



Scottish Crucible Alumni Network

Examples of tangible impacts of undertaking Scottish Crucible programme

March 2018

Dr Jonathan Fraser - Scottish Crucible 2017

Lecturer in Mathematics and Statistics

School of Mathematics and Statistics, University of St Andrews

<http://www.mcs.st-and.ac.uk/jmf32/>

Tel: +44 (0)1334 463754 jmf32@st-andrews.ac.uk



I am a Pure Mathematician and Lecturer at the University of St Andrews. My research interests centre on Fractal Geometry and aspects of Dynamical Systems. I participated in the 2017 Scottish Crucible and was apparently the first Pure Mathematician on the programme! This was an excellent opportunity to meet researchers from across Scotland in a unique and stimulating environment. It also helped me to put my work and role as an academic in a wider context, both within the Scottish scientific landscape and the more general interplay between government, industry and academia. The range of activities and presenters was impressive and the other 29 participants constituted an interesting and diverse group of young, motivated researchers.

During the Crucible programme I began collaborating with two groups of fellow participants, both of which have led on to broader research projects. The first project, which is in collaboration with Alice Toniolo (St Andrews), Lucas Richert (Strathclyde), Yong-Sung Park (Dundee) and Chiara Bernardi (Stirling), is investigating formal analogies between communication breakdown and singularities in fluid dynamics. The second project, together with Heidi Burdett (Heriot-Watt) and Craig McKenzie (Dundee), is using fractal analysis to study growth patterns in maerl beds via high resolution imaging. I can definitively state that both of these projects would never have happened without the Scottish Crucible. The opportunity to collaborate with people outside my research area - and even outside Mathematics - has been valuable and eye-opening to say the least!

Shortly after the 2017 programme ended I was awarded, as PI, a Standard Grant from the EPSRC for a project entitled *Fourier Analytic Techniques in Geometry and Analysis* (fEC £420,153). This project considers the Fourier transform of measures and will investigate links between decay of the Fourier transform and geometric properties of the measure. The utility of the Fourier transform stems from Joseph Fourier's breakthrough idea in the early 1800s that certain functions can be written as an infinite sum of simple 'wave-like functions'. Such a decomposition is now known as a "Fourier series", and has had wide-ranging applications across science. The Fourier transform measures the amplitudes of the waves in the Fourier series, and the decay rate of the Fourier transform is therefore a measure of "smoothness".

Dr Silvia Gratz - Scottish Crucible 2017

Principal Investigator, Gut Health Group
Rowett Institute, University of Aberdeen
<https://www.abdn.ac.uk/rowett/research/>
Tel: +44 (0)1224 438675; S.Gratz@abdn.ac.uk



I am a research fellow at the Rowett Institute with research interests in human nutrition and food toxicology. Participating in the 2017 Scottish Crucible has been a highly inspiring and energising experience allowing us to exchange ideas with other exceptional Cruciblists and to gain insights into the workings of leadership in higher education as well as the policy and industry landscapes.

For my personal career development, the day at the Scottish Parliament was the most insightful and motivating day of the programme. Understanding the role of the different players within the process of informing policy has encouraged me to develop my own stakeholder network with the policy bodies most relevant to my research area of Food Toxicology. I have since established a firm link with Food Standards

Scotland and we are currently organising a joint policy-industry workshop on food contaminants with funding from the BBSRC Agri-Food Catalyst fund. Scottish Crucible has also encouraged me to look further afield and I am now actively exploring opportunities within the EU to shape future Food Safety policies through contributing to the European Food Safety Authority's scientific panels.

Participating in the Scottish Crucible was intense but really motivating and has greatly enhanced my professional development. I am very happy to be a part of the Crucible-Alumni network and look forward to participating and contributing to future activities.

Dr Neeraj Dhaun (*Bean*) - Scottish Crucible 2016

British Heart Foundation Intermediate Clinical Fellow and Honorary Consultant Nephrologist
Centre for Cardiovascular Sciences, University of Edinburgh &
Royal Infirmary of Edinburgh, NHS Lothian
<https://www.cvs.ed.ac.uk/about-cvs>
Tel: 0131 242 6786; Bean.Dhaun@ed.ac.uk



I took part in the 2016 *Scottish Crucible* programme. *Scottish Crucible* provided me with an excellent opportunity to meet and collaborate with fellow researchers from outside the field of medicine and from across Scotland. I very much enjoyed the three, very different, 2-day programmes and the social events organised alongside these! Amongst its many strengths, *Crucible* highlights the areas of importance that we as researchers might have otherwise overlooked. For example, the discussions and exercises around media and public engagement were excellent, led by experts in the field. They helped crystallise my views on these and focus more consciously on this aspect of my research output.

Since attending *Scottish Crucible*, and together with colleagues in the Schools of Physics and Engineering, I have successfully applied for a PhD studentship from the MRC Doctoral Training Programme (*DTP*) in *Precision Medicine*. This 3-year project will explore novel pathways involved in the development of high blood pressure, an important and costly global health problem. The initial conversations we had at *Scottish Crucible* have since brought our individual expertise together to generate an innovative and exciting proposal that will utilise cutting edge technologies to answer important medical questions. Our experiences at *Scottish Crucible* will help communicate this work to a wider audience, thus aiding greater public understanding and furthering research within this area. We also have plans to submit further inter-disciplinary applications for research funding within this and other areas.

The first 2-day event for the 2016 intake of *Crucibilists* was held at the *Royal Society of Edinburgh (RSE)*. During this, the strengths and opportunities available through the *RSE* were highlighted. As a result, I successfully applied for grant funding from the *RSE* to support the first European *ITMAT* meeting which was held in Edinburgh in March 2017. The Institute for Translational Medicine and Therapeutics (*ITMAT*; <http://www.itmat.upenn.edu>) based at the Perelman School of Medicine, University of Pennsylvania, was the first institute for translational medicine in the world, and supports work at the interface of basic and clinical research, focusing on developing new and safer medicines. The Edinburgh meeting brought together a small number of the most eminent UK and US leaders in the field to generate an outstanding one-day meeting. The theme of the meeting was *Big Data and the Development of New Medicines*.

I found *Scottish Crucible* to be both an intensive and rewarding professional development programme. It provides a unique platform to bring together like-minded individuals from diverse disciplines and from across Scotland. It aims to nurture the research leaders of the future who will synergise to bring Scotland to the forefront of inter-disciplinary research.

Dr Louise Horsfall - Scottish Crucible 2015

Senior Lecturer, School of Biological Sciences, University of Edinburgh
Tel: +44 (0)131 650 5363, Louise.Horsfall@ed.ac.uk,
<http://horsfall.bio.ed.ac.uk>, Twitter: @lehorsfall



I attended the Scottish Crucible in 2015, three years after I first joined the University of Edinburgh as a Lecturer in Biotechnology. The Crucible provided me with an extensive network of researchers who all excel in their fields of study, and I still draw on this today. The diversity of disciplines represented at the events led to some weird and wonderful conversations, and taught me that there are overlaps in people's research interests no matter how different their subjects first appear. The training provided gave me the

confidence and skills to take part in a number of radio interviews, public debates and feature articles. I believe the networks, skills and resulting confidence have directly contributed to my success since taking part in the Scottish Crucible programme, examples include:

- Awarded an EPSRC Fellowship: Biologically Upcycling Metals, £1.3M
- Became an Associate Director of the highly interdisciplinary Centre for Science at Extreme Conditions, University of Edinburgh
- Recipient of the University of Edinburgh's Chancellor's Rising Star Award 2015, and the School of Biological Sciences 2015 Recognising Excellence Award for Public Engagement
- Participated in debates, hosted by the Royal Society of Biology and the Biochemical Society, at the Glasgow Science Festival event and at the Royal Institution
- Participated in live interviews on Future Technologies for the BBC Radio 4 Today Show and BBC Radio Ulster Talkback.
- Elected to the Royal Society of Edinburgh's Young Academy of Scotland
- Began an art-science project with Burton Nitta entitled '*Landscape Within*', supported by a Wellcome Trust Arts Award, which has been exhibited at the V&A

Dr Erik Gauger- Scottish Crucible 2015

Royal Society of Edinburgh/Scottish Government Research Fellow,
Assistant Professor, Institute of Photonics and Quantum Sciences, Heriot-Watt University
Tel: +44 (0)131451 3345, e.gauger@hw.ac.uk,
<http://qtt.eps.hw.ac.uk/>



Participating in the 2015 Scottish Crucible has been a truly enriching and inspiring experience. Following the Crucible, I was part of a team being award funding for the Crucible project “Play to Promote”, which involved mentoring a student group at Abertay for developing a science outreach computer game. This was not only great fun but has also resulted in a visually stunning puzzling game “Orbs” letting the player experience some of the strangeness governing the quantum world.

Above all, Crucible has given me confidence and encouraged me to keep pursuing interests along cross- and interdisciplinary lines. I am sure it will continue to have influence and a positive impact on my research and career trajectory. To list a few specific recent successes and activities with relevant links to the Scottish Crucible:

- I am a Co-I on a major multi-institutional EPSRC grant worth over £1m with the aim of developing quantum sensing approaches to ultimately become applicable to biological cell membrane imaging. Incidentally, this project also includes my experimental colleague and 2010 Cruciblist Dr Jonathan Leach.
- building on the outcome of the Crucible project Play to Promote, I have run an outreach event at the Scottish Festival of Physics, and will be returning with Orbs to the Family Fun Day at the Edinburgh International Science Festival.
- since my Crucible participation, I have had input into four newspaper and magazine articles ranging from the scientific to the popular press (Physics World, ArsTechnica, Swiss Sonntags-Zeitung) — in three cases to give an expert opinion and in case covering my own research.

Dr Marisa Wilson - Scottish Crucible 2015

Chancellor's Fellow and Lecturer, School of GeoSciences,
Institute of Geography, University of Edinburgh
Tel: +44 (0) 131 651 4634, Email: Marisa.Wilson@ed.ac.uk
<https://www.geos.ed.ac.uk/geosciences/people/mwilso18>



I am a Chancellor's Fellow in Human Geography at the School of GeoSciences, University of Edinburgh, and Research associate in Human Geography at the University of the West Indies, St Augustine, Trinidad and Tobago. The different strands of my research are bound by two themes: the socialities of alternative food networks and, more recently, political economic and cultural factors leading to dietary and food systems change. I seek to understand and explain everyday barriers and opportunities for more equitable, healthy and sustainable food systems, particularly (though not exclusively) in post-colonial contexts.

I took part in Scottish Crucible in 2015. The programme opened the way for an ongoing interdisciplinary collaboration between myself and colleagues from Abertay and St Andrews Universities to develop a research programme that explores how the sugar industry changed Scottish society and diets. Our initial funding from the Crucible centred on establishing key contacts with the museum and heritage sectors in Greenock (the McLean Museum and the Inverclyde Heritage Hub). The Scottish Crucible funding leveraged a successful British Academy/Leverhulme Small Grant project, entitled: Visualising Sugaropolis: Interdisciplinary Recreations of Greenock's Transnational Past. This project, which will commence in late March 2018, will use participatory and co-design methodologies to visualize and re-imagine how diverse agents involved in Greenock's sugar industry inhabited transnational spaces. Preliminary archival research will inform a series of activities with school children, university students and museum visitors, using methodological experimentation such as taste interviews and the co-design of story maps, game prototypes and virtual landscapes. The purpose of these activities will be to enable the researchers to assess which methodological tools best convey complex geographies of meaning, power and exclusion and the multiple, creative and unfinished nature of such capitalist encounters. By creating visual narratives about the role of sugar in Greenock's past, the project seeks to develop inclusive and accessible explanations for sugar's role in Scotland's history, with direct relevance to contemporary concerns about health inequalities in Scotland.

Dr John Connolly - Scottish Crucible 2014

Reader in Public Policy, School of Public Policy,
School of Media, Culture and Society, University of the West of Scotland, Paisley Campus
Tel: +44 (0) 141 848 3667, Email: John.Connolly@uws.ac.uk
https://www.researchgate.net/profile/John_Connolly24/publications



I was fortunate to participate in the Scottish Crucible in 2014 and the thing that I will always remember is that those leading the programme and the facilitators of the sessions were very keen to get the cohort to recognise that they were 'important'. There is no doubt that the Crucible did wonders for my confidence! I was always confident in my academic ability but probably less so about 'research leadership' and to understand the ways to get out of the comfort zone from my own discipline – public policy/political

science. However, I would say that the Crucible has been very important for my career to date in the sense that it gave me a 'go for it' mind-set. When I participated in the Crucible I was a Lecturer and my involvement in the programme was on my CV when I applied, and then secured, a Senior Lectureship in 2015. I'm now a Reader in Public Policy.

Since 2014 I have published several journal articles in high impact journals and published a critically acclaimed single-authored book *The Politics and Crisis Management of Animal Health Security*. I'm also currently part of a major and prestigious interdisciplinary ESRC Brexit study (*The Impact of Brexit on UK Fisheries Policy*). I have several other funded projects with multiple partners that relate to public health, evaluation, public sector reform and health security governance. In short, I work across disciplines and the Crucible has given me the confidence to be a leader amongst my networks. More recently, I was appointed as Associate Editor of the *Contemporary Social Science* journal, which is highly respected flagship academic journal of the Academy of Social Sciences. The journal publishes peer-reviewed articles based on research that cross-cuts disciplines across the social sciences. In short, the Crucible helped to realise the opportunities to work with diverse academic teams (and beyond) and to make my aspirations become a reality. It is four years since I was a 'Cruciblee' and it's got to be *the* best academic development programme I have been involved in.

Prof Frederike van Wijck - Scottish Crucible 2009

Professor in Neurological Rehabilitation
School of Health and Life Sciences; Glasgow Caledonian University (GCU)

Email: Frederike.vanWijck@gcu.ac.uk

[http://researchonline.gcu.ac.uk/portal/en/persons/frederike-van-wijck\(ec0c4c7c-6e1e-4fd2-8dc2-cfc9ff3fac8b\).html](http://researchonline.gcu.ac.uk/portal/en/persons/frederike-van-wijck(ec0c4c7c-6e1e-4fd2-8dc2-cfc9ff3fac8b).html)



I was fortunate to obtain a place on the very first Scottish Crucible in 2009. To have an opportunity to interact with a wonderful group of curious, committed and engaged individuals from a wide range of academic backgrounds, in a series of labs orchestrated by leading experts, was an extraordinary privilege. This really was a crucible: throw in a handful of diverse elements, spark off some blue skies thinking, and the result is a transformation.

Having participated in the Scottish Crucible certainly transformed my trajectory. As a movement scientist, I had always had an affinity for working with people from different backgrounds, but the Crucible experience highlighted even more the value of interdisciplinary research, and the importance of communicating this widely - and meaningfully - to diverse audiences. Importantly, Scottish Crucible did not just provide an opportunity to develop novel ideas and networks - it also offered real exposure and training on how to engage with a range of diverse audiences.

The impact of the Scottish Crucible can be seen throughout my work, as I have continued to benefit from this experience. At GCU, where I now co-lead the cross-disciplinary *Living with stroke and other long term neurological conditions* research group, our aim is to make a positive impact on the lives of people affected by these complex and often disabling conditions through research. It is only by engaging with health and social care service users and providers, practitioners and policy makers, as well as other researchers that we can design better interventions and support strategies that make a real difference.

Scottish Crucible Directorate
Centre for Academic Leadership and Development
Heriot-Watt University
Email: ScottishCrucible@hw.ac.uk Tel: +44 (0)131 451 3789
<https://scottishcrucible.org.uk/>