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R&D Forum:

Accelerating AI Solutions for Biomedical Engineering Biology with AI-ready data

Event hosted by the UK Government's Science & Technology Network, in partnership with the Department for Science, Innovation and Technology and the University of Edinburgh, and supported by the Scottish Government.

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Aaron Payne

Head of International Policy, Engineering Biology, Department for Science, Innovation and Technology

Aaron shapes DSIT's international strategy for engineering biology, and led the preparations for this symposium. He specialises in the intersection between international relations and technology policy. In previous roles he strengthened the government's support offer to universities with security-sensitive research programmes, authored a Cabinet Office review of the GREAT Campaign's communications strategy, and worked on the counter-disinformation response to the 2018 Salisbury poisoning. He started his career at the Daily Mail newspaper, and retains a keen interest in strategic communications.

Amrik Basran

Chief Scientific Officer, ExpressionEdits Ltd

Dr Amrik Basran is Chief Scientific Officer at ExpressionEdits (Cambridge, UK), where he leads the translation of the company's AI-enabled gene intronization engine to develop recombinant therapeutic proteins for their internal pipeline. With over two decades experience in biologic drug discovery and development, he has held senior R&D leadership roles across biotech and pharma, including Domantis, Avacta and GSK, spanning antibody modalities, engineered protein scaffolds and therapeutic proteins, taking assets from concept to clinic. He earned a PhD in biochemistry/protein engineering from the University of Leicester.

Chris P Barnes

Head of Science for AI and Professor of Systems and Synthetic Biology, National Physical Laboratory

Chris Barnes is Head of Science for AI at the National Physical Laboratory (NPL), where he leads strategic research into trustworthy AI, AI for science and AI assurance. His work supports the development of reliable, transparent, and fit-for-purpose AI systems, particularly in critical sectors such as healthcare and manufacturing. He also holds a professorship in Systems and Synthetic Biology at University College London (UCL), where his academic research focuses on AI, computational modelling, engineering biology, and biomedical applications.

David Riglar

Assistant Professor in Engineering Biology, Imperial College London and the Francis Crick Institute

David Riglar's research uses a combination of synthetic biology, imaging and sequencing based approaches to better understand the function of the gut and its resident microbiota during health and disease. This knowledge is driving development of innovative technologies, such as living engineered probiotics, to probe and control the gut environment. David is an Assistant Professor in Engineering Biology in the Department of Infectious Disease at Imperial College London and a Satellite Group Leader at the Francis Crick Institute. His research is funded by a Sir Henry Dale Research Fellowship from Wellcome Trust and Royal Society, and grants from BBSRC and Rosetrees Trust.

Debora Marks

Professor, Harvard Medical School

Dr. Debora Marks is a computational biologist, with focus on developing new AI methods to accelerate biotherapeutic and sustainability discovery. Her lab developed novel machine learning methods specifically for biological data with an emphasis on interpretability and causality. Marks' lab was able to predict 3-dimensional protein structures from sequence alone, predict fitness effects of human genetic variation, and make robust generative models for protein, antibody, and deimmunization and vaccine designs. Marks has received numerous awards including an NIH Director's Transformative award for antibody design (2020). Marks leads a multi-institutional team funded by CEPI for Predictive Modeling for Vaccine Escape.

Diego Oyarzún

Professor of Computational Biology & Head of ML Engineering, University of Edinburgh, Generative Biology Institute, Ellison Institute of Technology Oxford

Prof Oyarzún works at the interface of biology and computation, specializing in biological sequence optimization using AI and machine learning. His portfolio includes applications in gene therapy, sustainable manufacturing, and environmental remediation. Prof Oyarzún has led multiple initiatives at the interface of biology and AI, including the £8M UKRI Centre for Doctoral Training in Biomedical Artificial Intelligence, and has had roles with global multi-stakeholder bodies (World Economic Forum, G20, OECD). In his current role at Generative Biology Institute, he leads the AI/ML strategy, infrastructure, and innovation in Engineering Biology across the organisation.

Emmanuelle Astoul

Head of Translation,
Wellcome Sanger Institute

Emmanuelle leads the Sanger Institute's translation function, striving to apply the extraordinary scientific outputs of this genomic research powerhouse towards new products and services that benefit society.

Her expertise and area of interest include biodata-driven ventures and cross-sectors partnerships at the interface of tech and life sciences to power predictive biology.

With an interest in sharing good practices in the translation of biodata and AI, and building networks and communities, Emmanuelle has founded the Commercialisation of Genomic & Biodata Courses.

Fergal Martin

Lead for Ensembl Genome Annotation,
EMBL-EBI

Fergal has over two decades of experience in the field of genomics. His team produces genome annotations for the Ensembl project, used by hundreds of thousands of researchers per year. He is a leader in biodiversity and human genomics and serves as Head of the GENCODE consortium, overseeing the development of the human and mouse reference gene sets. His primary interests are in building new systems for genome annotation through deep learning, provision of AI-ready datasets and the application of agentic AI to workflows.

Florence Chaverneff

Senior Science & Innovation Officer,
UK Science and Technology Network

Florence Chaverneff joined the UK Science & Technology Network at the British Consulate in San Francisco as Senior Science & Innovation Officer in 2021. In this role, she identifies and creates opportunities in emerging technologies in Northern California and the Pacific Northwest for UK stakeholders through strategic partnerships at the academic, industrial, and policy levels, and provides policymakers with information for evidence-based decision-making. Florence is the Science & Technology Network Lead for Quantum, liaising with Whitehall, developing the sector plan, and coordinating activities across the U.S. network.

Giovanni Stracquadanio

Professor of Engineering Biology,
University of Edinburgh

Giovanni Stracquadanio is a Professor of Engineering Biology at the University of Edinburgh, where he also serves as Deputy Director of the Centre for Engineering Biology and Co-Director of the Edinburgh Genome Foundry (EGF).

His research focuses on uncovering the genetic and molecular mechanisms underlying human diseases and translating these insights into next-generation therapeutics using generative AI and engineering biology. His group currently works on developing next-generation therapies for Lysosomal Storage Diseases (LSDs. In addition, Dr. Stracquadanio is the co-founder and CEO of ZYTHERA, a University of Edinburgh a start-up dedicated to developing next-generation LSD therapies.

Haiping Lu

Director, UK Open Multimodal AI Network (UKOMAIN);
Professor of Machine Learning, University of Sheffield,
University of Sheffield

Haiping Lu is Director of the UK Open Multimodal AI Network (UKOMAIN) and Professor of Machine Learning at the University of Sheffield. His research focuses on deployment-centric multimodal AI for engineering biology and biomedical applications, integrating generative modelling, multimodal data fusion, and uncertainty-aware learning. He has led work on interpretable drug–target interaction prediction, diffusion-based inverse protein folding, multi-omics integration, medical imaging systems, and open-source AI infrastructure. He is particularly interested in AI-ready open science ecosystems and benchmarking frameworks that enable robust, real-world translation of advanced AI into biomedical engineering practice.

Isobel Merrett

Engineering Biology International Senior Policy Adviser, Department for Science, Innovation and Technology (DSIT)

Isobel works on the UK's bilateral and multilateral engineering biology policy and supported preparations for the symposium. She contributes to the UK's international approach to engineering biology, working with partners to deepen collaboration and respond to the opportunities and risks of emerging technologies. Before joining DSIT, Isobel served in the Foreign, Commonwealth & Development Office (FCDO), including on European affairs. She has a strong background in international strategy, cross-government coordination and science diplomacy.

James Briscoe

Associate Research Director,
The Francis Crick Institute

James Briscoe is a principal group leader and associate research director at the Francis Crick Institute, London. He also serves as the Senior Independent Member for the BBSRC Council.

His research interests include the molecular and cellular mechanisms of tissue development. To address these questions his lab uses a range of experimental and computational techniques with model systems that include mouse and chick embryos and embryonic stem cells.

James McCafferty

Chief Information Officer,
Wellcome Sanger Institute

James is Chief Information Officer at the Wellcome Sanger Institute, where he leads research data, informatics and AI infrastructure supporting large-scale genomics and engineering biology. He has established institute-wide AI-ready data standards, embedding provenance, metadata quality, interoperability and secure governance across more than 90 petabytes of biological data. James has overseen high-volume sequencing pipelines and integrated compute platforms spanning HPC and cloud, enabling reproducible, model-ready datasets. He advises various UK national bodies on research data infrastructure and transformative technologies, with a focus on standards-based, responsible AI deployment to accelerate engineering biology and AI-driven science.

Jeantine Lunshof

Philosopher Ethicist, Senior Research Scientist,
Harvard Medical School

Jeantine Lunshof studied Philosophy and Tibetan Language and Culture in Hamburg and Amsterdam. She obtained her PhD from VU University Amsterdam with a thesis on advanced genomic technologies and innovation in Ethics. Jeantine was awarded a Marie Curie Fellowship by the European Commission. She developed the practice model of Collaborative Ethics on the workfloor of the lab. Jeantine's research interests are in philosophical research ethics in genomic sciences and biological engineering where disruptive technological innovations call for epistemological and normative exploration; current focus is on xenobots, cyborg organoids, expanded DNA alphabets, AI-agents.

Jane Calvert

Professor of Science and Technology Studies, University of Edinburgh

Jane Calvert is Professor of Science and Technology Studies at the University of Edinburgh. Her research is on the social studies of the life sciences, particularly synthetic biology. She works in close collaboration with scientists, engineers, artists, designers and policy makers.

Jeffrey Anthony

Engineering Biology Partnerships Lead, National Physical Laboratory

Jeffrey Anthony joined NPL in 2019 and works as part of NPL's Life Sciences & Health Partnerships Team. With a focus on the building collaborations across the Life science sector Jeffrey works with collaborators across industry, academic and public sector.

Jeffrey's technical background is in microbiology, and he has worked in roles across quality assurance, and both product and business development. His experience includes the pharmaceutical sector, the development of genomic marker technologies in agritech and activities in cell biology. In his current role his time is dedicated to building partnerships across the UK and internationally supporting Standards and metrology in Engineering Biology and helping companies in their quest to scale and commercialise at pace.

Josh Leonard

Professor of Chemical and Biological Engineering, Northwestern University, Center for Synthetic Biology

Leonard is a pioneer in mammalian synthetic biology, creating new biomedical technologies that improve human health. Employing methods ranging from biomolecular engineering to computation-driven design, his team develops technologies including (1) programmable cell-based devices for treating cancer and chronic disease, including synthetic receptors and genetic programs, and (2) bioengineered delivery platforms based upon nanoscale biological vesicles. He directs a Biotechnology Training Program, co-founded Northwestern's Center for Synthetic Biology, and directs a Synthetic Biology Foundry core. He is also co-founder and CSO of Syenex Inc., whose mission is making transformative gene editing and delivery technologies universally accessible.

Joshua Pan

Senior Research Scientist,
Google DeepMind

Josh is a research scientist at Google DeepMind, with an interest in shaping large datasets for training AI models.

Julian Braybrook

Director, National Laboratories, LGC & UK Government Chemist, LGC Limited

Director, National Measurement Laboratory & UK Designated Institute for chemical & bio-metrology, with responsibility for establishing & implementing sovereign measurement science strategy & delivery, including partnerships. >30 years' proven track record in developing & implementing successful measurement research strategy & responsible innovation, knowledge transfer & exploitation for private & public sector businesses, & in independently informing government & commercial policy, standards & regulation.

UK Government Chemist providing the independent statutory referee role for food & feed & advisory role to government.

Chair & UK Lead for national & international documentary standards committees for biotechnology.

Member, BIA Advisory Committees.

Jussi Taipale

Senior Group Leader,
Wellcome Sanger Institute

I am a biochemist with experience in both experimental and computational work. The focus of my career was initially signal transduction; during the course of work in my independent laboratory, we started to focus more on gene expression and its regulation by transcription factors.

My laboratory has a long-standing interest in growth control and cancer, and specifically on how genetic variation affects cancer risk. For this purpose, we have developed several technologies and led the field in mouse modelling of cancer risk variants

Kathryn Richmond

Vice President, Science,
Fund for Science and Technology

Kathy Richmond helps guide the Fund for Science and Technology's bioscience strategy and is a scientist with over 25 years of executive experience in philanthropic foundations and nonprofit research organizations. Richmond previously served as an Executive Vice President at the Allen Institute leading their Office of Science and Innovation and worked with Allen Family Philanthropies to drive over $250M of philanthropic investments. She currently is a trustee of the Board of Directors at the Morgridge Institute and participates in multiple advisory groups within the philanthropic sector.

Lorraine Kerr

Director of Strategic Initiatives,
Edinburgh Innovations, The University of Edinburgh

Lorraine leads the Strategic Initiatives team at Edinburgh Innovations, the commercialisation service of the University of Edinburgh. She works extensively in the engineering biology space developing larger propositions, strategic partnerships with key companies and novel funding mechanisms. With wide-ranging experience and connections in the bioeconomy sector, she is also member of the Scottish Bioeconomy Council and sits on the Advisory Board for the Edinburgh Genome Foundry.

Mary Shin

Senior Science & Technology Officer,
UK Science & Technology Network

Mary Shin, MSc, MPhil, is a Senior Science & Technology Officer for the UK Science & Technology Network in the US, based at the British Consulate-General in Boston. While focusing on the New England region, she also leads the engineering biology subsector for the US Network, and supports the biosecurity subsector. Mary received a BS in electrical engineering with a double major in psychology from Johns Hopkins University, an MPhil in technology policy from the University of Cambridge, UK, and an MSc in Bioethics from Harvard Medical School.

Max Ryadnov

NPL Fellow in Biometrology, Head of Engineering Biology, National Physical Laboratory

Max leads Engineering Biology at NPL. He is an NPL Fellow in biometrology, Professor of biophysics, Director of the UK's reference biofoundry and holds a PhD in Chemistry. In his role Max is responsible for pre-normative research, metrology and standardisation with an emphasis on sector-agnostic biomanufacturing. His team has delivered 3rd party projects with over 80 UK companies across TRLs, having secured a substantial grant portfolio from UKRI, ISCF, ISPF, EURAMET, STFC and industry. He is a member of standardisation and metrology fora (ISO, CCQM) and chairs a technical working area in VAMAS, which provides international leadership for standardization in EngBio.

Megan Sperry

Senior Scientist, Wyss Institute for Biologically Inspired Engineering at Harvard University

Megan Sperry, PhD, is a computational biologist at the Wyss Institute for Biologically Inspired Engineering at Harvard University. She leads an interdisciplinary research group focused on integrating transcriptomics, proteomics, metabolomics, and advanced computational modelling to uncover disease mechanisms and accelerate therapeutic discovery. Her work leverages AI-driven approaches to interpret high-dimensional biological data and identify drug repurposing opportunities, with current applications spanning neurobiology, metabolism, and radiation injury in human organ-on-chip systems.

Mohammed AlQuraishi

Professor of Systems Biology, Columbia University

Mohammed is an Assistant Professor in the Department of Systems Biology and a member of Columbia's Program for Mathematical Genomics, where he works at the intersection of machine learning, biophysics, and systems biology. The AlQuraishi Lab focuses on two biological perspectives: the molecular and systems levels. On the molecular side, the lab develops machine learning models for predicting protein structure and function, protein-ligand interactions, and learned representations of proteins and proteomes. On the systems side, the lab applies these models in a proteome-wide fashion to investigate the organization, combinatorial logic, and computational paradigms of signal transduction networks.

Michael Ball

Associate Director of Data Science,
The Medical Research Council

Dr. Michael Ball has worked in roles bridging science, strategy, and policy to support data science and research infrastructures in MRC, BBSRC and ESRC since joining BBSRC in 2008. Currently serving as Associate Director of Data Science at the MRC (Medical Research Council), he oversees strategic development and management of projects, such as Health Data Research UK and UK Biobank.

Natalio Krasnogor

Professor of Computing and Synthetic Biology,
Newcastle University
Founder and CTO, GitLife Biotech Ltd.

Natalio Krasnogor is Professor of Computing Science and Synthetic Biology at Newcastle University and leads the ICOS (Interdisciplinary Computing and Complex BioSystems) research group. His work sits at the intersection of AI, engineering biology, and DNA/RNA nanotechnology, with a focus on optimisation, modelling, and biosecurity for real-world biotechnological applications. He holds a Royal Academy of Engineering Chair in Emerging Technologies on DNA data storage. He is also co-founder of GitLife Biotech and Workli, bridging academia, industry, and translational innovation.

Paul Freemont

Professor, Imperial College London
Co-director of SynbiCITE

Professor Paul Freemont is co-founder and co-director of the National UK Innovation and Knowledge Centre for Synthetic Biology (SynbiCITE - since 2013) and director of the London BioFoundry (since 2016). His research focuses on developing automation and integrated biofoundries for synthetic biology applications. He is a council member of US Engineering Biology Research Consortium and recently led an international Task Force on Engineering Biology Metrics and Technical Standards for Global Bioeconomy. He also co-chairs the newly formed UK Governments Ministerial Engineering Biology Advisory Panel. He is co-founder of Solena Materials Ltd and SynBioVen Ltd, an early-stage seed investment company.

Pete Kelly

Co-founder, Head of Science,
The Align Foundation

Pete Kelly is Co-Founder and Head of Science at The Align Foundation, a nonprofit building AI-ready biological datasets to advance predictive biology. He leads multi-institution collaborations that generate standardized, scalable data for machine learning, including protein engineering benchmarks and large genotype-to-phenotype programs. Align partners with academia, government, industry, and philanthropy to create open datasets and evaluation frameworks that accelerate model-driven discovery.

Sanjay R Srivatsan

Assistant Professor, Fred Hutch Cancer Center, Computational Biology Department, Institute for Protein Design, Fred Hutch Cancer Center

Dr. Sanjay Srivatsan is an Assistant Professor at the Fred Hutchinson Cancer Center, where his research focuses on developing scalable technologies for reading and writing biological systems, including single-cell genomics, lineage tracing, and multimodal sequencing. The lab combines experimental platforms—such as capsule-based combinatorial indexing—with machine learning to generate large biological datasets and train next-generation models of cells and genomes. His work aims to bridge biotechnology and artificial intelligence to enable predictive models of biological systems and accelerate the discovery and engineering of new therapeutics, and cellular programs.

Scott Allen

CoHead of Engineering Biology,
Department for Science, Innovation & Engineering

Scott Allen is CoHead of Engineering Biology at DSIT, leading the department's work under the UK Biological Security Strategy and shaping policy at the intersection of AI and engineering biology. He oversees national responsibilities for economic security, responsible innovation, and partnerships with the Ministry of Defence. Scott's background spans national security and resilience policymaking, following 12 years of service in the Royal Air Force and subsequent roles in the Cabinet Office and DSIT. His work focuses on advancing safe, secure and globally competitive engineering biology capabilities for the UK.

Stephen Piccolo

Associate Professor,
Brigham Young University

Stephen Piccolo advances biology and human health through computational discovery, with a strong emphasis on data curation and stewardship. His lab works to ensure that large-scale molecular datasets—especially generated through genomics and transcriptomics—are findable, interoperable, and reusable (FAIR). By integrating biology, computer science, medicine, and statistics, the team develops methods to harmonize, annotate, and aggregate complex public data resources. This “dry lab” approach enables robust, reproducible analyses that uncover subtle drivers of disease. The lab also promotes bioinformatics education, exploring inclusive teaching practices and the use of artificial intelligence to broaden access to computational biology skills.

Sophie Stone

Research Fellow, University of Edinburgh

Dr Sophie Stone is a Science and Technology Studies (STS) Research Fellow in the UKRI Engineering Biology for Advanced Therapeutics Mission Hub at the University of Edinburgh. She investigates the social and political dimensions of advanced therapeutics (including cell and gene therapies) and collaborates with Hub colleagues to develop capacity for responsible research and innovation. Her research examines how advanced therapeutics are made, manufactured, governed and understood; the politics of scaling EB; and more recently, the intersections between EB and AI. She also has a keen interest in collaborative practice and exploring the spaces in which EB takes place.

Susan Rosser

Professor of Synthetic Biology,
The University of Edinburgh

Susan Rosser is Director of the UK Centre for Mammalian Synthetic Biology and Co-director of the Edinburgh Genome Foundry. She holds a Royal Academy of Engineering Chair in Emerging Technologies and leads the Engineering Biology for Advanced Therapeutics Hub. She previously served on the Scottish Science Advisory Council, Scotland’s highest level science advisory body and currently sits on the UK Engineering Biology Advisory Panel, an expert group advising and assisting UK Government on engineering biology policy work.

Theresa Meacham

Head of International, UK Research and Innovation - Biotechnology and Biological Sciences Research Council (BBSRC)

Dr Theresa Meacham is Head of International for the Biotechnology and Biological Sciences Research Council.

Theresa has extensive experience of developing international R&I partnerships, having worked within the International Team of BBSRC since 2016. She has led on the development of funding programmes across the globe, including the NSF led Global Centres programme, lead agency agreements and other memoranda of understanding. Prior to joining BBSRC, Theresa was an analyst with the UK's Global Food Security Programme.

Theresa studied Biological Sciences at the University of Oxford and completed a PhD at the University of Edinburgh, focused on improving the understanding of below-ground Carbon stocks in forest ecosystem models.

Thierry Le Goff

Commercial Director,
National Measurement Laboratory

Thierry is the commercial director at the National Measurement Laboratory and UK's designated institute for chemical and bio-measurement. He leads diverse teams across program management, business development, and analytical quality training. He is responsible for commercial and partnerships activities with industry and leading research institutions, and initiatives to integrate metrology and standards into key innovation areas such as in engineering biology, vitro diagnostics and novel food.

He holds a PhD and Postdoctoral research in Environmental Analytical Chemistry.

Thomas Moreau

VP Cell Programming Research,
Bit Bio Limited

Thomas Moreau is a stem cell biologist and the Vice President of Cell Programming Research at bit.bio, an acclaimed spin-out from the University of Cambridge. From company's inception, he has spearheaded the development of the cell coding platform enabling the deterministic manufacture of human cells at scale. Embedding both unparalleled consistency of faithful biological assets and high throughput genetic perturbation and engineering capabilities, bit.bio's platform is uniquely positioned to generate the high-fidelity causal ground truth data required to train accurate biological models. Dr. Moreau's expertise addresses the critical convergence of biology, data science and engineering to advance medicine.

Carole Goble
Professor, The University of Manchester / ELIXIR UK

30+ years at the forefront of technology/policy for FAIR digital infrastructure, data, and computational workflows. Head of ELIXIR-UK national node of ELIXIR, European Research Infrastructure for Life Science Data; founded the digital infrastructure for IBISBA European Research Infrastructure for Industrial Biotechnology and Biomanufacturing ; co-lead of FAIRDOM consortium Systems Biology data/model sharing. Co-founder UKRI's national Digital Research Infrastructure for Bioscience (BioFAIR); UK expert representative G7 Open Science Working Group; member of UKRI DRI Advisory Group for Data.

Andrew Hickl
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