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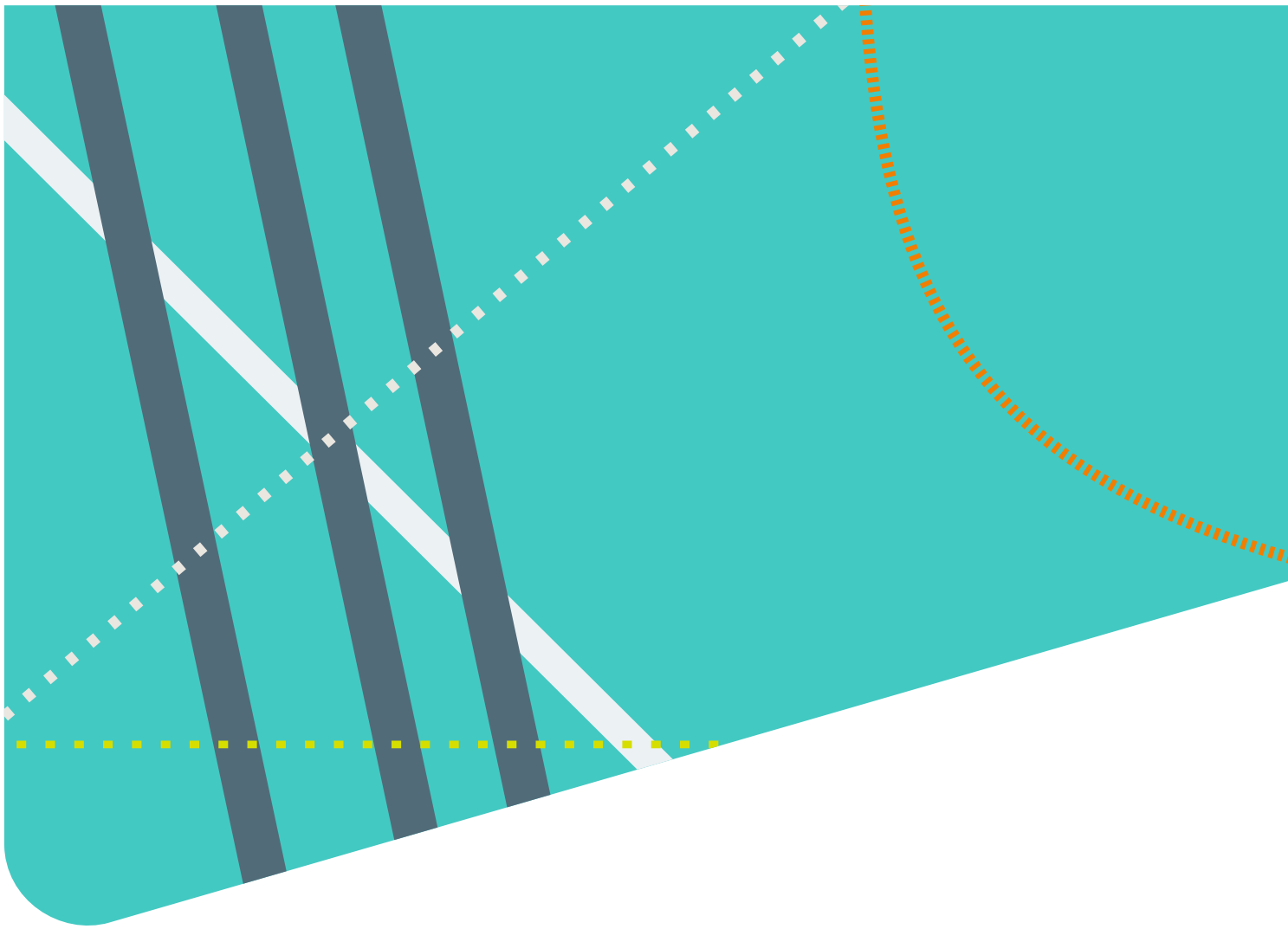


Illustration inspired by the work of John Maynard Keynes

BETTER SCIENCE THROUGH BETTER DATA 2019 PROGRAMME

ADVANCING DISCOVERY

6th November 2019 | 09:00 to 17:00

Wellcome Collection, London
#scidata19

wellcome

In partnership with Springer Nature

Introduction

Dr Varsha Khodiyar

Data Curation Manager, Springer Nature

Welcome to the sixth annual Better Science Through Better Data conference.

When this conference was first established in 2014, the idea of sharing and facilitating access to research data was considered a fringe idea, and in some quarters as quite radical. We've come a long way in a short time, and in 2019 open science and data sharing has become truly main-stream.

At the same time, in the wider world outside of research and academia, we see many examples of mistrust in science and scientific findings. There is a sense of urgency about the need for transparency and independent validation of research findings, especially when considering how best to inspire political and societal action on some of the larger and global challenges currently facing humanity. Keeping these considerations in mind we have built this year's programme around two main themes, digital footprints and open science in practice.

Every time we go online, we leave digital footprints. Understanding how to use these important and illuminating datasets on human behaviour, in a responsible and ethical manner, is a vital issue, which will be addressed in our afternoon sessions. At the same time, curating a strong digital presence as a researcher can be essential for building a personal brand for robust and sound science. Cultivating a digital footprint for your reputation as a researcher is the focus of our opening keynote.

As always, a highlight of the conference is hearing individual research data sharing stories. We are thrilled to have lined up a variety of researchers at various stages in their career, to speak about their personal experiences via keynotes and lightning talks. However, we know that many researchers need better support to share and manage their data. Over the past few years we have seen many funders worldwide develop research data policies, and so in a new session for this year, we've invited funders, and other providers of research infrastructure, to give an insight into what they are doing to support their researchers to manage and share data.

Better Science Through Better Data is again brought to you through a partnership between Springer Nature, publishers of the Nature Research journal Scientific Data, and the Wellcome Trust, a global biomedical research charity that supports thousands of researchers. We're grateful to Wellcome for their continued support, and for allowing us to host the event at the Wellcome Collection.

I hope you leave the conference inspired and encouraged, and with a clear vision of what you can do on a personal level to share and manage your research data with a view to practising better science.

Dr Varsha Khodiyar

Event Schedule

Registration and coffee 09:00

Welcome 09:30
Varsha Khodiyar, Springer Nature

Keynote #1: Your digital presence 09:45
Shelley Stall, Senior Director, Data Leadership, American Geophysical Union (AGU)

Keynote #2: How I learned to stop worrying and love Open Science 10:30
Tomas Knapen, Assistant Professor, Vrije Universiteit Amsterdam

Coffee break 11:00

Putting our money where our mouth is: How funders are backing up data policy with practical support 11:30

- **Maximising the value of research data – current priorities for Wellcome**
  David Carr, Wellcome Trust
- **FAIR and Open data at the European Commission**
  Konstantinos Repanas, European Commission
- **Enabling a national environment for improved data sharing – initiatives from the HRB**
  Aileen Sheehy, Irish Health Research Board
- **Building a data sharing culture at Cancer Research UK**
  Paola Quattroni, Cancer Research UK
- **Policy into practice (TL;DR Jisc - you don't need to know who we are,but these are some of the things we do [for you])**
  Paul Stokes, Jisc

Lunch 12:30

Panel discussion: Who's afraid of data misuse? 13:15
Grace Baynes, Springer Nature (moderator)
Panellists:

- Yves-Alexandre de Montjoye, Imperial College London
- Sabina Leonelli, University of Exeter (remote participation)
- Shelley Stall, Data Leadership, American Geophysical Union (AGU)

Event Schedule

Lightning talks: 7 data sharing stories **14:15**

- The citation advantage of linking publications to research data
  Barbara McGillivray, The Alan Turing Institute and University of Cambridge
- Bibliographic Data Science: Open Ecosystems for Scalable Collaboration
  Leo Lahti, University of Turku
- Reproducible Research - Why and How?
  Yasemin Turkyilmaz-van der Velden, TU Delft
- Research Data Management Using Open Source off the shelf Tools
  Graham Addis, Nuffield Department of Experimental Medicine
- X chromosome genetic data in a Spanish children cohort, dataset description and analysis pipeline
  Augusto Anguita-Ruiz, University of Granada
- Participatory Science to Empower: Building a Citizen Science Platfor
  Georgia Aitkenhead, The Alan Turing Institute
- 'Open Science' opens doors: How #Scidata18 helped me unlock career opportunities
  Connie Clare, University of Nottingham

Coffee break **15:15**

Keynote #3: Getting Big Data: Social scientists must strive to be autonomous from corporate charity **15:40**

David Stillwell, Lecturer in Big Data Analytics and Quantitative Social Science, Judge Business School, University of Cambridge

Keynote #4: Integrating Open Science in the Humanities: the Case of Computational History **16:25**

Mikko Tolonen, Assistant Professor, Faculty of Arts, University of Helsinki

Conference closing remarks **16:55**

Varsha Khodiyar, Springer Nature

Networking drinks sponsored by Springer Nature at The Parcel Yard **17:30**

Speaker Biographies

Varsha Khodiyar

Data Curation Manager, *Springer Nature*

Dr Varsha Khodiyar is part of the Research Data team working on research data publishing initiatives at Springer Nature. Varsha is Data Curation Editor for the journal *Scientific Data*, and leads the team of curators working on Springer Nature's Research Data Support service. Varsha contributes to the design, development and delivery of Springer Nature's research data training workshops, and is responsible for the recommended repository list used at Springer Nature. Varsha began her career in curation with the Human Gene Nomenclature Committee, assigning official names to human genes for the Human Genome Project. After completion of the Human Genome Project, she joined the Gene Ontology project, distilling findings from the literature into machine readable data. During this time she also developed and taught an MSc module on data curation for University College London. Varsha's career in publishing began at the journal *F1000Research* where she worked on research data initiatives, prior to joining *Scientific Data.*

Shelley Stall

Senior Director, Data Leadership, *American Geophysical Union (AGU)*

Shelley Stall is the Senior Director for the American Geophysical Union's Data Leadership Program. She works with AGU's members, their organizations, and the broader research community to improve data and digital object practices with the ultimate goal of elevating how research data is managed and valued. Better data management results in better science. Shelley's diverse experience working as a program and project manager, software architect, database architect, performance and optimization analyst, data product provider, and data integration architect for international communities, both non-profit and commercial, provides her with a core capability to guide development of practical and sustainable data policies and practices ready for adoption and adapting by the broad research community.

Tomas Knapen

Assistant Professor, *Vrije Universiteit Amsterdam*

Tomas is a cognitive neuroscientist whose research focuses on the role sensory topographies (visual retinotopy, auditory tonotopy and bodily somatotopy) play in the detailed organization of the human brain and cognition. For this work, Tomas uses state of the art 7-Tesla MRI techniques. Early-career experiences where he 'failed to replicate' previous findings have impressed upon him the need to make research reproducible from top to bottom. Because of this, his lab uses only open methods and puts all their data and methods online. Having invested in these methods, Tomas is convinced that, in the end, it is not a burden to perform open science, rather it provides researchers with great opportunities for ground-breaking science.

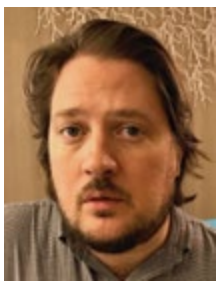
Speaker Biographies

David Stillwell

Lecturer in Big Data Analytics and Quantitative Social Science, Judge Business School, *University of Cambridge*

David is a Lecturer in Big Data Analytics and Quantitative Social Science at Cambridge University's Judge Business School. David's research uses big data to understand psychology. He has published papers using social media data from millions of consenting individuals to show that the computer can predict a user's personality as accurately as their spouse can. This research has important public policy implications. How should consumers' data be used to target them? Should regulators step in, and if so how? David has spoken at workshops at the EU Parliament and to UK government regulators.

Mikko Tolonen



Assistant Professor, Faculty of Arts, *University of Helsinki*

Mikko Tolonen is an assistant professor of Digital Humanities at the University of Helsinki. He is the PI of Helsinki Computational History Group (COMHIS). In 2015-17 he also worked in the National Library of Finland on digitized newspapers as professor of research on digital resources. He is the chair of Digital Humanities in the Nordic Countries (DHN). His current main research focus is on an integrated study of early modern public discourse and knowledge production that combines bibliographic metadata and full-text sources. In 2016, he was awarded an Open Science and Research Award by the Finnish Ministry of Education and Culture.

Grace Baynes

VP, Research Data & New Product Development, *Magazines & Research Services, Springer Nature*

Grace is responsible for Springer Nature's approach to research data, including advocacy for open data and good data practice; journal data policies; and data publishing including the journal Scientific Data. Her new product development responsibilities are currently focused on developing research data services and solutions for researchers, institutions and funding organizations, and establishing Springer Nature's new product development approach for researcher services. Grace has spent twenty years in publishing, sixteen of those working in open research, joining open access publisher BMC in 2003, and since then in roles at Nature Publishing Group and now Springer Nature.

Panel Discussion

Who's afraid of data misuse?

Grace Baynes, Springer Nature (moderator); Yves-Alexandre de Montjoye, Imperial College London; Sabina Leonelli, University of Exeter; Shelley Stall, Data Leadership, American Geophysical Union (panellists)

The ethics and privacy consideration around sharing of data openly are not trivial in the context of personal data, the internet of Things, machine learning and AI. At the same time, researchers have concerns about "misuse of data" for reasons that extend well beyond this including lack of credit, being scooped or losing competitive advantage, and others finding errors in their data. In the 2018 State of Open Data, concerns about "data misuse" rank higher than any other barrier to sharing data. Drawing on the results of the 2019 survey, this panel discussion will explore what concerns really researchers have about "data misuse" and what can be done to allay them. It will also explore if we really should be concerned about "data misuse" in the context of computational privacy.

Lightning Talk Abstracts

The citation advantage of linking publications to research data

Barbara McGillivray, The Alan Turing Institute and University of Cambridge

Journal policies have been increasingly encouraging or mandating authors to provide data availability statements, in an effort towards open and reproducible research. A strong uptake of data availability statements in recent literature has followed these policies. Nevertheless, it is still unclear whether these statements actually contain well-formed links to data, for example via a URL or permanent identifier, and whether they add value to the research articles they are included in. In this talk I will present research done in collaboration with Giovanni Colavizza, Iain Hrynaszkiewicz, Isla Staden, and Kirstie Whitaker (arxiv.org/abs/1907.02565). We collected 531,889 journal articles published by PLOS and BMC from the PubMed Open Access collection, we automatically categorized their data availability statements and we analysed how different groups of statements affect the citations of the articles. Crucially, we found that statements containing a link to a repository are still very few. On the other hand, when they do appear, these statements provide a citation advantage to the articles they are part of, which is encouraging, and shows the positive effect of sharing data for both publishers and authors.Consent for data archiving in end of life care research: reflections on two qualitative studies

Lightning Talk Abstracts

Bibliographic Data Science: Open Ecosystems for Scalable Collaboration

Leo Lahti, University of Turku

Bibliographic data science investigates patterns in knowledge production over time and geography. Despite the availability of massive historical library catalogues that cover millions of documents across multiple centuries, the lack of reliable and standardized digital records has formed a key bottleneck for large-scale quantitative research as variations in languages and naming conventions, spelling errors, and biases in data collection can have significant influence on qualitative conclusions and need to be addressed in a systematic and transparent way. Hence, we have implemented a dedicated algorithmic ecosystem to harmonize and integrate some of the most comprehensive collections of bibliographic data from international memory organizations. Such algorithmic approaches can help to realize the full research potential of these data resources in computational history. By combining harmonized research data with the latest techniques of modern data analysis we can model the emergence and spread of Western knowledge production at an entirely new quantitative resolution and scale. Open and collaborative development of such computational ecosystems can provide tangible solutions to improve the reliability and efficiency of research and mediate the accumulation of our collective understanding of the data and interpretation, introducing new research methods in intellectual history.

Reproducible Research - Why and How?

Yasemin Turkyilmaz-van der Velden, TU Delft

In a recent Nature survey, 90 percent of the participating 1,576 researchers told that there is a reproducibility crisis in science. According to this survey, up to 85 percent of the researchers have failed to reproduce someone else's results while up to 65 percent of the researchers have failed to reproduce their own results. Among the top factors contributing to irreproducible research, "methods, code unavailable" and "raw data not available from original lab" were reported. Research reproducibility is certainly gaining more attention as can be seen in changes in funders' and publishers' policies regarding data availability and the emergence of the FAIR data principles. Although these developments will be covered in this talk, the main focus will be placed on the good practices for research reproducibility by highlighting their time and cost-efficiency and contribution to better visibility, recognition and impact of research efforts. For this, tools and good practices for research reproducibility during all stages of the research life cycle for the collection/generation, versioning, documentation, licensing and publication of research data, code and protocols will be explained.

Lightning Talk Abstracts

Research Data Management Using Open Source off the shelf Tools

Graham Addis, ***Nuffield Department of Experimental Medicine***

In the scientific community, the focus has always been on publishing papers. Traditional notebooks used to provide a complete and coherent research record. There was little need for more sophisticated management of the data, and meta-data, that led to publication. An explosion in the types and quantity of research data, large collaborative projects, and a drive for data re-use, mean paper notebooks are no longer a viable option. Bespoke Electronic Laboratory Notebook solutions, often targeted at specific branches of the scientific community, have had limited uptake. In contrast, analogous tools are universally accepted within the software development community. These tools support collaborative projects that routinely span multiple continents and include thousands of contributors mandating large-scale management of data and extensive collaboration. Over half a century of development, and competition, within the software development community has led to a rich set of free, stable, and mature tools. For the last two years, I have been working within a project which has generated approximately 30 Terabytes of research data. During this time I have found that certain Open Source, Off The Shelf, Software Configuration Management solutions can readily be used to organise and curate research data effectively.

X chromosome genetic data in a Spanish children cohort, dataset description and analysis pipeline

Augusto Anguita-Ruiz, University of Granada

X chromosome genetic variation has been proposed as a potential source of missing heritability for many complex diseases, including obesity. Currently, there is a lack of public available genetic datasets incorporating X chromosome genotype data. Although several X chromosome-specific statistics have been developed, there is also a lack of readily available implementations for routine analysis. Here, we aimed: (1) to make public and describe a dataset incorporating phenotype and X chromosome genotype data from a cohort of 915 normal-weight, overweight and obese children, and (2) to deeply describe a whole implementation of the special X chromosome analytic process in genetics. Datasets and pipelines like this are crucial to get familiar with the steps in which X chromosome requires special attention and may raise awareness of the importance of this genomic region.

Lightning Talk Abstracts

Participatory Science to Empower: Building a Citizen Science Platform

Georgia Aitkenhead, The Alan Turing Institute

This talk will present a new methodology and offer a test case for participatory, open science. It will share early findings from an innovative project: co-designing a citizen science platform to investigate sensory processing and autism with members of the affected community. The project is a collaboration between the autism research charity, Autistica, and The Alan Turing Institute. This talk will explore strategies of collaboration with multiple stakeholder groups, including industry, academia, and NGOs, and will present the integration of a back-end platform used by The Open Humans Foundation, which specialises in open science and data agency online. It will explore how current platforms for open building and working can support participatory research methods to engage and empower research communities, and rebalance power asymmetries between scientists and research participants.

'Open Science' opens doors: How #Scidata18 helped me unlock career opportunities

Connie Clare, University of Nottingham

As a winner of last year's Early Career Researcher writing competition, I would like to share my story of how attending #Scidata18 enabled me to unlock exciting career opportunities within the field of Open Science. After networking with TU Delft Data Stewardship Coordinator, Marta Teperek, at #Scidata18 I undertook a doctoral internship to learn how building a community of Data Champions can drive uptake of proper research data management within academic institutions. My project involved interviewing Data Champions and writing articles to showcase their efforts by publishing them on the Open Working blog. I also developed a 'toolkit'; a resource that informs other institutions how to successfully implement a community-based model. As an editor and author of 'Engaging researchers with research data: The cookbook', I participated in a collaborative writing exercise during a three-day book sprint. My book sprint story was published on the RDA blog. I hope to share my internship experience with an international audience at a conference held at the University of Vienna in September and the RDA's 14th Plenary in Helsinki in October. As the future of science, Early Career Researchers have an opportunity to make a difference and drive a culture change towards Open Science.

Programme Committee

Varsha Khodiyar – Programme Chair

Data Curation Manager, Springer Nature

Dr Varsha Khodiyar is part of the Research Data team working on research data publishing initiatives at Springer Nature. Varsha is Data Curation Editor for the journal *Scientific Data*, and leads the team of curators working on Springer Nature's Research Data Support service. Varsha contributes to the design, development and delivery of Springer Nature's research data training workshops, and is responsible for the recommended repository list used at Springer Nature.

David Carr

Programme Manager – Open Research, The Wellcome Trust

David Carr is Programme Manager for Open Research at the Wellcome Trust, where he is responsible for developing and taking forward a range of activities to maximise the availability and re-use of research outputs – including publications, datasets, software and materials. Previously, David worked as a Policy Adviser at Wellcome – leading on work to develop and communicate policy in several areas – including data sharing, open access publishing, biosecurity and genomics. In 2001, David worked on secondment at the World Health Organisation in Geneva, where he assisted in the preparation of the Advisory Committee on Health Research (ACHR) report on Genomics and World Health. Prior to joining the Trust in 1999, David worked as a project researcher at a scientific consultancy firm in Cambridge. He has undergraduate and master's degrees in genetics from the University of Cambridge.

Dr Helena Cousijn

Community Engagement and Communications Director, DataCite

Helena Cousijn works as Community Engagement and Communications Director for DataCite, a leading global non-profit organisation that provides persistent identifiers (DOIs) for research data. She is responsible for all DataCite's outreach activities. She's committed to DataCite's mission of enabling data sharing and reuse and is especially passionate about data citation. Before joining DataCite, Helena worked as Senior Product Manager for Research Data Management Solutions at Elsevier. She holds a DPhil in Neuroscience from the University of Oxford. Helena is based in Amsterdam, the Netherlands.setting up round the world, and is currently helping UKDS to scale up for managing new and novel forms of data.

Programme Committee

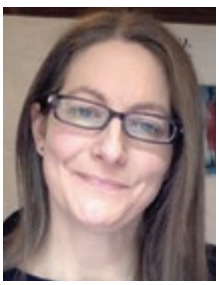
Dr Kristie Whitaker

Research Fellow, The Alan Turing Institute

Kirstie Whitaker is a research fellow at the Alan Turing Institute and senior research associate in the Department of Psychiatry at the University of Cambridge. Her work covers a broad range of interests and methods, but the driving principle is to improve the lives of people with mental health disorders. Dr Whitaker uses magnetic resonance imaging to study child and adolescent brain development and participatory citizen science to educate non-autistic people about how they can better support autistic friends and colleagues. She is the lead developer of "The Turing Way", an openly developed educational resource to enable more reproducible data science. Kirstie is a passionate advocate for making science "open for all" by promoting equity and inclusion for people from diverse backgrounds, and by changing the academic incentive structure to reward collaborative working. She is the chair of the Turing Institute's Ethics Advisory Group, a Fulbright scholarship alumna and was a 2016/17 Mozilla Fellow for Science. Kirstie was named, with her collaborator Petra Vertes, as a 2016 Global Thinker by Foreign Policy magazine.

Dr Emma Ganley

Independent Data and Editorial Consultant



Emma Ganley is an independent consultant with many years of experience in both Editorial and Data Publishing. Until very recently Emma was Chief Editor of PLOS Biology. During her time at PLOS Emma was one of the team to define and implement the updated PLOS Data policy. She led the PLOS data program for many years providing advice both within the organisation and externally to funders and other publishers about data policy implementation. Initially trained as a scientist with a PhD in Molecular Biology from the MRC-LMB in Cambridge followed by postdoctoral research at UC Berkeley, Emma moved into science publishing joining PLOS Biology in 2005. Emma re-joined PLOS in 2012 after some years in New York where she was Executive Editor of the Journal of Cell Biology at Rockefeller University Press. Emma has long been involved in efforts to ensure the highest level of scientific integrity via data presentation and making data available alongside publications; she has been involved in initiatives to visualise original microscopy image data first with the development of the JCB DataViewer and subsequently as a Project Manager for the Open Microscopy Environment. She oversaw many projects at PLOS related to Open Science, Open Data, publishing ethics and mechanisms to improve research assessment. Emma is currently Co-Chair of the Advisory Board for FAIRsharing.org, and an active participant in various Force11 and RDA working groups.

Programme Committee

Yasemin Turkyilmaz-van der Velden

Data Steward - Faulty of Mechanical, Maritime and Materials Engineering, TU Delft

Yasemin Turkyilmaz-van der Velden works as the Data Steward at the TU Delft Faculty of Mechanical, Maritime and Materials Engineering. She obtained her MSc degree at Radboud University Nijmegen from the program 'Molecular Mechanisms of Disease'. Then, she did her PhD at the Molecular Genetics Department of Erasmus MC Rotterdam where she studied UV-induced DNA damage repair using proteomics and live cell imaging approaches. During her academic journey, she daily managed data during acquisition, analysis, and publication stages and therefore she has a good understanding of researchers' perspective and experiences about data management. As a Data Steward, she provides customized and discipline-specific data management support to researchers at every stage of the research lifecycle, with the eventual goal of achieving a cultural change in Scheresearch data management at daily practice. She is also the Community Manager of TU Delft's Data Champions initiative.

Dr Fiona Reddington

Head of Population, Prevention & Behavioural Research Funding, Cancer Research UK

Fiona obtained her BSc (Pharmacology) at University College Dublin and her PhD (Neurophysiology) from Kings College London (UMDS). From there, Fiona joined the NHS as a project manager and went on to manage a Cancer Centre at University College London. Management roles at a national cancer network and the National Cancer Research Institute Informatics Initiative followed where Fiona was part of the team to win the inaugural Times Higher Research project of the Year award. Fiona joined Cancer Research UK in 2008. She has responsibility for the Cancer Research UK research portfolio in the areas of population research, prevention and early diagnosis. She represents the charity on matters relating to data sharing and the management boards of a number of external initiatives such as the UK Prevention Research Partnership and UKCRC Public Health Centres of Excellence.

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ADVANCING DISCOVERY

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*arxiv.org/abs/1907.02565

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Research data solutions for researchers

Springer Nature is committed to supporting researchers in sharing research data and in receiving the credit you deserve. We have developed the following products and services to make sharing your research data faster, easier and more impactful.

Research data helpdesk

Our team of research data editors gives free advice on how and where to share your research data, according to your specific research community. We always respond to your enquiry within two working days.

go.nature.com/helpdesk

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Knowing how to make your data useful, findable and get the credit you deserve takes a lot of time and effort. Our expert research data editors will organise, curate and deposit your files in a useful and accessible way. We make your data simpler to understand, easier to find by relevant researchers in your field of study and more shareable for just €300/£265/US$340.

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Research data publishing

Nature Research's *Scientific Data* and *BMC Research Notes* are two of our open access, online-only journals that publish article summaries of scientifically valuable datasets.

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Research data community

Our growing community of advocates for the sharing of research data is a great place to interact with other researchers, read the latest information on research data and help us make research data sharing the new norm.

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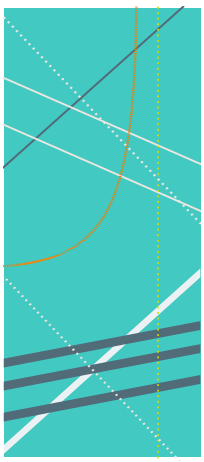

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John Maynard Keynes (1883–1946)
John Maynard Keynes was a British economist who revolutionised the theory and practice of macroeconomics, reformed economics and had a profound influence on economic policy. His work built upon the causes of the business cycle, and challenged established neoclassical economic ideas. This illust ration represents the Keynesian model that he created as a result of the Great Depression. It showed that in a monetary economy it is possible to have periods of high unemployment unless governments use active monetary and fiscal policy to stimulate aggregate demand.

Springer Nature advances discovery by publishing robust and insightful research, supporting the development of new areas of knowledge and making ideas and information accessible around the world.

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