International Alliance for Cancer Early Detection

University of Cambridge PhD Supervisors 2026

Dr Maria P. Alcolea

Cambridge Stem Cell Institute
Department of Physiology, Development and Neuroscience

Research Interests:
Our research seeks to understand the earliest events in cancer development by uncovering how mutant clone competition, cell fate plasticity and microenvironmental interactions shape pre-malignant evolution. By revealing the mechanisms that determine whether mutant cells expand, persist or are eliminated, we aim to advance strategies for early cancer detection, prevention and intervention.

Clinical specialties relevant to your areas of research interest:
Gastroenterology, upper gastrointestinal surgery, histopathology, medical oncology and translational cancer medicine.

Professor Antonis Antoniou

Public Health and Primary Care

Research Interests:
Cancer genetic epidemiology, multifactorial cancer risk modelling, health and administrative data, data linkages, cancer risk stratification, prevention, early detection.

Clinical specialties relevant to your areas of research interest:
Cancer genetic epidemiology.

Dr Stephanie Archer

Department of Psychology

Research Interests:

My research focuses on the design, development and implementation of multifactorial risk prediction tools (e.g. CanRisk). I am interested in how we communicate complex risks to a range of stakeholders. I also focus on how risk prediction tools can be used outside of the specialist clinical setting (e.g. clinical genetics) and by a diverse group of patients/clinicians.

Clinical specialties relevant to your areas of research interest:

Secondary Care Breast Services, Community Pharmacy, Oncology, Genetics/Genomics, Primary Care

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Dr Giulia Biffi

Cancer Research UK Cambridge Institute

Research Interests:

This project will build from work initiated by an ACED postdoctoral fellow to validate stroma-specific biomarkers for early detection of pancreatic cancer adenocarcinoma (PDAC) in high-risk chronic pancreatitis patients, as well as patients with pre-cancerous cysts. The project will leverage spatial transcriptomics and proteomics analyses with bioinformatic support.

Clinical specialties relevant to your areas of research interest:

HPB

Dr Michael Boemo

Department of Pathology

Research Interests:

We develop AI and genomics technologies to identify cancers with DNA damage response (DDR) defects and predict sensitivity to DDR-targeted therapies. Our work combines AI engineering, algorithm development, and sequencing. We also have extensive experience teaching these methods to medical students, including those without mathematical or computational backgrounds.

Clinical specialties relevant to your areas of research interest:
AI engineering

Professor James Brenton

Cancer Research UK Cambridge Institute

Research Interests:
Repurposing oncology treatments for chemoprevention of high-grade serous carcinoma by targeting chromosomal instability and immune escape in the fallopian tube. Double strand break repair in mammalian cells can be modelled as a series of decisions that choose distinct biological pathways for survival. We have identified different 'rules' for BRCA1 and BRCA2 carriers and are developing precision prevention strategies using CRISPR engineered human fallopian tube organoids and mouse models.

Clinical specialties relevant to your areas of research interest:
Medical oncology, Obstetrics and Gynaecology, Gynaecological Oncology

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Dr Mireia Crispin- Ortuzar

Department of Oncology

Research Interests:
Our lab is interested in the development and application of multimodal AI tools for real-world data, with a focus on the early stages of ovarian, kidney, and liver cancers. We work on image analysis (pathology & radiology early detection) integrated with text and omics data. We have a special interest in opportunistic / multimodal ambient AI, and agentic data integration.

Clinical specialties relevant to your areas of research interest:
Oncology, radiology, pathology, urology, gynaecology, hepatology

Dr Harveer Dev

Department of Oncology

Research Interests:

Prostate cancer early detection and treatment response monitoring

Clinical specialties relevant to your areas of research interest:

Prostate cancer, early detection, early interception

Professor Rebecca Fitzgerald

Early Cancer Institute
Department of Oncology

Research Interests:

This PhD will provide a grounding in translational research with state-of-the-art computational and molecular methods. Focussing on Barrett's oesophagus the project aims to reconstruct early malignant evolution, identify precursor cell populations, and discover biomarkers to improve risk stratification and enable earlier detection of oesophageal adenocarcinoma.

Clinical specialties relevant to your areas of research interest:

Gastroenterology, oncology, medical genetics, pathology, public health.

Dr Alexander Frankell

Early Cancer Institute
Department of Oncology

Research Interests:

My lab develops techniques and algorithms to measure early cancer evolution non-invasively, e.g. via circulating tumour DNA, breath derived DNA or brushings, primarily in the lung and oesophagus. These samples provide opportunities for risk prediction, screening and longitudinal monitoring of premalignancy or early cancers, however, are typically too impure for standard methodologies.

Clinical specialties relevant to your areas of research interest:

Thoracic/GI oncology/surgery but also many others.

Professor Ljiljana Fruk

Department of Chemical Engineering and Biotechnology

Research Interests:

Development of nanostructured probes for urine-based detection. Nano based probes for CT/PET detection of therapy-induced senescence and polyploid giant cancer cells in pancreatic and lung cancer.

Clinical specialties relevant to your areas of research interest:

Pancreatic cancer, lung cancer, solid tumours in general.

Dr Chiara Herzog

Cambridge Stem Cell Institute

Research Interests:

My research investigates how the epigenome records exposures and how these marks enable cancer risk prediction/early detection, leading to several biomarkers (incl. MHRA-approved). My work has also shown smoking and vaping induce shared epigenetic changes in carcinogenic pathways, with ongoing work on risk stratification biomarkers and underlying mechanisms.

Clinical specialties relevant to your areas of research interest:

This could be a broad range, e.g., respiratory medicine, (medical) oncology, primary care, clinical genetics, geriatrics, etc.

Dr Siddhartha Kar

Early Cancer Institute

Research Interests:

Cancer epidemiology, cancer genetics, genetic epidemiology, clonal haematopoiesis

Clinical specialties relevant to your areas of research interest:

All specialties.

Professor Walid Khaled

Cambridge Stem Cell Institute
Department of Pharmacology

Research Interests:
My lab studies the earliest cellular events in breast tumour initiation, particularly in BRCA1/2 mutation carriers. We build single-cell and spatial genomic atlases of mouse and human breast to define premalignant states, and use these to identify early detection markers and to develop cancer interception and vaccination strategies.

Clinical specialties relevant to your areas of research interest:
Breast surgery, Clinical oncology, medical genetics

Professor Elisa Laurenti

Department of Haematology

Research Interests:
My laboratory studies clonal haematopoiesis. We are specifically interested in how somatic mutations functionally impact human haematopoietic stem cell biology and function, i) imparting them with a selective advantage; ii) determining the generation of dysfunctional immune cells, iii) increasing the risk of transformation to leukaemia and/or promote solid cancer growth.

Clinical specialties relevant to your areas of research interest:
Haematology

Dr Frank McCaughan

Department of Medicine

Research Interests:
Chemoprevention of squamous lung cancer. Nodule stratification in CT screening via biomarkers. Risk profiling in never-smokers.

Clinical specialties relevant to your areas of research interest:
Oncology. Respiratory medicine.

Professor Matthew Murray

Department of Pathology

Research Interests:

Our lab works focusses on the role of short non-protein coding RNAs, including microRNAs (miRNAs), in solid tumours, including germ cell tumours (GCTs), Wilms tumour (WT), and neuroblastoma (NB). Our work has established that the miR-371~373 and miR-302/367 clusters are highly over-expressed in all malignant GCTs, regardless of patient age, sex, race, subtype, or site, are circulating biomarkers of disease and that dysregulated miRNA expression has therapeutic potential. We have also demonstrated the circulating biomarker potential of miRNAs for other tumours.

Clinical specialties relevant to your areas of research interest:

Paediatric Oncology; Oncology; Urology; Gynaecology

Professor Oscar Manuel Rueda Palacio

MRC Biostatistics Unit

Research Interests:

Statistical Modelling, Bioinformatics, Genomics, Prognostic and Prediction Models, Machine Learning, Data Integration, Multiomics.

Clinical specialties relevant to your areas of research interest:

Breast cancer.

Professor Nora Pashayan

Public Health and Primary Care

Research Interests:

My research focuses on risk stratification and cancer screening, including understanding of the natural history of cancer, evaluating screening strategies – who, when, and how to screen to improve the benefit-harm balance and the cost-effectiveness of a screening programme, and implementing innovative risk-stratified screening strategies.

Clinical specialties relevant to your areas of research interest:

Public health, urology, gynaecology, oncology, gastroenterology, respiratory medicine

Professor Robert Rintoul

Department of Oncology

Research Interests:

My work focuses around clinical trials for discovery and evaluation of molecular biomarkers for earlier detection of primary and second primary lung cancer. The latter is becoming increasingly important as long-term survival rates for lung cancer improve particularly as lung cancer screening rolls out. Current work focuses on breath and blood based biomarkers.

Clinical specialties relevant to your areas of research interest:

Respiratory Medicine; Thoracic Oncology

Dr Maike de la Roche

Cancer Research UK Cambridge Institute

Research Interests:

i) Hedgehog signalling pathway, ii) Immune parameters in patients with Gorlin Syndrome, iii) Utilising the immune syndrome for early cancer detection, intervention and novel therapeutics

Clinical specialties relevant to your areas of research interest:

Oncology, haematology, immunology

Professor Elizabeth Soilleux

Department of Pathology

Research Interests:

Identifying T-cell responses to cancer antigens may permit blood-based screening. We have identified specific T-cell receptor (TCR) features to distinguish active anti-cancer responses from "incidental" TCRs predicted to bind cancer antigens. Corroborating these features in colorectal/ endometrial cancer specimens and in vitro will inform cancer screening strategies, T-cell therapeutic design and the basis of T-cell anergy in cancer.

Clinical specialties relevant to your areas of research interest:

Oncology, Pathology (including Histopathology/ Cellular Pathology), Immunology, General Medicine (and its various subspecialties, especially Gastroenterology), Rheumatology, Haematology, Colorectal surgery, Gynaecology, Genetics, Palliative Care

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Professor Grant Stewart

Department of Surgery

Research Interests:

Early detection of abdominal cancers via targeted screening, integrated with lung cancer screening, including automated image analysis (with Dr Mireia Crispin-Ortuzar). Early detection biomarkers for kidney cancer (urine and plasma). Multiparametric analysis of data streams.

Clinical specialties relevant to your areas of research interest:

Kidney cancer surgery

Professor George Vassiliou

Department of Haematology

Research Interests:

Clonal haematopoiesis, myeloid malignancies, blood cancer prevention.

Clinical specialties relevant to your areas of research interest:

Haematology.

Dr James Whitworth

Department of Genomic Medicine

Research Interests:

Heritable conditions predisposing to renal cell carcinoma - Risk prediction, early detection assays, improvement of surveillance protocols. Multiple primary tumours as a route to detection of cancer predisposition gene variants not identified by standard clinical practice (e.g. mosaicism, structural variants).

Clinical specialties relevant to your areas of research interest:
Clinical Genetics

Dr Xin Yang

Public Health and Primary Care

Research Interests:

My research focuses on developing and validating integrated models for cancer early detection by combining genetic susceptibility, polygenic risk scores, biomarkers, family history, and clinical risk factors. I aim to improve personalised risk stratification, optimise screening strategies, and promote equitable implementation across diverse populations.

Clinical specialties relevant to your areas of research interest:
Early cancer detection.