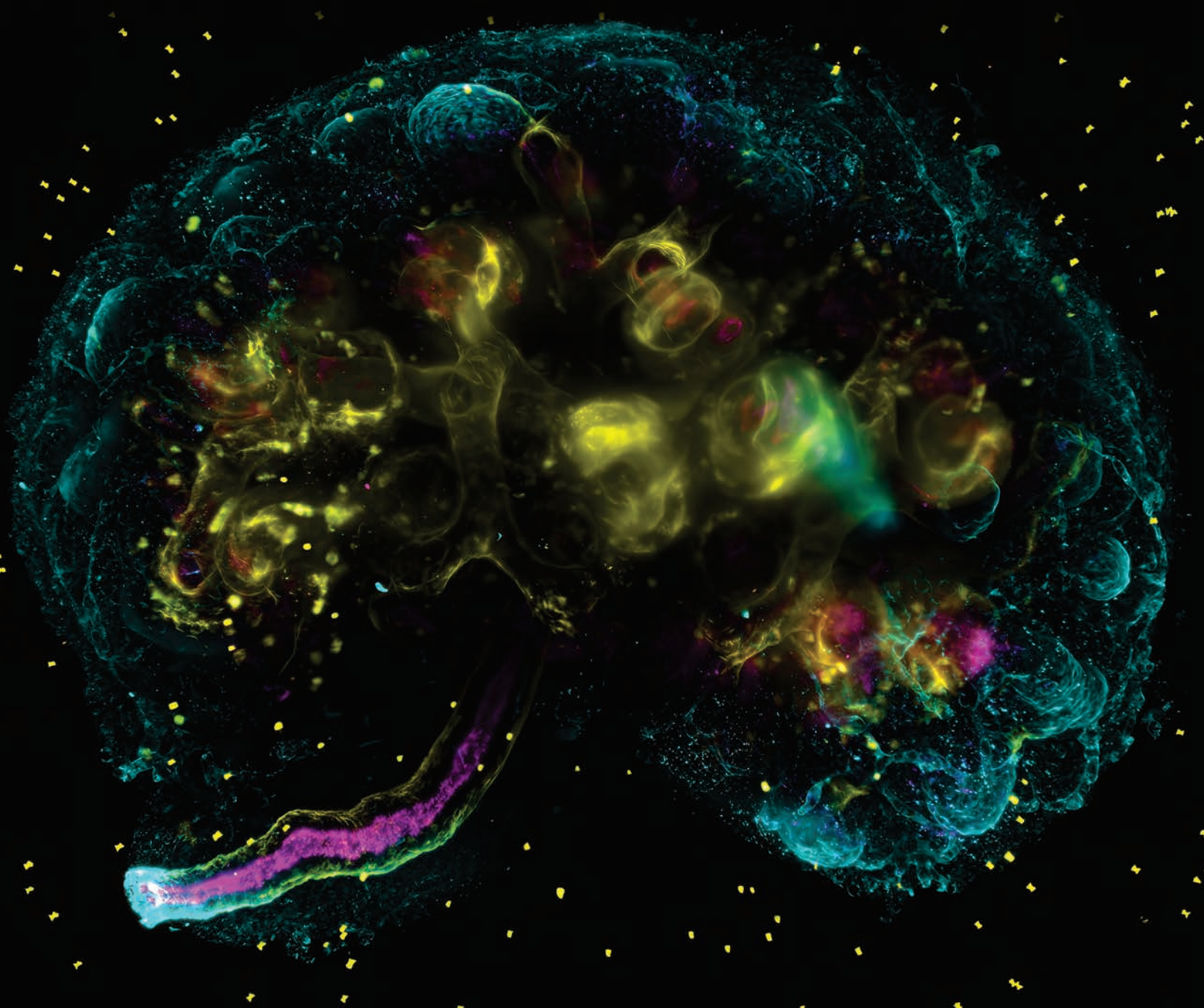
UNIVERSITY OF LIVERPOOL

Faculty of Health and Life Sciences

STRATEGY 2025–2031



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Foreword

The Strategic Plan (2025-2031) of the Faculty of Health and Life Sciences at the University of Liverpool builds on nearly two centuries of outstanding education, research and civic engagement in the health and life sciences sector and supports our University's Strategy, '**Liverpool 2031**'.

Our Faculty traces its origins back to the foundation of a medical school in Liverpool in 1834. Since that time, we have educated generations of doctors, scientists, dentists, allied health professionals, nurses and veterinarians. Our research, from across the bioscience, biomedical, and clinical disciplines, has improved the lives of millions of citizens, both in the UK and globally. Now, as we look towards the University's 150th anniversary in 2031, and the bicentenary of medical education in our city in 2034, we want to go further. A devastating pandemic, geopolitical insecurity, drastic inequality, and the looming spectre of climate change mean that our endeavours have never been more relevant or urgent.

We present our new Strategic Plan. The Faculty as a whole seeks to be greater than the sum of its parts and to tackle complex challenges in a complex world, informed by the values we hold as a civic university, inspired by the challenges facing our city and the wider world, and driven by a desire to deliver positive and equitable impact on a global scale.

Professor Louise Kenny, Executive Pro-Vice-Chancellor, Faculty of Health and Life Sciences

Executive Summary

The Faculty of Health and Life Sciences Strategy 2025-2031 outlines a bold vision for advancing world-leading education, research and innovation in a supportive and collaborative environment, with demonstrable benefits to society in Liverpool, nationally and globally.

Our strategic plan has six pillars, feeding into and supporting the University of Liverpool Strategy 2031 and working towards our target of becoming a QS Top 100 University by 2031.

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Purpose and Vision

Overarching aims

- **All research active health and life sciences subjects in the top 75 QS ranking by 2031.**
- **Provide outstanding research-connected curricula and a supportive and inclusive learning environment that enables every student to reach their goals.**
- **Contribute to improved health outcomes for our planet and its inhabitants, locally and globally.**
- **Be an employer of choice that attracts and retains talent from across the globe.**

The Faculty is committed to improving lives locally and globally by addressing pressing challenges across health and life sciences. Our vision is to be a global leader in biomedical and life sciences education and research, with a focus on fostering innovation, interdisciplinary collaboration, and transformative healthcare solutions.

We aim to create an environment where research excellence thrives, students receive a world-class education, and partnerships with industry, government, and healthcare providers drive meaningful change.

Research and Impact

Research and Impact Strategic Objectives

- **Increase the proportion of outputs recognised in REF2029 as world-leading to 50%.**
- **All impact cases submitted to REF2029 to be recognised as delivering either internationally excellent or world-leading impact.**
- **Expand research income to £118M by 2031.**
- **Establish two externally funded research Centres of Excellence.**
- **Develop two new strategic industrial partnerships to help translate research into practice.**
- **Expand the breadth of our doctoral training programmes to nurture future leaders.**

Anchored in a commitment to academic curiosity, our Faculty champions research and innovation from discovery to 'real world' implementation. Our researchers work to discover the fundamental principles of biology and to address grand challenges in key areas of national and global unmet need.

We are dedicated to delivering high-quality, internationally competitive research, as evidenced by our strong performance in the national Research Excellence Framework (REF) 2021 exercise. Cross-disciplinary collaboration within and beyond the Faculty is a keystone of our success. Stronger engagements with the NHS, industry and government partners, and investing in people will be key to building on our established research excellence.

Acknowledging the world-leading research and innovation activity across the breadth of health and life sciences, we have identified three priority themes for research growth.

Therapeutic innovation

Key aims

- **Better therapeutics - make medicines better.**
- **Better targeting - use medicines better.**
- **Enhanced clinical relevance.**

Objectives

- **Advance drug discovery and repurposing, focusing on multi-omics and data-driven insights.**
- **Establish a Centre of Excellence.**
- **Expand clinical trial capabilities through national and international collaborations.**

Therapeutic innovation

Therapeutic innovation draws on our world-leading expertise across fundamental biochemistry and cell biology, pharmacology and therapeutics, multi-omics, biomedical engineering, health data science and psychology, in combination with world-class clinical trials facilities and ready access to clinical samples and biobanks.

Working collectively across clinical and non-clinical areas, building leadership at all levels, and working in close partnership with the NHS, industry, and other stakeholders, including our patient populations, we will develop medicines more efficiently, embed advanced treatments into routine clinical care, and develop policies that direct treatment for the most impact on human health and animal welfare.

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Health across the life course

Key aims

- **Identify the early life factors which reduce healthy lifespan.**
- **Address complex diseases of later life.**
- **Reduce health inequalities.**

Objectives

- **Address health disparities and improve healthy lifespan through integrated healthcare research.**
- **Investigate determinants of health inequalities and develop evidence-based interventions.**
- **Establish a Liverpool-based population cohort for longitudinal health studies.**

Health across the life course

Health across the life course tackles the stalling progress in healthy life expectancy in high income countries and the inequalities in health and lifespan between the least and most advantaged populations. Trajectories of poor physical and mental health stemming from childhood ultimately explain differences in adult health and societal productivity. Moreover, the role of biological sex in determining health outcomes, particularly in non-communicable diseases, is under-studied and poorly understood. Defining drivers of ill health and reducing life expectancy disparities between the richest and poorest in our society will not only improve quality of life, but also have significant economic benefits relating to wealth and productivity.

Microbiome and Infection

Key aims

- **Pandemic preparedness.**
- **Antimicrobial resistance.**
- **Vaccine development.**

Objectives

- **Lead global efforts in antimicrobial resistance (AMR) and vaccine development.**
- **Develop a Liverpool Antimicrobial Learning System integrating human and veterinary health data.**
- **Establish a Centre of Excellence for the discovery, development and management of antimicrobials.**

Microbiome and infection

The microbiome and infection theme recognises that evidence-based development of new ways to tackle infection requires understanding of how the infectious agent and host interact, and that our microbiome plays a key role in health and our response to disease. The theme's multi-faceted research programme spans disease surveillance through to vaccine development.

Multi-Omics and Data Science

Objectives

- **Establish a Centre for Innovation in multi-omics, consolidating our industry partnerships to drive innovation in product development and deployment.**
- **Develop an integrated AI-driven pipeline for cohort-based understanding of disease drivers and/or treatment regimens.**

These research priorities are supported by cross-cutting platforms in **Multi-omics** and **Data Science**, driving understanding of biological systems from the molecular to the population level into actionable insights. By embedding these technologies into clinical workflows and discovery research programmes, we will create a dynamic, learning system that continuously refines its approaches to better investigate global grand challenges.

Education and Student Experience

Education and Student Experience Strategic Objectives

- **Develop high quality UG and PG programmes aligned to our research strengths and strategic partnerships.**
- **Embed extracurricular opportunities such as internships, placements, and entrepreneurial projects to create well-rounded graduates.**
- **Grow international student recruitment through transnational education initiatives.**
- **Maintain our Teaching Excellence Framework Gold award.**
- **Improve subject positioning in international league tables.**
- **Increase and diversify our student body.**
- **Develop digital learning and student employability programmes.**
- **Increase student mobility through international exchange opportunities.**

The Faculty is dedicated to providing a research-led education that equips students with the skills and knowledge needed for career success.

Enhancing undergraduate (UG) and postgraduate (PG) programmes remains a priority, with a strong emphasis on creating a diverse cohort of confident, inquisitive, high-quality graduates whose skills will meet the demands from home and global markets. Digital learning strategies and employability-focused programmes will ensure that graduates are prepared for the evolving demands of the healthcare and life sciences sectors. Increasing student mobility through international exchange opportunities will also play a key role in fostering a globally connected learning environment.

We will ensure that all of our programmes have contemporary, evidence-based curricula, reflecting current scientific and medical advances, equipping students to succeed in further study or in highly-skilled employment.

Our strategy proposes a number of approaches to enhance our training offering, including promotion of an inclusive, accessible, supportive and research-connected experience for all students. We recognise that attainment gaps remain for specific cohort groups and will work with Schools and Institutes to develop initiatives to close these gaps.

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Global Experience

Global Experience Strategic Objectives

- **Enhance international research collaboration.**
- **Expand international education and student recruitment.**
- **Foster global health impact.**
- **Promote the University's global visibility and reputation.**

Aligning with the University's strategy to boost global visibility and reputation, we will strengthen our existing international collaborations and develop new strategic partnerships.

We will create opportunities for researchers to develop new connections and provide dedicated support for large multinational research funding bids, centred around our core scientific and clinical priorities. To sustain our world-leading research influencing global health, we will actively engage with healthcare providers, policymakers, industry, and researchers to drive and shape global outcomes for human, animal and environmental health. This engagement will support capacity-building in low- and middle-income countries, and address pressing global health challenges.

Place and Innovation

Place and Innovation Strategic Objectives

- **Establish an integrated Academic Health Science Campus to support interdisciplinary research and learning.**
- **Expand collaborations with Liverpool Health Partners, NHS Trusts, and regional stakeholders.**
- **Enhance economic impact through life sciences innovation and industry engagement.**

The University of Liverpool is proud of its role as a civic institution, driving prosperity and wellbeing across the Liverpool City Region.

We will leverage our region's key civic assets by partnering with a wide range of stakeholders – NHS trusts, charitable bodies, government agencies, non-government organisations, industry, and academic institutions – to secure infrastructure funding and establish cross-disciplinary research centres that deliver tangible impact for the health and prosperity of our local populations. By integrating research, innovation, and clinical practice, we will become a hub for groundbreaking medical research and transformative healthcare delivery. Our research will be grounded in the needs of local communities but with potential for adaptation to benefit other populations nationally and globally.

People and Culture

People and Culture Strategic Objectives

- **Foster an inclusive research environment.**
- **Achieve Athena Swan Gold accreditation across all Institutes.**
- **Achieve Athena Swan Bronze accreditation for Professional Services.**
- **Enhance support and mentoring for different types and stages of career pathways.**
- **Strengthen Equality, Diversity, Inclusion, and Wellbeing (EDIW) strategies.**
- **Develop an action plan in support of the University Race Equality Charter.**

Focusing on an inclusive, supportive, and forward-thinking environment is central to our strategy. We will foster a culture of research and teaching excellence, ethical practice, and inclusivity. By focusing on our environment, promoting ongoing professional development and support, monitoring workloads, and actively nominating staff for awards to highlight their successes, we will improve staff satisfaction and engagement.

We recognise the diverse contributions of our community; thus a key aspect of our strategy is to promote teamwork across academic and professional services. Equality, Diversity, Inclusion, and Wellbeing (EDIW) remain central to the Faculty's ethos and we will continue to support staff to embed EDIW principles across all their endeavours. Research ethics and integrity are upheld through adherence to high research standards and Findable, Accessible, Interoperable, and Reusable (FAIR) data principles, with regular audits and open research practices ensuring accountability and transparency.

Our recently launched *Research & Impact Leave* scheme will also give academics defined time to develop world-leading research outputs, ambitious, large scale research programmes or create new high value partnerships.

Strong public engagement, and patient and public involvement initiatives underscore our commitment to knowledge exchange and delivery of impactful, community-focused research. We will continue to deliver our flagship public engagement programmes, *Meet the Scientists* and *Pint of Science* and to host school-age students at all levels for open days and workshops.

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Sustainability

Sustainability Strategic Objectives

- **Achieve LEAF Gold certification in all eligible laboratories by 2031.**
- **Reduce Faculty-related travel emissions by 30% to align with the University's net-zero goals.**
- **Embed sustainability principles into curricula and research initiatives.**

The Faculty is committed to addressing the climate crisis by advancing climate research and operating sustainably in line with the United Nations Sustainable Development Goals and the University's Sustainability Strategy.

Alongside our plans to reduce the environmental impacts of our laboratory, computational, and clinical research activities, and lowering carbon emissions from travel, we will develop new global partnerships and research projects that align with the Sustainable Development Goals, embed Education for Sustainable Development into taught programmes, and explore new courses focused on climate change and the green skills gap.

Implementation and Success Measures

Implementation and Success Measures

- **Achieve top 75 QS rankings across disciplines.**
- **Substantially increase research income and contribution.**
- **Grow the breadth and quality of research outputs and impact case studies submitted to REF2029.**
- **Grow international student numbers.**
- **Strengthen regional and global partnerships.**
- **Enhance sustainability and EDIW commitments.**

To ensure the successful execution of our strategic objectives, we have defined clear performance indicators that will be essential to fulfil our ambitions.

Conclusion

Through a combination of research excellence, world-class education, and strong regional and global partnerships, the Faculty of Health and Life Sciences is poised to drive transformative change.

Our commitment to sustainability, innovation, and inclusivity will ensure that we remain at the cutting edge of scientific and medical advancements. By 2031, we aim to have made a significant and lasting impact on health and life sciences, both within the UK and internationally.

Introduction

The Faculty of Health and Life Sciences at the University of Liverpool is the largest of the three Faculties in the University.

With over 2,300 staff, including ~450 Teaching and Research staff plus ~480 teaching-focused staff with collective responsibility for ~6,000 undergraduate and ~1500 postgraduate students annually, we are the only Russell Group University to offer the full range of Clinical Medicine, Allied Health Professions and Nursing, Dentistry, Veterinary Science, Biosciences, and Psychology in a single unit.
Our diversity allows us to address a broad range of fundamental behavioural, biological and clinical questions from the molecule to the metropolis, creating unparalleled opportunities for research and education, and allowing us to respond rapidly and collectively to local, national and global challenges.

Purpose

Our purpose is to improve lives, locally and globally, by tackling major human, animal and environmental health challenges.

We do this by bringing together a community of world-changers from across the Faculty, the University and our global networks to deliver excellence and innovation in education and research.

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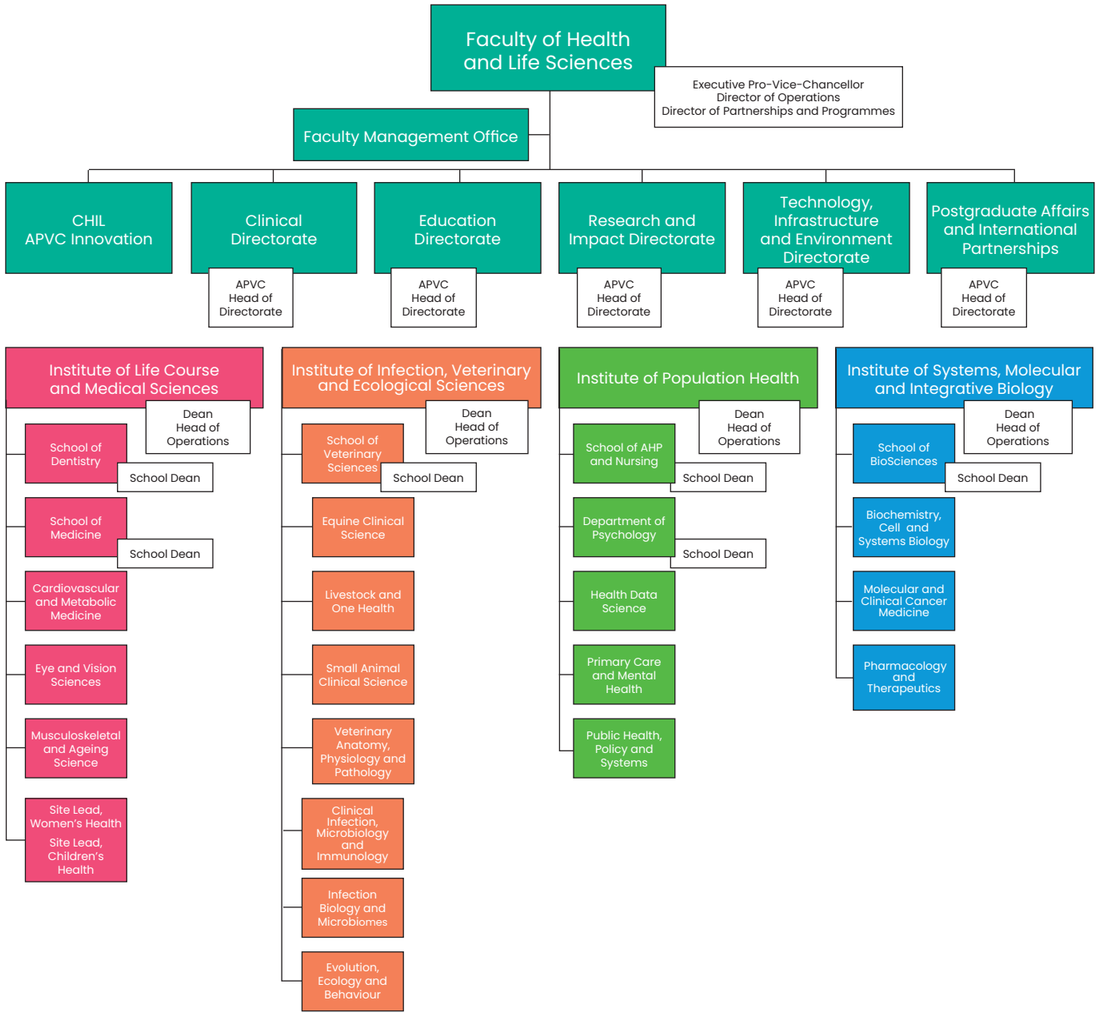
Vision

Grounded in Liverpool's rich heritage and driven by relentless ambition to effect positive change, we aim to be the premier destination nationally and globally for world-changing, life-affirming education and research in biomedical and life sciences.



Overarching Strategic Aims

In support of the University's aim to attain Top 100 Status in QS World Rankings, we aim for all our subjects to be in the top 75 QS ranking by 2031.

To provide outstanding research-connected curricula and a supportive and inclusive learning environment that enables every student to reach their goals.

To contribute to improved health outcomes for our planet and its inhabitants, locally and globally.

To be an employer of choice that attracts and retains talent from across the globe.

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Research and Impact

We are an institution that values academic curiosity and thus we will continue to support and promote blue sky discovery research, addressing fundamental biological questions, whilst tackling pressing clinical and societal issues.

We will do this by connecting our fundamental mechanistic investigations and data science expertise and applying them to grand challenges, in an environment that recognises and rewards diversity and nurtures talent in all forms. As well as enhancing research endeavours within and across the four Institutes within the Faculty, the Research and Impact Directorate also supports Research Centres of Excellence that are aligned with our strategic objectives. These Centres constitute vital platforms through which researchers across the University, in partnership with external stakeholders, can collectively address grand challenges outside of traditional Departmental, Institute, Faculty or disciplinary boundaries.

These Research Centres exemplify that impactful science often arises by working in concert across disciplinary boundaries. We will continue to promote cross-disciplinary collaboration within the Faculty and drive broader engagement across the University, with our NHS partners, industry, other HEIs, government, and global stakeholders to deliver world-changing innovations.

Building research excellence requires that we inspire and support leadership to advance and develop areas of strength. Recognising the benefits of diverse leadership, we seek to identify and empower individuals and teams from different backgrounds and across career stages to maximise potential.

The high quality of our research was recognised in the outcomes of the national Research Excellence Framework (REF) 2021 exercise. Our ranking with respect to other Russell Group Universities increased across all four Units of Assessment (UoAs) to which we returned, with UoA4 (Psychology, Psychiatry & Neuroscience) and UoA6 (Agriculture, Food & Veterinary Sciences) ranking in the top 10 for Research Power across all HEIs. Life Sciences and Medicine at the University of Liverpool has consistently ranked in the top 100 in the international QS rankings, with Veterinary Science and Pharmacology ranked 11th and 32nd respectively (3rd and 8th in the UK) in 2024.

Our Faculty is committed to enhancing and expanding doctoral training programmes that align with our strategic research priorities, ensuring their relevance and impact. By fostering interdisciplinary collaborations, leveraging cutting-edge facilities, and engaging with industry and external partners, we aim to provide a vibrant and supportive environment for postgraduate researchers (PGRs). Our strategy includes targeting funding opportunities that fall within our research priorities, providing professional development pathways, and mentorship programmes to attract and nurture diverse talent. This approach will not only grow PGR numbers but also strengthen our research capacity, driving innovation and contributing to the advancement of knowledge in our priority fields.

Achieving our goal of research excellence and effective translation of our research across the breadth of medical, veterinary, health, psychological and life sciences will catalyse change in key areas of global unmet need, raising the profile of our own research, and that of the University and our partners.

Strategic Objectives

1. **Increase the number of world-leading research outputs that deliver societal benefit: >50% of our outputs returned in the next REF being recognised as 4*; all our impact cases identified as delivering either internationally excellent or world-leading impact.**
2. **Grow annual research income to £118M (non-inflated) by 2030/31 (from £71.8M in 2023/24).**
3. **Increase research contribution to 15% by 2031.**
4. **Expand external partnerships and collaborations, with at least two new strategic Industrial Partnerships; increase income from Industry partners to 10% (from 7% in 2023/24).**
5. **Develop and maintain two externally funded Research Centres of Excellence to help deliver impact.**

Strategic Priorities

Across the Faculty, we have identified three key areas which highlight our research strengths and opportunities for growth, recognising that excellence exists outside of these themes. These are underpinned by two significant cross-cutting platforms.

1 Therapeutic innovation

Pharmacology and therapeutics are areas of excellence as recognised by REF 2021, and the award of the Queen's Anniversary Prize (2018). Combined with our core strengths in the generation, analysis, integration and predictive modelling across large data sets (molecular to population level), novel strategies for the delivery of therapeutics, bioengineering and psychological interventions, we have an unparalleled opportunity to improve treatment of specific populations. This priority area draws on our expertise across multiple domains: fundamental biochemistry and cell biology, pharmacology and therapeutics, multi-omics, biomedical engineering, health data science and psychology, and clinical trials, and utilises our ready access to clinical samples and biobanks. Bringing together diverse areas of expertise we will determine the biological and psychological drivers of treatment needs, particularly in the context of local and global health inequalities.
We will strengthen the critical mass of researchers working collectively across these areas to build leadership and co-ordinate clinical and non-clinical activity, with a particular focus on multi-morbidity, precision therapeutics, infection and antimicrobial resistance (AMR), biomedical engineering, cancer, neuroscience and psychological interventions, and mental health. Furthermore, by continuing to develop our collaborations with industry and the NHS, and actively engaging with other stakeholders, including our patient populations, we will embed advanced treatments into routine clinical care, and develop policies that direct treatment for the most impact on human health and animal welfare thereby maximising the impact of our fundamental research. These research developments present opportunities to host clinical trials of novel therapeutics, and forge new partnerships with Industry to bring better therapies to market for patient benefit.

Key Aims

Better therapeutics (making medicines better)

The drug discovery pipeline is complex. Late-stage failures often cost the pharmaceutical industry billions. Failures also often mean that commercial interest wanes leaving clinical unmet need. One of the reasons for this is that animal models do not readily translate into human targets and disease. Ideally target discovery should be in humans, with experimental studies supporting mechanisms. To overcome this bottleneck, we have developed and are now delivering scalable mechanisms for drug target discovery, aligning with a cross-Faculty University Research Frontier in *Therapeutics Innovation*. By creating disease case collections which link bespoke study data to NHS data (with appropriate consent) and underpinning this with repeat sample collection, we are now able to understand more precisely the cause and consequence of disease. With our multi-omics capabilities, defining the molecular changes that occur during the life course of a disease will enable us to re-define disease taxonomy and provide tangible opportunities for:

(1) enhanced drug discovery and drug repurposing

(2) development of companion/ predictive/ prognostic biomarkers

(3) precisely understanding mechanisms of effect

We will capitalise on our international partnerships (for example in Malawi and India) to enable equitable drug discovery, seeding such studies in low- and middle-income countries and developing appropriate cost-effective solutions for different regions. Building on ongoing investigations, we will combine disease-specific approaches with population-based approaches harnessing the multi-morbid (where individuals suffer from two or more long-term health conditions) and polypharmacy-exposed (patients simultaneously taking multiple medicines) population in Liverpool. Here, repeated samples linked to the NHS record will provide a unique resource for prediction and prognosis as well as a trial-ready population, building on our leadership in the region and nationally in health data science. Linking our clinical research facility across the city region, allows a seamless bed for translational therapeutics. Our translational therapeutics pipeline will be enhanced by our ability to stand up early phase studies using the AGILE platform and enable better drug delivery through improved formulation leveraging expertise in the Centre of Excellence for Long-acting Therapeutics (CELT) and emerging nano-therapeutic platforms. We will engage with commercial partners who are investing in the region to improve strategies for therapeutic formulation and delivery. In addition, our rich cohort of data, sample availability and expertise will attract outside funding and partnerships interested in harnessing and mining it for their own research, improving societal impact and expanding our reputation.

Deliverables:

By 2031, the Faculty will:

1. **Increase the number of disease-based cohorts,** and within these have demonstrated the utility through partnership and commercialisation of one or more drug targets or biomarkers.
2. **Establish areas of expertise which can seed unmet need,** including populations who are neglected in trials; build capacity for disease investigation using a case collection approach but also building a trial ready population. For example, **Children Growing Up in Liverpool (C-GULL)** is already establishing this within pregnancy, but other areas of unmet need e.g. neurosciences, cancer and rare disease, can follow.
3. **Establish a Liverpool-based population cohort** with sampling and linked health records: Liverpool and Me (LivMe). We will secure funding to establish an internationally unique resource that will recruit and retain citizens of Liverpool, embedding life course sampling into routine clinical care.

Better targeting (using medicines better)

Building on key strengths within the Faculty, we will enhance the use of existing therapeutics. We will build on our expertise in drug safety, understanding the mechanisms of drug toxicity and expand beyond liver toxicity and immunotoxicity. We already house the most unique resource for clinicians to reduce drug-drug interactions (**Liverpool University HIV/HEP/Cancer Drug Interactions**) and are now expanding the ability to more safely use medicines in the clinical arena through a pharmacogenomics approach.

Coupled with our internationally recognised expertise in data science and modelling and the ability to generate hypotheses for evaluating interventions from health records, we are core to numerous national initiatives including Health Data Research UK (HDR UK), and the NHS Cheshire and Merseyside **Data into Action** programme built on the **CIPHA** (Combined Intelligence for Population Health Action) platform. We will leverage this expertise further by enabling methods to accelerate causal inference underpinning and enhancing repurposing opportunities or prioritisation of trials which will feed into our expanded AGILE platform. We will establish a UK wide therapeutics intelligence framework that will enable arm's length bodies (NHS, Medicines and Healthcare products Regulatory Agency (MHRA), National Institute for Health and Care Excellence (NICE) to make better use of data science approaches for safer, more clinically and cost-effective use of medicines.

Deliverables:

By 2031, the Faculty will:

1. **Establish a UK-wide therapeutics learning system** working with national partners, Health Data Research UK (HDR UK), Medical Research Council (MRC), which links medicines to health outcomes for more clinically and cost-effective use of medicines.
2. **Lead the implementation of precision medicine approaches** by embedding pharmacogenomics into routine health care and establishing the Data Documentation Initiative (DDI) resource within our local health system.
3. **Expand our mechanistic understanding of drug safety** through experimental techniques beyond liver injury, establishing Safer Pharmaceuticals for Human Efficacy and Risk Assessment (SAPHER).

Enhanced clinical relevance

Our programme of making and using medicines better will have direct clinical impact in the short and longer term, regionally, nationally and internationally. We will direct our efforts into clinical translation through clinical trials, which is unique in Liverpool from Phase 1 (first-in-human) to Phase III/IV, and our capability to deploy multicentre and multinational populations. We will focus on unmet need, improving the health of people within the Liverpool City Region, which is multi-morbid and polypharmacy-exposed, demonstrating how this can be effectively done and fed into policy, but also into a global vision. We will strengthen our ability to deliver clinical trials in a timely and cost-effective manner, facilitating the transition from fundamental research to clinical intervention. We will develop and apply novel and efficient trials methods, including platform trials using healthcare systems data and deliver trials across clinical disciplines, considering the evaluation of drugs, devices, surgical procedures and behavioural interventions. This will build on our expertise in safety, pharmacokinetics-pharmacodynamic (PK-PD) studies and modelling.

Deliverables:

By 2031, the Faculty will:

1. **Establish a translational platform approach** - the *Therapeutics Innovation Factory*- that will enable commercial and arm's length body engagement to make and use medicines better. The aim will be to establish Liverpool as the go-to place internationally for therapeutics.
2. **Become an internationally excellent centre for education and training** in therapeutics development or relevance to clinicians that encompasses and links all relevant disciplines. We will train the next generation of clinical research leaders to understand the route to therapeutics innovation.
3. **Establish an externally funded Centre of Excellence in Therapeutics Innovation.**

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2 Health across the life course

While there has been a remarkable increase in human lifespan in high-income countries over the last two centuries through improvements in social, economic and environmental determinants of health, progress has stalled over recent years. The year-on-year increase in life expectancy observed in most countries had plateaued pre-pandemic in the UK. Life expectancy is falling, particularly for girls and women growing up and living in disadvantaged communities. Intergenerational cycles of disadvantage persist. A child born in the most disadvantaged tenth of UK areas can expect to live a decade less than a child born in the most advantaged tenth. The gap increases to almost two decades when we consider healthy life expectancy. For adult women, this inequality is further compounded by secondary prevention strategies that rely on risk factors and interventions developed in all-male cohorts or trials. The role of biological sex in determining health outcomes, particularly in non-communicable diseases, is under-studied and poorly understood. We are also having to deal with a rapidly ageing society. Currently around 10% of the population are over 65. By 2050 this is projected to increase to 16%, and by 2100 to 25%. Age and morbidity are intrinsically linked, with years lived with disability increasing exponentially from age 50. Decades of advances across the life sciences sector are allowing many diseases to be managed or cured, but treatment management has resulted in growing populations with multiple long-term conditions and multimorbidity.

Trajectories of poor physical and mental health stemming from childhood ultimately explain differences in adult health and societal productivity. We are at the sharp end of these health inequalities in Liverpool. Over a third of children are living in poverty and children's health and wellbeing are considerably worse than the England average. People in our region have lower life expectancy and healthy life expectancy, more premature deaths from cardiovascular disease, cancers, and respiratory illnesses, and higher rates of obesity and mental health problems. The pandemic has exacerbated these inequalities, driving unsustainable pressures on health and social care systems internationally.

A key aim of the UK government through the **Ageing Society Grand Challenge**, is to increase the healthy life expectancy of the UK population by 5 years by 2035, and to reduce the difference between the richest and poorest in our society. Achieving this goal will not only improve quality of life, but also have significant economic benefits relating to wealth and productivity. Addressing these challenges will require complex combinations of interventions and policies across sectors and at different levels. Since inequalities are an international problem, solutions to these problems will be globally relevant.

We have key strengths in a variety of disciplines necessary to address the complex challenge of improving health across the life course and reducing inequalities – women's health, public health, epidemiology, fetal programming and the Developmental Origins of Health and Disease (DOHaD), psychology and our world-leading translational research from fundamental (neuro) science to applied research in industry, healthcare and behaviour change, health data science, cancer, underpinned by strong discovery research in key ageing-related domains such as musculoskeletal biology, cardiovascular sciences, endocrinology, and ophthalmology.

Key Aims

Identify the early life factors which reduce healthy lifespan

A healthy start in life is essential to a healthy lifespan, but we still lack a collective understanding of precisely which factors in early life are major determinants of lifelong well-being. We will adopt a life course approach focusing on both early life determinants, and the role of biological sex in determining adult disease. **Children Growing Up in Liverpool (C-GULL)** is a flagship programme that integrates our expertise in women's and children's health and data science to determine the underlying health, environmental and social issues that drive health inequalities, an issue which is particularly relevant in the Liverpool City Region. We will use this unique resource to discover the mechanistic link between early life exposures, reproductive outcomes and long-term health and well-being, with a particular emphasis on the gut microbiome and mental health, and the role of pregnancy as a predictor of multimorbidity. Beyond C-GULL, we will also use our expertise in perinatal mental health, neurodevelopment, infant feeding, bonding and interaction to help shape positive developmental trajectories from the beginning of life. We will build on our expertise to explore the major psychological issues from early childhood through to adulthood that contribute to healthy lifespan: perception, cognition and language (with implications for both the young and old); appetite, obesity and addiction to permit critical incidence decision making, risk management and resilience.

Deliverables:

By 2031, the Faculty will:

1. **Establish an externally funded Centre of Excellence in Women's Health.**
2. **Establish the Liverpool Institute of Child Health and Wellbeing** as a Centre of Excellence by expanding research and innovation in child health, in partnership with Alder Hey Children's Hospital. This will drive impactful solutions and improve health outcomes for children and young people.
3. **Secure follow-on funding** to continue C-GULL as the cohort matures into adolescence.

Address complex diseases of later life

As we age, we are more prone to major diseases which have a substantive impact on healthspan. Multimorbidity has a profound effect on healthspan and is a substantial burden to both individuals and care-providers, as well as the NHS. We will build on our expertise in musculoskeletal diseases such as frailty and osteoarthritis, cardiovascular diseases including stroke, and metabolic and endocrine disorders, chronic pain, neuro-degenerative illness as well as those disorders affecting eye and vision, and other cognitive, sensory and motor impairment to effectively treat and/or prevent those disorders that are significant causes of ill-health in middle and later life. By defining the key drivers of multimorbidity and working together with integrated health and social care systems, including enhancing psychological support and resilience, we will improve treatment and rehabilitation for complex diseases, improving both healthspan and the substantive burden to the NHS and social care systems.

Deliverables:

By 2031, the Faculty will:

1. **Establish a joint research Centre of Excellence** with the Walton Centre to advance understanding and treatment of neurological and neurodegenerative diseases.
2. **Further develop our biobanks of samples** with associated multi-omics and clinical data to permit understanding and drivers of complex disease presentation, multimorbidity and the effects of polypharmacy.
3. **Develop one or more translational assays** to screen for early biomarkers, or treatment differentiation markers, of ageing-related diseases.

Reduce health inequalities

We will improve health and reduce inequalities through the study of the determinants of health and wellbeing, and the policies and interventions that impact them. We will unpick the pathways to inequalities across the life course by understanding the major psychological, behavioural, environmental, social, situational and biological challenges faced by societies and individuals that contribute to poor ageing and premature mortality. We will evaluate the impact of policies and interventions at different levels, from the population to the individual, across our areas of expertise in public health, psychology, mental health, education, pharmacology, health professional practice, child health and health services that improve healthy lifespan and reduce inequalities. To have true impact, we must both define the causative factors of these inequalities using state-of-the-art methodologies (especially via data science, evidence synthesis and trials and evaluation of evidence based policy) and work with local, national and international agencies, and importantly the local affected populations, to develop and implement effective, sustainable and scalable solutions.

Deliverables:

By 2031, the Faculty will:

1. **Become a world leading centre for developing place-based solutions** to addressing health inequalities and improving health and wealth over the life course, helping deliver sustainable solutions to reducing pressures on health and care systems.
2. **Develop and lead regional initiatives to address health inequalities** and improve health across the life course, in collaboration with our citizens and local stakeholders across the North of England.
3. **Become an internationally excellent centre for education and training** in addressing intergenerational health inequalities. We will train the future leaders in this field.

3 Microbiome and infection

Microorganisms, be they bacteria, fungi, viruses or parasites, are key to all ecosystems; they can exert both beneficial and harmful effects to humans and animals, the food we eat and the environments that we inhabit. In the Faculty, there are large groupings in virology, parasitology and bacteriology alongside epidemiology, vector biology and environmental science working at the interface of fundamental science and clinical and veterinary medicine. These strategic networks develop technologies to explore microbiome diversity and spread, investigate their positive effects and symbiotic relationships, define mechanisms of infection and pathways for treatment, through to addressing the ultimate impacts arising from large-scale infection, all of which align with government and international priorities.

Infectious diseases remain major causes of human and animal mortality and morbidity, with the Global Burden of Disease study estimating 10.2 million human deaths per year, and more than half a billion life years lost to disability and death, from communicable, maternal, neonatal and nutritional disease. Infectious diseases are thus a substantial burden to the UK and the global economy: the COVID-19 pandemic is estimated to have cost the global economy £12 trillion to date, seasonal influenza costs over £1.4 billion a year to the UK economy and the 2022 avian flu outbreak has resulted in about 40 million animal losses and economic costs ranging from $2.5 to $3 billion in the United States alone. While progress has been made against many infections, new pathogens regularly emerge; for example, Ebola, Zika, SARS-CoV-1, SARS-CoV2m Mpox and H5N1 influenza, amongst many others, have all emerged in the last twenty years. And, as microbes become increasingly unresponsive to current treatments, antimicrobial resistance (AMR) is both a financial concern, estimated to impact the global economy to the value of £2.7 trillion by 2030, and a substantive health concern resulting currently in the deaths of ~5 million people per year, either directly or indirectly. Further AMR is a significant concern in the veterinary population, and solutions to AMR require a one-health approach. We must therefore prepare for, and minimise the effects of, current and potential infections, improve the treatment of infections and address the inflammatory drivers of long-term ill health.

We recognise that diseases are multimodal with the response to infection being dependent on both the microbe and the host. Consequently, innovative investigation requires integration of expertise in both host and pathogen biology. Work within the Microbiome Innovation Centre combines ecological, biological, clinical and veterinary science expertise to understand the fundamental biology of microbial communities and their impact on human and animal health. Through the NIHR Health Protection Research Unit (HPRU) in Emerging and Zoonotic Infections, and subsequently The Pandemic Institute, we have demonstrated a sustained response to pandemic threats, working with local, national and international partners. Our critical mass of researchers evaluating and developing new globally relevant medical countermeasures including vaccines, antivirals and host-directed therapeutics are essential to prevent and treat infections of relevance to humans and other species. The University of Liverpool-led Centres for Antimicrobial Optimisation Network (CAMO-Net) brings together research teams from across the world to address the impact of AMR on human health. **The Centre of Excellence for Long-acting Therapeutics (CELT)** which continues to advance understanding and development of long-acting medicines for HIV, hepatitis C (HCV), tuberculosis and malaria, alongside continued concerted efforts in COVID-19, exemplifies our ambitions to address global public health needs in infection.

Key Aims

Pandemic preparedness

The Faculty's work on pandemic preparedness builds on the University's outstanding record in emerging infections developed over decades. For example, as leads since 2014 of the **NIHR Health Protection Research Unit in Emerging and Zoonotic Infections** we were at the forefront of the UK response to Ebola, Zika and Covid-19. Since 2021, we have hosted **The Pandemic Institute**, a unique collaboration of academic, civic and health service partners in Liverpool.

We will capitalise on and strengthen our national leadership position tackling emerging infections and pandemic threats. In support of the G7's 100 days mission we will work to have diagnostic tests, drug treatments and vaccines available within 100 days of a new disease emergence. This requires improved surveillance (strengthened through our longstanding international partnerships, including in **Malawi, Kenya, India** and **Brazil**) and better prediction of which diseases will emerge and spread, enhanced through our data integration and modelling approaches. Building on our **AGILE** platform, we will extend our therapeutics programmes, spanning new drug discovery through first-in-human trials and into efficacy evaluation and eventual clinical deployment. We will strengthen our vaccine development pipeline, which extends from epitope discovery through pre-clinical and clinical studies to post-marketing surveillance. Our diagnostic, therapeutics and vaccine work will benefit from investment in our planned Pandemic Preparedness and Response Facility for pre-clinical studies, enhanced clinical infrastructure, and stronger links with commercial partners. We will make better use of non-pharmaceutical interventions and strengthen preparedness and resilience to emerging threats, using a "smart city" approach of a civic data and AI cooperative.

Deliverables:

By 2031, the Faculty will:

1. **Consolidate our position as a pre-eminent academic institution for pandemic preparedness**, as evidenced by hosting the next NIHR Health Protection Research Unit in Emerging and Zoonotic Infections (2026-31) and lead the development (with partners) of the UK Pandemic Sciences Network.
2. **Strengthen capabilities for pre-clinical study of emerging infections,** for example through a new Pandemic Preparedness and Response Facility.
3. **Integrate public health infection research of non-pharmaceutical interventions** in the Liverpool City Region into the Civic Health Innovation Labs (CHIL).

AMR

In addition to the effect on human health, AMR has significant, yet under-investigated, implications for animal health and the environment. Resistant microbes spread through our ecosystem, from humans and animals to plants, through soil and water sources. Loss of diversity can contribute to increased use of antimicrobials which compounds AMR. Our approach to AMR is to create and implement a future for antimicrobial therapy that is precise, pre-emptive, predictive, and participatory (4Ps).

We will pursue the development and discovery of new antimicrobial assets (antimicrobial agents, diagnostics and digital/data/AI building blocks) alongside new strategies for implementation. AIs include tools to deliver precision care, optimise workflow management and enable outbreak prediction.

We will develop a novel Liverpool Antimicrobial Learning System (in collaboration with the NHS), which is built on regionally connected data and workflows, to implement a 'laboratory-at-scale'. This enables novel antimicrobial assets to be developed and evaluated in real-time, using data from routine care. Uniquely, we will take a One Health approach to an antimicrobial learning system, combining human and animal health informatics assets such as our NHS **Data into Action** programme (via CHIL) and **SAVSNet** (a veterinary surveillance network used for AMR initiatives in companion and farm animal fields). Our work to understand AMR drivers and optimisation of treatment regimes in both humans and animals provides a unique opportunity for cross-fertilisation of methodologies, surveillance approaches and mechanistic understanding for maximal impact.

Deliverables:

By 2031, the Faculty will:

1. **Develop a global data repository for antimicrobial agents** including pharmacokinetic-pharmacodynamic data and algorithms used to deliver precise and sustainable antimicrobial therapy.
2. **Establish an externally funded internationally recognised Centre of Excellence for the discovery and development of new antimicrobial therapeutics, medicines management, diagnostics** and AIs to address the global threat of AMR, and to train the next generation of research leaders to address AMR.
3. **Lead research efforts in the sustainable use of antimicrobials** in alignment with policy articulated within the National Action Plan, World Health Organisation (WHO) and United Nations General Assembly (UNGA) 2024. A One Health approach will be taken that recognises AMR is an enmeshed problem of human, environmental and animal health.
4. **Develop and lead a region-wide AMR learning system** that enables Liverpool's citizens and its clinicians to learn and benefit from data collected in real time to improve management of infection and AMR.

Vaccine development

Our vaccine work seeks to maximise the global benefits of vaccination and reduce the global burden of vaccine-preventable infections in both humans and animals. We are a key part of the Liverpool City Region's internationally recognised expertise as a region of High Potential Opportunity (HPO) in the discovery, development and manufacture of vaccines. We will continue to integrate world-leading multidisciplinary research and training in laboratory science, clinical trials, and epidemiology to deliver the next generation of vaccines.

Deliverables:

By 2031, the Faculty will:

1. **Establish a Centre for Global Vaccine Research**, determining immune response and correlates of protection to assist the discovery and licensing of new vaccines, develop innovative pipelines for the generation of novel vaccines against significant global causes of illness in human and animals e.g. flavivirus in humans and spirochaetal infections of ruminants, with the aim of at least two candidate vaccines entering clinical trials.
2. **Advance approaches for pre-clinical and clinical assessment of new vaccines** candidates to speed delivery from concept to practice with appropriate flexibility for pandemic response.
3. **Supported the equitable introduction of vaccines through public health science** in our own region and across the globe.

4 Cross-cutting platforms

Our ability to undertake world-leading research with societal impact, will increasingly depend on our capability to generate and harness big data, and our ability to train people in the technological advancements required for the acquisition and interrogation of large-data. Liverpool Shared Research Facilities (LIV-SRF) are sector leading with priority capabilities in Bio-Imaging, Multi-Omics and Bio-Resources. We will maximise on our expertise and infrastructure, linking with NHS and industry partners to drive research impact and outcomes. The development of more capable AIs, bioinformatic and computational biological approaches that make use of these data for hypothesis generation and outcome prediction is also key. Advancing these cross-cutting discovery science platforms requires continued investment in people, infrastructure, technologies and data.

Key Aims

Multi-omics

High throughput discovery 'omics has revolutionised the way that biologists, environmentalists and clinicians (human and animal) understand the systems that they are working with; these technologies have proven indispensable for both hypothesis generation and validation, exploration of physiological and pathological mechanisms, and the discovery and screening for markers of disease. The multiple technical Centres of Excellence that drive advances in the generation and analysis of genome, transcriptome, proteome and metabolome level data, along with data fusion within the Computational Biology Facility, are unique across the UK landscape. By embedding technical excellence and state-of the art infrastructure within academic-led facilities in the Faculty, in-house innovation can be exploited to address global challenges in collaboration with our academic, clinical and industrial partners.

Our extensive experience of running externally funded training courses means that we also serve as a beacon for upskilling across the UK and beyond. Our multi-faceted innovations in omics method development, analysis and integration, along with industrial level standardisation, underpin the breadth of research undertaken within the Faculty, from human and animal health to the environment (including the life course exposome), and is bolstered by expertise in multi-scale imaging, gene editing (synthetic biology) and the availability of extensive well-characterised clinical cohorts and diverse biobanks. Working in harmony with the Data Science Platform, multi-omics provides unparalleled opportunities that make us unique internationally, aligning mechanistic discovery at the molecular level with population level health data. Consequently, we can address areas of local and global need, providing capabilities of relevance to fundamental and applied research endeavours with substantial opportunities for external investment.

Deliverables:

By 2031, the Faculty will:

1. **Establish a Centre for Innovation in Multi-omics,** positioning Liverpool internationally at the forefront of 'omics data generation and integration that drives understanding of systems biology
2. **Consolidate our partnerships with industry to drive innovation** in product development and deployment, acting as a technological test and demonstration site for one or more key instrument vendors.
3. **Develop an integrated AI-driven pipeline** to derive cohort-based understanding of disease drivers and/or treatment regimens based on 'omics data.

Data science

From understanding biological mechanisms to developing and evaluating new interventions and managing population health, AIs can speed up and enhance our work. To properly harness the pace and scale of AI developments, we need to build on our existing strengths in data science research, platforms and capabilities across the Faculty.

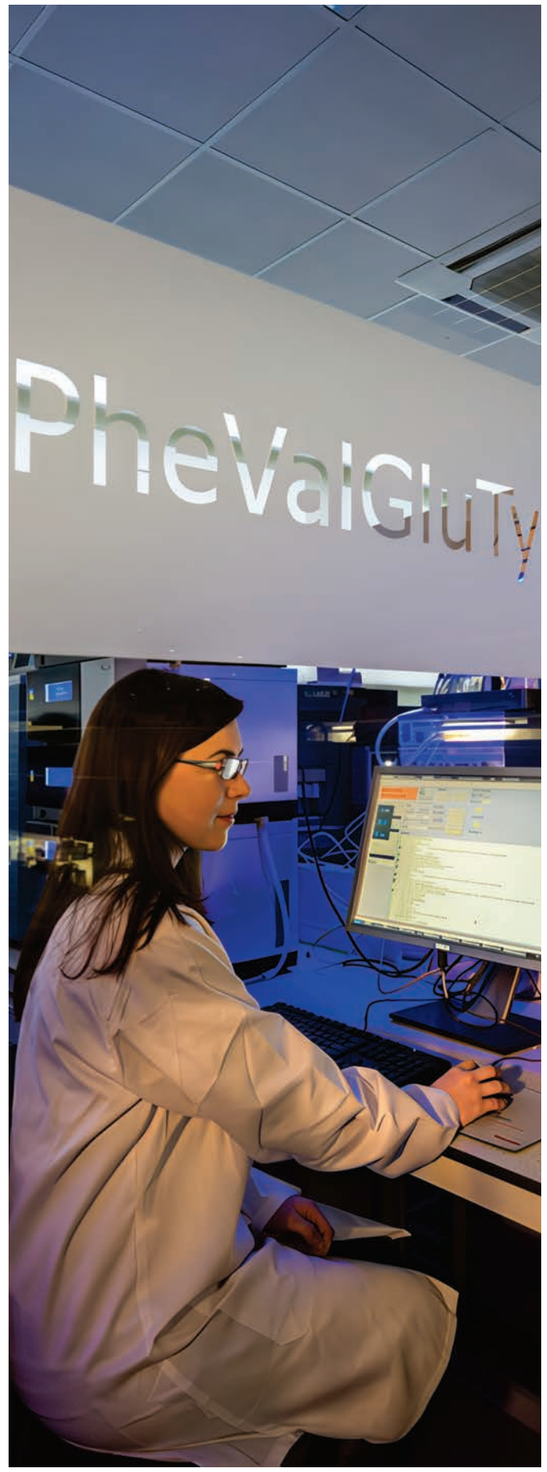
We will achieve this through workforce development, including our Research Technical Professional career pathway, a strong portfolio of projects integrating data science, and a field-leading civic data partnership that drives research, planning and care delivery from an integrated platform.

The platform will build on the investments of the University of Liverpool, UK Research and Innovation (UKRI), NHS partners and Liverpool City Region Combined Authority in the Civic Health Innovation Labs (CHIL), which concentrates data science, AI engineering and translational research around shared data, computing public participation resources. CHIL will catalyse cross-Faculty collaboration with mathematicians, computer scientists and engineers – enabling us to translate advancing methods into training, tools and frontier research for the health and life sciences, and in return provide well-formed problems to advance AI research in the fundamental sciences, arts and humanities.

Deliverables:

By 2031, the Faculty will:

1. **Establish Liverpool as an international focus for coupling biomedical discovery** with the AIs that people use to access health and social care services – a leader in multi-omics linked to digital twin or 'health avatar' technologies.
2. **Embed data science into the digital workflows** of care and planning across our academic health system; use AIs to make traditional clinical trials more efficient, enhancing feasibility assessment, recruitment, retention, resolution of data, long-term follow-up and cost-effectiveness.
3. **Drive economic growth across the Liverpool City Region in life sciences** and digital sectors at the forefront of a civic AI economy for improved health and welfare.
4. **Establish Liverpool as world-leading in population health data science**, protecting and improving health as a learning system, with linked advances across infection, medicines, mental health, public health and care equity.



UNIVERSITY OF LIVERPOOL
FACULTY OF HEALTH AND LIFE SCIENCES STRATEGY 2025-2031

Education and Student Experience

Develop high quality undergraduate and postgraduate programmes

Our goal is to have greater alignment of research and teaching, enhanced by a reconfiguration and refurbishment of our estates to support our globally competitive programmes.

We will provide a suite of stimulating, authentic research-led undergraduate (UG) and postgraduate (PG) clinical and non-clinical programmes, taught by world-class researchers and scholars, that meet the demands from home and global markets and increase inclusivity and diversity. Our programmes will create confident, inquisitive, successful, high-quality graduates that fulfil the requirements of local, regional, national and international employers.

Strategic Objectives

1. **Develop our education provision to provide a unique, global experience for all students with all subject areas in the top 75 subject rankings (QS World Rankings).**
2. **Continue to achieve excellent levels of student satisfaction in all subject areas measured via National Student Survey.**
3. **Achieve growth in our international student numbers aligned to the aspirations of Liverpool 2031.**
4. **Maintain our Teaching Excellence Framework Gold award.**
5. **Enhance our postgraduate taught (PGT) offer through a targeted suite of new programmes.**
6. **Align our PGT offer with research priorities and international industry and NHS partnerships to strengthen the academic pipeline from undergraduate through to research.**

We will ensure our existing programmes have scholarly teaching built into our curricula development and delivery. Our curricula will be contemporary, and evidence based, as demonstrated by the recent redesign of the Biosciences portfolio, and the Dentistry undergraduate curriculum. This will ensure that we are not only fit for purpose but also meet the requirements of a global market with world leading teaching and learning strategies. Our programmes will focus on acquisition of knowledge and essential life skills that will create graduates of the future, giving them the know-how required to succeed either in further study or in highly skilled employment.

We will continue to exceed the expectations of accreditation and Professional Statutory Regulatory Body (PSRB) requirements. In clinical areas, we will aim to implement and support the NHS Long-term Workforce Plan to tackle national skills gaps by reviewing our existing undergraduate and postgraduate curricula. We will therefore regularly look to develop new areas of study, such as a new MPharm programme, that align with the NHS Longterm Workforce Plan, Lifelong Learning to upskill health professionals, multi-professional training, and accelerated learning (e.g. the Graduate Entry Programme in Medicine) by working closely with regional and national NHS partners. We will continue to enhance all our teaching and training by improvements to the learning environment and physical spaces.

Growth of international student numbers and transnational education

We will develop our postgraduate programmes through analysis of market insight data and expand our lifelong learning opportunities, developing a pipeline from undergraduate to postgraduate study and research by developing a suite of programmes that build on our research strengths. By expanding our portfolio of PGT programmes we will ensure we remain competitive and attractive to a global audience. We will grow and significantly expand our transnational education offer and develop existing and new international partnerships that enhance student opportunities.

To increase global opportunities, we will prioritise international partnerships that develop reciprocal arrangements for both education and research, as well as developing programmes that are attractive to international markets.

Enhancement of the digital student journey

We will enhance the personalised digital learning journey and equip graduates with the digital skills to prepare them for a wide variety of careers in a rapidly changing world. By enhancing the opportunities for digital learning, students will be able to study flexibly both physically on campus and online, facilitated by the development of cutting-edge digital skills through advanced Technology Enhanced Learning, e-portfolios, groundbreaking AI, and simulation, for students wanting to learn at their own pace and embrace new approaches to learning.

We will fully integrate simulation, virtual and augmented reality, into the learning environments of our programmes, by developing shared learning spaces, particularly in our clinical programmes.

UNIVERSITY OF LIVERPOOL
FACULTY OF HEALTH AND LIFE SCIENCES STRATEGY 2025-2031

Employability opportunities

We will ensure our students are fully prepared, personally and professionally, to confidently compete in a global employment market, readying them for the jobs of tomorrow. All students will have access to embedded employability opportunities, as well as co- and extra-curricular employability activities. We will work closely with our health and NHS Trust partners to provide our clinical students with a wide range of placements across multiple healthcare environments and facilitate interdisciplinary learning.

We aim to offer our undergraduate and postgraduate students career enhancement through a stimulating range of inclusive extracurricular opportunities such as volunteering, placements, study abroad, Year in China, field-trips, projects with employers and industry partners to all who want to participate. Working with central hubs of excellence such as the Brett Centre for Entrepreneurship, we will build enterprise and entrepreneurial skills development for all students into the curricula, supported by innovative entrepreneurs.

Enhancing the student experience

We will promote an inclusive, research-connected, supportive experience, enabling all students to feel connected to our diverse Faculty community. By promoting a strong sense of identity and belonging of the students within our Faculty, we will enable a positive learning experience, increase student well-being, and encourage students to continue their learning journey within the University from UG through to PGT and PGR.

Working with our students, we will enhance every opportunity for their success through the highest-level of student support, integration and research involvement. Considerations of enhanced student wellbeing will be embedded in every programme and through the provision of high-quality student support services.

Widening participation

We will continue to increase and diversify our student body by ensuring all our programmes are accessible to a wide range of students regardless of background. We will continue to analyse data within the Faculty to reduce the awarding gap and improve the attainment of our undergraduate students.

We will work with Schools and Institutes to develop initiatives that enable the Faculty to meet the agreed Institutional targets identified in the Access and Participation Plan. We will focus on specific cohort groups to increase recruitment from them and reduce attainment gaps:

1. Racially minoritised students
2. International students
3. Male students
4. Students with disabilities
5. Increase non-traditional routes into our programmes through Access, Foundation and Y0 programme opportunities
6. Index of Multiple Deprivation (IMD) Participation of Local Areas (POLAR) - specifically targeting Low Participation Neighbourhoods, care leavers and First-in-family.

We will gain a better understanding of the barriers to widening participation throughout the student journey and gather data from our postgraduate cohorts so we can target interventions. This will continue to enhance and expand the future representation within our academic faculty to ensure it is more representative.

Sustainability and student mobility

Our students will be empowered as global citizens to make a difference in a changing world, and we will enhance the wider student experience by developing opportunities for them to engage locally in Liverpool, in their wider communities and beyond. All of our programmes will have sustainability embedded into the curriculum to provide students with a greater understanding of how they and the Faculty are contributing to the UN Sustainable Development Goals (SDGs).

We will develop national and international partnerships to enhance student mobility and provide opportunities to ensure that by 2031 31% of students across the University have the opportunity to study, work or volunteer in an international context.

Deliverables:

By 2031, the Faculty will:

1. **Increase international students through the strategic expansion of our postgraduate offer,** developing new postgraduate taught, MRes and postgraduate research programmes.
2. **Develop our transnational education opportunities** and the number of international partnerships across all areas but particularly in Medicine, Dentistry, Veterinary Science and Allied Health, to increase our international Undergraduate and Postgraduate student recruitment and student mobility.
3. **Initiate an Academic Health Science Campus** that will provide state-of-the-art, innovative, vibrant, technologically enhanced, unique learning spaces for our clinical programmes.
4. **Increase multi-professional learning** by facilitating Interprofessional Learning (IPL) as a central tenet of our clinical curricula.
5. **Enhance our simulation provision and integration,** particularly in our clinical programmes, across the Faculty to enhance student learning journeys.
6. **Strengthen the student experience** through digital enhancement, technological innovation and digital empowerment for students and staff.
7. **Ensure equitable access,** increased participation and equal attainment opportunities for all students from underrepresented and disadvantaged cohorts who want to undertake undergraduate and postgraduate studies at the Faculty.
8. **Create opportunities to enhance the student experience** and support our Civic Engagement with the Liverpool City Region.

Global Experience

In line with the University strategy to promote global visibility and reputation, we will improve the Faculty's presence in global rankings by enhancing research output, citations, and international collaborations.

Strategic Objectives

1. **Enhance international research collaboration.**
2. **Expand international education and student recruitment.**
3. **Foster global health impact.**
4. **Promote the University's global visibility and reputation.**

Strategic Priorities

Enhance international collaborations

International collaborations are crucial for ensuring our research remains globally relevant and widely recognised. Studies have shown that publications involving international teams tend to have a greater impact and higher citation rates. Consequently, a key aspect of our international strategy is to support existing collaborations while actively fostering new ones. Our work spans all continents, with significant efforts concentrated in Sub-Saharan Africa, particularly in Malawi through the Malawi-Liverpool-Wellcome Programme (MLW). Engaging in global collaborations enhances the impact and reach of our research, bolstering our reputation.

We have established formal partnerships with several international institutions, including Xi'an Jiaotong University (China), the University of Georgia (USA), the National Institute for Mental Health and Neurosciences (NIMHANS, India), and the International Livestock Research Institute (ILRI) in Nairobi (Kenya). To further strengthen these collaborations, we will explore seed funding opportunities, organise sandpit workshops to develop new connections, and support larger bids to expand our existing partnerships. We will also nurture fast emerging collaborations in our priority research areas.

To continue building our collaborative network, we aim to establish additional partnerships with international institutions whose strategic focus aligns with our own. By cultivating relationships centred on our core scientific and clinical interests, we will engage meaningfully and produce high-quality research with global relevance. This approach will position us to address critical global challenges through access to local populations and clinical samples, and to increase our funding from international agencies.

Expand international education and student recruitment

A key component of our international strategy is to enhance the recruitment of overseas students. To achieve this, we will focus on targeted efforts in key regions with high recruitment potential by:

1. Establishing recruitment pipelines with more articulation routes and partnerships
2. Expanding our summer school offerings to partner institutions, providing prospective students a preview of studying in Liverpool and inspiring them to pursue postgraduate training
3. Developing programmes that are attractive to the international market delivered at the point of need and/or demand at the Liverpool campus, online and as transnational education (TNE)
4. Collaborating with international and alumni offices to leverage our alumni network in supporting overseas recruitment to the Faculty
5. Attracting top talent for postgraduate research, developing and promoting joint and dual degree programmes with leading international universities.

Foster global health impact

The international impact of our Faculty is a core strength. To sustain world-leading research that influences global health across all aspects of life, it is crucial that we actively engage with key international partners and stakeholders. We will leverage our partnerships to collaborate with healthcare providers, policymakers, industry, and researchers to drive and shape global health outcomes. By working alongside international organisations, NGOs, and governments, we aim to tackle global health challenges through research, education, and policy development. Additionally, we will focus on capacity building and up-skilling initiatives in low- and middle-income countries, contributing our health sciences expertise to support the UN SDGs.

Deliverables:

By 2031, the Faculty will:

1. **Establish key strategic international partners linked to each research area,** and as needed to align with emerging global health trends and opportunities.
2. **Develop at least two new transnational education opportunities** to meet the ambition to grow international student numbers and enhance global reputation.

UNIVERSITY OF LIVERPOOL
FACULTY OF HEALTH AND LIFE SCIENCES STRATEGY 2025-2031

Place and Innovation

As a global civic University, we aim to deliver ground-breaking research and outstanding transformative learning experiences that, while addressing global needs, drive prosperity and wellbeing across the Liverpool City Region. Achieving this real-world impact requires us to work with partners across the NHS, charitable bodies, governments and non-governmental organisations (NGOs), the industrial sector, and other academic institutions. These partners will be key for our ambitions through infrastructure funding and cross-disciplinary research centres that deliver on impact and train future generations.

Strategic Objectives

1. **Build on Liverpool's unique strengths as a strong civic asset, growing opportunities for collaboration with the people and local organisations, ranging from sharing data in progressive ways and active participation in key studies, to collaborative innovation.**
2. **Support and leverage large-scale change in organisations and estates, including the merger of NHS organisations into the University Hospitals of Liverpool Group and the development of a new Academic Health Sciences Campus.**
3. **Harness and nurture civic partnerships and platforms across Liverpool City Region and the Cheshire and Merseyside Integrated Care System, including new investments in data-driven public service innovation.**
4. **Drive growth of the regional and national health and life sciences economy through strategic partnerships with the Liverpool City Region Combined Authority and key public and private sector organisations, including commercialisation of our intellectual property.**

Strategic priorities

NHS Trusts

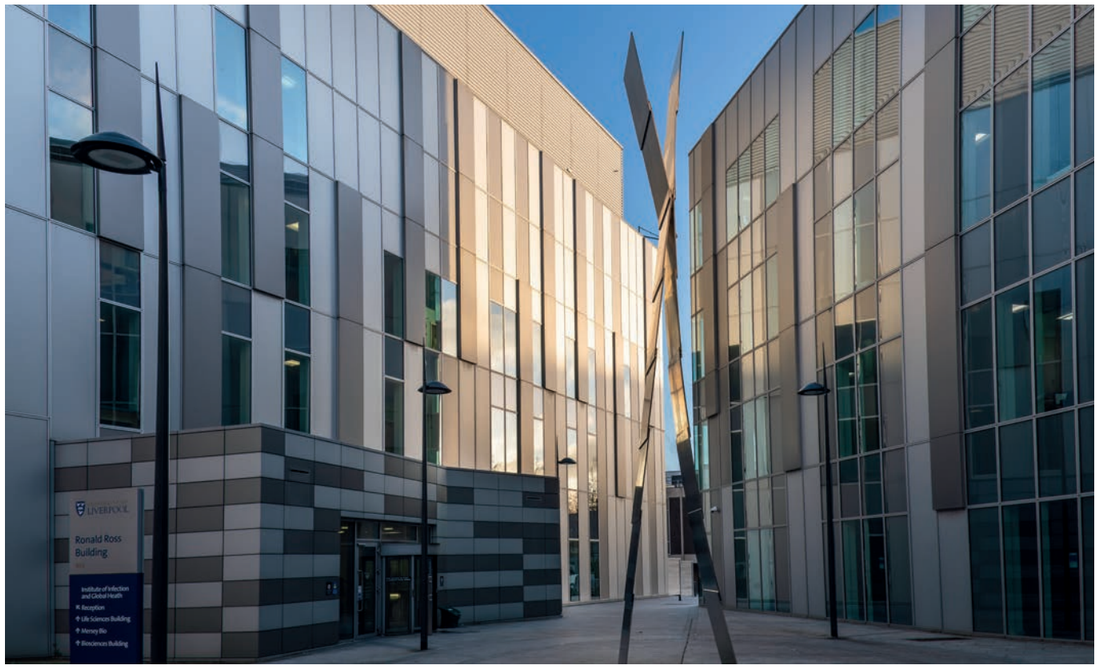
We have entered a new era where local NHS trusts are working together to create a more cohesive and complementary structure that supports healthcare delivery, education and research. The Faculty fully supports this transition and embraces the opportunities it brings. The formation of NHS University Hospitals of Liverpool Group (UHLG) in November 2024 brought together Liverpool University Hospitals NHS Foundation Trust and Liverpool Women's NHS Foundation Trust under a shared Board, enhancing collaboration across key hospital sites including Aintree, Broadgreen, Liverpool Clinical Laboratories, Liverpool Women's and Royal Liverpool University Hospital. Over time, other adult trusts in the region are planned to join UHLG, while Alder Hey Children's Hospital and Mersey Care NHS Foundation Trust will continue to operate as independent entities. We will continue to partner and collaborate in both research and education with other NHS Trusts across the North West. Our partnerships with numerous NHS primary care providers in education will be maintained and further developed.

All of our NHS partners have a greater recognition of the role of research, innovation and education in achieving our shared goals. The Faculty will continue to build on our established strong NHS partnerships to support these developments. Jointly funded clinical academic positions (primarily at consultant level) provide valuable clinical expertise to the Trusts and drive collaborative ground-breaking clinically directed research with demonstrable patient benefit. Similarly, our cohort of clinical academic trainees (Fellows, PhD/MD students, lecturers) form the future clinical academia cadre, adding to our research capacity and knowledge base, and providing a valuable supernumerary resource to Trusts' clinical services. We have a physical presence at many of our local Trusts, allowing our research teams to engage in patient-facing activities, and NHS staff to work more closely with our staff, taking advantage of our facilities and skills. This arrangement also provides our staff with access to cutting-edge hospital facilities including two NIHR-funded Clinical Research Facilities (CRFs) based in adult and paediatric settings. Our research capabilities and ability to co-develop health and social care innovation are enhanced by additional regional NIHR infrastructure in the form of the Applied Research Collaboration (ARC) North West Coast, the Liverpool Experimental Cancer Medicine Centre (ECMC), and Health Protection Research Units in Gastrointestinal Infections and Emerging and Zoonotic Infections. Recently awarded, the Commercial Research Development Centre supports commercial trials research across all our regional Trusts. Our close partnership with the local NIHR Research Delivery Network ensures the smooth delivery of portfolio-adopted studies across the region. This infrastructure funding is invaluable, driving world-class research at the University and benefiting the wider region by strengthening collaboration and accelerating the translation of research into real-world impact. Looking ahead, we will continue to work with our partners to grow NIHR infrastructure core funding, further enhancing our capacity for impactful, collaborative research.

To strengthen our clinically relevant research and innovation activity, we will maintain and continue to drive active collaborations with our NHS partners in areas where our Faculty strategy intersects with those of the different Trusts, as has been achieved with e.g. the **Liverpool Centre for Cardiovascular Science (LCCS)** and the Cheshire and Merseyside **Data into Action** programme. **Health Innovation Liverpool** is central to our plans for further embedding University, NHS, industry and civic partners into a shared research, innovation and training environment.

Liverpool Health Partners (LHP), local authorities and other regional stakeholders

In addition to our strong relationships with local NHS Trusts, we are represented at both board and operational levels within Liverpool Health Partners (LHP), an Academic Health Science Network that brings together NHS partners and other Higher Education Institutions (HEIs) in the region. LHP plays a crucial role in fostering collaboration and creating opportunities to work with industry partners in areas such as health technology, biobanking, and clinical innovation. We are committed to further strengthening this partnership, continuing to contribute to the region's leadership in medical research and healthcare solutions. We will continue to work closely with local authorities, especially Liverpool City Council and Liverpool City Region Combined Authority. We are committed to collaborating on initiatives that address health inequalities and drive transformative change in areas such as childhood health, **mental health** and social care. Building on the strong partnerships formed during the COVID-19 pandemic, we will contribute to local health protection policy development, and support health and social care service planning and delivery through the Cheshire and Merseyside Integrated Care Board.



People and Culture

Strategic Objectives

1. **Maintain our excellent staff satisfaction.**
2. **Attain Athena Swan Gold status in all Institutes and Bronze in Professional Services.**
3. **Actively nominate staff for external achievement awards promoting our successes.**
4. **Promote professional development and support for all staff.**

Strategic Priorities

Research culture

The *RISE* (Research in an Inclusive and Sustainable Environment) initiative was established as a two-way dialogue between University senior leadership and staff, to understand how the University can help improve our research environment. Following extensive consultation, a number of strategic changes were implemented aimed at maximising the potential, and recognising the activities of, our research community. We will continue to evaluate and improve research inclusivity and excellence across the Faculty, building on existing best-practice and acknowledging the diversity of talents and activities that contribute to excellent research. Teamworking across academic and professional services staff has, and continues to be, a key aspect in allowing us to sustain and grow high-quality research, with individuals performing different roles as befits their primary responsibilities. Within our Faculty, we have already established guidance for recognising and attributing intellectual 'ownership' for all named co-applicants on a project, and are cognisant of the need to recognise research income of individuals as either Principal Investigator (PI) or Co-Investigator (CoI), as well as contributions of all to research outputs.

Equality, diversity, inclusion and wellbeing

Consideration of equality, diversity, inclusion and wellbeing (EDIW) is central to the ethos of the Faculty, and we have a growing portfolio of initiatives which seek to improve EDIW in relation to our research and teaching activities. As well as RISE, these include an openly accessible and dynamically evolving **EDIW Researcher Toolkit** considering all aspects of the research journey, and training for peer-reviewers and recruiters. EDIW is integral to all our research, impact and integrity practices to maximise the potential of our staff and students. EDIW resources for teaching include the openly accessible **Decolonising the Curriculum Toolkit** and **School of Medicine EDI Toolkit**. The Faculty supports the University Race Equality Charter (REC) and will launch a Faculty REC Action Plan in 2025. This action plan, and activities like the Faculty's Black Science Bootcamp, feed directly into Access and Participation Plan (APP) targets supporting TEF Gold. Creating an inclusive and welcoming environment is critical to student recruitment and retention, especially supporting our ambitions for increasing international PGT student numbers.

We have recently been awarded two Gold Athena Swan awards, with the other two Institutes currently holding Silver. Our ambition is for all four Institutes in HLS to be awarded Gold by 2031. We were also the first Russell Group University to be awarded a Bronze Athena Swan Professional Technical Operational staff (PTO) Award in 2024 for our Faculty Management Office and Directorates. Critical to our goals of delivering the charter action plans to ensure quality and equity of staff and student experiences, and support future Gold Athena Swan applications, following on our recent award of a Gold award to ISMIB, we pump-prime EDIW initiatives, monitor impact, embed activities, and champion and promote good practice to the wider community. The Faculty continues to lead on initiatives in broader areas of EDIW, such as Neurodiversity Celebration Week events, the Autism Hub, and a pilot Staff Mental Health Peer Support Scheme. We will launch a Faculty EDIW strategy and action plan in 2025, building on the University's Equality Objectives Action Plan (2022-2028), which will include unique areas of Faculty need (e.g. clinical staff) and EDIW excellence (e.g. neurodiversity).

Ethics and integrity

The Faculty is committed to maintaining a high standard of research ethics values and principles in-line with the **University of Liverpool Values and Ethics Principles**. We value all research and impact endeavours that meet our ethical and integrity standards and the FAIR (Findability, Accessibility, Interoperability, and Reusability) principles of scientific data management and stewardship. We commit to embedding a culture of integrity and ethics within research practices, supporting researchers in understanding and acting according to expected standards, values and behaviours.

We will continue to promote research integrity through our specific Institute research integrity groups and their role in periodic assessments, particularly relating to their promotion of best practice and transparency relating to research integrity. We will adhere to and promote open research and data standards, and the use of data repositories.

Professional development and support

We recognise the importance of supporting staff, both for their own personal development and in their research and teaching endeavours, across all grades and roles. The annual Professional Development Review (PDR) is a critical part of this process, allowing staff to discuss with line managers current activities, workload, training needs and support requirements. These discussions, tailored towards individual need, also provide an opportunity to feedback on previous year's progress, and define targets and aspirations for the coming year. The Academic Portfolio Planning (APP) model that is currently being developed across the University, will assist in these discussions; consideration of the various research, teaching and administrative responsibilities of academic colleagues will allow line managers to better understand the activities of staff within and across departments. Well-structured PDR discussions are important to maximise their effectiveness. We will thus work with the University to provide additional guidelines for both PDR reviewers and reviewees. We are also committed to develop Professional Services colleagues and their career development.

As a research-intensive Russell Group Institution, *Research and Impact Leave* should be an important part of academic life and we have recently launched a process in the Faculty whereby academics can apply for such leave, allowing defined time to:

a. complete key research outputs deemed to be potentially world-leading
b. develop a substantive strategic research programme application
c. advance Knowledge Exchange within a given domain by consolidating partner relationships.

Early Career Researchers within the Faculty are a crucial part of building our talent pipeline and have been awarded over 40 independent externally-funded Fellowships over the last five years. Building on this substantive success, we will continue to encourage and support strong fellowship applications aligned with our strategic priorities.

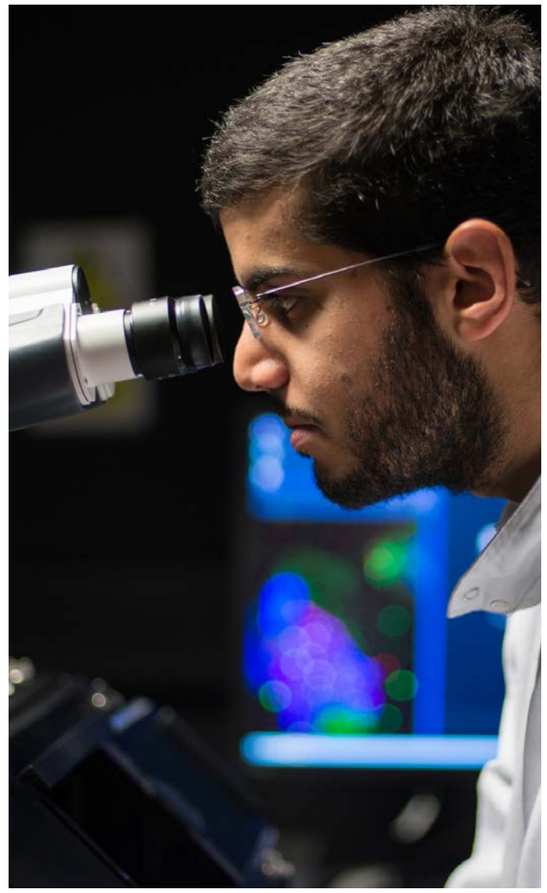
Support for postdoctoral researchers and research technicians

There are over 500 postdoctoral research scientists in our Faculty who, alongside PGR students, play a critical role in our research successes. We have a collective responsibility to mentor and support their career development. The Faculty actively engages and leads University initiatives aimed at supporting non-academic research staff and students.

The **Prosper** project, led by The Academy, supports postdoctoral researchers to unlock their potential by helping position them for success across multiple career pathways, recognising their diversity of talents and this benefit to the wider UK economy.

The **Researcher Development Concordat** forms the framework for the support, development and management of researchers' careers and sets out the expectations placed both on the University and on researchers, as we collectively shape a supportive and successful research environment. Our sustained commitment to the Concordat has been hailed as transformative and an exemplar across the HEI sector by Universities UK (UUK) in the way that it puts ECRs at the heart of the Concordat Governance.

The Faculty is committed to the University's signatory status of the **Technician Commitment** and recognition of the role of all technicians in supporting our research endeavours, through critical intellectual contributions to teaching and research, and the provision of core technical excellence. **Fair Attribution Guidelines for Technical and Specialist Support** have recently been developed to advise on how the contribution of technicians and facilities to a user's research can be attributed in an appropriate manner. In 2023, we also launched the, now nationally lauded, **Research Technical Professional (RTP) Career Pathway,** defining a clear strategy for the recruitment, recognition and retention of specialist researchers and technicians, making our University a much more attractive place to work for technical staff.



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Support for PGR delivery and development

The Faculty has a number of externally-funded **Doctoral Training Programmes (DTP)**, including BBSRC, MRC, NIHR, NERC, ESRC and Wellcome. We will continue to expand avenues to train and develop PhD student cohorts aligned to our strengths and prioritise our financial commitment to PhD studentship support based on: (i) contractual commitments to DTPs; (ii) prestigious funding applications aligned with Faculty research priority areas; (iii) applications where the potential contribution exceeds the cost of the requested studentship contribution. To increase PGR numbers, we will also implement creative and cost-effective approaches to funding, such as international partnership schemes, widening participation (WP) UG-PhD bursaries (potentially via a local civic partnership), industrial partnerships and re-investment of income from new PGT and CPD courses.

Recognising and celebrating success

It is important that we recognise and celebrate the research achievements of our staff and their teams. As a Faculty we will continue to nominate staff for awards (external and internal) in recognition of their activities. Working with Faculty and University communications teams, we will also proactively engage with social media and news outlets to highlight our successes and most impactful research.

Patient and public engagement and involvement

As a Faculty, we run a wealth of successful public engagement (PE) and patient and public involvement (PPI) initiatives and events. Through our two flagship PE programmes, *Meet the Scientists* and *Pint of Science*, we have engaged over 45,000 people within a four-year period. We additionally host school age students at all levels for open days and workshops. Our internally facing initiatives work with hundreds of members of staff and students each year, supporting people to take their first steps in PE and PPI, and to develop significant initiatives which enhance their research and its relevance to our society.

We have a robust framework in place with clearly defined goals for patient and public involvement in research, working with the associated Public Contributor Group to support PPI training and integration. For example, through our Civic Data Cooperative and CHIL we have gained international recognition for public participation in data and AI uses – informing national policies. The Faculty Academic Lead for PPI will remain a key advocate for PPI in health and social care research, ensuring its representation at a senior level.

We will continue to drive a culture in which PE and PPI are seen as strategically important for our research, embedding into core business activity, and partnering with our residents and patients to co-produce clinically-relevant research programmes. We will evaluate the impact of these endeavours to maximise our ambition of having a demonstrable impact on health across all aspects of life, addressing inequalities locally and globally.

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Sustainability

With a climate crisis upon us, it is more vital than ever that we contribute to climate research - understanding and addressing the impacts of climate change, undertaking our activities in a sustainable manner and supporting activities that align with the UN's Sustainable Development Goals (SDGs). As a Faculty, we remain committed to the University's Sustainability Strategy, whilst recognising the tensions of delivering global research and the requirement to travel.

Strategic Objectives

1. **Roll out the Laboratory Efficiency Assessment Framework (LEAF) across all areas of the Faculty.**
2. **Explore opportunities to collectively reduce the environmental impacts of our lab, computational and clinical-based research activities, such as energy-intensive computing, and clinical trials.**
3. **Reduce carbon emissions from Faculty-related travel.**
4. **Harness opportunities to develop new global partnerships aligned to the SDGs.**
5. **Leverage strategic partnerships and initiatives to develop research projects aligned with the SDGs.**
6. **Embed Education for Sustainable Development (ESD) within our taught programmes.**
7. **Explore opportunities to develop new programmes dedicated to addressing the effects of climate change and the green skills gap.**

Strategic priorities

Across the Faculty, we are driving implementation of **LEAF (Laboratory Assessment Efficiency Framework)**, an initiative to improve the sustainability and efficiency of laboratories and technical workspaces. It is our ambition that all eligible spaces in our Faculty will achieve gold by 2031.

The uptake in online meetings during and after the pandemic has shown us the benefit of this different way of working. We will continue to implement options for hybrid working and virtual meetings with external partners where feasible, including online and offline electronic options, which will necessitate continued investment in high-quality video conferencing facilities.

We will implement a carbon monitoring policy for business travel across the Faculty with a view to reducing carbon emissions from flights by 30% by 2031 against 2014/2015 levels, and encouraging 'climate conscious travel' in line with the University's goal of being net zero by 2035.

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Front cover image: A mouse embryonic kidney stained for multiple developmental markers, Dr Marie Held, Centre for Cell Imaging.