CANCER GRAND CHALLENGES 2023 Summit

# Cancer Grand Challenges Summit 2023

**London, UK**

8-10 March, 2023

CANCER GRAND CHALLENGES

CANCER RESEARCH UK

NIH NATIONAL CANCER INSTITUTE

2023 Summit

# Wednesday

**08.30 - 10.15**
Foyer

**Registration**

**10.15 - 10.30**
Trinity Suite

### Welcome

David Scott, *Director, Cancer Grand Challenges, Cancer Research UK*
Dinah Singer, *Deputy Director for Scientific Strategy and Development, National Cancer Institute, US*

**10.30 - 11.00**
Trinity Suite

### Keynote: Why we need Cancer Grand Challenges

David Lane will give the opening keynote in which he'll share his thoughts and experiences on the need for new ways to do research, the importance of global, interdisciplinary team collaboration and the power of this approach when it works. This will be an inspirational talk, drawing on David's experiences throughout his distinguished career as well as more recently as chair of the Cancer Grand Challenges Scientific Committee.
David Lane, *Chair, Scientific Committee, Cancer Grand Challenges, UK*

**11.00 - 11.45**
Trinity Suite

### Solving the challenge: The impact and legacy of a Cancer Grand Challenges team

Chair: Elizabeth McKenna, *Executive Editor, Cancer Discovery, American Association for Cancer Research, US*
Hear from the leads of our four inaugural Cancer Grand Challenges teams on the significant impact and legacy of their research. Get a deeper understanding of how their innovative approaches are driving progress and leading to breakthroughs that are helping us better understand and manage cancer.
Jelle Wesseling, *team lead, PRECISION, Netherlands Cancer Institute, NL*
Greg Hannon, *team lead, IMAXT, Cancer Research UK Cambridge Institute, UK*
Mike Stratton, *team lead, Mutographs, Wellcome Sanger Institute, UK*
Josephine Bunch, *team lead, Rosetta, National Physical Laboratory, UK*

**11.45 - 12.15**
Foyer

**Break: Refreshments available**

**12.15 - 13.00**
Trinity Suite

### Are we drowning in data?

Chair: Charlie Swanton, *Scientific Committee, Cancer Grand Challenges, The Francis Crick Institute, UK*
'New technology' vs. 'new ideas': How do they both co-exist to drive science forward? In this thought-provoking panel discussion, we will explore the interplay between new technologies and new ideas in cancer research as well as the importance of intellectual and technological innovation. Is cancer research advancing because of the availability of "new technologies", or due to the emergence of "new ideas"? We will discuss why ideas without data are useless - but so is data without ideas.
Sui Huang, *co-investigator, STORMing Cancer, Institute for Systems Biology, US*
Nuria Lopez-Bigas, *co-team lead, PROMINENT, Institute for Research in Biomedicine Barcelona, ES*
Shelley Hwang, *co-investigator, PRECISION, Duke University, US*
Gerard Evan, *Trustee, Cancer Research UK, The Francis Crick Institute & King's College London, UK*

**13.00 - 14.15**
Foyer

**Welcome lunch**

**14.15 - 15.00**
Trinity Suite

### Patient advocacy on a global scale

Chair: Tim Rebbeck, *Scientific Committee, Cancer Grand Challenges, Dana-Farber Cancer Institute, US*
Join the conversation as we address the unique opportunities and challenges in involving patients in a global discovery science consortium. We will discuss how we are working together to advance patient-centred research and improve cancer outcomes for all.
Cath Bollard, *co-team lead, Children's National Hospital and the George Washington University Hospital, US*
Margaret Grayson, *Chair, Patient Advocacy Panel, Cancer Grand Challenges, NI*
Amy Moore, *patient advocate, CANCAN, LUNGevity Foundation, US*
Tobias Janowitz, *team lead and co-investigator, CANCAN, Cold Spring Harbor Laboratory, US*
Sara Wakeling, *patient advocate NexTGen, Alice's Arc and University College London, UK*

2023 Summit

# Wednesday, cont.

**15.00 - 15.25**
Trinity Suite

## Discover Live

**Keynote: Fiona Powrie, *co-investigator, OPTIMISTICC, Kennedy Institute of Rheumatology, University of Oxford, UK***

Chair: Karen Vousden, *Scientific Committee, Cancer Grand Challenges, The Francis Crick Institute, UK*

In this session, we will hear from Dame Fiona Powrie, Director of the Kennedy Institute of Rheumatology and Professor of Musculoskeletal Sciences. Her research interests include characterisation of the interaction between the intestinal microbiota and the host immune system and how this mutualistic relationship breaks down in inflammatory bowel disease. Her current work seeks to translate findings from model systems into the clinic in inflammatory bowel disease patients.

**15.25 - 15.50**
Trinity Suite

## Discover Live

**Keynote: Sam Aparicio, *co-investigator, IMAXT, BC Cancer Research Centre, University of British Columbia, CA***

Chair: Judy Garber, *Scientific Committee, Cancer Grand Challenges, Dana-Farber Cancer Institute, US*

In this session we will hear from Professor Sam Aparicio, the Nan and Lorraine Robertson Chair in Breast Cancer Research and Canada Research Chair in Molecular Oncology at the University of British Columbia and the BC Cancer Agency in Vancouver, Canada. His research programme encompasses the fields of cancer genomics, mouse genetic models, high throughput screens, and translational breast cancer research. His most recent work on the molecular taxonomy of breast cancer led to identification of new genes that could change the way breast cancer is diagnosed, and form the basis of next-generation treatments.

**15.50 - 16.15**
Foyer

**Break: Refreshments available**

**16.15 - 17.00**
Trinity Suite

### Nine new challenges

Chair: David Lane, *Chair, Scientific Committee, Cancer Grand Challenges, UK*

We're announcing nine of cancer's toughest challenges with $25m funding for global research teams. Following the announcement, Expressions of Interest will open until 22 June. This session is being live streamed to the wider research and Cancer Grand Challenges community.

Charlie Swanton, *Scientific Committee, Cancer Grand Challenges, The Francis Crick Institute, UK*
Lillian Siu, *Scientific Committee, Cancer Grand Challenges, Princess Margaret Cancer Centre, CA*
Sherene Loi, *Scientific Committee, Cancer Grand Challenges, Peter MacCallum Cancer Centre, AU*

**17.00 - 18.00**
Atrium

### Poster session

Join us in the Atrium for a poster session featuring the latest research from the teams' Future Leaders and Patient Advocates. Drinks and light refreshments will be available.

**18.00 - 18.40**

**Break**

**18.40**
Lobby

### Travel to the Tower of London

Meet the Cancer Grand Challenges team in the hotel lobby before walking 12 minutes to the Tower of London. Please let the registration desk know if you require a taxi.

**19.00 - 21.30**
**Tower of London**

### Tower of London Reception

Join us for a private reception at the Tower of London, one of England's most evocative ancient monuments. The Yeoman Warders, also known as 'Beefeaters', will take you on a short tour and share key stories from over 1,000 years of history.

Following the tour, hear from Michelle Mitchell, Chief Executive, Cancer Research UK and Doug Lowy, Principal Deputy Director, National Cancer Institute, as we celebrate the announcement of the new challenges and the next phase of Cancer Grand Challenges.

2023 Summit

# Thursday

**08.00 - 09.30**
Hotel restaurant
Harpley Suite

**Breakfast - Networking - Team time**

Private breakfast for patient advocates

**09.45 - 10.45**
Trinity Suite

### Team Talks: Round one

Chair: René Bernards, *Scientific Committee, Cancer Grand Challenges, Netherlands Cancer Institute, NL*

We will hear from the Cancer Grand Challenges round one teams on how they are wrapping up their research in their final year.

**Rosetta: Developing, delivering and translating Rosetta from an early concept to a functioning and impactful pipeline for cancer research and patient care**

Josephine Bunch, *team lead, National Physical Laboratory, UK*

**IMAXT: Update from IMAXT**

Greg Hannon, *team lead, CRUK Cambridge Institute, UK*

**Mutographs: Update on Mutographs**

Mike Stratton, *team lead, Wellcome Sanger Institute, UK*

**PRECISION: The grand challenge in moving from overtreatment to PRECISION management of DCIS**

Jelle Wesseling, *team lead, Netherlands Cancer Institute, NL*

**10.45 - 11.15**
Trinity Suite

## Discover Live

### Keynote: Ben Cravatt, *co-investigator, eDyNAmiC, Scripps Research, US*

Chair: René Bernards, *Scientific Committee, Cancer Grand Challenges, Netherlands Cancer Institute, NL*

In this session we will hear from Professor Ben Cravatt, who is the Gilula Chair of Chemical Biology and Professor in the Department of Chemistry at Scripps Research. He is a co-investigator on the eDyNAmic team. His research aims to understand the role of proteins in human physiological and pathological processes and use this knowledge to identify novel therapeutic targets and drugs to treat diseases. In 2022, Ben was awarded the Wolf Prize for Chemistry developing activity-based protein profiling, which has emerged as a powerful and a widely used chemical proteomic strategy to characterise enzyme function in native biological systems.

**11.15 - 11.45**
Foyer

**Break: Refreshments available**

**11.45 - 12.30**
Trinity Suite

### Team Talks: Round two

Chair: Judy Garber, *Scientific Committee, Cancer Grand Challenges, Dana-Farber Cancer Institute, US*

The Cancer Grand Challenges round two teams will be presenting their latest research and how it is progressing their understanding of each challenge.

**SPECIFICANCER: Overview of SPECIFICANCER**

Kevin Haigis, *co-investigator, Dana-Farber Cancer Institute, US*

**OPTIMISTICC: Update on the bowel cancer microbiome**

Matthew Meyerson, *team lead, Dana-Farber Cancer Institute, US*

**STORMing Cancer: Integration of multi-omic data provides novel insights to initiation of chronic inflammation-associated cancers**

Thea Tlsty, *team lead, University of California, San Francisco, US*

**12.30 - 13.00**
Trinity Suite

## Discover Live

### Keynote: Garry Nolan, *co-investigator, STORMing Cancer, Stanford University, US*

Chair: David Hunter, *Scientific Committee, Cancer Grand Challenges, University of Oxford, UK*

In this session we'll hear from Professor Garry Nolan, the Rachford and Carlota A. Harris Professor in the Department of Pathology at Stanford University School of Medicine where he has been honoured as one of the top 25 inventors at Stanford University. He is a co-investigator in the STORMing Cancer team. Garry's areas of research include hematopoiesis, cancer and leukaemia, autoimmunity and inflammation, and computational approaches for network and systems immunology. His recent efforts include a focus on single cell analysis advances using a mass spectrometry-flow cytometry hybrid device.

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# Thursday, cont.

**13.00 - 15.00**
Foyer
Harpley Suite

14.00 - 14.45
Sidney Suite

**15.00 - 16.00**
Trinity Suite

**16.00 - 16.45**
Trinity Suite

**16.45 - 17.15**
Foyer

**17.15 - 18.15**
Trinity Suite

**18.15 - 19.45**

**19.45 - 22.00**
Trinity Suite

**Lunch**

**Private lunch for patient advocates**

**Translating your discovery – A panel discussion**
Chair: Alessia Errico, *Associate Director, Search and Evaluation, Cancer Research UK*

**Team Talks: Round three**
Chair: David Hunter, *Scientific Committee, Cancer Grand Challenges, University of Oxford, UK*
Learn how the Cancer Grand Challenges round three teams have started tackling their challenges in their first year.

**CANCAN: Highlights from the CANCAN team**
Marcus DaSilva Goncalves, *co-team lead, Weill Cornell Medicine, US,*
Tobias Janowitz, *co-team lead, Cold Spring Harbor Laboratory, US*
Eileen White, *co-team lead, Rutgers Cancer Institute of New Jersey, US*

**NexTGen: Developing Next Generation T cell Therapies for Pediatric Solid Tumours**
Cath Bollard, *co-team lead, Children's National Hospital and the George Washington University Hospital, US*
Martin Pule, *co-team lead, University College London, UK*

**eDyNAmiC: Tackling the ecDNA Cancer Grand Challenge**
Paul Mischel, *team lead, Stanford University School of Medicine, US*

**PROMINENT: Discovering the molecular signatures of cancer PROMotion to INform prevENTion**
Allan Balmain, co-*team lead, University of California, San Francisco, US*
Eve Kandyba, *postdoctoral researcher, University of California, San Francisco, US*

**Themed talks: Novel insights into cancer biology**
Chair: Karen Vousden, *Scientific Committee, Cancer Grand Challenges, The Francis Crick Institute, UK*
Explore the latest developments and breakthroughs in cancer biology research coming from Cancer Grand Challenges teams. Get ready to be inspired by innovative ideas and cutting-edge findings that have the potential to revolutionise our understanding of cancer.

**Leveraging developmental biology to target lineage restricted oncoproteins with cellular therapies in childhood cancers.**
John Maris, *co-investigator, NexTGen, University of Pennsylvania and Children's Hospital of Philadelphia, US*

**Using mass spectrometry imaging to identify metabolic vulnerabilities of high MYC tumours**
Mariia Yuneva, *co-investigator, Rosetta, The Francis Crick Institute, UK*

**Oncogenic and epigenetic cancer drivers converge to promote tissue-specific therapeutic vulnerabilities**
Karen Cichowski, *co-investigator, SPECIFICANCER, Brigham and Women's Hospital, Harvard Medical School, US*

**Break: Refreshments available**

**Themed talks: Novel insights into cancer biology cont.**

**Field cancerization in mammary tissues is driven by estrous cycle-mediated cell turnover**
Jacco van Rheenen, *co-investigator, PRECISION, Netherlands Cancer Institute, NL*

**Investigating the early metastatic microenvironment using in situ proteomics**
Marta Paez-Ribes, *Principal Scientific Associate, IMAXT, CRUK Cambridge Institute, University of Cambridge, UK*

**A mechanism of oncogene amplification in breast cancer**
Peter Park, *co-investigator, SPECIFICANCER, Harvard Medical School, US*

**Genomic instability as a driver of ovarian cancer evolution and immune evasion**
Ignacio Vázquez-García, *research fellow, IMAXT, Memorial Sloan Kettering Cancer Center, US*

**Break**

**Summit dinner**
Join us at the hotel for an informal curry night.

2023 Summit

# Friday

**08.30 - 10.15**
Hotel restaurant

**Breakfast - Networking - Team time**

**10.15 - 11.00**
Trinity Suite

**Themed talks: Novel insights into cancer biology cont.**

**Understanding the causes of head and neck cancer using mutational signature analysis**
Laura Torrens, *postdoctoral scientist, Mutographs and PROMINENT, International Agency for Research on Cancer, FR*

**Approaches to increase the cellular complexity of organoids for cancer modelling**
Calvin Kuo, *co-investigator, PROMINENT, Stanford University, US*

**Cellular conversations that control malignancy**
Uri Alon, *co-investigator, STORMing Cancer, The Weizmann Institute of Science, IL*

**11.00 - 11.45**
Trinity Suite

**Themed talks: New tools and technology development**

Chair: KJ Patel, *Scientific Committee, Cancer Grand Challenges, Cancer Research UK*
The aim of the session is to learn about the latest tools and technologies that are being developed by Cancer Grand Challenges teams. Discover the potential of these innovative solutions to better understand, diagnose and treat cancer.

**Design of a Fap2-encoding mRNA LNP vaccine against the oncomicrobe F. nucleatum**
Cody Despins, *graduate student, OPTIMISTICC, BC Cancer Research Institute, CA*

**Spatial and in-vivo metabolomics from discovery to diagnostics**
Zoltan Takats, *co-investigator, Rosetta, Imperial College London, UK*

**Integrating multiomic tissue signatures to understand how cancer progresses**
Sui Huang, *co-investigator, STORMing Cancer, Institute for Systems Biology, US*

**11.45 - 12.15**
Foyer

**Break: Refreshments available**

**12.15 - 13.15**
Trinity Suite

**Themed talks: New tools and technology development cont.**

**Reading and writing extrachromosomal DNA**
Howard Chang, *co-investigator, eDyNAmiC, Stanford University, US*

**NanoSeq: Leveraging ultra-low error rate sequencing in the analysis of mutational signatures and normal tissues**
Ellie Dunstone, *PhD student, Mutographs, Wellcome Sanger Institute, UK*

**CRISPR approaches for studying cancer biology and environmental perturbations**
Luke Gilbert, *co-investigator, PROMINENT, University of California, San Francisco, US*

**Approaches to study the complex phenotypes associated with cachexia**
Norbert Perrimon, *co-investigator, CANCAN, Harvard Medical School, US*

**13.15 - 14.30**
Foyer

**Lunch**

**14.30 - 15.45**
Trinity Suite

**Themed talks: Learning from patients**

Chair: Sherene Loi, *Scientific Committee, Cancer Grand Challenges, Peter MacCallum Cancer Centre*
This session will delve into the importance of utilising patient samples and data in cancer research. Cancer Grand Challenges teams will share the insights learnt from patients and how this is helping advance our understanding of cancer.

**A census of immune archetypes across childhood solid tumours**
Kevin Litchfield, *co-investigator, NextGen, University College London, UK*

**Leveraging longitudinal clinical and genomic studies to develop insights in cancer cachexia**
Mariam Jamal-Hanjani, *co-investigator, CANCAN (and eDyNAmiC), UCL Cancer Institute, UK*

**Microbiota-based biomarker of relapse in rectal cancer**
Paolo Nuciforo, *co-investigator, OPTIMISTICC, Vall d'Hebron Institute of Oncology Barcelona, ES*

**Insights from whole genome sequencing of DCIS**
Serena Nik-Zainal, *co-investigator, PRECISION (and eDyNAmiC), University of Cambridge, UK*

**Prevalence and clinical implications of extrachromosomal DNA**
Chris Bailey, junior investigator, *eDyNAmiC, The Francis Crick Institute, UK*

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# Friday, cont.

**15.45 - 16.30**
Trinity Suite

**Bringing curiosity back into science**

Chair: David Lane, *Chair, Scientific Committee, Cancer Grand Challenges, UK*

This panel session, chaired by David Lane, will explore the importance and opportunities presented when we give ourselves permission to follow lines of curiosity in research that may not be leading to the next publication or grant but that ultimately, could lead to some major breakthroughs.

KJ Patel, *Scientific Committee, Cancer Grand Challenges, Cancer Research UK*
Sherene Loi, *Scientific Committee, Cancer Grand Challenges, Peter MacCallum Cancer Centre, AU*
Paul Mischel, *team lead, Stanford University School of Medicine, US*
Judy Garber, *Scientific Committee, Cancer Grand Challenges, Dana-Farber Cancer Institute, US*

**16.30 - 16.45**
Trinity Suite

**Closing remarks**

David Scott, *Director, Cancer Grand Challenges, Cancer Research UK*
Dinah Singer, *Deputy Director for Scientific Strategy and Development, National Cancer Institute, US*

*Patient advocacy session from the Cancer Grand Challenges Summit 2022*

# SPEAKERS

***Uri Alon**, co-investigator STORMing Cancer, The Weizmann Instiute of Science, IL*
Uri is a professor at the Weizmann Institute of science. His research focuses on systems biology - mainly principles of human tissues, aging, and age related diseases.

**Samuel Aparicio**, *co-co-investigator IMAXT, BC Cancer Research Centre, University of British Columbia, CA*
Samuel is the Nan & Lorraine Robertson Chair in Breast Cancer Research University of British Columbia, BC Cancer Molecular Oncology Department Head, and Fellow of the Royal Society of Canada. His area of focus is on developing quantitative measures of clonal fitness in patients, including methods for single cell genome sequencing and patient derived xenograft models of human cancer.

**Chris Bailey**, *young co-investigator eDyNAmiC, The Francis Crick Institute, UK*
Chris is a haematology registrar and PhD candidate at the Francis Crick Institute where he works with the eDyNAmiC team. His research focuses on using computational methods to understand the processes governing ecDNA formation, evolution and characterisation across multiple tumour types.

**Allan Balmain**, *co-co-investigator, Mutographs and co-team lead, PROMINENT , University of California, San Francisco, US*
Allan studied Organic Chemistry at the University of Glasgow and cancer genetics at The Beatson Institute for Cancer Research. He is presently Professor of Cancer Genetics at University of California, San Francisco, where he developed approaches to understand the interactions between the environment and cancer at the genetic, molecular and cellular levels using the mouse as a model system.

**Gemma Balmer-Kemp,** *Head of Research, Cancer Grand Challenges, Cancer Research UK*
Gemma has been Head of Research for the Cancer Grand Challenges initiative at Cancer Research UK since 2021. She has been at CRUK for 10 years, working with the Discovery Research portfolio, CRUK Institutes and most recently Cancer Grand Challenges. Gemma originally trained as a scientist in the UK, studying cardiac regeneration and repair post-myocardial infarction.

**René Bernards,** *Scientific Committee, Cancer Grand Challenges, Netherlands Cancer Institute, NL*
René is a professor of molecular carcinogenesis at the Netherlands Cancer Institute in Amsterdam. His laboratory uses functional genomic approaches to find vulnerabilities of cancers that can be exploited therapeutically.

**Catherine Bollard,** *co-team lead NexTGen, Children's National and the George Washington University, US*
Catherine is the Director of the Center for Cancer and Immunology Research at Children's National Hospital, Professor of Pediatrics at The George Washington University and the Associate Center Director for Translational Research and Innovation at the George Washington Cancer Center. Her bench and translational research focuses on the development of novel cell therapies for cancer and post-transplant virus-associated diseases.

**Josephine Bunch**, *team lead Rosetta, National Physical Laboratory, UK*
Josephine is an analytical chemist at the National Physical Laboratory in the UK and holds the Chair of Biomolecular Mass Spectrometry at Imperial College London. She leads the Rosetta project on molecular imaging of tumours. Her research concerns the development of mass spectrometry imaging methods and multimodal pipelines for metabolic imaging.

# Speakers, cont.

**Howard Chang**, *co-co-investigator eDyNAmiC, Stanford University School of Medicine, US*
Howard is a physician-scientist at Stanford University. His research has focused on the noncoding genome and mechanisms that coordinate the activities of large numbers of genes in cell fate control. The long term goal of his laboratory is to decipher the regulatory information in the human genome for disease diagnosis and therapy.

**Karen Cichowski**, *co-investigator SPECIFICANCER, Brigham and Women's Hospital and Harvard Medical School, US*
Karen is a Professor at Brigham and Women's Hospital, Harvard Medical School and the Director of the Center for Targeted Therapies. Her research focuses on deconstructing the pathogenesis of Ras-related signaling pathways in cancer. More recently, she has been studying the intersection between oncogenic and epigenetic signals in cancer and investigating how convergence points represent unique nodes of vulnerability.

**Benjamin Cravatt,** *co-co-investigator eDyNAmiC, Scripps Research, US*
Benjamin is Professor and Norton B. Gilula Chair of Chemical Biology in the Department of Chemistry at Scripps Research. His research group is interested in developing chemical proteomic technologies that enable protein and drug discovery on a global scale and applying these methods to characterize biochemical pathways that play important roles in human physiology and disease.

**Cody Despins,** *graduate student OPTIMISTICC, BC Cancer Research Centre, University of British Columbia, CA*
Cody is a PhD candidate in Dr. Robert Holt's lab at the BC Cancer Research Centre in Vancouver, Canada. His research project focuses on studying immune responses and vaccine development for the oncomicrobe F. nucleatum.

**Ellie Dunstone,** *PhD student Mutographs, Wellcome Sanger Institute, UK*
Ellie is a final-year PhD student in computational genomics, working in the group of Professor Sir Michael Stratton at the Wellcome Sanger Institute. She is part of the Mutographs project, analysing mutational signatures in normal human tissues exposed to cytotoxic chemotherapy drugs and other mutagens.

**Gerard Evan**, *Trustee Cancer Research UK, The Francis Crick Institute & King's College London, UK*
Gerard Evan is a Ph.D. in Molecular Immunology (Cambridge, 1981), post-doc with J. Michael Bishop (UCSF, 1982), Principal Scientist (Imperial Cancer Research Fund Laboratories in London, 1986), Royal Society Research Professor (UCL 1996), Distinguished Professor (UCSF 1999), Professor and Chair of Biochemistry (Cambridge 2009), Principal co-investigator (Francis Crick Institute and KCL, 2022). His research focuses on defining the molecular aberrations that underpin genesis and maintenance of cancers.

**Judy Garber,** *Scientific Committee, Cancer Grand Challenges, Dana-Farber Cancer Institute , US*
Judy is the Susan F. Smith Chair and Chief of the Division of Cancer Genetics and Prevention at Dana-Farber Cancer Institute, and a Professor of Medicine at Harvard Medical School. She conducts research in clinical cancer genetics, with a special focus in the genetics of breast cancer.

**Luke Gilbert**, *co-co-investigator PROMINENT, University of California, San Fransisco, US*
Luke is an Associate Professor at University College San Fransisco. The Gilbert lab has developed repurposed CRISPR systems that are used to turn genes on (CRISPRa/CRISPRon) and off (CRISPRi/CRISPRoff). They have developed strategies for mapping human genetic interactions at large scales or at single cell resolution. Translationally, they focus on using CRISPR functional genomics expertise to tackle big problems in cancer biology.

# Speakers, cont.

**Marcus Goncalves**, *co-team lead CANCAN, Weill Cornell Medicine, US*
Marcus is a physician-scientist at Weill Cornell Medicine where he is a clinical endocrinologist and basic scientist. His lab studies the tumor-host interactions that alter systemic metabolism, support tumor progression, and promote cancer-induced complications like cachexia.

**Margaret Grayson**, *Chair, Patient Advocacy Panel , Cancer Grand Challenges , UK*
Margaret lives in Belfast and is Chair of the Cancer Grand Challenges Advocacy Panel. Patient advocacy plays a vital role in Cancer Grand Challenges. From helping shape challenges, to working closely with the teams, the voice, experience and insight of people affected by cancer is central to Cancer Grand Challenges. Each panel member brings a unique perspective based on their skills and experience.

**Greg Hannon**, *team lead IMAXT, University of Cambridge, UK*
Greg is Director at the Cancer Research UK Cambridge Institute and the team lead of IMAXT. Greg is internationally recognised for his contributions to small RNA biology, cancer biology and mammalian genomics. He has a long history in the discovery of cancer genes and has developed tools and strategies for manipulation of gene expression in mammalian cells and animals.

**Sui Huang**, *co-co-investigator STORMing Cancer, Institute for Systems Biology, US*
Sui is Professor at the Institute for Systems Biology in Seattle. His research approaches cancer as a nonlinear stochastic dynamical system, seeking to unite molecular/cellular mechanisms with inevitable (fundamental) principles of organismal complexity. One focus is the interplay of cancer and stromal cells in their non-genetic cell state dynamics in tumor driving "the arrow of progression".

**David Hunter**, *Scientific Committee Cancer Grand Challenges, University of Oxford, UK*
David is the Richard Doll Professor of Epidemiology and Medicine at the University of Oxford, and has facilitated the development of many initiatives in cancer genetics and genetic epidemiology. He is Chief Science Advisor to, Our Future Health, a major new UK initiative that is designed to help people live healthier lives for longer through the discovery and testing of more effective approaches to prevention, earlier detection and treatment of diseases.

**Shelley Hwang**, *co-investigator PRECISION, Duke University, US*
Shelley is a Professor of Surgery and Radiology, Vice Chair of Research, and Breast Cancer Disease Group Lead. Her research interests include breast cancer prevention, identifying less invasive treatments for early stage breast cancers, and understanding the genetic and stromal determinants of cancer progression. Dr. Hwang was the top funded surgeon-scientist in the USA in 2019.

**Mariam Jamal-Hanjani**, *co-co-investigator CANCAN, University College London Cancer Institute, UK*
Mariam is a thoracic oncologist and cancer researcher at the University College London Cancer Institute. Her research is focused on studying the biological processes driving metastatic disease and death in lung cancer, including genomic drivers of tumour dissemination, tumour- and host-initiated mediators of catabolic states indicative of cachexia, and failure of the adaptive immune system in advanced disease.

**Tobias Janowitz**, *co-team lead CANCAN, Cold Spring Harbor Laboratory, US*
Tobias is a medical oncologist at Cold Spring Harbor Laboratory where he leads a research program on the whole body response to cancer. Using pre-clinical and clinical research, his group investigates how cancer progression and cancer cachexia alter metabolism, neuroendocrine responses, and immunity of the host.

# Speakers, cont.

**Eve Kandyba**, *postdoctoral researcher PROMINENT, University of California, San Fransisco, US*
Eve is a postdoctoral scientist in Prof. Allan Balmain's laboratory at University of California, San Fransisco. She is part of the PROMINENT team and is responsible for developing the mouse skin carcinogenesis studies to examine the effect of promotion on mutation burden in normal tissue.

**Calvin Kuo**, co-*co-investigator PROMINENT, Stanford University, US*
Calvin is Professor of Medicine at Stanford University where his laboratory investigates organoid modeling of cancer, infectious disease and autoimmunity.

**David Lane,** *Chair, Scientific Committee, Cancer Grand Challenges, UK*
David is a cancer biologist with a special interest in tumour suppressor genes and p53 in particular. He is the current Chair of the Cancer Grand Challenges Scientific Committee and has been a committee member since the start of the initiative. He has worked in London, Dundee, Singapore and Stockholm.

**Kevin Litchfield**, co-*co-investigator NexTGen, University College London, UK*
Kevin is a Group Leader at University College London Cancer Institute and a Visiting Scientist at the Francis Crick Institute. His research interests focus on tumour immunology and bioinformatics.

**Sherene Loi**, *Scientific Committee Cancer Grand Challenges, Peter MacCallum Cancer Centre, AU*
Sherene is a Medical Oncologist specialized in breast cancer treatment as well as a clinician scientist with expertise in genomics, immunology and drug development. She is a Group Leader at the Peter MacCallum Cancer Centre in Melbourne, a Consultant Medical Oncologist in the Breast Service and Head of the Breast Cancer Clinical Trials Unit. She Co-Chairs the International Breast Cancer Study Group (IBCSG) (Switzerland).

**Nuria Lopez-Bigas**, co-*team lead PROMINENT, Institute for Research in Biomedicine Barcelona, ES*
Nuria is a Catalan Institution for Research and Advanced Studies Profesor at the Institute for Research in Biomedicine Barcelona, where she leads the Biomedical Genomics Lab. Her research is focused on the identification of cancer driver mutations, genes and pathways across tumor types and in understanding the mutational processes leading to the accumulation of mutations in cancer cells.

**Douglas Lowy**, *principal deputy director, National Cancer Institute, US*
Douglas has been the National Cancer Institute's (NCI) principal deputy director since July 2010, helping to lead NCI's key scientific initiatives. He has also served as acting director several times during his tenure. His research interests include the biology of papillomaviruses and the regulation of normal and neoplastic cell growth.

**John Maris**, *co-co-investigator, NexTGen, University of Pennsylvania and Children's Hospital of Philadelphia, US*
John is a physician-scientist who has focused for over three decades on the childhood cancer neuroblastoma with the dual goals of improving patient outcomes and using the disease as a model to understand cancer in general. His group has discovered all the known neuroblastoma susceptibility genes and also identified many of the oncogenic drivers of the disease. Dr. Maris has steadfastly sought to translate these discoveries to the clinic using precision medicine.

# Speakers, cont.

**Elizabeth McKenna,** *Executive Editor, Cancer Discovery, American Association for Cancer Research, US*
Elizabeth earned her PhD from Harvard University in 2011. Her research with Dr. Charles Roberts showed that pediatric tumors with inactivating mutations of an epigenetic regulator are genomically stable and driven by changes in target gene expression. She joined Cancer Discovery shortly after its launch and became Executive Editor in 2019.

**Paul Mischel**, *team lead eDyNAmiC, Stanford University School of Medicine, US*
Paul leads Team eDyNAmiC. He is Professor and Vice Chair for Research, for the Department of Pathology, Stanford Medicine, and is an Institute Scholar in Sarfan ChEM-H, Stanford University. His lab has made a series of seminal discoveries that have identified a central role for ecDNA (extrachromosomal DNA) in cancer development, progression, accelerated tumor evolution and drug resistance.

**Michelle Mitchell**, *Chief Executive, Cancer Research UK, UK*
Michelle is Chief Executive of Cancer Research UK, the world's leading cancer charity dedicated to saving lives through research, influence and information.

**Amy Moore**, *patient advocate CANCAN, LUNGevity Foundation, US*
Amy is the VP, Global Engagement and Patient Partnerships at LUNGevity Foundation. She is a PhD-trained scientist and patient advocate with extensive experience working with diverse stakeholders on large cancer research initiatives. Dr. Moore is a recognized expert on issues related to COVID and lung cancer and serves on a number of advisory boards.

**Serena Nik-Zainal**, *co-co-investigator PRECISION and eDyNAmiC, University of Cambridge, UK*
Serena is the Professor of Genomic Medicine and Bioinformatics at Cambridge and NHS Consultant in Clinical Genetics. Her team uses a combination of computational and experimental approaches to study physiological changes associated with cancer and neurodegeneration. She has expertise in whole cancer genomics, functional multi-omics, mutational signatures, and development of clinical algorithms for cancer genome interpretation.

**Garry Nolan**, *co-investigator STORMing Cancer, Stanford University, US*
Garry is the Rachford and Carlota A. Harris Professor in the Department of Pathology at Stanford University School of Medicine. He trained with Leonard Herzenberg (for his PhD) and Nobelist Dr. David Baltimore (for postdoctoral work for the first cloning/characterization of NF-kB p65/RelA and the development of 293T rapid retroviral production systems).

**Paolo Nuciforo**, *co-investigator OPTIMISTICC, Vall d'Hebron Institute of Oncology, ES*
Paolo is the Principal co-investigator of the Molecular Oncology group at Vall d`Hebron Institute of Oncology. He has 15+ years of experience in oncology translational medicine and drug development both in academic and pharmaceutical environments. In the microbiome field, his main interest is studying tumor-associated microbiota and bacteria-host cells interactions in the tumor microenvironment.

**Marta Paez-Ribes**, *Principal Scientific Associate, IMAXT, Cancer Research UK Cancer Institute, UK*
Marta studied biology in Barcelona, where she later obtained a PhD in biomedicine before moving to the University of Toronto as a postdoctoral fellow to investigate tumour angiogenesis. In 2015 she joined the University of Cambridge where she has been focused on unravelling the crosstalk between tumour cells and their microenvironment, with a special interest in metastasis.

# Speakers, cont.

**Peter Park**, *co-investigator SPECIFICANCER, Harvard Medical School, US*
Peter is a computational biologist at Harvard Medical School and directs its PhD program in Bioinformatics and Integrative Genomics. His lab focuses on identification and interpretation of somatic mutations in whole-genome sequencing data, including at the single cell level.

**KJ Patel**, *Scientific Committee Cancer Grand Challenges, Cancer Research UK, UK*
KJ trained in medicine in London and spent most of his research career at the Medical Research Council Laboratory of Molecular Biology in Cambridge. He worked as a professor for molecular medicine and stem cell genomics. His research focuses on the molecular basis of inherited genomic instability and the role it plays in the biology of stem cells, particularly those making blood.

**Norbert Perrimon**, *co-investigator CANCAN, Harvard Medical School, Howard Hughes Medical, US*
Norbert studies a number of fundamental questions in cell signaling and homeostasis. Examples include mechanisms involved in controlling cell and tissue growth and signaling mechanisms used in the context of maintaining tissue integrity by stem cell systems. Our group studies how tissues grow, maintain their mass, and communicate with others to retain physiological and growth homeostasis of the organism.

**Fiona Powrie**, *co-co-investigator OPTIMISTICC, Kennedy Institute of Rheumatology, University of Oxford, UK*
Fiona is Director of the Kennedy Institute of Rheumatology, University of Oxford. She was previously the Sidney Truelove Professor of Gastroenterology and Head, Translational Gastroenterology Unit (2009-2014). Her research examines the mutualistic relationship between the intestinal microbiome and the host immune system and how this breaks down in IBD, arthritis and cancer.

**Martin Pule**, *co-team lead NexTGen, University College London, UK*
Martin leads the University Collgee London CAR T-cell program which comprises over 80 scientists, clinicians and regulatory staff. He has pioneered the development of allogeneic CAR T-cells, automated CAR T-cell manufacture and dual antigen targeting. Twelve T-cell engineering cassettes designed by Dr Pule have been tested in first-in-human clinical studies.

**Timothy Rebbeck**, *Scientific Committee Cancer Grand Challenges, Dana-Farber Cancer Institute, US*
Timothy is the Vincent L. Gregory Professor of Cancer Prevention and a member of the Cancer Grand Challenged Scientific Committee. His areas of research are the etiology of cancer and cancer disparities, with a focus on prostate cancer and global health.

**David Scott,** *Director, Cancer Grand Challenges, Cancer Research UK*
David has been the Director of the Cancer Grand Challenges initiative at CRUK since 2020. Before this, he was Director of Discovery Research at CRUK for over 11 years where he oversaw the charity's basic science portfolio. David originally trained as a scientist in the UK and Italy, modelling fluid and solute transport across the vasculature and interstitial tissues.

**Dinah Singer**, *Deputy Director for Scientific Strategy and Development, National Cancer Institute, US*
Dinah is Deputy Director, National Cancer Institute (NCI), and has facilitated the emergence of new cancer research areas and led the development of numerous initiatives, including the Cancer Moonshot. As a Principal co-investigator in the Center for Cancer Research, NCI, her research focuses on interrogating the regulatory networks governing gene expression.

# Speakers, cont.

**Lillian Siu**, *Scientific Committee Cancer Grand Challenges, Princess Margaret Cancer Centre, CA*
Lillian is a senior medical oncologist at Princess Margaret Cancer Centre in Toronto, Canada, and a Professor of Medicine at the University of Toronto. She is the Director of the Phase I Trials Program, and holds the BMO Chair in Precision Genomics. Her research focus is in the area of experimental therapeutics, and in head and neck malignancies.

**Mike Stratton**, *team lead Mutographs, Wellcome Sanger Institute, UK*
Mike is Director of the Wellcome Sanger Institute and Chief Executive Officer of the Wellcome Genome Campus. His primary research interests have been in the genetics of cancer. His early research focused on inherited susceptibility. Mike mapped and identified the major high-risk breast cancer susceptibility gene BRCA2 and subsequently a series of moderate-risk breast cancer and other cancer susceptibility genes.

**Charles Swanton,** *Scientific Committee Cancer Grand Challenges, The Francis Crick Institute, UK*
Charles is group leader, Cancer Evolution and Genome Instability, at the Francis Crick Institute and thoracic oncologist at University College London Hospital. His research focuses on how tumours evolve over space and time, processes that drive cancer cell-to-cell variation in the form of new cancer mutations or chromosomal instabilities, and the impact of such cancer diversity on effective immune surveillance and clinical outcome.

**Zoltan Takats**, *co-co-investigator Rosetta, Imperial College London, UK*
Zoltan is Professor of Analytical Chemistry at Imperial College London. He's been pioneering *in-vivo* mass spectrometry and spectroscopically guided semi-autonomous surgical interventions for cancer treatment for the last 15 years.

**Laura Torrens**, *postdoctoral scientist Mutographs/ PROMINENT, International Agency for Research on Cancer, FR*
Laura is a Postdoctoral Scientist at the Genomic Epidemiology Branch of the International Agency for Research on Cancer. Her research focuses on identifying preventable causes of head and neck cancer and associated mutational signatures related to its exposure in order to unravel relevant carcinogenic mechanisms in this tumor type.

**Jacco van Rheenen**, co-*co-investigator PRECISION, Netherlands Cancer Institute, NL*
Jacco is group leader at the Netherlands Cancer Institute and the Oncode Institute, and professor in Intravital Microscopy at the University Medical Center Utrecht. The van Rheenen group studies the identity, behavior, and fate of cells that drive the initiation and progression of cancer by high resolution intravital microscopy technologies.

**Ignacio Vázquez-García**, *research fellow IMAXT, Memorial Sloan Kettering Cancer Center, US* Ignacio is a postdoctoral research fellow in Computational Oncology at Memorial Sloan Kettering and Columbia University. He is interested in studying the mechanisms of spatio-temporal tumor evolution, progression and therapy response using single-cell genomics and in situ imaging. His current research focuses on genomic instability and its impact on tumor evolutionary dynamics and the immune microenvironment.

**Karen Vousden,** *Scientific Committee Cancer Grand Challenges, The Francis Crick Institute, UK*
Karen is a cancer biologist at The Francis Crick Institute. Her work has contributed to our understanding of the regulation and function of the tumour suppressor p53, revealing an ability of p53 to help cells adapt to transient periods of nutrient starvation. Her studies now focus on a more general investigation of cancer cell metabolism.

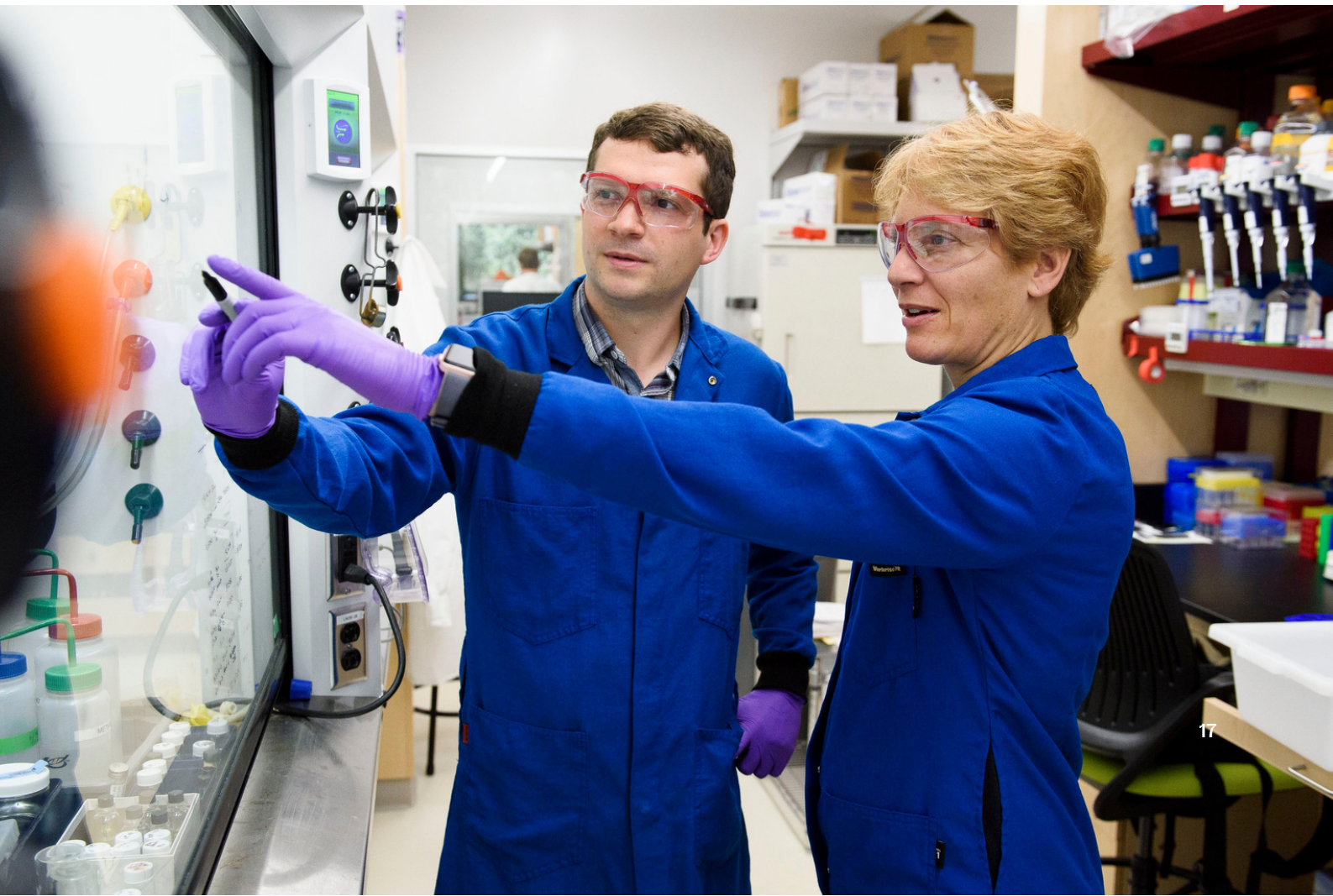
# Speakers, cont.

**Sara Wakeling**, *patient advocate NexTGen, Alice's Arc and University College London, UK*
Sara is a patient advocate for team NexTGen. She is the co-founder of Alice's Arc, a children's cancer charity focused on funding research into the childhood cancer, rhabdomyosarcoma. Sara holds a number of Patient and Public Involvement and Engagement (PPI/E) roles including the National Cancer Research Institute, Novel Agents Group and the European paediatric Soft Tissue Sarcoma Group. She is also a PPI/E Research Assistant at University College London.

**Jelle Wesseling**, *team lead PRECISION, Netherlands Cancer Institute, NL*
Jelle is professor of breast pathology at the Netherlands Cancer Institute–Antoni van Leeuwenhoek Hospital and at Leiden University Medical Center and team lead on the PRECISION Cancer Grand Challenge. PRECISION aims to conquer overtreatment of women with low-risk DCIS, potential precursor to breast cancer. Ultimately, this will save thousands of women from across the globe, the burden of needless intensive treatment.

**Mariia Yuneva**, *co-co-investigator Rosetta, The Francis Crick Institute, UK*
Mariia is a senior group leader at the Francis Crick Institute. Her group studies the role of metabolism in different aspects of tumourigensis.

*In the lab with Professor Carolyn Bertozzi of team NexTGen and graduate student, Fred Tomlin. Photo credit: Linda A. Cicero - Stanford News Service*



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