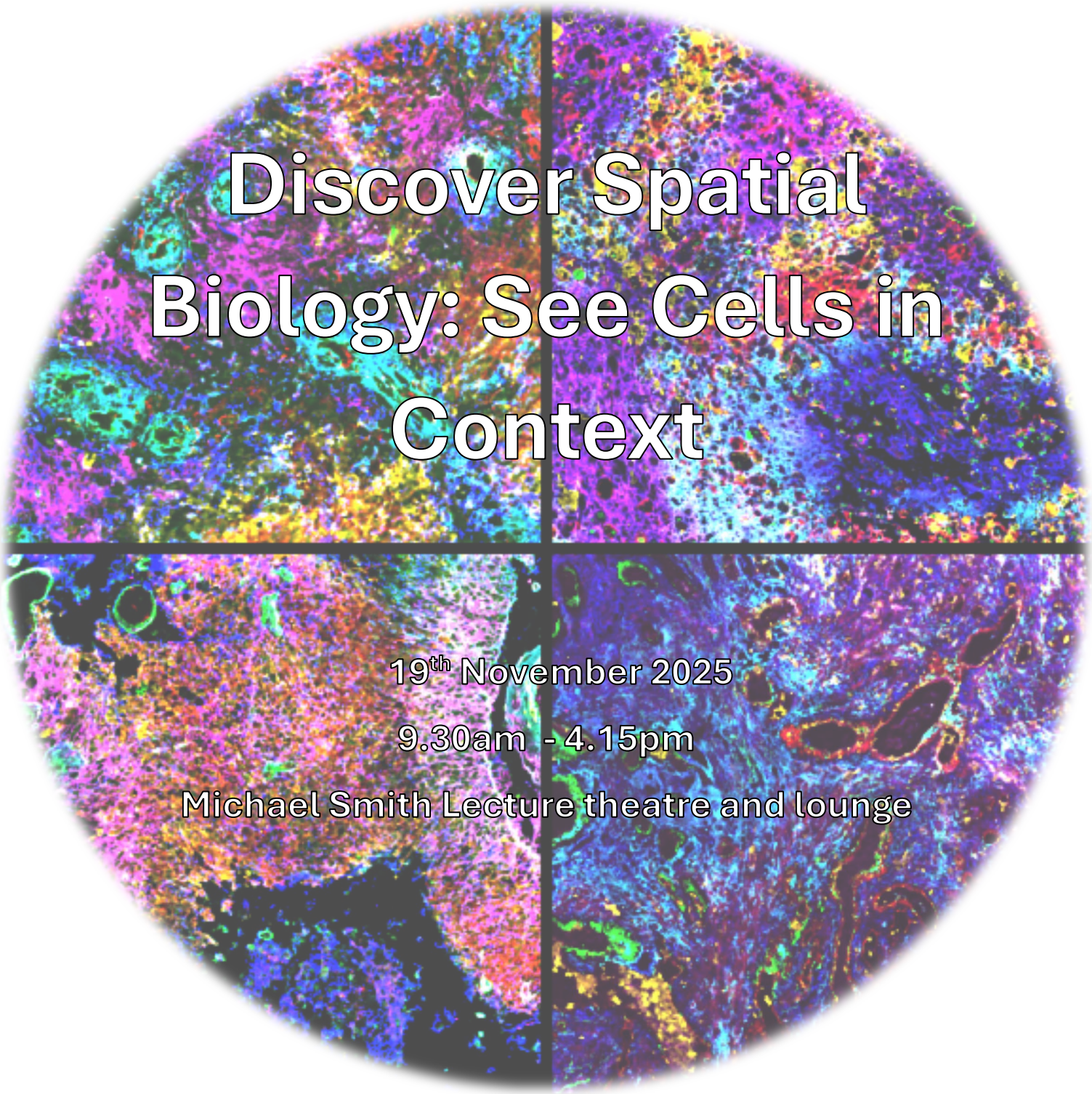


Discover Spatial Biology: See Cells in Context

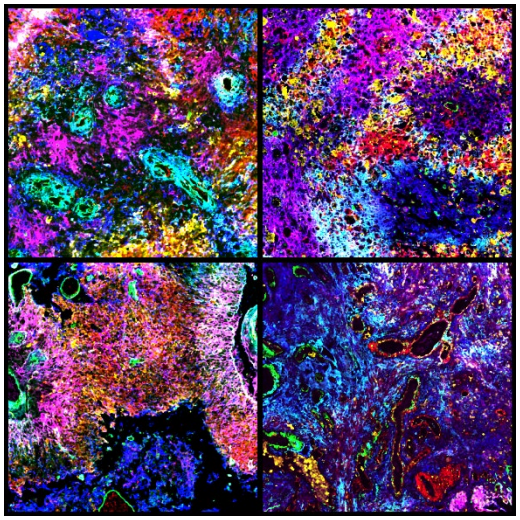
19th November 2025

9.30am - 4.15pm

Michael Smith Lecture theatre and lounge

Contents

Discover Spatial Biology: See Cells in Context



Spatial biology is a transformative new field that allows us to study cells and molecules right where they live—revealing not just what's present, but exactly where it happens. Using cutting-edge platforms like spatial transcriptomics and multiplexed protein imaging, researchers can now map tissues at single-cell or even subcellular resolution. This means we can see not only the abundance of cells and proteins in a tissue, but also where they are, whether they are colocalised, and how they might communicate.

Why does this matter? The function of a cell and the role of molecules in a tissue depend on their precise location and their interactions with the surrounding environment. For example, the environmental context of cells within a tumour can influence how quickly it progresses and how it responds to treatment. Spatial biology technologies are revolutionizing biomedical research—uncovering new biomarkers, guiding precision therapies, and helping us build detailed atlases of human tissues.

Curious about spatial biology and how it could advance your research? Join us to learn about the latest spatial biology research happening in FBMH and CRUK MI and discover the support available to help you kickstart your own spatial biology journey.

Event Details:

- **When:** Wednesday 19th November
- **Where:** Michael Smith Building, Main campus, University of Manchester

Whether you're new to spatial biology or looking to deepen your understanding, this event will provide insights, inspiration, and practical guidance to help you see cells—and science—in a whole new context.

AGENDA:

Session 1: Spatial Transcriptomics (Chair: Kevin Couper)		
9.30am-10.00am	Coffee and registration	
10.00am-10.10am	Kevin Couper and Claus Jorgenson	Welcome and Introduction
10.10am – 11.30am	10.10am – 10.30am – Karen Piper Hanley	*Spatial transcriptomics in the liver to understand healthy and disease environments*
	10.30am – 10.50am – Wolfgang Breitwieser	*Spatial Omics Technologies as a Core Service*
	10.50am – 11.10am – Stephen Richardson	*High resolution spatial transcriptomic and proteomic mapping of the developing human spine*
	11.10am-11.30am - Charlotte Russell	*Mapping tumour-stromal interactions in skin cancers*
11.30am – 11.50am	Coffee	

Session 2: Spatial Imaging (Chair: Stuart Pepper)		
11.50am – 1.10pm	11.50am – 12.10pm – Patrick Caswell	*Mapping the immune matrix microenvironment in ovarian cancer metastasis*
	12.10pm – 12.30pm – Mike Haley	*Spatially deconstructing the tumour microenvironment of glioblastoma*
	12.30pm – 12.50pm – James Parkinson	*The Spatial Context of the Allergic Lung*
	12.50 – 1.10pm – Victoria Fife	*Spatial profiling of the immune microenvironment in lung cancer using multiplex immuno-histochemistry*
1.10pm – 2.10pm	Lunch	

Session 3: Data Analysis for Spatial Biology (Chair: Claus Jorgenson)		
2.10pm – 3.30pm	2.10pm – 2.30pm – David Wedge	*Tracking the spread of colorectal peritoneal metastases using spatial multiomics*
	2.30pm – 2.50pm – Syed Murtuza Baker	*The GPS of Cells: Navigating the World of Spatial Transcriptomics*
	2.50pm – 3.10pm – Ali Al-Anbaki	*Spatial Transcriptomic Mapping of Blood Emergence in Embryos*
	3.10pm – 3.30pm - Mohammad Faiz Iqbal Faiz	*BioGIS: Charting Cellular Territories with Geostatistical Methods*
3.30pm – 4.00pm	Q&A session	
4.05pm – 4.15pm	Kevin Couper and Claus Jorgenson	Closing remarks

SPEAKERS:

Kevin Couper: Kevin is a Professor of Immunology within the Division of Immunology, Immunity to Infection and Respiratory Medicine. Kevin started his research group with a Medical Research Council Career Development Award at the London School of Hygiene and Tropical Medicine in 2009 before moving to the University of Manchester in 2012. Kevin is the branch lead for brain inflammation within the Geoffrey Jefferson Brain Research Centre (GJBRC), a translational partnership between the University of Manchester, the Northern Care Alliance and the Manchester Academic Health Science Centre. Kevin is also the Academic Director for Core Facilities within the Faculty of Biology, Medicine and Health in Manchester.

Kevin's group is focussed on studying immune responses within different neuroinflammatory conditions, including brain tumours and cerebral malaria.

Claus Jorgenson: Dr Claus Jorgensen is a senior group leader and Deputy Director at the Cancer Research UK Manchester Institute and Professor of cancer biology at The University of Manchester. Dr Jorgensen obtained his PhD at the University of Southern Denmark in 2005, after which he moved to Toronto, Canada for his postdoctoral training with Dr Tony Pawson at the Samuel Lunenfeld Research Institute. In 2010 Dr Jorgensen started his independent career as a team leader at The Institute of Cancer research, London UK, supported by a CRUK Career Establishment Award and moved to the CRUK Manchester Institute in 2014. Dr Jorgensen has been the Chair of the Pancreatic Cancer UK Research Strategy Group since 2025.

The work in Dr Jorgensen's lab focuses on unravelling how the evolving tumour microenvironment control tumour cell function and response to therapy in pancreatic cancer. The lab employs a number of techniques including profiling platforms and functional mechanistic platforms to address these relationships.

Karen Piper Hanley: is Professor of Molecular Medicine and Head of the Division of Diabetes, Endocrinology and Gastroenterology at the University of Manchester. Her research investigates the cellular and molecular mechanisms underlying fibrotic disease — a common, often irreversible process that contributes to the progression of most chronic conditions across organ systems. With fibrosis currently lacking effective diagnostic tools and therapies, her group combines in vitro, in vivo, and human modelling approaches to identify new pathways for diagnosis and intervention, particularly in progressive liver disease.

Karen also maintains a long-standing interest in human developmental biology and disease, with particular expertise in the liver and pancreas. She leads studies using spatial transcriptomics, single-cell multiomics, and advanced imaging to uncover how human organs form and how developmental programmes are reactivated or disrupted in adult disease, including liver cancer and metabolic dysfunction.

Wolfgang Breitwieser: Studied Biology at University of Vienna, Austria

PhD: EMBL Heidelberg, Germany

Postdoc: ICRF (now CRUK London Institute) and CRUK Manchester Institute

Current Position: since 2015 Head of Molecular Biology, CRUK Manchester Institute.

Dr Stephen Richardson:

Division of Cell Matrix Biology and Regenerative Medicine, School of Biological Sciences, Faculty of Biology Medicine and Health, The University of Manchester, Stopford Building, Manchester, M13 9PT
s.richardson@manchester.ac.uk

I am a Senior Lecturer in the Division of Cell Matrix Biology and Regenerative Medicine at The University of Manchester. My research encompasses three core themes: 1) Characterisation of phenotypic and functional changes in cell sub-populations during human intervertebral development, homeostasis and degeneration; 2) Modelling intervertebral disc development and developing stem cell-based regenerative therapies for intervertebral disc degeneration; and 3) Integration of biomaterial, biofabrication and bioreactor technologies to create biomimetic tissue analogues to model tissue development, disease processes and develop novel therapeutics. We use a range of -omics technologies, including bulk and single-cell RNASeq, spatial transcriptomics, mass spectrometry proteomics, and mass spec imaging to

characterise human cells and tissues, along with CRISPR-based tools to investigate the function of identified genes in cell fate decisions and healthy/degenerate cell state transitions. This work is combined with biomaterials, biofabrication and bioreactor studies aimed at developing physiologically relevant tissue analogues to study tissue development and understand the mechanisms of disease.

Charlotte Russell: Charlotte is an MB-PhD student in Dr Amaya Viros' group at the CRUK MI. She completed her undergraduate degree in Biochemistry, with a year in industry, before starting her medical degree at the University of Manchester. She is currently investigating the contribution of age-dependent stromal metabolites in brain metastasis growth.

Patrick Caswell: Pat is Professor of Cancer Cell Biology at the University of Manchester. Pat studied Biochemistry at the University of Nottingham, before undertaking a PhD at the University of Leicester and a postdoc in Jim Norman's lab at the CRUK Scotland Institute. Pat established his lab in Manchester in 2010 within the Manchester Cell Matrix Centre, focussing on how cell-matrix interactions are regulated to influence cancer progression.

Mike Haley: Michael Haley has driven the advancement of high-dimensional tissue imaging and spatial omics analysis at the University of Manchester, pioneering the use of Hyperion imaging mass cytometry (IMC). He has extensive experience analysing spatial omics datasets, including IMC and Visium 10x spatial transcriptomics, using them to explore cellular organisation, interactions, and molecular heterogeneity in glioblastoma. Gaining his PhD in 2013, he is a Senior Experimental Officer within the Bioimaging Core Facility, where he supports and develops cutting-edge tissue imaging and integrative omics approaches.

James Parkinson: James is currently completing a PhD at the University of Manchester in the lab of Prof. Judi Allen and co-supervised by Dr Tara Sutherland. His work aims to understand how alternatively activated macrophages regulate the tissue environment in conditions of type-2 inflammation including parasite infection and allergy. Specifically, his work has focused on understanding changes in the tissue microenvironment during allergic inflammation and specifically in role of the macrophage expressed protein Ym1 as a requirement for subepithelial collagen deposition.

Victoria Fife: Victoria Fife is a postdoctoral scientist at the CRUK National Biomarker Centre, specialising in biomarker discovery and translational immuno-oncology. Her PhD research focused on identifying a prognostic biomarker for relapse in early-stage non-small cell lung cancer, validated through advanced molecular profiling and computational approaches. To explore the immune landscape of early-stage lung cancer specimens, she utilized a 25-plex immunohistochemistry protocol enabling high-throughput immune spatial profiling.

David Wedge: David Wedge is Professor of Cancer Genomics and Data Science at the Manchester Cancer Research Centre, University of Manchester. He was co-lead of the Evolution and Heterogeneity working group of the ICGC Pan-Cancer Analysis of Whole Genomes (PCAWG) project and is currently one of the leaders of the Pan Prostate Cancer Group (PPCG). Much of the research in the Wedge lab is focused on tumour evolution, from the initial transformation of normal cells to cancer, through the acquisition of treatment resistance and to the formation of metastatic lesions. We are also interested in how factors in the tumour microenvironment, such as hypoxia and immune cell populations, affect the course of tumour evolution. The Wedge group have pioneered the development of several computational methods to study heterogeneity in primary and metastatic cancers. In recent years, the focus of the lab has shifted towards the Global South, and we have formed scientific collaborations with a wide geographical spread, including Nigeria, South Africa, Kenya, Hong Kong, Sri Lanka and Malaysia.

Syed Murtuza Baker

Dr Syed Murtuza Baker is a Senior Bioinformatics Scientist and recognised expert in single-cell and spatial omics data science at the University of Manchester. As a member of the Bioinformatics Core Facility (BCF), he leads the development of advanced analytical tools, computational workflows, and strategic bioinformatics infrastructure that underpin cutting-edge biomedical research.

His expertise spans high-throughput sequencing data analysis—including bulk and single-cell RNA-seq, ATAC-seq, multiome, and spatial transcriptomics—as well as imaging-based spatial proteomics. Dr Baker's work integrates these modalities through innovative multi-omics and machine-learning approaches, with a strong focus on reproducibility, transparency, and FAIR data principles.

He has published in leading journals and actively contributes to the UK spatial omics community through invited talks, workshops, and national collaborations. An experienced mentor and educator, he supervises PhD students and delivers bespoke training in single-cell and spatial data analysis.

Dr Baker also plays a strategic role in shaping institutional bioinformatics capacity—serving on the University's Bioinformatics Strategy Group and leading initiatives that enhance computational infrastructure, research efficiency, and interdisciplinary collaboration

Ali Al-Anbaki: Dr Ali Al-Anbaki is a Postdoctoral Scientist in the Stem Cell Biology Group at Cancer Research UK (CRUK), University of Manchester.

I obtained my MBChB from Al-Nahrain College of Medicine (Baghdad, Iraq) in 2001, followed by an MSc in Human Anatomy, Histology, and Embryology from the same institution in 2006.

I earned my PhD in Developmental Biology from the University of Manchester, UK in 2017, where his research focused on the roles of SOX2 and KLF4 transcription factors in the formation and specification of the mammalian epiblast lineage.

From 2018 to 2022, i joined the laboratories of Professors Neil Hanley and Karen Piper Hanley at the University of Manchester, investigating the differentiation of cell types in the early embryonic and fetal human liver.

Since 2023, I have been part of Professor George Lacaud's laboratory, working on developing in vitro platforms for blood generation and exploring the molecular regulation of the endothelial-to-hematopoietic transition (EHT) using advanced Molecular technologies.

Mohammad Faiz Iqbal Faiz: Mohammad Faiz Iqbal Faiz is 1st year PhD student funded by the BBSRC DTP. He is a computer science engineer by training and an aspiring computational biologist. His research interests lie in developing spatial-omics methods using ideas drawn from computational geography, graph theory, and artificial intelligence. His PhD project is about developing a spatially aware muti-omics resource that can do spatial-omics analysis on multiple modalities, essentially a Google map equivalent but for biology. He previously worked on application of AI techniques in digital histopathology and precision oncology.

SPATIAL BIOLOGY Q&A SESSION

Panel members:

Kevin Couper

Claus Jorgenson

Wolfgang Breitwieser

Syed Murtuza Baker

Mike Hayley

Victoria Fife

VENDORS:

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Thank you everyone for attending and taking part.

Thanks to Mike Haley for the Image used in this brochure