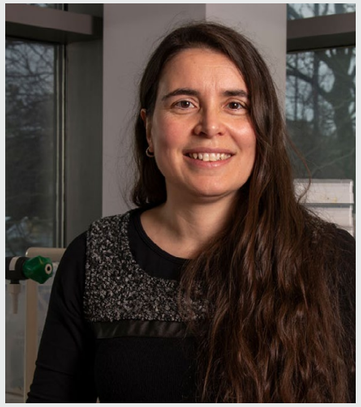
UNIVERSITY OF LIVERPOOL

INSTITUTE OF SYSTEMS, MOLECULAR AND INTEGRATIVE BIOLOGY

RESEARCH WITH IMPACT

Welcome

At the University of Liverpool, the Institute of Systems, Molecular and Integrative Biology provides a hub for cutting-edge, interdisciplinary research across the biological sciences.



Professor Sonia Rocha
Executive Dean

We are dedicated to untangling the complexities of living systems through a well-integrated approach comprising molecular, cellular and systems-level perspectives. Our research spans all scales of life, from viruses to bacteria, to plants and humans.

Understanding the intricacies of life requires a multi-disciplinary approach. Our diverse researchers tackle some of the most pressing questions in modern biology to address national and global challenges.

By fostering collaboration among scientists with expertise ranging from genomics and bioinformatics to cell biology and physiology, we catalyse breakthrough discoveries that have far-reaching implications for both fundamental science and real-world applications.

At the heart of our Institute is a vibrant community of PhD students. Our dedication to nurturing the next generation of scientific leaders is demonstrated through our transformational educational programmes and training initiatives. From undergraduate to postgraduate, we provide a supportive environment for students to thrive and achieve their full potential.

We are committed to supporting all those involved in research to flourish, creating avenues for development and career progression through the Concordat and Research Technical Professional Career Pathway.

Our welcoming and inclusive culture means that every colleague – academic, technical and professional services staff and postgraduate researchers – is valued and given a voice to contribute to the management and success of our Institute.

UNIVERSITY OF LIVERPOOL

The Institute of Systems, Molecular and Integrative Biology is organised into four diverse and vibrant academic departments:

- **Department of Biochemistry, Cell and Systems Biology**
- **Department of Molecular and Clinical Cancer Medicine**
- **Department of Pharmacology and Therapeutics**
- **School of Biosciences**

91% OF OUR RESEARCH IS WORLD-LEADING AND INTERNATIONALLY EXCELLENT

OUR CLINICAL MEDICINE RESEARCH IS RANKED 11TH IN THE UK FOR RESEARCH POWER, WITH 100% OF OUR IMPACT RATED OUTSTANDING OR VERY CONSIDERABLE

ATHENA SWAN SILVER AWARD

Our research

The Institute is a hub of diverse research areas, each with its own national and international recognition. From cutting-edge multiomics, cancer and pharmacology research to pioneering studies in plants, crops, and photosynthesis, our efforts span the full scientific spectrum.

Professor Roy Goodacre
Institute Research and Impact Lead

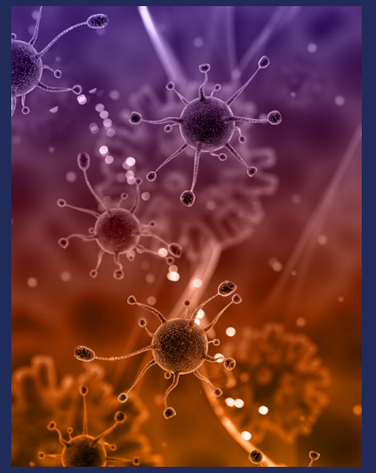
What sets us apart is our collaborative spirit, both within and between departments, across faculties, and with industry partners. This team approach fuels innovation and drives solutions to some of the most pressing challenges of our time, including antimicrobial resistance and climate change.

Supporting our scientists, which include successive waves of early career researchers, remains a top priority and we manage an active Concordat programme to support career development at all levels.

Successful initiatives we have introduced include a peer-review process for all grants, a workshop fund to bring scientists together and a professional development award scheme.

Recognising excellence is also fundamental to our culture. Our new annual Dean's Excellence Awards, which we established in 2023, celebrate scientific achievements and inspire further innovation across our interlinked research, teaching, and professional services community.

Operationally, we are continually refining our practices to better support our researchers and promote sustainability. From empowering department heads to manage research profiles effectively, to implementing sustainable practices in our laboratories to achieve LEAF (Laboratory Efficiency Assessment Framework) awards to at least silver level for every laboratory in the Institute, we are committed to creating an environment where research thrives responsibly.



Our ambitious research strategy closely aligns with the University's 2031 Strategic Framework, focusing on collaboration, societal impact, and community engagement. We have enlisted world-leading external scientists to guide us on our Scientific Advisory Board, with the goal of forging new collaborations, strengthening ties with industry partners, and developing our research strengths, including establishing a new centre for multiomics.

Additionally, we remain committed to winning an Athena SWAN Gold Award, demonstrating our commitment to gender equality and diversity in academia. We also aim to increase our Patient and Public Involvement (PPI) activities and generate societal impact for clinical research, establish a sabbatical programme, and assess our building infrastructures with a bold vision for the future.

Department of **Biochemistry, Cell and Systems Biology**

Professor Patrick Eyers
Head of Department

The very first Department of Biochemistry was established in Liverpool in 1902. With a rich history of pioneering research and a commitment to bridging the gap between fundamental discovery and translational application, the **Department of Biochemistry, Cell and Systems Biology** now stands as a global leader in interdisciplinary exploration at the intersection of biochemistry, cutting-edge technologies and multiomics-based studies.

Our research covers a diverse array of fields, ranging from computational biology to structural biology, synthetic biology and artificial intelligence. At the forefront of multiomics research, the Centre for Proteome Research and the Centre for Metabolomics Research develop and exploit state-of-the-art technologies such as mass spectrometry to understand the nuts-and-bolts of biological systems.

Importantly, our Computational Biology Facility (CBF) drives large-scale complementary data analyses and systems-level modelling in the era of big data.

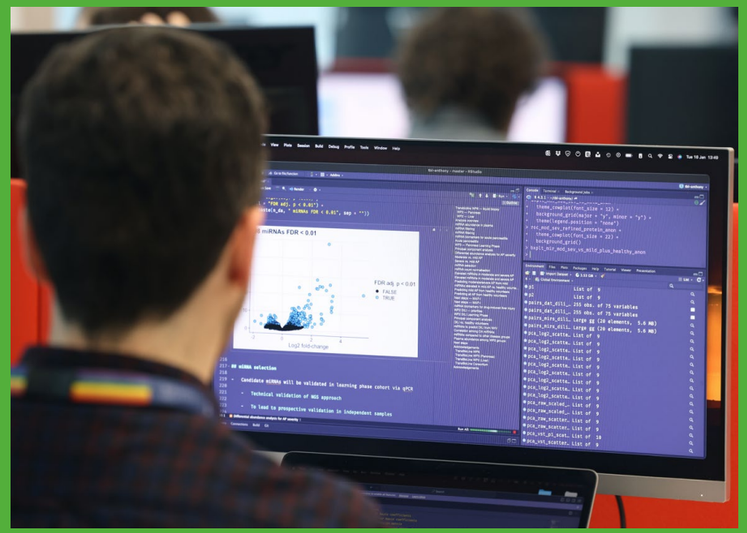
Our internationally recognised work on cell signalling and cellular dynamics explores how organisms communicate, and at its heart seeks to understand how cells and systems respond to challenges such as ageing and disease.

Through our multidisciplinary approaches, we are continually unravelling how cellular complexities arise and are regulated, offering transformative insights into the biology of life that are crucial for the development of innovative therapeutic interventions.

UNIVERSITY OF LIVERPOOL

Through diverse biophysical approaches such as X-ray crystallography and NMR, our research is also shedding light on fundamental processes from the nitrogen cycle to cardiovascular and neurodegenerative diseases.

Finally, in the rapidly advancing fields of photosynthesis research and plant biology, we are seeking to supercharge photosynthesis, enhance CO2 fixation and reposition metabolism to provide new sustainable solutions to global food security, including agricultural resilience in the midst of a climate emergency, where the need to act is now urgent.



Department of **Molecular and Clinical Cancer Medicine**

Professor Michael Schmid
Head of Department

The **Department of Molecular and Clinical Cancer Medicine** is dedicated to revolutionising cancer detection and treatment through cutting-edge research and collaborative efforts between scientists and clinicians.

Our mission is clear: to bridge the gap between discovery science and therapeutic applications, optimising collaborations to uncover better ways to detect and treat cancer. With a focus on translational oncology, our research spans from the identification of novel targets to their validation in pre-clinical models and early-phase clinical trials.

Our dedicated staff tackle the challenges of cancer research head-on. From developing effective methods for earlier detection to identifying cancer vulnerabilities and novel therapeutic targets, we are committed to advancing the field and improving patient outcomes.

Our research also addresses the intricate interactions between malignant cancer cells, stroma, and the immune system, aiming to uncover mechanisms that drive cancer progression and response to therapy. Through our research on cancer cell signalling, from membrane to nucleus, we seek to understand the dysregulation of cellular communication in cancer and its response to treatment.

Supported by research centres like the Experimental Cancer Medicine Centre and the Liverpool Head and Neck Centre, we have established expertise in various cancer types, including pancreas, head and neck, lung, colorectal, brain, blood cancers and more.

Together, our research is making a difference for patients locally, nationally, and internationally.

Department of **Pharmacology and Therapeutics**

Professor Shampa Das
Head of Department

The **Department of Pharmacology and Therapeutics** is globally recognised for its impactful research in improving patient care. We are a Queen's Anniversary award-winning department dedicated to investigating the intricate mechanisms governing drug efficacy and toxicity, with a focus on developing safer and more effective therapies.

Through collaborative efforts and cutting-edge facilities, we conduct innovative research across a wide spectrum of areas including infection pharmacology, personalised medicine, immunopharmacology, drug safety science, antimicrobial pharmacodynamics and therapeutics, neuropharmacology, long-acting therapeutics, and cardiovascular pharmacology.

We are home to three centres of excellence, the Centre for Drug Safety Science, the Centre of Excellence for Long-acting Therapeutics and the Centre for Experimental Therapeutics, which serve as hubs of innovation, fostering collaboration, nurturing talent, and driving forward-thinking research initiatives.

Our research initiatives are driven by a shared commitment to improving patient outcomes and addressing key challenges in healthcare. By bridging the gap between fundamental research and clinical practice, we strive to translate scientific discoveries into tangible benefits for patients around the world. Through our ongoing efforts, we aim to shape the future of medicine and contribute to a healthier society for generations to come.

RESEARCH WITH IMPACT

Driving change: HPV research and policy reform in the UK

Human papillomavirus (HPV) has emerged as a significant factor in head and neck cancer, particularly oropharyngeal squamous cell carcinoma (OPSCC). **Professors Andrew Schache, Terry Jones, Richard Shaw**, and colleagues from Liverpool Head and Neck Centre (LHNC) embarked on a pioneering research journey to understand the epidemiological and clinical implications of HPV-positive OPSCC within the UK context.

Against a backdrop of escalating OPSCC incidence and limited data, the team conducted multi-centre studies to determine the prevalence and clinical impact of HPV in OPSCC cases. Their findings challenged prevailing estimates, revealing a substantial HPV positivity rate exceeding 50% among UK OPSCC cases, highlighting the urgency for evidence-based interventions.

Calls for gender-neutral HPV vaccination have been made since before female-only HPV vaccination commenced in the UK in 2008.

Evidence from the team's research demonstrated the efficacy and cost-effectiveness of vaccinating boys and was pivotal to the UK government's 2019 introduction of a gender-neutral HPV vaccination programme.

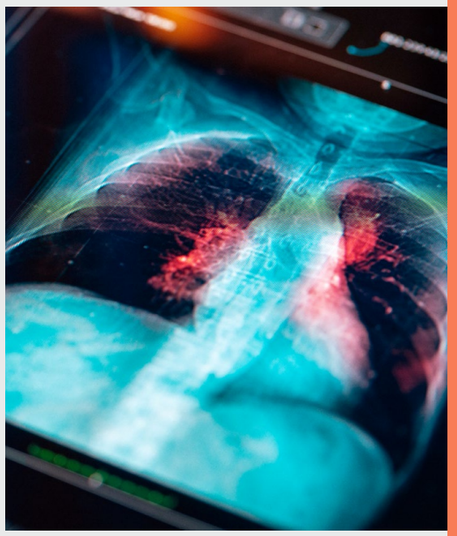
The implementation of this research will result in substantial clinical, health economic, societal, and, most importantly, individual benefits. Effects will not be seen for many years, as throat cancers are most common in adults in their 40s and 50s. However, by 2058, with OPSCC cases expected to rise, over 14 million boys will have been offered the HPV vaccine.

"By bridging the gap between scientific evidence and public health action, the team's work exemplifies the power of research-driven advocacy in shaping preventive oncology strategies."

Conservative estimates have concluded that almost 29,000 male cancers will be prevented as a result of this change to UK vaccination policy. As HPV vaccination also conveys protection against other (low-risk) HPV disease types, all those vaccinated will also receive protection from diseases such as genital warts, a debilitating sexually transmitted disease.

By bridging the gap between scientific evidence and public health action, the team's work exemplifies the power of research-driven advocacy in shaping preventive oncology strategies. This effort paves the way towards a future where HPV-related cancers become increasingly preventable.

RESEARCH WITH IMPACT



Transforming lung cancer detection: The Liverpool Lung Project

The impact of early-stage lung cancer identification is profound, saving lives and drastically improving prognosis. A long-standing programme of research by **Professor John Field** and colleagues has been crucial in demonstrating the effectiveness of lung cancer screening, leading to widespread adoption in the UK and beyond.

The Liverpool Lung Project (LLP) Lung Cancer Risk Model was developed by the team using case-control and cohort studies to identify individuals at high risk of developing lung cancer.

It played a crucial role in selecting high-risk individuals for the UK Lung Cancer Screening (UKLS) trial, the first trial of its kind in the UK. Led by Professor Field, UKLS was pivotal, showcasing a clear pathway for early intervention, with a significant proportion of identified lung cancer cases being suitable for surgical treatment, far exceeding routine clinical practice.

Demonstrating the life-saving potential and financial feasibility of lung screening, the trial prompted the UK's first lung screening pilot in Liverpool. Similar pilots followed in Manchester, Nottingham, London and Yorkshire, culminating in the introduction of the £70m NHS England lung screening programme in 2019. Since then, the programme has been delivering lung health-checks in over thirty localities utilising the LLP model to identify high-risk individuals.

"By leveraging evidence-based strategies and collaborative efforts, the Liverpool Lung Project has paved the way for early intervention and improved outcomes in the fight against lung cancer."

In 2023, the Government announced the national roll out of a targeted lung cancer screening programme in England. People aged 55 to 74 with a GP record including a history of smoking will be assessed and invited for screening and smoking cessation services. Once fully rolled out, it is expected to detect cancer in as many as 9,000 people and deliver almost one million scans every year as well as ensuring treatment can be provided earlier.

The LLP model and UKLS trial has attracted significant national and international recognition, including providing evidence for the European Position Statement on lung cancer screening and a major Nature Review on lung cancer screening and future perspectives.

By leveraging evidence-based strategies and collaborative efforts, the Liverpool Lung Project has paved the way for early intervention and improved outcomes in the fight against lung cancer.

RESEARCH WITH IMPACT

Improving drug-drug interactions management with digital prescribing tools

Addressing the complex landscape of drug-drug interactions (DDIs) is crucial for ensuring the effectiveness of treatments and the safety of patients. To tackle this challenge, the Liverpool Drug Interactions Group, led by Professor Saye Khoo, has developed specialised online prescribing tools for identifying and managing DDIs in patients with HIV, hepatitis and COVID-19.

Their work began in the 1990s with extensive research, highlighting the prevalence of DDIs affecting a quarter of individuals undergoing HIV treatment. They were pioneers in identifying harmful DDIs in HIV-TB coinfection cases and pinpointing the beneficial interactions of HIV protease inhibitors.

The team first developed an electronic point-of-care HIV drug interaction tool in 2000, providing prescribing support in the form of interaction recommendations on the likelihood of DDIs between HIV drugs and commonly prescribed co-medications.

This involved the collation of all available drug information including University of Liverpool and external DDI studies, published drug labels and expert predictive pharmacokinetics.

With the introduction of direct-acting antivirals for hepatitis C in 2011, they expanded their focus to include hepatitis-specific resources, adapting their tools to address emerging challenges.

Engaging in large-scale studies from 2012 to 2018 to characterise the frequency and severity of DDIs worldwide, they uncovered significant DDIs in 18-35% of patients on antiretroviral therapy.

They identified particular risks associated with antibiotics, antifungals, central nervous system drugs, cardiovascular drugs, and corticosteroids.

Amidst the global upheaval caused by the COVID-19 pandemic, the team recognised the urgent need to address potential DDIs arising from the treatment of COVID-19 patients. Understanding that those most vulnerable to severe outcomes of COVID-19 often have underlying comorbidities requiring additional medication, they swiftly developed a freely available drug interactions online resource tailored to this unprecedented healthcare challenge.

Today, their prescribing tools are widely adopted in over 30 countries and translated into multiple languages. They have proven effective, identifying missed DDIs in up to 95% of prescriptions and influencing clinical management in over half of cases.

Together, these tools have garnered significant usage, with an average of 190,000 unique monthly users and more than 12 million checks made in 2023. This global reach underscores the impact and importance of their work in optimising patient care and reducing the risks associated with complex medication interactions in HIV, hepatitis and COVID-19.

“Their prescribing tools are widely adopted in over 30 countries and translated into multiple languages. They have proven effective, identifying missed DDIs in up to 95% of prescriptions and influencing clinical management in over half of cases. ”

RESEARCH WITH IMPACT

Transforming patient care through pharmacogenomics

“Their work contributed to the implementation of pharmacogenomic testing for warfarin dosing and carbamazepine hypersensitivity in the NHS, leading to improved patient outcomes and reduced healthcare costs.”

In modern healthcare systems, adverse drug reactions (ADRs) present a substantial challenge, both clinically and economically. Approximately 6.5% of hospital admissions in developed countries are attributed to ADRs, costing the NHS a staggering £1.6 billion each year. Addressing this issue requires innovative approaches that consider individual genetic variability in drug response.

Led by **Professor Sir Munir Pirmohamed**, an interdisciplinary team combining expertise in genetics, pharmacology, and clinical medicine, have collaborated to investigate the genetic basis of ADRs and develop personalised approaches to drug therapy.

The team’s research has focused on warfarin dosing and hypersensitivity ADRs. By identifying genetic variants like CYP2C9 and VKORC1, they have developed genotype-guided dosing algorithms, improving therapeutic outcomes. They have also demonstrated the utility of pre-emptive genetic testing for hypersensitivity reactions.

These findings have translated into tangible benefits for patient care. Collaborating with healthcare providers and policymakers, they have integrated genotype-guided strategies into clinical practice. For instance, their work contributed to the implementation of pharmacogenomic testing for warfarin dosing and carbamazepine hypersensitivity in the NHS, leading to improved patient outcomes and reduced healthcare costs.

Furthermore, their cost-effectiveness analyses have underscored the economic value of pharmacogenomic testing, providing healthcare providers with compelling evidence to support implementation efforts.

The journey from research to implementation in pharmacogenomics represents a paradigm shift in personalised medicine. By leveraging genetic insights, the team has transformed patient care, mitigating the risks of ADRs and optimising drug therapy.

As they continue to expand their understanding of pharmacogenomics, they are committed to fostering collaborations and driving innovation to improve healthcare outcomes for individuals worldwide.

RESEARCH WITH IMPACT

BIOTECHNOLOGY SPINOUTS

PHENUTEST

PHENUTEST DIAGNOSTICS LTD:

Revolutionising the diagnosis and treatment of UTIs

Urinary tract infections (UTIs) impact over 200 million people worldwide every year and account for more than 20% of prescribed antibiotics. Current diagnostics are slow, taking at least 48 hours, frequently leading to the wrong antibiotic being prescribed.

PhenUtest Diagnostics was spun out from the University of Liverpool in 2021 and has gone from strength to strength since then. Its AST diagnostic can be used at point of-care and deliver results within an hour. This low-cost test accurately identifies which bacteria is causing the infection, ensuring the correct antibiotic is prescribed.

Originally developed by **Professor Douglas Kell** and **Dr Srijan Jindal**, the company now has 17 full-time employees, adding new positions in microbiology, engineering and leadership since spin-out.

PhenUtest has so far gained funding through grant applications and rounds of investment, with over £3 million secured from funders and private investors including Innovate UK and the University of Liverpool's Enterprise Investment Fund.

For further information visit www.phenutest.com

RESEARCH WITH IMPACT

BIOTECHNOLOGY SPINOUTS

SULANTRIX

SULANTRIX LTD:

Targeting untapped pseudoenzymes for new cancer medicines

Sulantrix (pseu-lan-tricks) is exploring new drug treatments targeting cancers, including drug-resistant solid tumours, in which previously untapped classes of pseudokinases play a central mechanistic role.

Co-founder **Professor Patrick Eyers** is leading the science charge to integrate new fundamental findings with personalised approaches to medicine in order to develop breakthrough medicines in cancer.

The team is currently based at the Institute and are using state-of-the-art multiomics platforms for new discoveries, target validation, alongside high-throughput screening, cheminformatics and AI-based technologies to create an internationally-leading drug pipeline.

Originally spun out in 2022, the company has been set up with founder capital and University Enterprise Investment Funding and is in the midst of raising significant seed funding to expand its operations and progress multiple drug discovery programmes towards the clinic.

For further information visit www.sulantrix.com

Research excellence

Centre of Excellence for Long-Acting Therapeutics (CELT)

CELT is at the forefront of pioneering research in the development of long-acting medicines. By repurposing existing drugs into sustained-release formulations, the Centre is aims to transform the prevention and treatment of chronic and acute diseases across the globe. Led by experts in pharmacology and materials chemistry, CELT collaborates with international partners to advance innovative interventions for critical health issues such as HIV, malaria, and tuberculosis.

Through its multidisciplinary approach, CELT accelerates the translation of research into tangible patient benefits, with the goal of revolutionising patient management and improving outcomes.

Liverpool Head and Neck Centre (LHNC)

Head and neck cancer is a devastating disease and is a major healthcare problem in the Liverpool region. LHNC combines internationally recognised clinical and research strengths to deliver research-led improvements in the quality and safety of patient care.

Co-located at the University of Liverpool, LHNC brings together a breadth of internationally recognised clinical and scientific expertise, providing a unique opportunity to make impactful differences for patients with diseases of the head and neck locally, nationally and internationally.

Antimicrobial Therapy and Antimicrobial Resistance

The global challenge of antimicrobial resistance (AMR) poses a significant threat to public health, requiring collaborative efforts to address its impact.

The Institute co-leads the UK hub of the Centres for Antimicrobial Optimisation Network (CAMO-Net), a Wellcome funded, multidisciplinary, global collaboration working together to address the impact of AMR on human health. The UK hub specialises in AMR diagnostic, detection and stewardship systems development.

AMR-X Liverpool is a collaborative action research network dedicated to optimising antibiotic treatment with a vision focused on equity, collaboration, and evidence-based practice. It is pioneering projects such as digital diagnosis of urinary tract infections and prediction of sepsis-related deaths.

Centre for Experimental Therapeutics (TherEx)

TherEx is working to improve the health and wellbeing of people through research that helps us to use existing drugs more effectively, and that accelerates the development of new treatments.

The Centre's research spans the breadth of clinical drug development and deployment. It focuses on early-phase trials of new drugs, infection therapeutics (HIV, tuberculosis and pandemic therapeutics), medicines optimisation, and drug-drug interactions.

Centre for Drug Safety Science (CDSS)

The CDSS delivers crucial work to improve patient safety through better understanding of the mechanisms of adverse drug reactions. It aims to inform the future design of medicines, act as a catalyst for future research and provide an environment for cross-disciplinary collaboration. The unique work at the CDSS also contributes to train and develop the next generation of drug safety scientists, nationally and internationally.

Research facilities

"LIV-SRF brings together all the core University of Liverpool facilities, ensuring that they receive the investment they need to remain at the cutting edge and deliver to the highest standards. Whether you require our services, technology or expertise, we have everything you need to achieve your research goals."

PROFESSOR IAN PRIOR
LIV-SRF DIRECTOR (HEALTH AND LIFE SCIENCES)

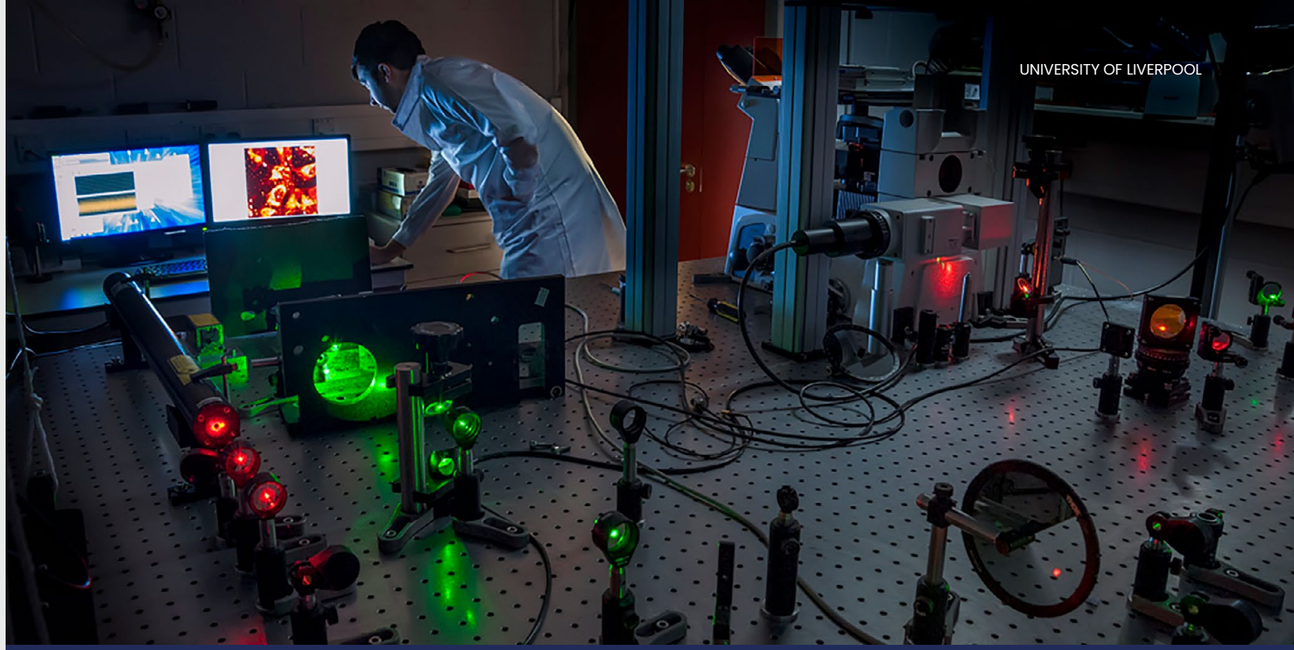
Liverpool Shared Research Facilities (LIV-SRF)

Liverpool Shared Research Facilities (LIV-SRF) offer flexible access to world-class equipment and expertise for researchers across the University and external partners from academia, the NHS, and industry. LIV-SRF consists of 24 University facilities, 12 of which are based within the Institute.

For more information scan the QR code below or visit **liverpool.ac.uk/liverpool-shared-research-facilities**

Facilities based within the Institute:

- Centre for Cell Imaging
- Centre for Metabolomics Research
- Centre for Preclinical Imaging
- Centre for Proteome Research
- Computational Biology Facility
- GeneMill
- Biomedical Electron Microscopy Unit
- Centre for Drug Safety Science Bioanalytical Facility
- Cell Sorting and Mass Cytometry Facility
- Histology Facility
- Egg Facility
- High-Field NMR Facility



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Centre for Cell Imaging

The Centre for Cell Imaging is a world-class resource, providing researchers with a suite of custom-designed temperature-controlled rooms for optimal live cell imaging. A member of the UK Node of Euro-BioImaging, the facility specialises in a range of microscopy techniques including confocal, epifluorescent, lightsheet, high-content, atomic force and super-resolution light microscopy.

Centre for Metabolomics Research

The Centre for Metabolomics Research employs state-of-the-art mass spectrometry and Raman and infrared analysis platforms to examine metabolomic processes in cellular organisms from microbes to humans and plants. With interdisciplinary expertise spanning biology, analytical chemistry and the computer sciences, the facility supports researchers with advice from study conception and experimental design to data acquisition and data analysis.

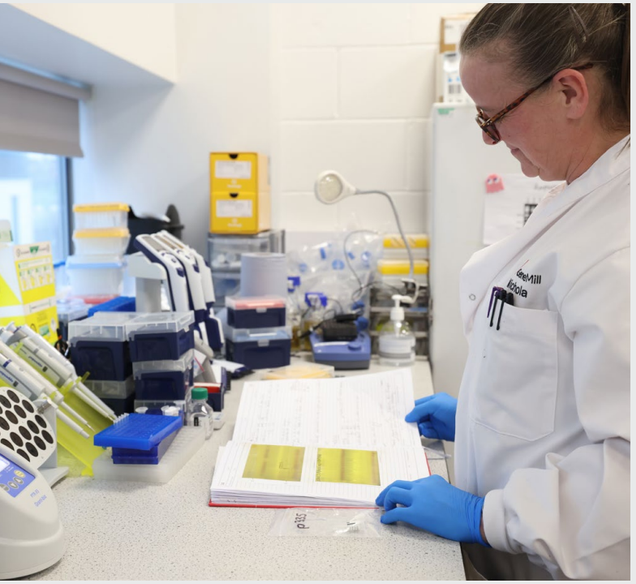
Computational Biology Facility

The Computational Biology Facility comprises a team of highly experienced and qualified data scientists, bioinformaticians, and software developers. Operating as partners, collaborators, or service providers, the facility supports data-driven biological and clinical research, offering tailor-made, gold standard solutions across a wide range of bioinformatics, statistics, and functional interpretation of data.

Centre for Proteome Research

The Centre for Proteome Research is a state-of-the-art facility specialising in proteomic mass spectrometry. Led by academic experts, it provides comprehensive support spanning from experimental design to data analysis. The Centre addresses a range of challenges in protein mass spectrometry and proteomics for biological and biomedical sciences, including quantitative analysis, post-translational modifications, single-cell studies, and virus interactions.

Responsible research



Sustainability

We integrate sustainable practices into our research, teaching and operations. All our laboratories are accredited by the Laboratory Efficiency Assessment Framework (LEAF), ensuring sustainability and efficiency. Several labs have received LEAF Gold Awards for exemplary practices, including energy and water conservation.

Our data-driven approach enables informed decisions for optimising energy usage and reducing waste. We've also introduced a sustainability workshop in our master's programmes and staff inductions, fostering a culture of sustainability across our community.

Research Integrity

At the Institute, we prioritise research integrity and excellence in experimental practices. Through targeted awareness campaigns and mandatory training initiatives, we empower researchers to uphold the highest standards and ensure reproducibility.

Our efforts include integrating training into master's programmes and implementing electronic lab books for enhanced efficiency. Additionally, we host lectures and workshops to further foster a culture of research integrity and collaboration.

Several of our labs have received LEAF Gold Awards for exemplary practices, including energy and water conservation.

"As responsible researchers, we must find the most sustainable possible way to do research. LEAF is a user-friendly green initiative that was created to guide researchers in implementing more sustainable practices in their labs. I'm proud we can contribute by reducing our carbon emissions and creating an environment that supports research quality."

PROFESSOR AINHOA MIELGO IZA

Inclusive research

We are proud to create an inclusive and welcoming environment that attracts the best staff and students from around the world, actively celebrating and encouraging our diversity.

We are committed to embedding inclusivity within everything we do by working towards disability inclusion, and gender, LGBTQIA+ and race equality.

Neurodiversity Celebration Symposium

Led by Institute lecturer Dr Kate Hammond, the University's inaugural Neurodiversity Celebration Symposium brought together staff and students for engaging discussions, presentations, and networking opportunities. Experts and individuals with lived experience provided unique insights into neurodivergent experiences and offered practical strategies for creating more inclusive environments.

Trans and Non-Binary Peer Support Network

Originally born out of an idea by Institute researcher Dr Daryl Hodge, and now a fully-fledged University staff network, the Trans and Non-Binary Peer Support Network is a group of staff and postgraduate students who meet regularly to share support, advice, and friendship.

Inclusivity in clinical research

Professor Catriona Waitt received the American Society for Clinical Pharmacology and Therapeutics (ASCPT) Dolores Shockley Diversity and Inclusion in Clinical Research Award in recognition of her research aiming to increase the fair inclusion of pregnant and breastfeeding women in clinical pharmacology research in Uganda.

Women in Data Science Scholarship

Our Computational Biology Facility (CBF) runs an annual International Women's Day Scholarship to address the underrepresentation of women in data science. With less than a quarter of data science professionals being women, the CBF's initiative provides access to its professional courses and peer-to-peer support for a period of five years.

DeCoL-SoLS-Advocates

Our DeCoL-SoLS-Advocates group, led by Institute lecturer Dr Carl Larsen, brings together students and staff to discuss ways the University can decolonise and be more inclusive. Students have created library exhibitions focused on the overlooked contributions of black and marginalised people to science, such as Henrietta Lacks and John Edmonstone. The group recently won the REACH award for their efforts at the University's inaugural Equality Plus Awards.

People in research

We're committed to creating a positive research culture that supports the ongoing development of staff at all levels.

At the heart of this work for research staff is our sustained commitment to the Concordat to Support the Career Development of Researchers, an agreement between universities, research institutes and funders to support researcher careers in the UK.

"Team Science is critical, and the RTP provides an ideal opportunity to recognise professionals like me who contribute to multiple impactful initiatives but may not fit the traditional academic pathway."

DR EVA CAAMAÑO GUTIÉRREZ
CO-DIRECTOR OF THE COMPUTATIONAL BIOLOGY FACILITY, PROMOTED TO GRADE 9

Support for Early Career Researchers (ECRs)

We are keen to support early career researchers from the very outset. To recognise outstanding local research talent, we launched the Douglas Endowment Prize fund for ISMIB master's students, which provides full funded PhD studentships. Institute PGR Travel Grants support Postgraduate Research students to attend research conferences and our PGR Wellbeing Ambassador scheme provides a peer-to-peer support network.

At postdoctoral level, our sector leading Prosper programme unlocks postdocs' potential to thrive across multiple career pathways, both within and beyond academia. Institute ECR Development Awards also provide support for a wide range of development opportunities with pump priming funds available to support research.

Professional Services

Our professional services staff play a crucial role in supporting our world-leading research. From our finance and research support teams to our administrative staff, each plays a vital part.

Our staff receive career support through processes like Professional Development Reviews, access to training funds, and guidance from the Review and Development Group, fostering their professional growth within the Institute.

Research Technical Professional Career Pathway

Our highly skilled technical staff are essential to the support of our research - from developing methodology, technology, and research facilities to facilitating our world leading science.

In 2023, the University created the first Research Technical Professional Career Pathway. The pathway aims to address visibility, career development and sustainability issues faced by specialist research and technology staff.

The pathway has been developed for three main purposes: recruitment, retention, and recognition. It demonstrates our investment in the technical workforce and our Technician Commitment pledge to tackle the key challenges affecting our technical staff.

For more information visit **liverpool.ac.uk/research/research-environment/research-technical-pathway** or scan the QR code below:

Training the next generation

The University of Liverpool has been teaching and researching life sciences for over 100 years. Our School of Biosciences offers world-class, inspirational research-led education across the full biosciences spectrum, from Anatomy and Human Biology to Zoology.

Working at the heart of critical topics in science – including drug design and development, tissue engineering, cancer, omics, programming, and genetic engineering - we offer a breadth and depth of study choice which is unrivalled in the UK.

We have a thriving postgraduate community pursuing a vast range of courses, from CPD modules and diplomas to master's degrees and PhDs.

TEF 2023 Gold Teaching Excellence Framework

Master's programmes

- Advanced Biological Sciences MRes
- Biomedical Sciences and Translational Medicine MRes
- Bioinformatics MSc
- Biotechnology MSc
- Cancer Biology and Therapy MSc
- Infection and Immunity MSc
- Emerging Infections and Pandemics MSc
- Pharmacology and Toxicology MSc

Postgraduate research opportunities

We host a variety of PhD students from Doctoral Training Programmes including MRC, BBSRC and NERC. Other funders include charities such as Breast Cancer Now, North West Cancer and the British Heart Foundation. We hold several international postgraduate partnerships, including Chulalongkorn (Bangkok) and XJTLU (Suzhou, China), as well as industrial partnerships.

Clinical research opportunities

Integrated Clinical Academic Training at Liverpool provides focused support for the training of the brightest and most promising clinical academic researchers at all stages of their careers.

The Institute is leading a new MRC Medicines Development Fellowship programme, offering an exciting opportunity for medically qualified trainees to undertake cutting-edge science in an environment that fosters collaboration between universities and industry. Additionally, the Institute hosts Fleming Fund Fellows from Nigeria and Sierra Leone to tackle the challenges posed by antimicrobial resistance in their respective countries.

Engaging research

We're committed to involving patients and the public in our research activities, creating a collaborative environment where their input help to shape our work.

Engaging with the community enhances transparency and ensures our research addresses real-life needs and concerns.

Public engagement and involvement aren't just a formality; they're crucial to enriching our research outcomes and benefiting those we aim to serve.

"Liverpool is an amazing city with the people being known as some of the friendliest in the UK which is evident by their involvement in our public engagement events. This includes all levels from the support provided by schools, family events at local museums and evenings in city centre pubs."

DR JILL MADINE
FACULTY ACADEMIC LEAD FOR PUBLIC ENGAGEMENT

UNIVERSITY OF LIVERPOOL

Black Science Bootcamp
A two-day residential for fifty-five Black year 10 pupils from local Liverpool schools, which aimed to help young black people in Liverpool consider university as an option.

Fame Lab
PhD student Bethany Facer won the 2024 North West heat of Famelab, the biggest science communication competition in the world, with her talk on neuroscience research.

Citizens' Jury Uganda
Professor Catriona Waitt and Dr Lauren Walker led Uganda's first healthcare citizens' jury, endorsing the ethical use of electronic medical data in research, setting a model for culturally diverse and resource-limited settings.

British Science Week
We welcomed 100 A-level students from five different schools for a day of hands-on activities, experiments and talks to raise awareness of STEM and inspire the next generation of scientists.

Spectacular Science
360 primary school pupils visited for a 'Spectacular Science' event. Hands-on fun was the theme of the day, with pupils taking part in six activities, engaging in discussions, and expressing curiosity about the scientific world.

Pancreatic Research Outreach
Dr Muhammad Awais and colleagues from the Liverpool Pancreatitis Research Group have led outreach events for BAME communities in Liverpool focused on pancreatitis and diabetes, as well taking part in a Role Model Day for school children.

Awards and honours

The strong performance of researchers in the Institute has been recognised in a number of recent prestigious awards and fellowships:

Dr Ed Emmott and Dr Adeniyi Olagunju
Wellcome Career Development Awards (2023)

Professor Reecha Sofat
NIHR Research Professorship (2023)

Professor Alison Holmes
NIHR Senior Investigator award (2023)

Professor Ian Copple
Medical Research Council Senior Fellowship (2022)
British Pharmacological Society's Rang Prize (2022)

Professor Sonia Rocha
Biochemical Society Sir Philip Randle Lecture (2025)

Professor Rajarshi (Rishi) Mukherjee
Hunterian Professorship by the Royal College of Surgeons of England (2024)

Professor Roy Goodacre
Nils Foss Excellence Prize (2021)
Federation of Analytical Chemistry and Spectroscopy Societies Charles Mann Award (2021)

Professor Andrew Schache
British Association of Oral & Maxillofacial Surgeons Surgery Prize (2023)

Professor Tony Marson
Academy of Medical Sciences Fellowship (2023)

Professor Claire Eyers
Royal Society of Chemistry Jeremy Knowles Award (2022)

Royal Honours

Sir Munir Pirmohamed Knights Bachelor for services to medicine (2015)

Douglas Kell CBE for services to science and research (2014)

Alison Holmes OBE for services to medicine and infectious diseases (2021)

William Hope OBE for services to infectious diseases and COVID-19 (2021)

Saye Khoo MBE for services to infectious diseases and pharmacology (2024)

Paul Loughnane BEM for services to Nature Conservation (2014)

NIHR Research Professorship

Clinical pharmacologist **Professor Reecha Sofat** was awarded a National Institute for Health and Care (NIHR) Research Professorship to advance her research on CAUsal Inference Methods to Inform MedicineS ReguLation and Guidance (CAUSAL).

Her work aims to enhance understanding of medicine effectiveness and safety, particularly in populations where traditional clinical trials are impractical. With support from NIHR, Professor Sofat seeks to develop innovative statistical methods using observational data to improve medicine usage and prioritise randomised trials.

Wellcome Career Development Awards

Dr Edward Emmott was awarded £2.48 million to carry out important work that will give the global scientific community a greater understanding of coronavirus. Using a range of approaches, including mass spectrometry methods developed in his lab, Dr Emmott's team aims to determine the dynamics of coronavirus replication and how the viral proteins responsible for this alter and regulate this process throughout infection.

Dr Adeniyi Olagunju was awarded over £1.68 million to further his research on drug safety and efficacy during pregnancy and the first year postpartum. Recognising the ethical complexities of excluding pregnant women from clinical trials, Dr Olagunju aims to assemble an interdisciplinary team to pioneer innovative research facilitating safe medication use during pregnancy and postpartum, potentially revolutionising drug development for women's health.

"Wellcome Career Development Awards are highly prestigious and competitive and it's a huge achievement for an institution to receive one. So, for the Institute to receive two in one year is significant. This success is a testament to the high-quality research and innovative concepts that we are producing."

PROFESSOR SONIA ROCHA
EXECUTIVE DEAN

Academy of Medical Sciences Fellowship

Neurologist **Professor Tony Marson** was elected to the prestigious Fellowship of the Academy of Medical Sciences in recognition of his exceptional work on improving the treatment of epilepsy in the UK and worldwide.

He joins a prestigious Fellowship of 1,400 researchers who are central to the Academy's work. This includes providing career support to the next generation of researchers and contributing to the Academy's influential policy work to improve health.

Our people

Professor Sonia Rocha
Executive Dean

Professor Christopher Goldring
Deputy Executive Dean

Professor Susanne Voelkel
Dean of the School of Biosciences

Professor Shampa Das
Head of Pharmacology and Therapeutics

Professor Patrick Eyers
Head of Biochemistry, Cell and Systems Biology

Professor Michael Schmid
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The Institute of Cancer Research (ICR)

Professor Owen Sansom
The Beatson Institute for Cancer Research (CRUK Scotland Institute)

Scan the QR code above to view our full Researcher Directory or visit
liverpool.ac.uk/systems-molecular-and-integrative-biology/staff

Facts and figures

£53.85m
Total Income

£24.2m
Research Income

£120m
Active Awards

10
Awards over £1m

54.8%
Grant Success Rate

738+
Research Papers

165
Academics

138
Research Staff

190
Professional Services Staff

265
Postgraduate Researchers

44
MRes Students

120
Postgraduate Taught Students

Figures refer to 2022/23

UNIVERSITY OF LIVERPOOL

For more information please visit:
liverpool.ac.uk/systems-molecular-and-integrative-biology
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