

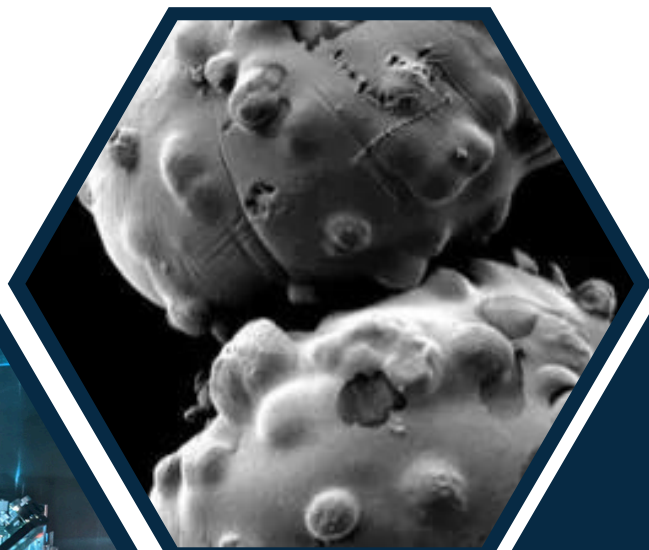
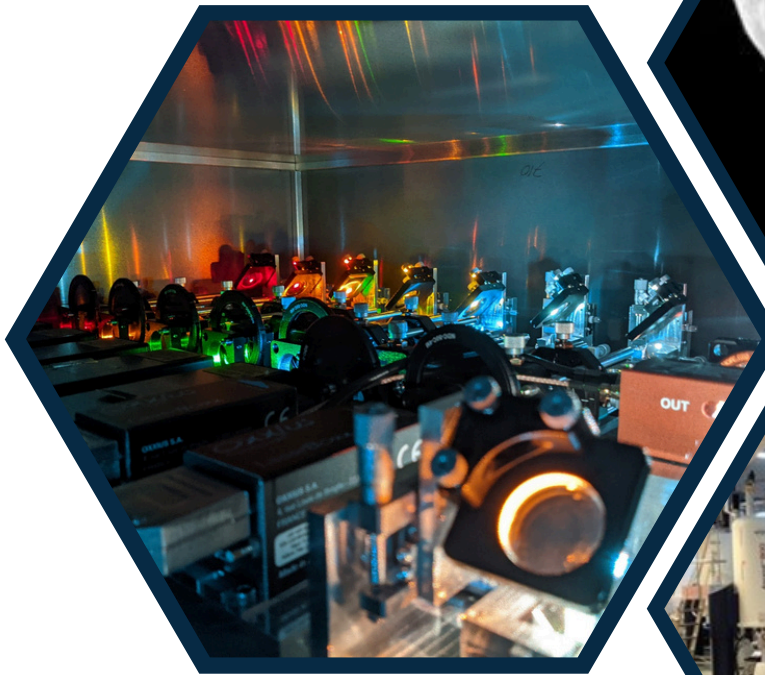
# 22-23



**Core  
Research  
Facilities**

# Highlights

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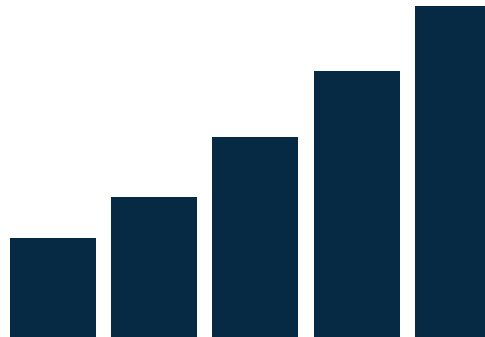
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# About Core Research Facilities

At King's College London, our core research facilities serve as the driving force underpinning the world-class research that is our hallmark. This year, we've made significant investments in enhancing these core facilities, a move underpinned by our commitment to listening to and acting upon the needs of our research community. Our approach to improvement has been informed by direct feedback, notably through initiatives like the Mass Spec Survey and subsequent community workshops. These engagements have been instrumental in shaping an informed strategic plan, and improving our services and support.

The expansion of our facilities this year included new state-of-the-art equipment, the introduction of specialised staffing, and the incorporation of new infrastructure. These enhancements are not just upgrades; they represent a responsive and evolving strategy to meet the ever-changing landscape of scientific research. By prioritising the needs and insights of our researchers, we have ensured that our facilities not only advance in capability but also align closely with the practical and innovative demands of our academic community. This ongoing dialogue and adaptation affirm our dedication to maintaining King's College London's status as a leader in global research and innovation, equipped to face both current and future challenges.



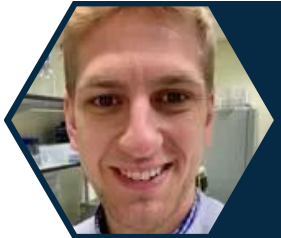
# Meet Our Team



## LEANNE ALLISON

Manager, Centre For Ultrastructural Imaging (CUI)

Leanne, an Electron Microscopy Specialist since 2012, has been instrumental in advancing life sciences and clinical research at the Centre. Her proficiency spans a broad spectrum of imaging techniques, including TEM, cryoSEM, array tomography, and SBF-EM.



## ALEXANDER MORRELL

Manager, London Metallomics Facility (LMF)

Alex's expertise lies in elemental characterisation techniques to enhance healthcare research. By developing data analysis pipelines for multi-modal approaches with correlative analyses, he aims to tackle complex questions surrounding both biomaterials research and human health & disease.



## JAMES JARVIS

Manager, NMR Facility

James has broad expertise in practical and theoretical aspects of NMR spectroscopy with experience in solution and solid-state NMR of organic and biological molecules, NMR simulations, NMR method development and structural biology and biophysics.



## STEVEN LYNHAM

Manager, Proteomics Facility

Steve brings nearly two decades of experience, specialising in protein identification, post-translational modifications, and advanced protein quantitation techniques, including isobaric mass tagging and label-free analysis utilising liquid chromatography coupled to a range of mass specs.



## DYLAN HERZOG

Manager, Nikon Imaging Centre (NIC)

Dylan has extensive expertise in fluorescence microscopy—ranging from wide-field to confocal and multiphoton systems across major microscopy platforms. His breadth of experience extends to a range of applications from microbiology to oversight of clinical studies.



## NICHOLAS ANTHONY

Manager, Microscopy Innovation Centre (MIC)

Nick is passionate about facilitating cross-disciplinary research projects, utilising his experience in building and modifying microscopy systems for the imaging and understanding of biologically significant research.



## ANDREA ZELMER

Manager, High Containment & Biosafety Facility (HBF)

With 14 years dedicated to infectious disease research and over a decade in high-containment CL3 facilities, Andrea is an expert in airborne pathogens, particularly Mycobacterium Tuberculosis. Andrea's extensive research background is complemented by her previous laboratory and facility management.

# 2022-2023 HIGHLIGHTS

## CENTRE FOR ULTRASTRUCTURAL IMAGING

CUI is advancing research with a new 200kV cryo-TEM, enabling around-the-clock automated data collection and structural analysis down to low Angstrom resolution. This leap in capabilities, supported by a specialised workflow, facility upgrades, and expert staff, will enhance molecular understanding, particularly of proteins, and drive forward scientific breakthroughs with efficient cryoEM workflows in the coming year.



### Featured Research Publication

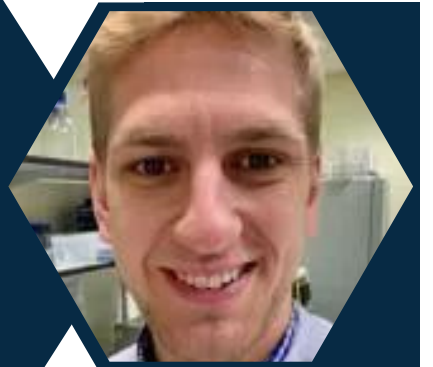
Neurons regulate protein production at the site of synapse formation in a way that depends on the type of neuron and synapse, which is crucial for how connections in the brain are made.



[Science \(2022\)](#)

## LONDON METALLOMICS FACILITY

Unveiling the future of precision analytics, The LMF has expanded its state-of-the-art suite with the NexION 5000 TQ-MS, Iridia laser ablation, and the Vitesse ToF-MS—ushering in a new era of ultra-sensitive, high-speed measurements. With detection limits down to parts per quadrillion and subcellular imaging resolutions, LMF is contributing to crucial applications in cancer, neurodegeneration, cardiovascular & infectious disease.



### Featured Research Publication

Differing oxygen levels alter zinc content and antioxidant responses in human heart cells, with potential implications for therapies targeting cardiovascular disease.



[Redox Biology \(2023\)](#)



# 2022-2023 HIGHLIGHTS

## NMR FACILITY

The NMR Facility is taking a significant leap forward with the integration of a new BBO cryoprobe into their 700 MHz magnet, offering unprecedented sensitivity, a wider range of detectable nuclei, and faster data acquisition to expand the characterisation of biomolecules, accelerate protein-ligand studies for drug discovery, and enhance metabolite profiling for rapid biomarker detection and metabolic research.



### Featured Research Publication

Obesity and fatty liver disease can lead to brain health issues, suggesting the MCT1 protein as a promising focus for new treatments to prevent related cognitive decline.



[J. of Hepatology \(2022\)](#)

## PROTEOMICS FACILITY

The Proteomics Facility is expanding its team with a new analyst to meet increasing service demands and ensure quicker results for researchers. Concurrently, the facility is pursuing funding for high-resolution mass spec upgrades and integration into a new Critical Mass UK (C-MASS) bid for enhanced mass spectrometry infrastructure, facilitating large-scale screening and rapid data sharing.



### Featured Research Publication

A comprehensive database, revealing how proteasomes may tailor immune responses, potentially advancing treatments for cancer, infections, and autoimmune diseases.



[Scientific Data \(2023\)](#)

# 2022-2023 HIGHLIGHTS

## NIKON IMAGING FACILITY

The NIC has recently acquired an advanced AXR point-scanning confocal with NSPARC detector on indefinite loan, enabling super-resolution imaging at depth with minimal sample disturbance. Additionally, a successful BBRC bid won by Dr. Franziska Denk will introduce an upright multiphoton version of the AXR with NSPARC, promising unparalleled clarity in visualising structures deep within living organisms, and expanding in vivo research possibilities.



### Featured Research Publication

B cells in melanoma patients show signs of an intense and possibly misdirected immune response, resembling autoimmune behaviour, which could impact how the body fights cancer.



[Nature Communications \(2023\)](#)

## MICROSCOPY INNOVATION CENTRE

MIC is introducing step change in its imaging capabilities with the new acquisition of a Leica Stellaris FALCON DIVE enabling advanced FLIM, and an Abbelight system for enhanced SMLM, empowering scientists to unravel complex biological processes and molecular interactions. Further bolstering MIC's innovation, a new grant will support the development of an integrated image analysis package, streamlining SMLM data validation for researchers.



### Featured Research Publication

Understanding the needs of the imaging community: demand for better documentation, user-friendly tools, and tailored solutions in image analysis, with insights on improving tool development and education.



[J. of Microscopy \(2023\)](#)

# 2022-2023 HIGHLIGHTS

## High Containment & Biosafety Facility

Set to launch in the upcoming year, King's new state-of-the-art facility will be a pioneering hub for infectious disease research, offering a Containment Level 3 (CL3) environment alongside heightened security. Dedicated to operational excellence, the facility will provide expert guidance, comprehensive training, and specialised infrastructure tailored for cutting-edge, highly regulated studies. Central to its mission, the facility aims to empower impactful research that advances health, enhances pandemic readiness, and supports the scientific community, all within the framework of utmost safety and regulatory adherence.





# Initiatives

## LEAF @ KCL

The Sustainability in Research team is at the forefront of our Climate and Sustainability Action Plan 2030, with Dr. Marcelo Salierno and Caitlin Broadbent leading the charge. Marcelo and Caitlin are critical in ensuring that sustainability becomes a cornerstone of our core research facilities, prioritising the reduction of our carbon footprint. A pivotal element of their mission is the full implementation of the LEAF framework across all labs by October 2023, with the establishment of 59 LEAF laboratory units on all campuses, highlighting our commitment to sustainable research practices as a central operational priority at King's and within our core research facilities.



🔗 Visit [their LEAF SharePoint](#) for more information! 🔗

## Euro BioIMAGING

The UK is enhancing biological research by offering open access to cutting-edge imaging technologies through Euro-BioImaging's UK Node, involving seven leading institutions including King's College London and The Francis Crick Institute. This Node provides advanced bioimaging techniques, specialised expertise, training, and data management services. Catering to all biological and biomedical fields, the Node supports researchers throughout their projects, from planning to data analysis. Professor Maddy Parsons will spearhead this initiative, with King's as the legal host, and our own Nick Anthony (MIC) and Alex Morrell (LMF) leading the engagement for our core facilities.



🔗 Visit [UK Euro-BioImaging](#) for more information! 🔗

# Awards & Distinctions

The LMF and MIC achieved their LEAF Gold and Bronze Awards in July 2023, paving the way for our whole team to be accredited by the end of the year. Congrats to everyone at the LMF and MIC for their hard work and effort!



Leanne represented Core Facilities to share her personal experiences at an RMID Women into Leadership event, highlighting networking challenges and strategies to overcome them. Thank you Leanne for your invaluable insight and for providing a spotlight on female leadership in RMID!

