



2024

THE EARLY DETECTION OF CANCER CONFERENCE

San Francisco, CA, USA

#EDxConf24

OCTOBER
22-24



www.earlydetectionresearch.com

2024

THE EARLY DETECTION OF CANCER CONFERENCE

October 22-24

This conference will use
an online question
submission system.

To participate
go to **Slido.com** and
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HYATT REGENCY
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50 3rd Street
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WEDNESDAY October 23
EVENING RECEPTION

SPIN San Francisco
690 Folsom Street #100
San Francisco, CA 94107

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Don Listwin Award

An international collaboration

Funding opportunities in early detection research

Organizing institutions

Sponsors

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On behalf of the Canary Center at Stanford, the OHSU Knight Cancer Institute, and Cancer Research UK (CRUK), we welcome you all to San Francisco for the ninth Early Detection of Cancer Conference.

WELCOME

Early detection is one of the most powerful ways in which we can improve cancer survival. Improving the early detection of lethal cancers is fundamental to treating patients more effectively. However, this is a very complex field. Early detection is multi-disciplinary, requires long-term evidence to prove success and may require entirely new approaches to tackling disease. For these reasons, Cancer Research UK, the Canary Center at Stanford and the OHSU Knight Cancer Institute have joined forces to address these challenges and accelerate progress.

CRUK and OHSU's first conference brought together 120 world-leading scientists in June 2016 in Portland, Oregon. In 2017, we held another conference of 160 attendees together in Cambridge, UK. These meetings were designed to stimulate creative thinking, build relationships across the globe, and assess the state of the art in the early detection field. In 2018, the Canary Center at Stanford joined us as a third partner. Together, we are building on our meeting histories to explore the current state of the early detection field and help define key challenges through a wide range of presentations and discussions.

As leaders in your fields, you have much to contribute to this conference. We want to unite world-leading scientists from multiple disciplines, and create a global network of experts dedicated to advancing this field. Collaboration is key to making this happen, so we ask you to take advantage of the discussions and networking opportunities to develop and share ideas and identify ways of driving the field forward.

We look forward to a lively and thought-provoking conference, and to hearing from you about how we tackle this important problem. Thank you for participating to the fullest!

Utkan Demirci

Professor of Radiology
Canary Center, Stanford University

Thuy Ngo

Associate Professor of Molecular
and Medical Genetics
Knight Cancer Institute, Oregon
Health & Science University

Sam Janes

Director of Medicine
University College of London

SCIENTIFIC COMMITTEE

Utkan Demirci

Canary Center, Stanford University

Utkan Demirci is a tenured professor in the School of Medicine at Stanford University and serves as the Interim Division Chief and Director of the Canary Center at Stanford for Cancer Early Detection in the Department of Radiology. Prior to Stanford, he was an Associate Professor of Medicine at the Brigham and Women's Hospital, Harvard Medical School, and a faculty member of the Harvard-MIT Health Sciences and Technology division.

Professor Demirci received his PhD from Stanford University in Electrical Engineering in 2005 and holds M.S. degrees in Electrical Engineering, and in Management Science and Engineering. He has published over 200 peer-reviewed journal articles, 24 book chapters, 7 edited books, and several hundred abstracts and proceedings, as well as having over 25 patents and disclosures pending or granted. He has mentored and trained hundreds of successful scientists, entrepreneurs and academicians and fostered research and industry collaborations around the world. Dr. Demirci was awarded the NSF CAREER Award, and IEEE EMBS Early Career Award. He is currently a fellow of the American Institute for Medical and Biological Engineering (AIMBE, 2017), and Distinguished Investigator of the Academy for Radiology and Biomedical Imaging Research and serves as an editorial board member for a number of peer-reviewed journals.

The BAMM Lab group focuses on developing innovative extracellular vesicle isolation tools, point-of-care technologies and creating microfluidic platforms for early cancer detection with broad applications to multiple diseases including infertility and HIV. Dr. Demirci's lab has collaborated with over 50 research groups and industry partners around the world. His seminal work in microfluidics has led to the development of innovative FDA-approved platform technologies in medicine and many of his inventions have been industry licensed. He holds several FDA-approved and CE-marked technologies that have been widely used by fertility clinics with assisted reproductive technologies leading to over thousands of live births globally and in the US.

Dr. Demirci is a serial academic entrepreneur and co-founder of DxNow, Zymot, Levitas Bio, Mercury Biosciences and Koek Biotech and serves as an advisor, consultant and/or board member to some early stage companies and investment groups.



SCIENTIFIC COMMITTEE

Thuy Ngo

Knight Cancer Institute, Oregon Health & Science University

Dr. Ngo is an Associate Professor in Molecular and Medical Genetics at Oregon Health and Science University and a member of the Knight Cancer Institute's Cancer Early Detection Advanced Research Center (CEDAR). She received her PhD in biophysics and computational biology from the University of Illinois at Urbana-Champaign under the advisory of Dr. Taekjip Ha in 2014. She completed her postdoc training in Dr. Stephen Quake's laboratory at Stanford University in 2017. Dr. Ngo is interested in technologies and basic mechanisms for diagnosis, precision selection of therapy, and treatment assessment by maximizing the high information content of cell-free RNA, cell-free DNA, and extracellular vesicles in body fluids. She has published research articles across disciplines in high-impact journals such as Science, Nature, and Cell. Her work in diagnostic technologies has led to 3 patent applications and licenses and was selected as Top 10 Breakthrough Technologies 2019 by MIT Technology Review. Her findings have been well-received by the academic community, which has led to a broad audience by multiple media outlets such as NYTimes, CNN, BBC, TIME Magazine, and ABC News.



Sam Janes

University College of London

Sam is the Director of Medicine at University College London, a division within the Faculty of Medical Sciences that encompasses 8 departments, over 20 centres and around 130 principal investigators across three campuses. His laboratory research, funded by Medical Research Council and Cancer Research UK programme grants focusses on the airways and examines both normal homeostasis and the earliest development of cancer. Major contributions include defining that normal airway homeostasis is governed by stochastic division of basal cell; showing that airways genetically damaged by smoking can resolve on quitting; mapping the molecular architecture of pre-cancerous Squamous cell lesions, and identifying the immunological abnormalities that allow precancerous lesions to progress to cancer. These achievements were recognised with his election to the Academy of Medical Sciences in 2021. He is the chief investigator of several trials ranging first-in-man trials of cell and gene therapies emanating from his own lab, to SUMMIT, the largest lung cancer screening trial in Europe recruiting over 13000 people. He works across the University, UCL Hospitals, the UCLH Biomedical Research Centre and interacts closely with industry, again ranging from trial delivery through to venture capital funded drug discovery programmes.



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6:00pm - 7:30pm Trainee Dinner

Tuesday, October 22

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9:15am - 10:15am	Keynote: Revolutionising cancer screening Peter Sasieni, Queen Mary University of London
10:15am - 10:45am	AM Break
10:45am - 12:15pm	How is biology informing early detection? Chairs: Rebecca Fitzgerald, University of Cambridge Sarah Mazzilli, Boston University Speakers: Sarah Aitken, University of Cambridge Angela Goncalves, Deutsches Krebsforschungszentrum, German Cancer Research Center Jennifer Beane-Ebel, Boston University Ken Lau, Vanderbilt University
12:15pm - 12:30pm	PPIE Flash Talks Saumya Bollam, University of California San Francisco Lluvia Del Rio, patient representative
12:30pm - 12:45pm	Lightning Talks: How is biology informing early detection? <ul style="list-style-type: none">» Polygenic Risk Scores Derived in White European Women Overestimate Breast Cancer Risk in Women of Black Origin - Eleanor Roberts, University of Manchester» Ovarian cancer growth kinetics - implications for cancer early detection - Bharath Narayanan, University of Cambridge» Circulating Tumor Cells in a Vascularized Bone-on-a-Chip Model Links Matrix Mineralization and Nuclear Damage as Novel Drivers of Prostate Cancer Progression - Avathamsa Athirasala, Oregon Health & Science University
12:45pm - 1:45pm	Lunch

CONFERENCE AGENDA

Tuesday, October 22

1:45pm - 3:15pm

Emerging technologies for cancer early detection

Chairs: Joseph DeSimone, Stanford University
Billy Boyle, Owlstone Medical

Speakers: Teal Health Representative
George Hanna, Imperial College London
Daniel Kim, University of California Santa Cruz
Otto Zhou, University of North Carolina

3:15pm - 3:30pm

PPIE Flash Talks

Ignacia Arteaga, University of California San Francisco
Emily Arteaga, patient representative

3:30pm - 3:45pm

Lightning Talks: Emerging technologies for cancer early detection

- » Clinical Evaluation of a New Blood-based Test for Colorectal Cancer Screening - Theodore Levin, Kaiser Permanente Northern California
- » Evaluating Deep Learning Features of Chromatin-Sensitive Partial Wave Spectroscopic Microscopy for Early Lung Cancer Diagnosis - Sravya Prabhala, Northwestern University
- » Distinctive proteomic signature of the pancreatic cystic fluid for EARLY DIAGNOSIS of PANcreatic Cancer (EARLY DIAPAC study) - Leonid Nikitenko, University of Hull

3:45pm - 4:10pm

PM Break

4:10pm - 4:55pm

Panel Discussion: Global challenges in cancer early detection

Moderator: Bill Dahut, American Cancer Society
Panelists: Rob Bristow, University of Manchester
Sok Ching Cheung, Cancer Research Malaysia
Jennifer Moodley, University of Cape Town

4:55pm - 5:00pm

Closing Remarks

Joseph M. DeSimone, Stanford University
Catherine Elliott, Cancer Research UK
Brian Druker, Oregon Health & Science University

5:00pm - 6:00pm

Evening Poster Reception

Wednesday, October 23

8:00am - 9:00am

Check-in & Breakfast

9:00am - 9:15am

Welcome Remarks

Sam Janes, University College of London

9:15am - 10:15am

Keynote: New approaches to early detection of cancer
Steve Quake, Stanford University

CONFERENCE AGENDA

Wednesday, October 23

10:15am - 10:45am

AM Break

10:45am - 11:30am

Panel Discussion: Investing into the future: From Lab to Clinic

Moderator: Sanjay Malhotra, Oregon Health & Science University

Panelists: Michael Liang, InVivium Capital

Nitzan Rosenfeld, Queen Mary University of London

Jenny Rooke, Genoa Ventures

11:30am - 12:00pm

Investing into the future: From Lab to Clinic Networking

12:00pm - 1:10pm

Lunch

1:10pm - 2:40pm

Insights from Early Detection Trials

Chairs: Nima Nabavizadeh, Oregon Health & Science University

Allan Hackshaw, University College of London

Speakers: Scott Bratman, University of Toronto

Tiffani Howard, Oregon Health & Science University

Kate Brain, Cardiff University

Rhian Gabe, Queen Mary University of London

2:40pm - 2:55pm

PPIE Flash Talks

Alice Groves, University of Cambridge

2:55pm - 3:10pm

Lightning Talks: Insights from Early Detection Trials

- » Smart PSA: a Trial of Risk-Adapted PSA Screening in a Minority-Serving Health Center Network - Peter Gann, University of Illinois at Chicago
- » REFLECTION: Initial findings from a real-world evidence study of multi-cancer detection (MCED) and toxic exposures among Veterans in the Veterans Affairs Healthcare System (VA) - Charles Atwood, VA Pittsburgh Healthcare System
- » Implementing Lung Cancer Screening in the UK: An update on Results from the NHS England National 'Targeted Lung Health Check' Programme - Richard Lee, Early Diagnosis and Detection Centre, Royal Marsden Hospital & Institute of Cancer Research

3:10pm - 3:55pm

PM Break & Poster Reception

3:55pm - 4:40pm

Panel Discussion: The future of evaluation of cancer screening technologies

Moderator: Tom Beer, Exact Sciences

Panelists: Li Li, University of Virginia

Adam Brentnall, Queen Mary University of London

Hilary Robbins, International Agency for Research on Cancer

Ruth Etzioni, Fred Hutch Cancer Center

CONFERENCE AGENDA

Wednesday, October 23

4:40pm - 5:15pm	<p>The Great Debate: Research focusing on early detection of rare cancers is a waste of money</p> <p>Moderator: David Crosby, Cancer Research UK</p> <p>For: Paul Spellman, University of California Los Angeles</p> <p>Against: Emma Woodward, University of Manchester</p>
5:15pm - 5:20pm	<p>Closing Remarks</p> <p>Sam Janes, University College London</p>
5:20pm	<p>Travel to Conference Dinner</p>
5:30pm - 8:30pm	<p>Conference Dinner/Reception & Don Listwin Award presentation</p> <p>SPIN San Francisco, 690 Folsom Street #100, San Francisco, CA 94107</p>

Thursday, October 24

8:00am - 9:00am	<p>Check-in & Breakfast</p>
9:00am - 9:15am	<p>Welcome Remarks</p> <p>Thuy Ngo, Oregon Health & Science University</p>
9:15am - 10:45am	<p>Artificial Intelligence - promises vs. reality for early detection</p> <p>Chair: Sylvia Plevritis, Stanford University Cathie Sudlow, Health Data Research UK</p> <p>Speaker: Bissan Al-Lazikani, MD Anderson Su-In Lee, University of Washington Jens Rittscher, University of Oxford</p>
10:45am - 10:50am	<p>Transition to Lightning Talks</p>
10:50am - 11:05am	<p>Lightning Talks: Artificial Intelligence - promises vs. reality for early detection</p> <ul style="list-style-type: none">» Imaging Biomarker for Early Detection of Lung Cancer Combining Semantic and Deep Features - Luoting Zhuang, University of California Los Angeles» A rigorous framework for cell-free DNA tissue deconvolution by combining a deep learning classifier and conformal prediction - Felix Jackson, Ludwig Institute of Cancer Research, University of Oxford» Early Prostate Cancer Detection Using AI-powered Transabdominal Ultrasound - Liza M. Kurucz, The Netherlands Cancer Institute - Antoni van Leeuwenhoek Hospital
11:05am - 11:30am	<p>AM Break</p>
11:30am - 12:30pm	<p>Keynote: The First Cell: Route for early detection and prevention</p> <p>Azra Raza, Columbia University</p>
12:30pm - 12:40pm	<p>Closing Remarks</p> <p>Thuy Ngo, Oregon Health & Science University</p>

Tuesday, October 22

SPEAKER AND SESSION INFORMATION

Keynote: Revolutionising cancer screening

Peter Sasieni

Queen Mary University of London

Peter Sasieni, FMedSci is Professor of Cancer Epidemiology at Queen Mary University of London. He is Director of the Cancer Research UK Cancer Prevention Trials Unit at QMUL and Co-Lead of the Centre for Cancer Screening, Prevention and Early Diagnosis in the Wolfson Institute of Population Health. After graduating in biostatistics, he worked with Jack Cuzick at the Imperial Cancer Research Fund and later at Queen Mary University of London before moving to King's College London where he was Director of King's Clinical Trials Unit. He has over 30 years' experience as an applied statistician and cancer epidemiologist. Professor Sasieni's research focuses on using an epidemiological approach to cancer early diagnosis and designing and running clinical trials of early detection and prevention interventions. He has published extensively on cervical screening and HPV vaccination. He is currently collaborating with Professor Rebecca Fitzgerald to evaluate her oesophageal capsule sponge both in screening and surveillance; and is one of the lead investigators on the NHS-Galleri Trial evaluating GRAIL's multi-cancer early detection blood test in population screening. Peter Sasieni is a member of several trial oversight committees and national advisory boards. In 2023 he received The Don Listwin Award for Outstanding Contribution to Cancer Early Detection.



Tuesday, October 22

How is biology informing early detection?

This session will examine how the biological and immunological landscape of normal tissues, precancerous lesions and early cancers is informing early detection approaches. It will explore at which timepoint abnormalities can be *meaningfully* detected i.e. when an intervention can be paired with detection.

CHAIR:

Rebecca Fitzgerald
University of Cambridge

Rebecca Fitzgerald OBE MACantab. MD FMedSci EMBO MAE is Professor of Cancer Prevention and Director of the Early Detection Institute at the University of Cambridge and practices medicine as Hon. Consultant in Gastroenterology and Cancer Medicine at Addenbrooke's Hospital. Rebecca also leads the Cambridge component of the CRUK International Alliance in Early Detection (ACED). The focus of her research is to investigate the steps in malignant transformation in the oesophagus and stomach and to use this information to improve clinical early detection strategies. Her work to develop and implement a non-endoscopic capsule sponge and related biomarker assays for detection of Barrett's oesophagus and associated dysplasia has been awarded a number of prizes including the Westminster Medal, an NHS Innovation prize and the Don Listwin Early Detection Prize. In 2022 Rebecca was awarded an OBE for services to cancer research. Rebecca has contributed to evidence reviews and policy work around screening including for the Department of Health in the UK and recently led a review of cancer screening for the European Commission that led to new screening policy for EU member states.



CHAIR:

Sarah Mazzilli
Boston University

Dr. Sarah Mazzilli is an Assistant Professor in the Section of Computational Biomedicine at Boston University Chobanian & Avedisian School of Medicine, where her group studies the early events that enable premalignant transition to frank lung carcinoma. Dr. Mazzilli is part of the collaborative research group at BU led by Dr. Avi Spira, who are leading the establishment of the Lung Precancer Atlas (PCA) as part of the NCI's Cancer Moonshot Human Tumor Atlas Network (HTAN). In addition, Dr. Mazzilli group works to establish and characterize preclinical models of premalignant transitions employing novel single cell and spatial biology approaches.



Tuesday, October 22

How is biology informing early detection?

SPEAKER:

Sarah Aitken
University of Cambridge

Dr Aitken is a Clinician Scientist, leading a research group at the University of Cambridge, UK and working as a Consultant Pathologist (board certified Attending) at Addenbrooke's Hospital, Cambridge. Dr Aitken trained in Medicine at the University of Edinburgh (UK), with an intercalated BMedSci in Experimental Pathology and postgraduate MSc in Translational Medicine. She undertook a mixed experimental-computational PhD at the CRUK Cambridge Institute (Cambridge, UK), followed by an EMBO Fellowship in bioinformatics at the IRB Barcelona (Spain). She returned to Cambridge to completed her clinical residency in Histopathology as an NIHR Academic Clinical Fellow and subsequently NIHR Clinical Lecturer, before establishing her independent research group. Her lab uses genomic pathology, which combines molecular biology, genomics, and image analysis, to study mechanisms of mutagenesis, the genetic and epigenetic basis of carcinogenesis, and the consequences of genetic diversity on cancer evolution. Dr Aitken is funded by a CRUK Clinician Scientist Fellowship.

**SPEAKER:**

Angela Goncalves
The German Cancer Research Center

Angela obtained her PhD from the University of Cambridge and the European Bioinformatics Institute. During her PhD she investigated the evolution of gene expression regulation during mammalian speciation and developed some of the earliest bioinformatics methods for the analysis of RNA-sequencing data. After her PhD, Angela conducted her postdoctoral research on population genomics at the Wellcome Trust Sanger Institute. During her postdoc she was awarded a Pump Priming grant by the Cambridge Cancer Centre Early Detection Programme to establish the use of menstrual fluid as a model system to track somatic mutations in normal tissues over time. Since 2018 she has led a group at the German Cancer Research Center. Her research interests are in modelling the evolution of somatic mutant clones in normal and pre-malignant tissues, with the view of developing methods for preventing and detecting cancer early.



Tuesday, October 22

How is biology informing early detection?

SPEAKER:

Jennifer Beane-Ebel
Boston University

Dr. Jennifer Beane is an Associate Professor of Medicine in the Section of Computational Biomedicine at the Boston University Chobanian and Avedisian School of Medicine. Her research interests focus on developing and implementing machine learning and statistical methodologies to expand our knowledge of the molecular changes associated with smoking and lung cancer. She is involved in developing relatively non-invasive multimodal biomarkers for the early detection of lung cancer. She is also interested in understanding early molecular changes associated with the development of lung premalignant lesions and their transition to invasive lung cancer as well as the molecular determinants of aggressive early-stage lung cancer. She has also been involved in several lung cancer chemoprevention studies and is interested in developing novel interception agents for lung cancer and biomarkers to predict their efficacy.



SPEAKER:

Ken Lau
Vanderbilt University

Dr. Ken Lau was born in Hong Kong and grew up in Toronto, Canada, where he received his Bachelors of Science and his Ph.D. in Proteomics and Bioinformatics (2008) from the University of Toronto. After a joint postdoctoral fellowship at MIT and Massachusetts General Hospital, he was recruited to the Vanderbilt Epithelial Biology Center and the Department of Cell and Developmental Biology as a tenure-track in 2013, and was promoted to Associate Professor with tenure in 2019, and Full Professor in 2023. Dr. Lau's laboratory applies data-driven systems biology approaches to understand cellular specification and function in the gut. His lab develops and utilizes single-cell and spatial technologies and data science algorithms to study cellular networks. His lab is broadly interested in the interactions between epithelium and the microbiome, cell states in stem cell biology and development, and the origins of cancer.



Tuesday, October 22

PPIE Flash Talks

The aim of the talks to encourage researchers to think about patient and public involvement in their early detection research. Researchers sometimes don't know where to start and how to go about it. Using these flash talks we are keen to showcase exemplars where PPI is done well.

SPEAKER:**Saumya Bollam**

University of California San Francisco

Saumya is a PhD Candidate in Allan Balmain's lab at the University of California, San Francisco. Her graduate thesis focuses on the roles major oncogenes play in coordinating epithelial-immune cell interactions during different stages of tumor development. She is also passionate about sharing knowledge with learners from diverse backgrounds, to empower a wide range of voices to actively participate in scientific research.

**SPEAKER:****Lluvia Del Rio**

Patient Representative

Lluvia Del Rio is a dedicated health advocate and community leader from Monterey County, known for her resilience and commitment to improving the lives of those in her farming town. A cancer survivor, Lluvia's personal journey has fueled her passion for raising awareness about health issues and supporting others facing similar challenges.

After overcoming her battle with cancer, Lluvia became deeply involved in community work, focusing on health education and access to resources for underserved populations. She believes that knowledge is power and works tirelessly to empower individuals to take charge of their health. Lluvia has collaborated with local organizations to organize workshops and outreach programs, providing essential information about cancer prevention, nutrition, and mental well-being.

Her advocacy extends beyond health; Lluvia is also an advocate for social justice and economic equality in her community. She actively participates in initiatives that promote sustainable farming practices and support local farmers, recognizing the vital role agriculture plays in the region's economy and culture.

Outside of her professional endeavors, Lluvia loves spending time with her family, tending to her farm animals and exploring the beautiful landscapes of Monterey County. Her unwavering spirit and commitment to her community continue to inspire those around her as she champions health and wellness for all.



Tuesday, October 22

Lightning Talks: How is biology informing early detection?

Polygenic Risk Scores Derived in White European Women Overestimate Breast Cancer Risk in Women of Black Origin

Eleanor Roberts

University of Manchester

Eleanor Roberts has just completed a Cancer Research UK funded PhD at the University of Manchester under the supervision of Dr Sacha Howell and Professor Gareth Evans. She completed her BSc in Biomedical Sciences at Queen Mary, University of London and MSc in Cancer Research and Molecular Biomedicine at the University of Manchester. Eleanor's research focusses on breast cancer genetics and risk stratification by using Polygenic Risk Scores to improve personalised risk prediction in non-White European women. Eleanor is also working on the BCAN-RAY clinical trial, a study aiming to improve the risk assessment of breast cancer in young women.



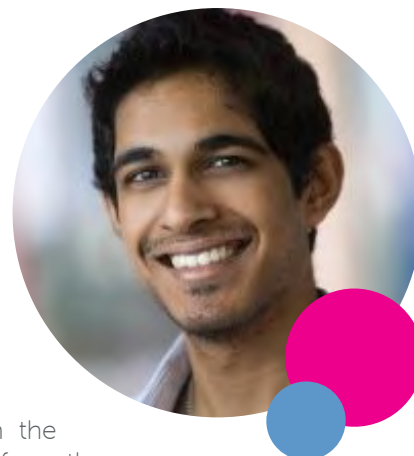
Ovarian cancer growth kinetics – implications for cancer early detection

Bharath Narayanan

University of Cambridge

Bharath is currently working as a research assistant in the department of public health and primary care at the University of Cambridge. He uses mathematical models of tumour growth to identify early detection strategies. He is also interested in developing models of metabolic/signalling networks to help identify timescales for metastasis / biomarker shedding.

Bharath completed his bachelor's degree in mechanical engineering from the National University of Singapore in 2012, with a minor in technopreneurship from the KTH in Stockholm. He worked as a researcher at the Tata Institute for Fundamental Research (TCIS) in Hyderabad, India on the flow past rough, rotating cylinders. In 2015, he moved to the Singapore Institute of Technology and Design (SUTD) where he published 3 papers on mathematical models of rod-like structures. He then used his time as a master's student at the EPFL in Switzerland to pivot towards a formal education in applied mathematics, and to gain experience in biomedical engineering. This culminated in a grant to conduct his master's thesis work at the Edelman Lab at MIT where he authored 2 papers and applied for 1 patent (pending) through his work on computational and experimental ways to characterize the material properties of arterial plaques. From 2020 to 2023, he used kinetic models of metabolic networks to suggest efficient ways to genetically engineer microorganisms towards a desired phenotype, at the EPFL in Switzerland, authoring 2 papers in the process. In 2023, he moved to Cambridge to start a research assistantship / PhD under the supervision of Prof. Nora Pashayan.



Tuesday, October 22

Lightning Talks: How is biology informing early detection?

Circulating Tumor Cells in a Vascularized Bone-on-a-Chip Model Links Matrix Mineralization and Nuclear Damage as Novel Drivers of Prostate Cancer Progression

Avathamsa Athirasala

Oregon Health & Science University

Dr. Avathamsa Athirasala is a postdoctoral researcher at Oregon Health & Science University (OHSU), specializing in tissue engineering with a focus on mechanotransduction and cancer biology. Her early research investigated nuclear mechanics and cellular responses to microenvironmental cues, particularly in the context of cancer cell migration. During her PhD at OHSU, Avathamsa developed expertise in biofabrication and tissue engineering to explore how the biophysical microenvironment—such as stiffness and geometry—impacts tissue behaviors and stem cell differentiation. By combining her background in mechanobiology with cutting-edge biofabrication techniques she hopes to develop in vitro models that simulate cancer biology and develop insights on how mechanical signaling pathways drive cancer progression in tumor microenvironments.



Tuesday, October 22

Emerging technologies for cancer early detection

This session will highlight new and cutting-edge technologies being utilized for cancer early detection, it will showcase research collaborations between engineers, biologists, and clinicians. This session could (but is not restricted to) highlight advances in: Imaging-based approaches, Exosome-based approaches, Nanotechnologies e.g. gold nanoparticles, quantum dots, etc., Theranostics, Synthetic biomarkers

CHAIR:

Joseph DeSimone
Stanford University

Joseph M. DeSimone is the Sanjiv Sam Gambhir Professor of Translational Medicine and Chemical Engineering at Stanford. Previously, DeSimone was a professor of chemistry at the University of North Carolina at Chapel Hill and of chemical engineering at North Carolina State University. He is also Co-founder and former CEO (2014 - 2019) of the 3D printing company, Carbon.

DeSimone is responsible for numerous breakthroughs in his career in areas including green chemistry, polymer synthesis, medical devices, nanomedicine, and 3D printing. He has published over 350 scientific articles and holds 240 patents. In 2016 DeSimone was recognized by President Barack Obama with the National Medal of Technology and Innovation. He is one of only 25 individuals elected to all three branches of the U.S. National Academies (Sciences, Medicine, Engineering). DeSimone received his B.S. in Chemistry in 1986 from Ursinus College and his Ph.D. in Chemistry in 1990 from Virginia Tech.



CHAIR:

Billy Boyle
Owlstone Medical

Owlstone Medical has developed Breath Biopsy with the goal of creating non-invasive breath tests to support early detection and precision medicine of diseases including cancer, asthma, COPD and liver disease. Our Breath Biopsy Research Products and Services are available to academic, clinical and pharma research partners who want to develop breath based diagnostics for their own applications. We work with leading academic institutions and industry leaders such as Cleveland Clinic, Astra Zeneca, J&J and GSK with over 100 published papers and posters using Owlstone's technology. As of 2023, the company has secured over \$150M of investment.

Billy received The Royal Academy of Engineering Silver Medal and was a winner of the 2018 MacRobert Award; he was then made a Fellow of the Royal Academy of Engineering in 2020 and an MBE in 2021. He was elected an Industrial Fellow at Trinity Hall Cambridge and Entrepreneur in Residence (EIR) at King's College Cambridge in 2022.

Billy sits on the CRUK Early Detection and Diagnosis Research Committee and was previously a judge for the Cancer Research UK (CRUK) Pioneer award and a trustee of the Linacre Institute.



Tuesday, October 22

Emerging technologies for cancer early detection

SPEAKER:

Teal Health Representative
Teal Health



SPEAKER:

George Hanna
Imperial College London

Professor George Hanna is the Head of the Department of Surgery and Cancer at Imperial College London. He practices oesophageal and gastric cancer surgery at Hammersmith Hospital, Imperial College Healthcare NHS Trust.

The current interests of his laboratory revolve around volatile organic compounds analysis for biomarker discovery and understanding the molecular drivers of volatile biomarkers. This programme aims to develop and validate a non-invasive breath test as a platform diagnostic technology to detect gastrointestinal (oesophageal, gastric, colorectal, pancreatic and liver) cancers. Professor Hanna is a Fellow of Academy of Medical sciences.



Tuesday, October 22

Emerging technologies for cancer early detection

SPEAKER:

Daniel Kim

University of California Santa Cruz

Daniel Kim is an Assistant Professor of Biomolecular Engineering at the University of California Santa Cruz, an Associate Member of the Canary Center at Stanford, and a Research Scholar of the American Cancer Society. He also serves as Co-Chair of the International Society for Extracellular Vesicles (ISEV) RNA Task Force, Co-Chair of the US National Institutes of Health (NIH) Liquid Biopsy Special Interest Group, and Chair of Media & Communications for the RNA Society. His laboratory develops RNA technologies for precision health, cancer early detection, and RNA medicine. His RNA research has been featured in Newsweek, Scientific American, and by the Director of the US National Institutes of Health, and has been recognized by awards from the Damon Runyon Cancer Research Foundation and the US National Academy of Sciences.



SPEAKER:

Otto Zhou

University of North Carolina Chapel Hill

Otto Zhou is a Professor at the University of North Carolina Chapel Hill. Dr. Zhou's group is interested in the application of nanotechnology for cancer detection and therapy.



Tuesday, October 22

PPIE Flash Talks

The aim of the talks to encourage researchers to think about patient and public involvement in their early detection research. Researchers sometimes don't know where to start and how to go about it. Using these flash talks we are keen to showcase exemplars where PPI is done well.

SPEAKER:

Ignacia Arteaga

University of California San Francisco

Ignacia Arteaga, PhD, is a Postdoctoral Scholar at the Philip R. Lee Institute for Health Policy Studies at UCSF, where she works on aging and equity issues among diverse populations. With a background in Sociology and Social Anthropology, Dr. Arteaga has over a decade of experience in cancer detection, treatment, and care research. From 2018 to 2022, she was a Research Fellow at the University of Cambridge, where she examined the development and social acceptability of novel early cancer detection technologies for diverse population groups.



Dr. Arteaga is dedicated to advancing the role of public and patient involvement (PPI) in clinical research, particularly in efforts to enhance equity and trust among marginalized groups. She co-led the REPRESENT project, funded by the Alliance for Cancer Early Detection (ACED), which aimed to develop evidence-based and consensus-based recommendations to improve inclusion and trust in early cancer detection research.

Through REPRESENT, Dr. Arteaga and her colleagues identified strategies for fostering trust and inclusivity in clinical research, particularly among underrepresented groups. The project culminated in the development of actionable recommendations, now published in the British Journal of Cancer, aimed at making early detection research more inclusive and community-centered (link to the paper: Recommendations for improving inclusion and trust in early cancer detection research).

At this conference, Dr. Arteaga will present the findings from REPRESENT, alongside a community advisor Emily Arteaga, highlighting the role of PPI in the project and its potential to reshape how marginalized communities engage with and benefit from clinical research.

SPEAKER:

Emily Arteaga Garcia

Patient Representative

Emily Arteaga Garcia is a Latina with a Master's in Computer Science and a member of the development team for the ROAR (Rapid Online Assessment of Reading) project at Stanford University. She focuses on building educational tools and platforms that support reading assessments. Emily works on creating inclusive and user-friendly digital experiences. She is also passionate about advocating for women in tech and enjoys contributing to projects that bridge the gap between technology and education.



Tuesday, October 22

Lightning Talks: Emerging technologies for cancer early detection

Clinical Evaluation of a New Blood-based Test for Colorectal Cancer Screening

Theodore Levin

Kaiser Permanente Northern California

Dr. Levin is a Gastroenterologist and the Clinical Lead for Colorectal Cancer Screening at the Permanente Medical Group, Inc, and the Associate Director for Cancer Research at the Kaiser Permanente Division of Research in Pleasanton, California. A graduate of the Emory University School of Medicine, he completed internal medicine residency, gastroenterology fellowship and health policy fellowship at UCSF. His research focuses on health care delivery and new technologies for colorectal cancer screening, including fecal DNA, fecal immunochemical tests, colonoscopy and blood-based screening tests.



Evaluating Deep Learning Features of Chromatin-Sensitive Partial Wave Spectroscopic Microscopy for Early Lung Cancer Diagnosis

Sravya Prabhala

Northwestern University

Sravya is a Research Associate at Backman Lab, Northwestern University, where she leverages AI to drive advancements in early-stage cancer diagnostics. With experience in deep learning and computer vision for medical imaging, her research focuses on studying alterations in chromatin organization to identify AI-enabled biomarkers. She also develops tools to enhance clinical decision-making by streamlining diagnostic workflows and integrating data across multiple imaging modalities.

Sravya holds a Master of Science in Law from Northwestern Pritzker School of Law and a Master of Science in Electrical Engineering from the University of South Florida, specializing in Signal Processing and Machine Learning.

Sravya is passionate about the intersection of healthcare, emerging technologies, and law, and how these fields can work together to improve patient outcomes.



Tuesday, October 22

Lightning Talks: Emerging technologies for cancer early detection

Distinctive proteomic signature of the pancreatic cystic fluid
for EARLY DIAGNOSIS of PANcreatic Cancer
(EARLY DIAPAC study)

Leonid Nikitenko

University of Hull

Leonid Nikitenko leads research group at Hull-York Medical School, University of Hull, United Kingdom. Leonid's current research is focused on investigating molecular mechanisms that govern endothelial cell contribution in chronic diseases, and on early detection of cancer, by using -omics technologies (www.endothelial-cell.com) Qualifying with a B.Sc. in Human Physiology from the University of Irkutsk in Eastern Siberia and a Ph.D. in Biological Sciences from the Russian Academy of Medical Sciences, Leonid completed post-doctoral training at the University of Oxford with Prof Margaret Rees and Prof Roy Bicknell, during which time he became interested in endothelial cell biology. For his work on characterising adrenomedullin receptors in human endothelial cells, Leonid received a E.P.A. Cephalosporin Junior Research Fellowship at Linacre College and a Merit Award (University of Oxford, 2002), and a Doctor of Sciences degree in Pathophysiology (Russian Academy of Medical Sciences, 2007). He continued endothelial cell research as a senior fellow at the University College London Cancer Institute with Prof Chris Boshoff and at the Ludwig Institute for Cancer Research in Oxford with Dr Sarah De Val. In 2015, Leonid was appointed at the University of Hull, where he established his own laboratory (2018). Leonid Nikitenko's research group conducts platform science-based (including in vitro, transcriptomic, proteomic and in silico approaches) through to clinical studies, and benefits from multiple academic and biotech/pharma collaborations nationally and internationally.



Tuesday, October 22

Panel Discussion: Global Challenges in cancer early detection

The differences between demographic regions worldwide, including genetic makeup and environmental influences such as exposure, lifestyle, and the prevalence of viral diseases, contribute to the underlying molecular anomalies associated with malignant transformation. Data regarding patients from certain regions, such as Africa, Asia, and South America, are underrepresented. Additionally, the implementation of cancer surveillance depends on healthcare accessibility and cost structures. How do cancer early detection tests address these multifaceted factors? Should the development and evaluation of such tests be tailored to the unique characteristics of each demographic region? Furthermore, how can we integrate the diverse spectrum of cancer risk factors and the varying capacities of healthcare infrastructure into surveillance guidelines and screening stratification?

MODERATOR:

Bill Dahut

American Cancer Society

William L. Dahut, MD, is chief scientific officer and serves as the scientific voice of the American Cancer Society.

Dr. Dahut held leading roles at the National Cancer Institute before joining ACS. He has pioneered treatment regimens in prostate cancer and is a recognized expert in clinical trials and immunotherapy.

He received his MD from Georgetown University and completed clinical training in internal medicine at the National Naval Medical Center, followed by training in hematology and medical oncology at the Bethesda Naval Hospital and the Medicine Branch of the NCI. He is also professor of medicine at Uniformed Services University of the Health Sciences in Bethesda, Maryland, and continues to see patients in the prostate cancer clinic at Walter Reed National Medical Military Center.



Tuesday, October 22

Panel Discussion: Global Challenges in cancer early detection

PANELIST:

Rob Bristow

University of Manchester

Robert Bristow completed his PhD in Medical Biophysics and Residency in Radiation Oncology at the University of Toronto with post-graduate fellowships at Erasmus University Rotterdam, MD Anderson Cancer Centre and Massachusetts General Hospital. Bristow joined the University of Manchester as Director of the Manchester Cancer Research Centre (MCRC) in August 2017 to develop a new cancer strategy. His research focuses on the prostate cancer genome and tumour microenvironment hypoxic tumour cell characterisation by understanding role of hypoxia in driving genetic instability and the changes in sporadic and hereditary (e.g. BRCA2) prostate cancer genomes during cancer aggression. He is Principal Lead of the Manchester arm of the International Alliance for Cancer Early Detection (ACED), with an interest in signatures that predict aggression in men with sporadic and hereditary prostate cancer. Rob also sits on the Alliance Executive Board (AEB).



PANELIST:

Sok Ching Cheong

Cancer Research Malaysia

Dr Cheong is the Chief Scientific Officer at Cancer Research Malaysia and Adjunct Professor at the Faculty of Dentistry, University of Malaya. Her work aims to improve management and survival of cancer patients through the understanding of the underlying molecular changes, and through the development of novel treatment approaches, focusing on head and neck cancers. Her work includes the development of immunotherapy and the use CRISPR-Cas9 essential screens to identify novel targets for head and neck cancer. In addition, she also focuses on early detection using innovative strategies including the development of novel mobile health tools. She has received grants from national and international funding bodies including the Newton-Ungku Omar Fund, Newton Fund Impact Scheme, Global Challenges Research Fund and the Ministry of Science, Technology and Innovation SMART Fund, amongst others. In recognition of her research contributions, she has received several national and international scientific awards, including the President's Award by the International Association of Oral Maxillofacial Pathologist (IAOP), the 8th Underwriters Laboratories-ASEAN-US Science Prize for Women 2022 and The World Academy of Sciences (TWAS) Medal Lecture.



Tuesday, October 22

Panel Discussion: Global Challenges in cancer early detection

PANELIST:

Jennifer Moodley
University of Cape Town

Professor Jennifer Moodley is the Director of the Cancer Research Initiative at the University of Cape Town. She is a Public Health Medicine Physician with experience in health systems research, epidemiology, advocacy and public policy development. Jennifer worked as a clinician in rural and urban health care settings and has first-hand experience of the challenges in providing health care in resource-constrained environments. She has been involved in the development and implementation of diverse public health programs and policies; conducted health systems research to support national and provincial public health objectives and mentored under- and post-graduates to meet similar responsibilities. Jennifer's research focuses on primary and secondary cancer prevention and on improving pathways to cancer diagnosis and care. She values the importance of multi-disciplinary teams in addressing public health issues and is committed to social development and translating research into policy and practice.



Wednesday, October 23

SPEAKER AND SESSION INFORMATION

Keynote:
New approaches to early detection of cancer

Steve Quake

Stanford University

Stephen Quake is Head of Science at the Chan Zuckerberg Initiative, where he oversees CZI's science grant programs, technology development, and the CZ Biohub Network. He has received numerous awards for his contributions to science and is one of only two dozen scientists elected to all three National Academies. Steve also holds a faculty position at Stanford University, where he is the Lee Otterson Professor of Bioengineering and Applied Physics. Previously he was the founding co-president of the Chan Zuckerberg Biohub (2016-2022), investigator of the Howard Hughes Medical Institute (2006-2016), and professor at the California Institute of Technology (1996-2005).



Wednesday, October 23

Panel Discussion: Investing into the future: From Lab to Clinic

Innovation and research on the research lab bench need to evolve further to make it to the clinic to serve our patients. The remarkable technologies need business development and investment to get to that level to create impact.

MODERATOR:

Sanjay Malhotra

Oregon Health & Science University

Sanjay V. Malhotra, PhD, FRSC is Director of the Center for Experimental Therapeutics, Professor, Department of Cell Development & Cancer Biology, and Sheila Edwards-Lienhart Endowed Chair in Cancer Research at Oregon Health & Science University (OHSU). Before joining OHSU, he was on the Faculty of the Stanford University School of Medicine, and previously served as the Director- Chemical Diversity Division of the National Cancer Institute (NCI)'s Experimental Therapeutics (NExT) program. He is a founding member of the Chemical Biology Consortium, a national Drug Discovery/Development program of the NCI/NIH and served on the Joint Commission on Science & Technology of the Office of Science & Technology of the President (President Obama White House). Dr. Malhotra's lab studies the science of therapeutics, with main focus on (i) developing chemical tools to probe disease biology, and (ii) discover small molecules that modulate the targets and provide pharmacological intervention. Dr. Malhotra obtained a PhD (Chemistry) and trained under Nobel Laureate Prof. Herbert C. Brown at Purdue University. His work has led to preclinical and clinical advancement of drug candidates. He has edited five books, is inventor on 20 patent applications and has authored >170 research articles. Dr. Malhotra is a Fulbright Specialist and Fellow of the Royal Society of Chemistry, UK.



PANELIST:

Michael Liang

InVivium Capital

Michael Liang, Ph.D. is a Managing General Partner with InVivium Capital. Previously, Mike spent 16 years as a Partner with Baird Capital, overseeing healthcare investments. Prior to joining Baird Capital, Mike was a healthcare investor with Advent Venture Partners (London, U.K.) and before that served in an operating role as a Director of R&D at Cortek, a spinal orthopedics company. Mike serves on the Board of Directors of Onchilles Pharma and was also previously a Board Member of Alto Neuroscience (NYSE: ANRO), GreenLight Biosciences (NASDAQ: GRNA), Interlace Medical (sold to Hologic), OncoHealth (sold to Arsenal Capital Partners), Veniti (sold to Boston Scientific), and a board observer of TomoTherapy (NASDAQ: TOMO, sold to Accuray). Mike also recently served on the Board of Directors of AiCure, Jumpcode Genomics, NeoChord and Zurex Pharma, and was a Board Observer for Saranas and Virtual Incision. Mike received a B.S. in bioorganic chemistry from the University of California, Berkeley, completed a Ph.D. in biophysical chemistry from Stanford University, and conducted a postdoctoral fellowship at Harvard University.



Wednesday, October 23

Panel Discussion: Investing into the future: From Lab to Clinic

PANELIST:

Nitzan Rosenfeld

Queen Mary University of London

At Cancer Research UK Cambridge Institute, Dr Nitzan Rosenfeld leads a lab group that's dedicated to developing sophisticated new ways to detect and monitor cancer, using patients' blood samples. As tumours develop and grow, they release tiny bits of DNA into the blood that can be fished out and analysed. Dr Rosenfeld and his colleagues have shown that this 'circulating tumour DNA' (ctDNA) can be used to track how cancers are evolving in response to treatment, and to monitor disease spread. Using ctDNA from a blood sample can give doctors a fuller picture of cancer's genetic landscape than a biopsy, and spare patients an invasive procedure.

Dr Rosenfeld and his team are working to progress this research and investigate new ways to use such techniques. They want to see whether testing for ctDNA could help doctors diagnose cancers earlier in people who are at higher risk of the disease, for example people with a family history of cancer. They are testing if doctors can use ctDNA to help guide treatment decisions, for example by revealing genetic faults in cancer cells that could be targeted with certain therapies. Finally, they analyse ctDNA to see if it could reveal new insight into why some cancers stop responding to treatment.

In the future, this important research could help improve the outlook for patients by helping doctors to diagnose the disease at an early stage, when treatment is more likely to be successful, and potentially lead to more effective treatment choices for patients.



PANELIST:

Jenny Rooke

Genoa Ventures

Jenny is the Founder and Managing Director of Genoa Ventures, where she leverages her unique toolkit of genetics domain expertise, strategic business acumen, and venture investing to launch and empower the next generation of category-defying companies at the convergence of technology and biology. She has nearly two decades of investing experience, beginning at Fidelity Biosciences in 2006 as a Kauffman Fellow. After Fidelity, Jenny helped establish the investing function at the Gates Foundation, funding companies in genetic engineering, diagnostics, and synthetic biology. Jenny started what would become Genoa Ventures in 2014 using the largest life sciences syndicate on AngelList and achieving one of the highest-performing AngelList syndicates in any sector. Jenny's investments and board seats at Genoa include Intabio (acquired by Danaher Sciex), InterVenn, Aqtau, Meiogenix, and BrightSpec. She also serves on the Board of Trustees of the Jackson Laboratory. Her prior investments include Zymergen (IPO), Caribou (IPO), Accuri (acquired by Becton Dickinson), and Topaz (acquired by Sanofi). Prior to her investing career, Jenny was a management consultant with McKinsey focused on the pharma and biotech sectors. She also served in executive management roles at U.S. Genomics, leading Corporate Development and Research and Development. Jenny studied physics at the Georgia Institute of Technology and has a Ph.D. in genetics from Yale.



Wednesday, October 23

Insights from Early Detection Trials

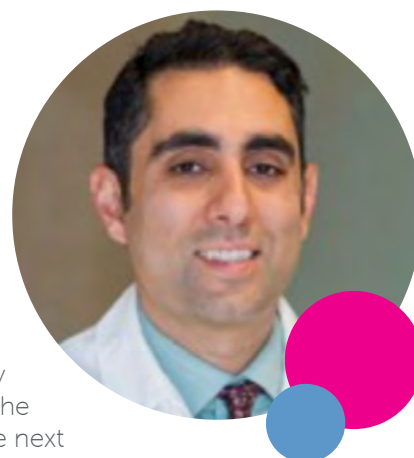
This session will highlight some of the novel approaches to detecting cancer currently being trialled within health systems in the UK, US and globally. This session could feature insights on screening trial design (viewpoints from statisticians and/or regulatory bodies) and the value of the patient voice in trial design and delivery, in addition to spotlighting detection technologies which are moving closer to the clinic.

CHAIR:

Nima Nabavizadeh

Oregon Health & Science University

Dr. Nima Nabavizadeh is an Associate Professor of Radiation Medicine at the Oregon Health & Science University (OHSU), where he holds multiple roles in patient care, cutting-edge research and medical education. In his role as the Chief Medical Officer within the Cancer Early Detection Advanced Research Center (CEDAR) at OHSU, he is at the forefront of innovative early detection research initiatives. He serves as the Principal Investigator for a multitude of cancer early detection clinical trials, exploring novel strategies and technologies for identifying cancer at its earliest stages. As the Radiation Oncology Residency Program Director at OHSU, Dr. Nabavizadeh plays a pivotal role in shaping the future of radiation oncology. He is responsible for mentoring and educating the next generation of radiation oncologists, ensuring that they receive the highest level of training and exposure to diverse clinical scenarios.



CHAIR:

Allan Hackshaw

University College London

Allan Hackshaw is Professor of Epidemiology & Medical Statistics at University College London, and Director of the Cancer Research UK & UCL Cancer Trials Centre. He has >32 years' experience in cohort/case-control studies, large real-world data studies, phase I-III clinical trials, and systematic reviews; in several areas including cancer, cardiovascular disease, and tobacco and health. A particular focus has been on adult (especially cancer) and prenatal screening, as a key investigator on large scale studies, some of which have evaluated new screening tests and policies that later became routine practice. He is undertaking work on evaluating lung cancer screening and multicancer blood tests. He is a member of the UK National Screening Committee Adult Reference Group, and co-editor of the Journal of Medical Screening. He has published more than 200 journal articles and book chapters, and sole or first author of four textbooks.



Wednesday, October 23

Insights from Early Detection Trials

SPEAKER:

Scott Bratman

University of Toronto

Dr. Scott Bratman is the Dr. Mariano Antonio Elia Chair in Head and Neck Cancer Research at University Health Network, Staff Radiation Oncologist at Princess Margaret Cancer Centre, and Associate Professor at University of Toronto. Dr. Bratman is known for his contributions to novel liquid biopsy methods with immense scientific and clinical impact. His ground-breaking research has produced fundamental discoveries in cell-free DNA biology with implications for early cancer detection, precision medicine, and response monitoring. The Bratman Lab at the Princess Margaret Cancer Research Institute looks to accelerate discoveries in head and neck cancer biology, dynamic biomarkers, and risk-adapted therapy. Dr. Bratman holds a BA from Princeton University and an MD/PhD from Columbia University.



SPEAKER:

Tiffani Howard

Oregon Health & Science University

Born and raised in Oregon and deeply involved in her personal and professional community, Dr. Tiffani Howard forms a unique bridge to connections between her extensive OHSU network (since 1992) and the people they serve throughout Oregon. As a developmental biologist she focused on gene regulation and silencing in development of neural tube and central nervous system formation. Her ability to communicate widely with all audiences and elicit trust allows her to build strong, long lasting, bi-directional relationships which has focused her work over the years. On an unconventional career journey Dr. Howard gained insight into how important it is for community engagement to thread through all scientific programs. As liaison between the scientists and design team for the construction of the Knight Cancer Research Building, Dr. Howard provided essential continuity throughout the project from pre-design through move-in (2014-2018) by engagement and inclusion of 450 occupants (principal investigators, lab staff, OHSU executives, and research cores) while managing scope, schedule and budget for the project. Leveraging over 15 years of research lab experience and adept at articulating the Knight's vision, from 2017-2018 her work influenced the directional and cultural transformation of the Knight when managing creation of new institutional Cultural Guiding Principles and 5 year scientific Strategic Plan. Subsequently she established a new cutting-edge Early Cancer Detection Clinical Trials program now recognized as top-enroller on national MCED trials and leader in creative and successful community engagement to boost diversity (4 fold increase over two years of enrollment). She accepted the institution-wide position of Asst. Director for Community Outreach and Engagement in 2021 to increase the impact of the Comprehensive Knight Cancer Institute on its catchment area, the entire state of Oregon.



Wednesday, October 23

Insights from Early Detection Trials

SPEAKER:

Kate Brain

Cardiff University

Professor Kate Brain is a health psychologist and world leader in cancer early detection behavioural research. She has extensive experience in using complex interventions frameworks to optimise cancer early detection behaviour and address inequalities through innovative community-based solutions. She is UK Chair for the US/UK Multi-Cancer Early Detection Consortium Health Equity work group. Kate has been a senior member of Cancer Research UK's Early Detection and Diagnosis Research Committee since 2020, and in 2023 joined the World Health Organisation's European Code Against Cancer expert working group on communication and health literacy. She advises NHS England on the Targeted Lung Health Check programme.

Since 2015 Kate has led the strategic direction of cancer behavioural science research in Wales, with infrastructure funding spanning the Wales Cancer Research Centre and Primary and Emergency Care Research Centre, funded by Welsh Government through Health and Care Research Wales. Her research portfolio includes international studies of cancer awareness, understanding and addressing socioeconomic disparities in cancer help-seeking, lung cancer screening and smoking cessation among high-risk populations, and the impact of the pandemic on cancer attitudes and behaviours.

Kate holds a number of senior leadership roles including Screening, Prevention and Early Diagnosis Lead within the Division of Population Medicine, Associate Director of Cardiff University's College of Biomedical and Life Sciences Population Health Research theme, and Cancer Research Strategy for Wales Senior Leadership Theme Lead for Population health-based cancer prevention and early diagnosis.



SPEAKER:

Rhian Gabe

Queen Mary University of London

Rhian has been involved in epidemiological and trials research for over twenty-five years and has a strong research interest in screening, prevention and early detection of cancer with publications in the fields of breast, colorectal, lung and prostate cancer. She is the lead statistician for the Yorkshire Lung Screening Trial and a portfolio of prostate cancer detection studies including the UK TRANSFORM trial of prostate cancer Screening. She has worked on international studies investigating prevention strategies for infection and smoking cessation.

Rhian is Professor of Biostatistics and Clinical Trials and Director of Barts Clinical Trials Unit at Queen Mary University of London. Within the Faculty of Medicine and Dentistry, Rhian leads the Centre for Evaluation and Methods at the Wolfson Institute of Population Health. The Centre encompasses two UKCRC registered Clinical Trials Units, a Methodology Research Unit and a Health Economics and Policy Research Unit.



Wednesday, October 23

PPIE Flash Talk

SPEAKER:

Alice Groves

University of Cambridge

Alice Groves is the Principal Research Nurse and clinical coordinator in the ACED Clinic Cambridge. The ACED Clinic Cambridge's goal is to facilitate early-stage trials of novel diagnostic and predictive technologies for the Early detection of cancer from Research from across the ACED Alliance. Currently we are facilitating multiple studies including - recruiting and working on the ACED Cohort study which aims to recruit 1000 volunteers aged 40-80 returning annually for up to 10 years. Gathering information on demographic, physiological, epidemiological, and cognitive data through questionnaires and interactive tasks, as well as collecting biological samples. Alice has a specific interest in improving representation of diverse populations in research, and improving public engagement in research.



Wednesday, October 23

Lightning Talks: Insights from Early Detection Trials

Smart PSA: a Trial of Risk-Adapted PSA Screening in a Minority-Serving Health Center Network

Peter Gann

University of Illinois at Chicago

Peter Gann, MD, ScD is currently Professor Emeritus in the Department of Pathology at the University of Illinois at Chicago. After starting his career during high school washing glassware in a lab at NIH in Bethesda, Maryland, he received his MD from the University of Pennsylvania and the ScD in Epidemiology from Harvard University. He is a former Associate Director at the University of Illinois Cancer Center and has served on the AUA and NCCN committees on prostate cancer early detection. His research interests have centered on molecular epidemiology regarding cancer etiology and prevention, the clinical epidemiology of biomarkers for breast and prostate cancer, and recently, the development of tissue-based biomarkers using digital pathology, image analysis, and AI. He initially encountered prostate specific antigen (PSA) as a graduate student in the early 1990's when he and colleagues published the first prospective analysis on the relationship between PSA levels and subsequent prostate cancer in the Physicians Health Study. He's been focused on prostate cancer screening ever since, particularly on its role in the well-known racial disparity for that disease.



REFLECTION: Initial Findings from a real-world evidence study of multi-cancer detection (MCED) and toxic exposures among Veterans in the Veterans Affairs Healthcare System (VA)

Charles Atwood

VA Pittsburgh Healthcare System

Dr. Charles Atwood is a pulmonary physician at the VA Pittsburgh Healthcare System, UPMC, and the University of Pittsburgh. He is director of the VA Pittsburgh's lung cancer screening program and the Co-PI for VA Pittsburgh's Lung Precision Oncology Program. He is the national PI for the Reflection study, a real world evidence study of multi cancer early detection (MCED) in 7 diverse VA sites.



Wednesday, October 23

Lightning Talks: Insights from Early Detection Trials

Implementing Lung Cancer Screening in the UK:
An update on Results from the NHS England National
'Targeted Lung Health Check' Programme

Richard Lee

Early Diagnosis and Detection Centre,
Royal Marsden Hospital & Institute of Cancer Research

Dr Richard Lee is Consultant Respiratory Physician and Champion for Early Cancer Diagnosis at the NIHR Biomedical Research Centre at The Royal Marsden and the Institute of Cancer Research (ICR), London. As co-lead of The Royal Marsden-ICR Early Diagnosis and Detection Centre, Dr Lee drives Screening, Prevention and Early Diagnosis initiatives across a number of cancer types.

His main clinical and research interest is early lung cancer diagnosis, as joint National Clinical Lead of the NHS England National Targeted Lung Health Check (TLHC) Programme that will deliver lung cancer screening to the entire UK eligible population by 2029. His research portfolio includes translation of artificial intelligence (AI) research to early cancer detection within the LIBRA, OCTAPUS-AI and AI-SONAR studies. He is also Principal Investigator for early diagnosis biomarker studies such as NIMBLE for lung nodules, SPICED in genetic risk cohorts, and The Royal Marsden Partners Lung Health Check biomarker study. As clinical lead for the SCOOT biomarker study, he will link biomarker research with imaging AI within NHSE TLHC, in partnership with Oxford University and the DART consortium. Dr Lee is also The Royal Marsden's Chief Research Information Officer, and leads the Early Diagnosis theme of the NIHR Oncology Translational Research Collaboration.



Wednesday, October 23

Panel Discussion: The future of evaluation of cancer screening technologies

The future of evaluation of cancer screening technologies - the current gold standard of evaluating screening approaches based on impact on mortality is robust, but requires trials which are 10+ years long and cost huge sums of money. The rapid pace of technology evolution means that the technologies being trialled may be obsolete by the time a trial delivers mortality data. Is there another way? Are there other indices we should be considering when evaluating the benefit of screening approaches? Are there surrogate endpoints which predict mortality? Should more attention be paid to impact on quality of life, not just its duration?

MODERATOR:

Tom Beer
Exact Sciences

Tomasz (Tom) Beer has served as our Chief Medical Officer, Multi-Cancer Early Detection since 2022. Prior to joining Exact Sciences, Dr. Beer was the Grover C. Bagby Endowed Chair for Prostate Cancer Research at the OHSU Knight Cancer Institute, where he led the Prostate Cancer Research Program. Dr. Beer also served as Deputy Director of the OHSU Knight Cancer Institute and the National Cancer Institute designated Comprehensive Cancer Center. He was previously the Chief Medical Officer for the Center for Early Detection Advanced Research (CEDAR), where he led clinical trials of multi-omic blood-based cancer early detection tests.



Dr. Beer continues to serve as Adjunct Professor of Medicine at the OHSU Knight Cancer Institute, where he treats men with prostate cancer. He has authored or co-authored more than 280 peer reviewed articles, including investigations of multi-cancer early detection as well as targeted therapies and immunotherapies in prostate cancer. Dr Beer's research served as the basis for a global change in the standard of care for advanced prostate cancer.

Dr. Beer earned his Bachelor's degree in Biomedical Engineering and his M.D. degree from the Johns Hopkins University and completed his post-graduate training in Internal Medicine, Hematology, and Medical Oncology at Oregon Health & Science University.

Wednesday, October 23

Panel Discussion: The future of evaluation of cancer screening technologies

PANELIST:

Li Li

University of Virginia

Li Li, MD, PhD, is an expert in primary care, population health and clinical translational research. He is chair of the UVA Department of Family Medicine, director of population health and co-director of the Cancer Prevention and Population Health program.

Li earned both his master's in public health and medical degree from Tongji Medical University in Wuhan, Hubei, P.R. China. He then went to the University of Southern California, where he obtained a master of science in applied biometry and a doctoral degree in preventative medicine. He also pursued a fellowship in cancer prevention at the National Cancer Institute, followed by family medicine training at the University of Kentucky.

During his career, Li has established multiple cancer and population health research programs (the Cleveland Colon Screening and Risk Factors Study, the Kentucky Colon Cancer Genetic Epidemiology Study and the Zhabai Health 2020 Study). He also co-led a \$3 million National Institutes of Health grant aimed to help us understand the genetic, lifestyle, and community factors that drive the significant racial disparities that exist for colorectal cancer.

Prior to arriving at UVA, Li was an assistant professor in the department of family medicine at Case Western Reserve University's School of Medicine and tenured as a full professor of family medicine. In addition, Li was a professor of epidemiology and biostatistics and environmental health sciences.



PANELIST:

Ruth Etzioni

Fred Hutch Cancer Center

Dr Ruth Etzioni is a full member in biostatistics at the Fred Hutch Cancer Center where she holds the Rosalie and Harold Rae Brown endowed chair. She develops statistical and computer models to generate evidence for cancer policy development. Her studies have informed national prostate cancer screening recommendations and she has also led studies to appropriately estimate overdiagnosis in prostate cancer breast cancer screening. More recently she has been developing models and methods to address evidence gaps regarding the impact of new multi-cancer screening tests. Dr Etzioni is lead author of the Springer textbook, "Statistics for Health Data Science: An Organic Approach." In 2022 she received an Outstanding Investigator Award from the National Cancer Institute to develop models and methods for assessing the impact of novel cancer diagnostics including biomarkers and imaging tests.



Wednesday, October 23

Panel Discussion: The future of evaluation of cancer screening technologies

PANELIST:

Adam Brentnall

Queen Mary University of London

Dr Adam Brentnall is a Statistician from Barts Clinical Trials Unit, Wolfson Institute of Population Health, Queen Mary University of London (QMUL). He also works closely with the CRUK and QMUL Cancer Prevention Trials Unit. He is currently a member of the UK National Screening Committee research and Methodology group, and the CRUK Expert Review Panel on Early Detection & Diagnosis Trials, Behavioural, Health Systems and Health Economics Research. He recently served as statistician on a National Institute of Clinical Excellence (NICE) committee for guidelines on identifying and managing familial and genetic risk for ovarian cancer.

His collaborative research has involved the design and analysis of epidemiological studies, clinical trials and laboratory studies to evaluate cancer prevention and early detection interventions, and statistical methodology driven by these studies. Ongoing research interests include the use of serum hormones to guide breast cancer preventive therapy; new methods for prostate cancer screening; validation of HPV self-sample tests; prospective observational studies to evaluate surgical prevention of ovarian cancer; population-based genetic testing; risk-adapted breast cancer screening using AI; screening using an oesophageal capsule sponge; surrogate endpoints for cancer screening trials; and new invitation, design and analysis methods to evaluate multi-cancer screening tests efficiently.



PANELIST:

Hilary Robbins

International Agency for Research on Cancer

Dr. Hilary Robbins is an American epidemiologist at the International Agency for Research on Cancer (IARC/WHO) in Lyon, France. She co-leads the IARC Risk Assessment and Early Detection (RED) team, a group of 16 scientists, staff, and fellows from 14 countries. Dr. Robbins studies risk-tailored approaches to early cancer detection and screening, with a focus on quantifying the potential utility of tools such as risk prediction models and biomarkers. Specific areas of focus include lung cancer, HPV-related cancers, and multi-cancer early detection.



Wednesday, October 23

The Great Debate: Research focusing on early detection of rare cancers is a waste of money

This debate will explore the merits and drawbacks of investing in research focused on early detection for rare cancers vs focusing on more common cancers. The debaters will likely consider this from multiple angles, including but not restricted to, benefit to public health, health economics, ethics, contribution to individual quality of life and the current scientific landscape.

MODERATOR:

David Crosby
Cancer Research UK

David Crosby is head of prevention and early detection research at Cancer Research UK (CRUK). David began life as a baby, before becoming a pharmacologist, completing a PhD studying cell signalling in platelets. He spent time in academia, lecturing in clinical pharmacology. He moved into industry, identifying and evaluating new clinical development opportunities for Linde Gas Therapeutics. He then moved into the public sector, joining the UK government research funding agency the Medical Research Council, where he oversaw various science areas and research funding programmes (including inflammation, cardiovascular and respiratory research), most recently leading the MRC-NIHR methodology research programme, and MRC's strategy and investments in experimental medicine. He is now developing and implementing a new strategy and programme of research investments at CRUK which aims to accelerate progress towards earlier detection and prevention of cancer, through an integrated multidisciplinary approach, driven by equitable improvements in health outcomes.



Wednesday, October 23

The Great Debate: Research focusing on early detection of rare cancers is a waste of money

FOR:

Paul Spellman

University of California Los Angeles

Dr. Spellman works to apply genomic and computational technologies to improve human health with a primary emphasis on improving outcomes for people with cancer. The work in his lab works at all phases from technology/method development, to application of technologies to answer critical questions in cancer biology, to population studies to understand the impact of genetic variation of disease, and to implementation trials that directly impact health. Current funded research focuses on systematic analysis of genetic and gene regulation information in clinical cohorts as part of the Genome Data Analysis Network and a clinical trial implementing genetic health screening for hereditary breast and ovarian cancer and Lynch syndromes. Other areas of interest include polygenic risk implementation and modeling, precision medicine, and understanding the molecular biology of cellular replication.



AGAINST:

Emma WoodwardUniversity of Manchester and
Manchester Centre for Genomic Medicine

Dr Emma Woodward studied medicine at the University of Cambridge where she also completed a PhD studying familial pheochromocytoma and familial renal cancer. Dr Woodward then undertook training in adult medicine in London, Lausanne and N. Ireland prior to her higher specialist training in Clinical Genetics in Birmingham. During this time Dr Woodward received an NIHR Clinician Scientist Award and undertook further study of familial renal cancer. She became a consultant at Birmingham Women's Hospital in 2008 and at Saint Mary's Hospital in 2015. Dr Woodward's current research is aimed at understanding the inherited predisposition to cancer, in particular thyroid cancer and also whether structural genomic variants influence cancer predisposition risk. Her clinical work involves the inherited predisposition to adult and paediatric onset cancers.



Thursday, October 24

SPEAKER AND SESSION INFORMATION

Artificial Intelligence - promises vs. reality for early detection

This session will cover the potential of artificial intelligence technologies to revolutionize when and how cancers are detected. It will cover novel artificial intelligence approaches to:

- » Interpret digital pathology and other clinical images for earlier detection of cancer and greater understanding of lesion progression
- » Identify high-risk groups for screening and early detection via integration and analysis of multimodal data e.g. electronic health record data, family history, routine blood tests etc.
- » Identify sensitive and specific biomarkers/other signatures through large datasets which could be indicative of receiving a future cancer diagnosis

CHAIR:

Sylvia Plevritis
Stanford University

Sylvia K. Plevritis, PhD, is Professor of Biomedical Data Science and of Radiology, and Chair of the Department of Biomedical Data Science. She is a thought leader on the expanded use of artificial intelligence and machine learning (AI/ML) in academic research and education. An electrical engineer by training, Plevritis' cancer systems biology research program has been deciphering tumor heterogeneity by pioneering novel AI/ML analytics on multimodal biomedical data sets from human tumors. Plevritis is also a contributor to data-driven computer simulation models that guide national cancer screening guidelines for early detection of breast and lung cancers. Plevritis serves on the NCI Board of Scientific Advisors and is a fellow of the American Institute for Medical and Biological Engineering and Distinguished Investigator in the Academy of Radiology Research.



Thursday, October 24

Artificial Intelligence - promises vs. reality for early detection

CHAIR:

Cathie SudlowUniversity of Edinburgh, UK Research and Innovation,
Health Data Research UK

Professor Cathie Sudlow is the Director of the Adolescent Health Study - a UK Research Institute initiative which aims to recruit and follow, longitudinally, the health and well being of 8-18 year olds in the UK. The aim is to develop a research resource which will be widely used not just UK-wide but also internationally to better understand the determinants of health and wellbeing during the transition from childhood and adolescence to adulthood. She is also Chair of Neurology and Clinical Epidemiology at the University of Edinburgh. Cathie is the former Chief Scientist/Deputy Director of Health Data Research UK and Director of the British Heart Foundation Data Science Centre, where she retains a role within HDR UK as a Strategic Adviser. Cathie was previously Director of the Centre for Medical Informatics at the Usher Institute, University of Edinburgh, the first Research Director for HDR UK in Scotland and Chief Scientist of UK Biobank. As a neurology specialist doctor, Cathie's clinical work has focused mainly on the assessment and treatment of patients with suspected stroke. Cathie's research interests have always been firmly embedded in the world of big data. Over the last 15 years, her focus has been on leading large-scale, collaborative, open-science initiatives that enable a better understanding of the causes and consequences of health and disease across the life course, leading to new and improved approaches to prevention, diagnosis and treatment. From 2011 to 2019, she led efforts to follow the health of UK Biobank participants through linkage to national health datasets, and during 2020-2021 worked with NHS Digital to develop the first trusted research environment to hold and enable access for research to linked health data from multiple sources for the whole population of England. Cathie is fellow of the Academy of Medical Sciences and of the Royal Society of Edinburgh. She was awarded an OBE for services to medical research in 2020.



SPEAKER:

Bissan Al-Lazikani

MD Anderson

Bissan Al-Lazikani FRSB MBCS is a data scientist and drug discoverer, dedicated to translation of data to patient benefit. She is Professor, Genomic Medicine; Director of Discovery Data Science and founding faculty of the Data Science Institute at MD Anderson Cancer Center. Prior to this, she was Head of Data Science at the Institute of Cancer Research, London. She is formally trained in biology and computer science: BSc Molecular Biology from University College, London; MSc Computer Science from Imperial College, London; PhD Computational Biology from the University of Cambridge, and Howard Hughes postdoctoral fellowship Biophysics, Columbia University, NY. Her background spans academia and industry. Among other activities, she led the creation of the world's largest public drug discovery knowledge-base, canSAR, integrating vast multidisciplinary data; and leading suite of AI-driven translational research algorithms. She applies these to discovery of novel drugs and to optimize and individualize therapy for adult and pediatric cancers.



Thursday, October 24

Artificial Intelligence - promises vs. reality for early detection

SPEAKER:

Su-In Lee

University of Washington

Professor Su-In Lee, the Paul G. Allen Endowed Professor of Computer Science at the University of Washington (UW), earned her PhD from Stanford University in 2009 under the guidance of Professor Daphne Koller. She joined UW in 2010 after serving as a visiting Assistant Professor at Carnegie Mellon University. Renowned for her groundbreaking work at the intersection of AI, biology, and medicine, Professor Lee has received several prestigious awards, including the Samsung Ho-Am Prize—often referred to as the “Korean Nobel Prize”—as the first woman to receive the Engineering award in its 34-year history, the International Society for Computational Biology (ISCB) Innovator Award, and the National Science Foundation (NSF) CAREER Award. She has also been honored as an ACS Research Scholar and American Institute for Medical and Biological Engineering (AIMBE) Fellow. Professor Lee is recognized as a pioneer in explainable AI (XAI) for her seminal contributions, particularly her Shapley Additive Explanations (SHAP) framework, significantly advancing the interpretability of machine learning models.

Her recent research focuses on fundamental XAI principles and techniques, as well as innovative biomedical research, spanning from basic biology to clinical medicine, which has been enabled by advancements in XAI. By fundamentally shifting how AI is integrated into biomedical research, her work addresses cutting-edge scientific questions and enables novel discoveries from high-throughput molecular data and electronic health records. This transformative integration is advancing healthcare in meaningful ways. This innovative research has resulted in highly cited publications in foundational AI, computational molecular biology, and clinical medicine.



SPEAKER:

Jens Rittscher

University of Oxford

Jens Rittscher is Professor of Engineering Science at the University of Oxford with his appointment held jointly between the Institute of Biomedical Engineering and the Nuffield Department of Medicine. He is a group leader at the Big Data Institute and is affiliated with the Ludwig Institute of Cancer Research and the Wellcome Centre as an adjunct member. Previously, he was a senior research scientist and manager at GE Global Research (Niskyauna, NY, USA). His research interests lie in enabling biomedical imaging through the development of new algorithms and novel computational platforms, with a current focus to improve mechanistic understanding of cancer and patient care through quantitative analysis of image data. He is a co-director of the Oxford EPSRC Centre for Doctoral Training in Health Data Science. Presently, he serves on the executive committee of the Medical Image Analysis and the editorial board of Biological Imaging. In 2019 he co-founded the Oxford University Spinout company Ground Truth Labs. He holds a visiting professorship at the Charité (Berlin) which is supported by the Stiftung Charité.



Thursday, October 24

Lightning Talks: Artificial Intelligence - promises vs. reality for early detection

Imaging Biomarker for Early Detection of Lung Cancer Combining Semantic and Deep Features

Luoting Zhuang

University of California Los Angeles

Luoting Zhuang is a third-year PhD student in medical informatics at UCLA, working in Dr. William Hsu's lab. Her research interests are primarily centered on developing accurate, robust, and interpretable deep learning techniques to advance the early detection of lung cancer. Specifically, she is exploring imaging biomarkers in indeterminate pulmonary nodules and the predictive value of longitudinal changes in these biomarkers to improve lung cancer diagnosis. Before pursuing her PhD, she received her BS in Applied Mathematics with a Statistics minor at UCLA. She later earned an MS in Biomedical Informatics at Harvard Medical School, where she worked on a thesis focused on multimodal fusion of medical data for cancer prognosis.



A rigorous framework for cell-free DNA tissue deconvolution by combining a deep learning classifier and conformal prediction

Felix Jackson

Ludwig Institute of Cancer Research, University of Oxford

I am a post-doc at Oxford with Professor Chunxiao Song, and recently completed my PhD in the same group. My PhD work was on exploring epigenetic signatures of cancer, and translating these as biomarkers in cell-free DNA. I developed multimodal ML approaches to extract the maximum possible information from cell-free DNA, to try improve computational methods for earlier cancer detection.



Thursday, October 24

Lightning Talks: Artificial Intelligence - promises vs. reality for early detection

Early Prostate Cancer Detection Using AI-powered Transabdominal Ultrasound

Liza M. Kurucz

The Netherlands Cancer Institute -
Antoni van Leeuwenhoek Hospital

Liza Maria Kurucz recently graduated with a degree in Technical Medicine from Delft University of Technology, in collaboration with Erasmus Medical Center and Leiden University Medical Center in The Netherlands. Throughout the final two years of her studies, she completed five internships in various hospitals, where she explored integrating artificial intelligence into clinical practice and developed a deep passion for research. Her master's thesis, conducted at The Netherlands Cancer Institute – Antoni van Leeuwenhoek Hospital under the supervision of Prof. Dr. Theo Ruers, aimed to enhance prostate cancer risk stratification workflows with AI-powered transabdominal ultrasound, a viable, patient-friendly tool compared to traditional methods. Her latest work is being presented at this conference.



Thursday, October 24

Keynote: The First Cell: Route for early detection and prevention

Azra Raza
Columbia University

Azra Raza is the Chan Soon-Shiong Professor of Medicine and Clinical Director of The Edward P. Evans Foundation MDS Center at Columbia University in New York. A practicing oncologist seeing 30-40 cancer patients weekly, she directs a basic cancer research lab with hundreds of original publications in high profile journals. Her life is dedicated to prevention of all chronic diseases including cancer by early detection. She worked with President Clinton designing Breakthrough Developments in Science and Technology and with President Joe Biden for the Cancer Moonshot initiative. Her latest book, *THE FIRST CELL: And the human costs of pursuing cancer to the last* is a national best seller and has been translated into nine languages.



DON LISTWIN AWARD For Outstanding Contributions to Cancer Early Detection

2024 RECIPIENT:

Antonis Antoniou, PhD

University of Cambridge

Professor Antoniou is a genetic epidemiologist and has made major contributions to the understanding of the genetic basis of common cancers and the development of cancer risk prediction models. Using innovative approaches to analyse data from large population-based and family studies, he has provided reliable estimates of cancer risks for carriers of mutations and BRCA1 and BRCA2 that are used every day in the clinic. His work showed that PALB2 was a high-risk breast cancer gene. He leads the coordinating centre of the international Consortium of Modifiers of BRCA1/2 and has demonstrated the importance of genetic modifiers of cancer risk for BRCA1 and BRCA2 carriers and that these modifiers lead to clinically important differences in cancer risk. He led the development of the multifactorial BOADICEA model using large-scale multimodal datasets. BOADICEA is used to predict breast and ovarian cancer risks using genetic, lifestyle, hormonal, anthropometric, and imaging risk factors. His team implemented BOADICEA into the CanRisk (www.canrisk.org) online tool used by clinicians across the world to counsel thousands of patients daily, to guide decisions on screening and surgical and medical prevention of disease. CanRisk is endorsed by clinical guidelines in several countries. He currently leads the CanRisk programme of work that aims to enable cancer risk prediction within routine frontline healthcare in the UK; and he is director of the Cancer Research UK, Cancer Data Driven Detection (CD3) initiative.



About the award

The Don Listwin Award for Outstanding Contributions to Cancer Early Detection recognizes a sustained contribution to, or singular achievement in, the cancer early detection field. The award is named in honor of Don Listwin, founder and chairman of the Canary Foundation.



AN INTERNATIONAL COLLABORATION

Cancer Research UK, the largest independent funder of cancer research globally, and the Knight Cancer Institute at Oregon Health & Science University, a leader in precision cancer medicine, formed an international collaboration in 2016 to accelerate research in the early detection of cancer. In 2018, they welcomed the Canary Center at Stanford to the partnership. The Canary Center was founded in 2009 as the first research center in the world dedicated to cancer early detection and now elevated to include precision treatment.

The goal of this unique trans-Atlantic agreement is to find lethal cancers as they're forming so they can be treated more effectively. Survival increases significantly when the disease is treated at an early stage.

The collaboration also seeks to accelerate progress by breaking down barriers for scientists, including:

- » A lack of cohorts of sufficient size and a shortage of clinical samples available for research
- » Development and deployment of new technologies
- » Lack of understanding of the biology of early cancer and technologies to detect its features

FUNDING OPPORTUNITIES IN EARLY DETECTION RESEARCH

Cancer Research UK is happy to support international collaborations in early detection research through our Early Detection Research funding committee.

We accept applications from UK-based lead researchers for Programme, Project and Primer Awards, which can include joint lead applicants and coinvestigators from outside of the UK. We can support running expenses and named research staff based at international institutions through these awards.

Please [click here](#) for more information.

For more information on these awards, please contact early.detection@cancer.org.uk

ORGANIZING INSTITUTIONS



ABOUT THE CANARY CENTER AT STANFORD

The Canary Center at Stanford is the first research center in the world entirely dedicated to cancer early detection.

The Canary Center at the Stanford School of Medicine was founded in 2009 through a unique alliance between Canary Foundation, the Department of Radiology at the Stanford University School of Medicine, and the Stanford Cancer Institute (a National Cancer Institute-designated Comprehensive Cancer Center).

In 2024 we have expanded our mission to include other disease foci. Our mission is to meet clinical needs with both in vivo and in vitro diagnostics and delivery technologies developed by the deep biomedical and engineering expertise that we have at Stanford University.

Our vision is to develop innovative and cost-effective new approaches for early detection and coupled precision treatments that are enabled by the fusion of engineering and medicine.



ABOUT THE KNIGHT CANCER INSTITUTE

The Knight Cancer Institute at Oregon Health & Science University is a pioneer in the field of precision cancer medicine.

The institute's chief executive officer, Brian Druker, MD, helped prove it was possible to shut down just the cells that enable cancer to grow. This breakthrough has made once-fatal forms of the disease manageable and transformed how cancer is treated.

The OHSU Knight Cancer Institute is the only National Cancer Institute-designated Comprehensive Cancer Center between Sacramento and Seattle – an honor earned only by the nation's top cancer centers. In addition to offering patients the latest treatments and technologies, as well as hundreds of research studies and clinical trials, the institute is headquarters for one of the National Cancer Institute's largest research collaboratives, SWOG.



ABOUT CANCER RESEARCH UK

Cancer Research UK is the world's leading cancer charity, dedicated to saving and improving lives with research, influence and information. Their vision is for a world where everybody lives longer, better lives, free from the fear of cancer.

Over the past 120 years, they have made discoveries about cancer that have saved countless lives and benefit millions each year, from discovering the link between tobacco and cancer to contributing to the development of the HPV vaccine.

They support research into all aspects of cancer through the work of over 4,000 scientists, doctors and nurses, based in CRUK Centres and Institutes across the UK.

SPONSORS



AbbVie In Oncology

At AbbVie, we are committed to transforming standards of care for patients living with difficult-to-treat cancers. We are advancing a dynamic pipeline of investigational therapies across a range of cancer types in both blood cancers and solid tumors. We are focusing on creating targeted medicines that either impede the reproduction of cancer cells or enable their elimination. We achieve this through various, targeted treatment modalities including Antibody Drug Conjugates (ADCs), Immuno-Oncology, bi-specific/multi-specific antibody and CAR-T platforms. Our dedicated and experienced team joins forces with innovative partners to accelerate the delivery of potential breakthrough medicines.

Today, our expansive oncology portfolio comprises of approved and investigational treatments for a wide range of blood and solid tumors. We are evaluating more than 20 investigational medicines in over 300 clinical trials across some of the world's most widespread and debilitating cancers. As we work to have a remarkable impact on people's lives, we are committed to exploring solutions to help patients obtain access to our cancer medicines.

For more information, please visit <http://www.abbvie.com/oncology>.



Bristol Myers Squibb

Bristol Myers Squibb is a leading global biopharma company focused on discovering, developing, and delivering innovative medicines for patients with serious diseases in areas including oncology, hematology, immunology, cardiovascular and neuroscience. Our employees work every day to transform patients' lives through science.

SPONSORS



Exact Sciences

A leading provider of cancer screening and diagnostic tests, Exact Sciences gives patients and health care professionals the clarity needed to take life-changing action earlier. Building on the success of the Cologuard® and Oncotype® tests, Exact Sciences is investing in its pipeline to develop innovative solutions for use before, during, and after a cancer diagnosis. For more information, visit ExactSciences.com, follow Exact Sciences on X (formerly known as Twitter) @ExactSciences, or find Exact Sciences on LinkedIn and Facebook.



Freenome

Freenome is a private biotechnology company breaking barriers to early cancer detection with a suite of blood tests built on its intelligent screening platform. Freenome's multimodal approach combines molecular biology and assays with computational biology, machine learning and multiple data types to tune into cancer's subtlest cues, even at the earliest stages of disease. By providing a more convenient option, Freenome's blood test for the early detection of CRC has the potential to boost screening adherence rates and improve accessibility for people in all communities. With the convenience of a standard blood draw, Freenome aims to empower everyone to access recommended cancer screenings.

SPONSORS



Natera

Natera™ is a global leader in cell-free DNA testing, dedicated to oncology, women's health, and organ health. We aim to make personalized genetic testing and diagnostics part of the standard of care to protect health, and enable earlier detection and more targeted interventions that help lead to longer, healthier lives. Natera's tests are validated by more than 200 peer-reviewed publications that demonstrate high accuracy. Based on its deep expertise in cfDNA analysis, Natera is developing blood tests for both multi-cancer early detection (MCED) detection and average risk colorectal (CRC) cancer detection. These assays analyze the methylation and mutation status in regions of cfDNA associated with cancer.



PacBio

PacBio is a premier life science technology company that is designing, developing and manufacturing advanced sequencing solutions to help scientists and clinical researchers resolve genetically complex problems. PacBio products and technology under development stem from two highly differentiated core technologies focused on accuracy, quality and completeness which include our existing HiFi long read sequencing and our SBB® short read sequencing technologies. PacBio products address solutions across a broad set of research applications including human germline sequencing, plant and animal sciences, infectious disease and microbiology, oncology, and other emerging applications.

CONFERENCE STAFF ORGANIZERS

While many individuals came together to make this conference possible, listed below are the main staff organizers of the 2024 conference:

Ana Barros	Cancer Research UK
Lina Cheuy	Stanford University
David Crosby	Cancer Research UK
Hector Huerga Encabo	The Francis Crick Institute, Abstract Review Committee
Katie Lynn Kapp	Stanford University, Abstract Review Committee
Katie Pontius	Stanford University
Talisia Quallo	Cancer Research UK
Harriet Quinn-Scoggins	Cardiff University, Abstract Review Committee
Joshua Sadivar	Oregon Health & Science University, Abstract Review Committee
Bruce Schaar	Canary Center at Stanford
Prima Dewi Sinawang	Stanford University, Abstract Review Committee
Amy Thomas	Stanford University
Stephanie Torres	Oregon Health & Science University, Knight Cancer Institute
Ashley Williams	Canary Center at Stanford
Fiona Winwick	Cancer Research UK
Adem Yildirim	Oregon Health & Science University, Abstract Review Committee

Tuesday, October 22

POSTER MENU

	First Name	Last Name	Abstract Title
1	Ignacia	Arteaga	An examination of the social acceptability of novel cancer detection technologies: Affect matters
2	Avathamsa	Athirasala	Circulating Tumor Cells in a Vascularized Bone-on-a-Chip Model Links Matrix Mineralization and Nuclear Damage as Novel Drivers of Prostate Cancer Progression
3	Bea	Bakshi	Improving the Faster Diagnostic Standard for Colorectal cancer in the NHS: The Impact of C the Signs
4	Andrew	Blake	Modelling the Interface Between Lung Cancer and the Immune System for Early Detection Biomarkers.
5	Christopher	Boniface	Detection, quantification, and phylogenetic inference of precancer clonal expansions using fluctuating CpGs in bulk sequencing
6	Ellen	Chang	Years of life lost across 21 cancer types by stage at diagnosis in the United States
7	Abigail	Colley	Fine-scale Mapping of T-cell Receptor Antigen Interactions
8	Connor	Daniels	Development of a novel hydrogel-based microneedle platform for the early diagnosis of skin cancer.
9	Gerard J.	Davis	Exploratory algorithms to aid in risk of malignancy prediction of indeterminate pulmonary nodules.
10	Derek	Ebner	Comparison of Efficient Frontier Strategies for Guideline-endorsed Vs Non-endorsed Colorectal Cancer Screening Tests
11	Derek	Ebner	Colorectal cancer screening with blood-based tests: Estimated impact of a 1-, 2-, or 3-year screening interval compared with annual FIT and triennial mt-sDNA strategies
12	Ece	Eksi	Multi-modal spatial analysis of the prostate tumor microenvironment for early detection and treatment
13	Chris	Estes	Estimated Adenoma Sensitivity Threshold Needed for Blood-based Colorectal Cancer Screening Tests to Be as Effective as Stool-based Screening Tests
14	Chris	Estes	Estimated Impact of Adenoma and Colorectal Cancer Early Detection on Health Outcomes and Screening Effectiveness
15	Evelyn	Fitzsimons	Integration of innate and adaptive immune signatures for early detection of cancer
16	Andrew	Gilmore	Understanding breast cancer risk associated with mammographic density and cancer initiation.
17	Alice	Groves	The ACED Cohort study: A BioResource to support early detection of cancer research

Tuesday, October 22

	First Name	Last Name	Abstract Title
18	Dmytro	Grygoryev	Spatial transcriptional and genetic analysis of PanINs distal and adjacent to pancreatic cancer.
19	Benjamin	Hunter	Development of Radiomics Models for Lung Cancer Early Diagnosis Using Multi-Centre Data: Results of the LIBRA Study
20	Ashley	Jackson	Positive MCED test results associated with subsequent cancer diagnosis in participants in the SYMPLIFY study
21	Felix	Jackson	Automated discovery of tissue specific methylation and hydroxymethylation markers in healthy tissues and tumour using non-negative matrix factorisation
22	Felix	Jackson	Predicting aberrant cancer gene expression from epigenetic signatures alone
23	Eva	Jencquel	Evaluation of the cost-effectiveness of a blood-based screening test for colorectal cancer in the context of the current screening landscape
24	Ruben	Lancaster	Evolutionary force reconstruction of lung tumors in Black Americans.
25	Ellen	Langer	PIN1 in the tumor microenvironment impacts pancreatic cancer development and progression
26	Claudia E	Leonard	Proteomic and Glycoproteomic Analysis on Cerebrospinal Fluid in Patients with Lung Cancer Leptomeningeal Metastases
27	Theodore R.	Levin	Clinical Evaluation of a New Blood-based Test for Colorectal Cancer Screening
28	Gerard	Lynch	Identification of patients at high risk of metachronous polyps to aid early detection strategies
29	Gerard	Lynch	SOX9 Expression in Colorectal Adenomas Improves Surveillance Colonoscopy Risk Stratification in a Bowel Screening Population
30	Hannah	Mearns	Identification of Protein Biomarkers in Serum for the Early Detection of Pre-cancerous Lesions Associated with Pancreatic Ductal Adenocarcinoma (PDAC) in Both Mouse Models and Human Patients
31	Emmanouela	Mitta	The effect of breathing motion in a model of early-stage lung adenocarcinoma
32	Joshua W.	Moore	Towards Spatial Hallmarks of Cancer
33	Bharath	Narayanan	Ovarian cancer growth kinetics – implications for cancer early detection
34	Leonid	Nikitenko	Distinctive proteomic signature of the pancreatic cystic fluid for EARLY DIAGNOSIS of PANcreatic Cancer (EARLY DIAPAC study)
35	Callum	Oddy	Studying Adaptive Plasticity in Patient-Derived Precancerous Organoids
36	David	Osuna de la Pena	Dissecting the impact of smoking cessation on clonal competition in the airways

Lightning Talk

Tuesday, October 22

	First Name	Last Name	Abstract Title
37	Emma	Parsons	Scoping into Surveillance: Outcomes and Barriers of Post-polypectomy Surveillance to Improve Early Detection of Colorectal Cancer
38	Adam	Perrett	Addressing the exclusion of mammogram mosaics in AI risk prediction
39	Adam	Perrett	Outlier detection to improve AI models for breast cancer prediction
40	Sravya	Prabhala	Evaluating Deep Learning Features of Chromatin-Sensitive Partial Wave Spectroscopic Microscopy for Early Lung Cancer Diagnosis
41	Eleanor	Roberts	Polygenic Risk Scores Derived in White European Women Overestimate Breast Cancer Risk in Women of Black Origin
42	Amit	Roshan	Removing barriers to Cancer Early Detection: Can identifying circulating tumour DNA in dried blood spots for cancer monitoring open new pathways in early detection?
43	Daniel	Salem	Evaluation of a novel extracellular vesicle based ovarian cancer screening test in asymptomatic postmenopausal women
44	Hayley	Smith	Variation in prostate cancer growth rate in an active surveillance cohort
45	Lyndon N.	Smith	3D Texture Analysis of Pigmented Lesions for Early Detection of Skin Cancer
46	Alexandra	Sockell	Improved detection of low frequency mutations and microsatellite instability in ovarian and endometrial cancers by utilizing a highly accurate sequencing platform
47	Caelia	Thomas	Speed of Sound Estimation in Ultrasound Molecular Imaging for Aberration Correction and the Early Detection of Breast Cancer
48	Chris	Tyson	Cumulative 1-3 Year Healthcare Costs of Commercially Insured Patients with Colorectal Cancer by Stage
49	Chris	Tyson	Multi-Cancer Early Detection Screening Can Improve Early Cancer Detection: A Modeling Study
50	Chris	Tyson	Can Multi-Cancer Early Detection Screening Result in Early Cancer Detection? A Modeling Study
51	Chris	Tyson	Radiation-induced cancer incidence from multi-cancer early detection screening: a modeling study
52	Christopher	Tyson	Time-to-diagnosis and peri-diagnostic healthcare utilization between screen- and non-screen detected cancers: Evidence from SEER-Medicare
53	Christopher	Tyson	Using Healthcare Claims to Predict Costs by Stage for Medicare and Commercially Insured Patients with Non-Small Cell Lung Cancer
54	Christoph	Wies	Investigating Interaction Errors in Clinical Decision-Making: Implications for Risk Understanding and XAI Assistance in Melanoma Diagnostics
55	Jason	Zhang	Blood microRNA-based diagnostic model for multi-cancer early detection

Lightning Talk

Wednesday, October 23

POSTER MENU

	First Name	Last Name	Abstract Title
1	Ishfaq	Ahmad	Benefits and harms of screening monoclonal gammopathy of undetermined significance in the US
2	Kaoutar	Ait-Ahmad	Automated segmentation of tumor innervating neuronal fibers
3	Lama	Alqahtani	Role of Microbiome in the Outcome of Pre-invasive Lung Squamous Cell Carcinoma Lesions.
4	May Anny	Alves Fraga	An organ on-a-chip model of the early oral squamous cell carcinoma interactions with the mineralized bone matrix.
5	Charles	Atwood	REFLECTION: Initial findings from a real-world evidence study of multi-cancer early detection (MCED) and toxic exposures among Veterans in the Veterans Affairs Healthcare System (VA)
6	Michelle	Beidelschies	DETECT-A participants with pre-malignant conditions diagnosed consequent to a multi-cancer early detection (MCED) test
7	Michelle	Beidelschies	Organ-specific performance of a multi-analyte, multi-cancer early detection (MCED) blood test in a prospectively-collected cohort
8	Michelle	Beidelschies	Performance of a multi-analyte, multi-cancer early detection (MCED) blood test in a prospectively-collected cohort
9	Kate	Bloch	A Pilot Study of Combining Radiomics Biomarkers with Liquid Biopsy Biomarkers to Classify Indeterminate Pulmonary Nodules
10	Oleg	Blyuss	Developing a dynamic predictive model for baseline detection and follow-up re-evaluation of the risk of prostate cancer progression on active surveillance (PROGRESS Prostate)
11	Jingfei	Cheng	A methylation and hydroxymethylation atlas of normal and tumour tissues
12	Jennifer	Davies	Urine high risk human papillomavirus testing as an alternative cervical screening strategy: the ACES Studies
13	Lucy	Denly	Use of Whole-Genome Urinary DNA Methylation as a Liquid Biopsy for Earlier Detection of Bladder Cancer Recurrence.
14	Olivia	Edwards	CRUK Diagnostics Development Framework
15	Libby	Ellis	Modelled Impact of a Multi-Cancer Early Detection Screening Programme on Cancer Treatment in England
16	Xiaoshuang	Feng	Performance of Lung Cancer Risk Prediction Models in Different Racial and Ethnic Groups in the United States: Results from the Lung Cancer Cohort Consortium

Wednesday, October 23

	First Name	Last Name	Abstract Title
17	Madeleine	Fenner	A gland-based deep learning approach for early prostate cancer characterization
18	Rhian	Gabe	Colorectal Cancer screening guided by modelling the effect of a multi-threshold FIT regimen: a combined insight from the UK FIT pilot study and Italian Reggio Emilia Screening
19	Peter	Gann	Smart PSA: a Trial of Risk-Adapted PSA Screening in a Minority-Serving Health Center Network
20	Victoria	Goss	MODERNISED Trial design: Cost-effective multi-cancer early detection by measuring patient plasma amino acid cross sections with the Enlighten test.
21	Sarah	Haggenmüller	Patients' and dermatologists' preferences on the use of artificial intelligence for skin cancer diagnostics: a prospective multicentric survey study
22	Xiaotong	He	Clonal evolutionary analysis reveals patterns of malignant transformation in pancreatic cancer from Intraductal Papillary Mucinous IPMN Neoplasms (IPMN)
23	Yi-Jhih	Huang	Molecular Imaging for the Detection of Barrett's Esophagus, Esophageal Dysplasia and Adenocarcinoma using a c-Met Specific Peptide
24	Andy	Hung	3D Printed Microneedles for Breast Cancer Biomarker Discovery in Dermal Interstitial Fluid
25	Seung	Hyun Lee	Integrating histopathology, Co-Detection by Indexing (CODEX) highly multiplexed imaging and computational analysis to create a single cell resolution atlas of human pancreatic cancer development
26	Felix	Jackson	A rigorous framework for cell-free DNA tissue deconvolution by combining a deep learning classifier and conformal prediction
27	Kathryn L.	Kapp	Proteomic and Glycoproteomic Changes in Pancreatic Cyst Fluid for Early Detection of Pancreatic Cancer
28	Sean	Knight	High dimensional immune phenotyping identifies potential biomarkers of lung cancer
29	Richard	Kuo	Novel Liquid biopsy technology reveals hidden RNA signals in early stage breast cancer
30	Liza M.	Kurucz	Early Prostate Cancer Detection Using AI-powered Transabdominal Ultrasound
31	M.J.	Kuykendall	Neuronal adhesion molecules as markers for lethal prostate cancer
32	Jane	Lange	Why did UKCTOCS fail to show benefit of screening: a forensic modeling approach?
33	Amy E.	Latarski	TRAINS: A Novel Gene Delivery Platform for Precision Targeting of NK Cells in Cancer Immunotherapy.
34	Richard	Lee	Implementing Lung Cancer Screening in the UK: An update on Results from the NHS England National 'Targeted Lung Health Check' Programme

Wednesday, October 23

	First Name	Last Name	Abstract Title
35	Richard	Lee	Video capsule examination in patients with Lynch and other cancer predisposition syndromes. A proof of concept study for obtaining data to support the development of machine learning algorithms to detect early cancers.
36	Marian	Love	Towards Understanding Progression to Diffuse Gastric Cancer in pathogenic CDH1 Mutation Carriers
37	Mao	Mao	A panel of four protein tumor markers for effective and affordable lung cancer early detection by artificial intelligence
38	Mao	Mao	A cost-effective two-step approach for multi-cancer early detection in the general population
39	William	McGough	Early Detection of Renal Cancer using Deep Learning in Low-Dose Computed Tomography
40	Sourabh	Mehta	Targeted Nanobubbles for Multimodal Molecular Imaging of Tumor-Specific Expression of PD-L1 in Triple Negative Breast Cancer In vivo
41	Moritz J.	Przybilla	Detecting 'sick lobes' - finding cancer-relevant driver mutations in breast milk for risk stratification
42	Nasir	Rajpoot	ODYN: An Artificial Intelligence-based Pipeline for the Prediction of Malignant Transformation in Oral Epithelial Dysplasia
43	Reihaneh	Safavisohi	Roles of Extracellular Vesicles in the Aging Microenvironment and Ovarian Cancer Progression: Proteome Profiling and Biomarker Detection
44	Mehrzad	Sasanpour	Development of an Internal Standard Protocol to Enhance the Reproducibility of Cancer Biomarker Detection Using Dielectrophoresis-Based Recovery of Nanoparticles from Plasma Samples
45	Selim	Sevim	A Human-in-the-loop Deep Learning Driven Annotation Framework for Multiplexed Digital Pathology
46	Prima Dewi	Sinawang	Circulating nanovesicles in serum carry Trop2 marker for prostate cancer detection and clinical care
47	Peter	Sodde	Early detection in Li Fraumeni Syndrome. cfDNA fragment length as a marker for early cancer
48	Mauricio	Sousa	Oral squamous cell carcinoma on-a-chip uncovers Fusobacterium nucleatum's Influence on tumor-associated macrophage differentiation.
49	Laura	Standen	Can cognitive function tests discriminate patients with and without glioma prior to treatment? A systematic review
50	Sushruta	Surappa	Dynamically reconfigurable acoustofluidic metasurface for subwavelength particle

Wednesday, October 23

	First Name	Last Name	Abstract Title
51	Runguo	Wu	Implementing risk-based triage for ovarian cancer detection in UK primary care using Ovatoools: a modelling study
52	Yunzhao	Wu	Detection of p53 aggregates in plasma of glioma patients
53	Nicolas	Zeitouni	DNA-based, MicroRNA-sensing Artificial Cells for Prostate Cancer Diagnosis
54	John Lizhe	Zhuang	Multiplex spatial phenotyping in Barrett's Oesophagus for early detection of progression risk
55	Luoting	Zhuang	Imaging Biomarker for Early Detection of Lung Cancer Combining Semantic and Deep Features

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