Senior Manager for Impact Evidence in BBSRC will outline how the Council conceptualises multiple forms of impact, illustrating each with an example from their collection of case studies, many of which can be found on their webpage <a href="http://Our.impact-BBSRC.ukri.org">Our.impact-BBSRC (ukri.org)</a>.</p>
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Professor Dominic Moran  
(Global Academy of  
Agriculture and Food Security,  
The Royal (Dick) School of  
Veterinary Studies and The  
Roslin Institute, University of  
Edinburgh)

We probably all want our research to have impact. However, our mental models of impact can be vague, abstract, biased and changing, and obviously conditioned by our disciplinary training. Many bioscience researchers will be hard up against the fundamental building blocks of life and the pathway to ultimate impact may sometimes seem remote. To contextualise our impact, and for alternative perspectives, it is helpful to understand how other disciplines might frame the issue. While impact can typically start from technically effective scientific advances, the application of these often depends on economic, behavioral, political and institutional barriers that are worth bearing in mind. This talk will explore this framing of impact from a non-bioscience perspective drawing on personal experience addressing solutions to two interdisciplinary and similar global challenges: climate change and antimicrobial resistance.

## EASTBIO PRESENTERS (THIRD YEAR STUDENTS)

Liat Adler	Liat is based at Alistair McCormick's lab at the University of Edinburgh. Her current project is focused on enhancing photosynthesis in C3 plants by engineering a CO <sub>2</sub> -concentrating mechanism from algae. Liat completed her EASTBIO placement with the Institute of Food Science and Technology where she generated knowledge materials about food waste and contributed to other activities in the institute.
Grace Bailey	Grace is based at the University of Edinburgh and works on Epigenetic control of nuclear chromatin organisation in cardiac development. Grace completed her EASTBIO placement in Sense about Science, an independent charity that champions the public interest in sound science and ensures evidence is recognised in public life and policy-making.
Jason Clark	Jason is based at the University of Aberdeen and works on the Application of artificial intelligence-driven design of function-directed ligands for selective retinoic acid receptor binding.
Amy Cooper	Amy is a third-year student based up at the University of Aberdeen and she is part of Dr Alan Bowman's bee health group. Her PhD research focuses on the complex interactions between the honeybee, the parasitic Varroa mite and the deformed wing virus. She completed her PIPS project, which was based in the Scottish Lyme Disease and Tick-Borne Infections Reference Laboratory, in her second year. She found it to be a really rewarding experience that changed the way she manages her PhD.

Rosie Spencer	Rosie is based at the University of Aberdeen and works on Genome editing and modelling to understand the biogenesis and function of a novel antiparasitic drug target.
Mark Williamson	Mark is based at the University of Aberdeen. His project focuses on the invasive slug species <i>Arion vulgaris</i> and <i>Arion flagellus</i> , a species considered a major threat to food security, due to high intrinsic rates of increase and resilience to control measures. Mark completed his placement with Marine Scotland and his presentation will be on "Developing spatial awareness: An introduction to the tools and techniques to develop spatial data for ecological purposes".
Holly Woodward	Holly is based at the University of Edinburgh and her PhD projects is on How do sex hormones regulate the function of arteries and valves? Holly completed her placement with the European Citizen Science Association (ECSA) aimed to promote 'citizen science' participation. Her particular role was to support the organisation of the ECSA 2020 online conference.

## CHAIRS & DEPUTY CHAIRS

Abbie Brewer	In her second-year, Abbie is based in the Sapkota laboratory at the University of Dundee. Her project focuses on broadening the applicability of the affinity-directed protein missile (AdPROM) system. Here, high-affinity binders (e.g. nanobodies) are used to fuse a protein of interest with the CUL2-RING E3 ligase complex, resulting in efficient degradation of the endogenous target protein.
Eszter Denes	Eszter's PhD project is co-supervised by Dr Delma Childers (University of Aberdeen) and Dr Edward Wallace (University of Edinburgh). The aim of her project is to improve our understanding of how fungal cells initially sense and respond to antifungal agents using the model yeast, <i>Saccharomyces cerevisiae</i> , and the clinically relevant yeast, <i>Candida glabrata</i> .
Katie Dubarry	Kate started her PhD in 2020 after completing her undergraduate studies in Agriculture at SRUC, a step-change from her first career as a beauty therapist. Her project focuses on immune gene expression in sheep, using molecular and bioinformatics techniques. For this, she will generate and analyse RNA data sets from whole blood and immune cell-type populations. Kate's ambition is to work on projects that translate into impactful improvements in animal health, for the benefit of farmers and the animals in their care. Outside the lab, she is an expert in representation and improving the student experience. She is currently an EASTBIO rep for Edinburgh, as well as sitting on NUS Scotland's Steering Committee, BSAS Early Career Council, and occasionally inputting into work across the HE sector. She is supervised by

	Dr Emily Clark (Roslin) and Professor Mike Coffey (SRUC). Her project is a CASE studentship in association with Roslin Technologies.
Eilidh Geddes	Eilidh has started her PhD studentship at Moredun Research Institute, in collaboration with the SRUC and University of Edinburgh. This project aims to optimise internal parasite control on hill and upland sheep farms at a farm level. Hill and upland sheep farming represents around 60% of the whole agricultural area in Scotland, yet is becoming increasingly challenging particularly due to parasite infections. Therefore, effective parasite management is essential, especially when faced with increasing resistance to anthelmintic products.
Zoe Gidden	Zoe's project is co-supervised by Prof Lynne Regan and Dr Mathew Horrocks and aims to fluorescently tag proteins in mammalian cells, so that they can be imaged using super-resolution microscopy, while minimising the effect on the normal function of the protein.
Tegan Knott	In her second year of research, Tegan is based at the University of St Andrews, where she is undertaking her PhD in the School of Psychology and Neuroscience. She has been looking at the processes involved and the brain areas required for rapid and flexible learning which allow us to 'think outside the box'. Throughout her Ph.D. she will be investigating how this network of brain areas assign credit to stimuli and filters out unwanted or redundant information from other stimuli to prevent overloading which could result in process failure. Her project is also a CASE studentship with the pharmaceutical company Boehringer Ingelheim so she will also continue her research to Germany.
Becky Maguire	Becky's PhD project is based at the University of St Andrews, under the supervision of Prof. Julie Harris. She is currently focused on how we attend to objects in depth, and hoping to use this information to better make predictions about camouflage strategies and mechanisms. For example, can predator ability to discern depth hamper camouflage strategies previously found effective in 2D paradigms? And can we gain insight into the best ways to fool perception if we gain better understanding of how we see things in the 3D world? These questions, among others, have been the cornerstones of her PhD project.
Katie Pickup	Katie is in her first year of her PhD research in Professor Richard Meehan's lab at the Institute for Genetics and Molecular Medicine at the University of Edinburgh, co supervised by Prof. Sari Pennings (Edinburgh) and Prof. Frank Gunn-Moore (St. Andrews). Her project is aimed at understanding fundamental epigenetic processes in embryonic development. These mechanisms are involved in regulating gene expression during the differentiation of stem cells into the range of cell types present in an adult organism, however their exact roles at different stages are unclear. Part of her project will involve

	generating 3D cell models of the early embryo as well as imaging by light sheet microscopy.
Sophia Puliasis	In her second year, Sophia's project is a joint studentship with the James Hutton Institute, supervised by Dr Runxuan Zhang, Dr Piers Hemsley, and Dr Dominika Lewandowska, based in the Information and Computational Sciences group. Her topic is still quite open-ended, but she's currently focusing on the use of alternative proteases for protein digestion in shotgun proteomics and the integration of genomic, transcriptomic, and proteomic data to aid in the identification and discovery of new peptides.
Josh Richards	Josh spent five years at the University of Edinburgh carrying out a BSc (Hons) in Biological Sciences (Immunology), followed by a MScR in Biomedical Sciences. He left the University of Edinburgh after his MScR degree to join Professor Rick Maizels' lab at the University of Glasgow - where he has been working for 18 months prior to starting in Dundee. His studies have mostly been on the mammalian immune system - with an interest on the interface between host and pathogen. His PhD project is asking the question "How is the activity of IL-33 controlled by the speed of its release, and how could this affect obesity?" In this project, he will be working with Dr Henry McSorley and Professor Simon Arthur at the University of Dundee - also with Dr Cecile Benezech at the University of Edinburgh.
Daniel Underwood	Daniel is in his second year and has been looking at the Rab32 GTPase, a small trafficking protein that has been shown to have a role in protection from Salmonella infections. A knockout of this gene in macrophages infected with <i>S. aureus</i> has suggested that it may have a similar role. His project will help to figure out whether this is the case, with positive results offering the possibility of new drug targets for a bacterium that is becoming increasingly drug resistant. Although his research is in macrophage defence mechanisms, his interests have moved from complement responses to TB to the effect of Parkinson's Disease on the respiratory system.
Tamsin Woodman	Tamsin is a first-year PhD student at the University of Aberdeen, working on integrating land-use and ecological models to reconcile food security and biodiversity conservation. The coupled model system she develops during her PhD will be used to explore the future impacts of climate and land-use change on biodiversity. Before her PhD, Tamsin worked as a research assistant in bioinformatics at the John Innes Centre in Norwich.
Anna Zolotariof	Anna is based at the University of St Andrews where she works with Dr Stuart MacNeill and Dr Tracey Gloster to explore the biotechnological potential of GH68 family fructosyltransferases from evolutionary diverse haloarchaea. Her focus is to characterise the enzymes and mechanisms of fructan biosynthesis by haloarchaea with the aim to establish a haloarchaeal platform for the production of fructans

industrially. This could have the potential to reduce reliance on chemical processes in the current fructan production, improve performance, lower operational costs and reduce carbon emissions.

## SYMPOSIUM ACADEMIC HOST & SUPPORT

Dr Rafael Guimaraes da Silva  
(University of St Andrews)

Maria Filippakopoulou  
(EASTBIO Administrator)

Website

<http://www.eastscotbiodtp.ac.uk/eastbio-symposium-2021>

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