SAVING LIVES
BY SUPPORTING
INNOVATION

iiCON

Annual Report

Infection Innovation Consortium

2025

Contents

Director's foreword

As we mark iiCON's fifth anniversary, it's incredibly inspiring to reflect on all that has been achieved through pioneering collaboration since 2020.

Over the last five years we have been privileged to support a very diverse range of projects, programmes, and partnerships across industry, academia and the NHS – all of which have introduced or leveraged new approaches and technologies, helping to drive forward infection innovation and bring new products to market.

We remain committed to working at the very cutting-edge of infection R&D, supporting our academic and industry collaborators, particularly the SMEs working with us, to access facilities and expertise that are truly world-leading. Passionate about removing barriers to innovation, our activity is focused on providing our collaborators with the tools and networks needed to develop pioneering solutions for complex global health challenges.

Over the past 12 months, we've continued to focus on supporting and developing the networks, novel technology, and advanced facilities that will give our collaborators the edge and enable truly transformational activity.

Three pioneering facilities where new technology is being leveraged to super-charge infection R&D took strides forward this year: the Infection Innovation Technology Laboratory: iiTECH, the Liverpool Robotic Infection Laboratory and development of the new CELT facilities in the new Hemisphere 2 building.

The centre of activity for iiCON's international, multi-partner sensor portfolio, iiTECH combines cutting-edge sensor technology with advanced AI analysis and machine learning. Formally launched in late 2024, this facility is now fully operational with active projects across Africa, India, and Europe.

Work meanwhile continues at pace on the pioneering £20 million Liverpool Robotic Infection Laboratory. Delivered by Liverpool School of Tropical Medicine and iiCON, it will be one of the first High Containment, Category Level Three, robotic infection laboratories in the UK and will advance and automate human organoid research to accelerate new infection treatments. It is expected to generate £40million of investment in its first three years and will be a critical national biosecurity asset.

As we explore and harness the potential posed by automation and machine learning to revolutionise infection R&D, we are incredibly excited by the possibilities that this novel technology presents in tackling some of our most challenging health crises – including the ongoing scourge of antimicrobial resistance.

Hemisphere 2 will bring together academic facilities, with the University of Liverpool's CELT programme occupying several floors, with facilities for SMEs in the Liverpool City Region. The facility is in the late stage of planning, with funding in place from the LCRCA Investment Zone and ScionTec.

We are privileged to be working collaboratively with so many inspiring and innovative organisations which come together to share knowledge, insights, and experience in the fight to save and improve lives.

This annual report is testament to the power of co-innovation and I would like to take this opportunity to thank all our dedicated team, collaborators, and partners and offer congratulations for another successful year working together to advance pioneering infection R&D.

Best wishes,

Professor Janet Hemingway, CBE, FRS

iiCON founding director

Year in review: 2024/2025

The last year has seen iiCON continue to drive forward a number of impactful programmes and projects – helping to save and improve lives across the globe. Here we explore some of the highlights of the past 12 months.

In April 2025, we officially secured £20 million in funding for our new Liverpool Robotic Infection Laboratory located at Liverpool School of Tropical Medicine (LSTM). This world-leading facility will be one of the first in the UK to provide high containment, Category Three Level, robotic-enabled infection research laboratories. Supported by £10 million in funding from the Liverpool City Region Life Sciences Investment Zone, it will house state-of-the-art containment and research capabilities to tackle some of the world's most pressing infectious diseases.

The new facility will support world-leading industry innovation and streamline and expand activity to drive forward new treatments and products – opening out this highly specialised offering to a larger range of companies nationally and internationally.

iiCON also launched the Infection Innovation Technology Laboratory: iiTECH this year. This pioneering centre combines cutting-edge sensor technology with advanced AI analysis and machine learning. iiTECH is cultivating partnerships that are helping to develop the next generation of diagnostics and healthcare solutions by pushing the boundaries of sensor technology. Located at the Liverpool Life Science Accelerator building, iiTECH is the centre of activity for iiCON's international, multi-partner sensor portfolio and is now working on projects across Africa, Asia, and Europe.


Credit: Matt Thomas

> "The new facility will support world-leading industry innovation and streamline and expand activity to drive forward new treatments and products..."

Over the last 12 months iiCON has supported companies and researchers working with novel technologies to develop new ways of tackling infection challenges as part of a unique initiative to shape the UK's response to Infection Transmission. As part of the initiative, funded by UK Research and Innovation (UKRI), 11 innovative projects were awarded £1.5 million - propelling the development of new concepts and solutions that leverage disruptive technologies such as Artificial Intelligence (AI), digital and automation, advanced humanised infection models, and novel diagnostics to combat the spread of infection. Complementing the work of UKRI's flagship AMR and epidemic preparedness programmes, this activity has acted to pump-prime radical new approaches to tackling infections by engaging new communities and capabilities with the challenge.

Further afield, iiCON has recently launched the first human challenge trial for a new vaccine for pneumococcal disease as part of a global collaborative project. Over the last 12 months, iiCON has reached a key stage in its collaboration with UK SME ImmunoBiology Ltd (ImmBio) to bring forward a new vaccine, PnuBioVax, against the disease, a leading preventable cause of death in children. iiCON is leading the delivery of the £3.2 million Medical Research Council (MRC) funded trial for the disease, which has high rates of antibiotic resistance, and is a major cause of disease globally. The programme has now reached a key milestone as it launches the first trials of the vaccine in people in Malawi. The trial will enrol 400 people and will be the biggest human challenge trial conducted in the country to date.


Credit: Matt Thomas

> "... we were thrilled to have been awarded the 2025 BioNow Award for Partnership and Collaboration. The BioNow Awards celebrate the best in life sciences, recognising individuals and organisations for their innovation and impact."

Over the last year, we have continued to work closely with collaborators across the North West of England to build on regional capability to drive forward world-leading innovation.

Working alongside Lyva Labs, an organisation which provides support for academic, clinical and business entrepreneurs with innovative ideas and technologies within the Liverpool City Region, we were privileged to co-host a diverse group of female founders and entrepreneurs for a Women in Innovation Pitch Day. The event, held as part of Liverpool City Region's Innovation Investment Fortnight, welcomed women leading businesses in high growth sectors including life sciences, artificial intelligence (AI), and clean tech and offered them the opportunity to showcase their concepts to leading investors and key regional stakeholders.

As an organisation with partnership and co-innovation at its core, we were thrilled to have been awarded the 2025 BioNow Award for Partnership and Collaboration. The BioNow Awards celebrate the best in life sciences, recognising individuals and organisations for their innovation and impact. The Partnership and Collaboration Award specifically honours achievements in commercial outcomes through collaboration across the life sciences sector. Our collaboration, spanning industry, academia, and the NHS, stood out for its significant impact in advancing infection control.

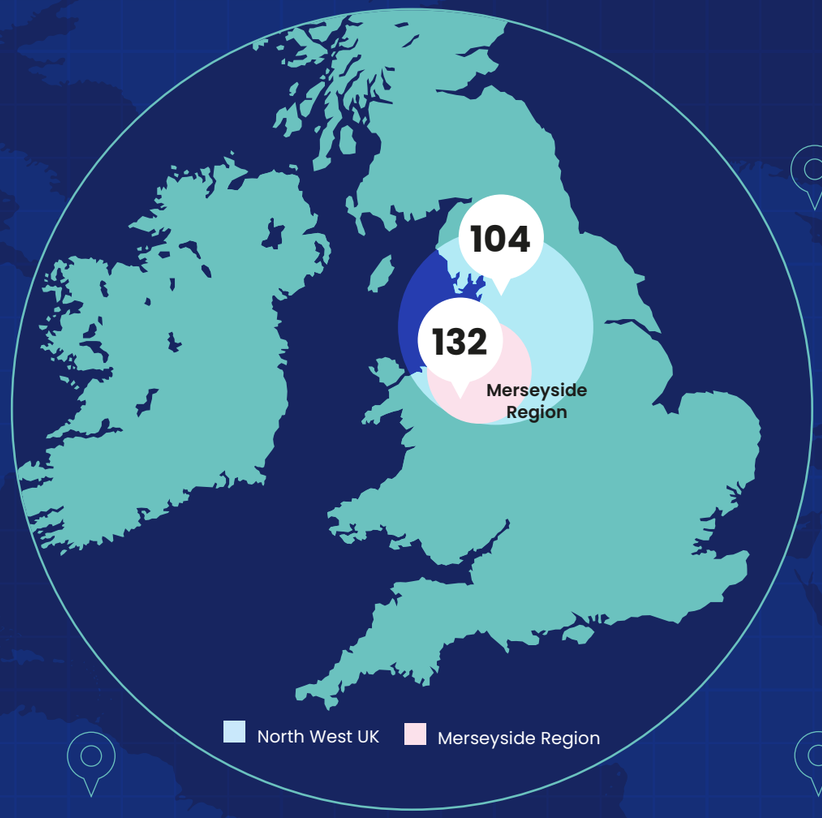
iiCON network

iiCON pays close attention to the infection research and development (R&D) network trends globally. Monitoring the key players, tracking who is moving into the space, and where organisations are based provides vital insight into upcoming opportunities.

Overall, iiCON has been successful in establishing and strengthening links with all organisation types playing an active role in infection R&D.

At a glance

iiCON has access to a diverse and expansive global network ranging from environmental management consultants in Namibia to multi-national pharmaceutical and agrochemical companies, making it well positioned to make a substantial worldwide impact in the infection space.



Global connections

On a global scale, iiCON is linked with **301** organisations across Europe (not including the UK), Asia, Africa and the Americas. Notable companies include BASF, Against Malaria Foundation, Gates Foundation, Sanofi, and Pfizer.

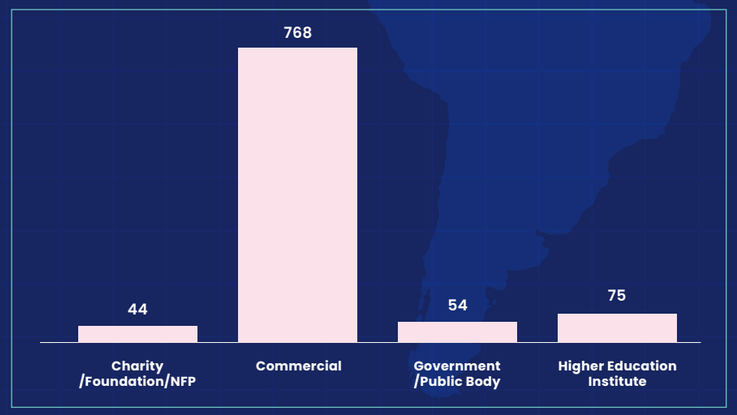
In the Merseyside region

Of the **941** organisations iiCON is linked with, **132** have a presence within the Merseyside region including international organisations such as Bristol Myers Squibb, AstraZeneca, and Nippon Sheet Glass.

In North West UK

The consortium is linked with a further **104** organisations within North-West UK, including stakeholders located at Sci-Tech Daresbury and Alderley Park such as the Medicines Discovery Catapult and the Science and Technology Facilities Council.

iiCON organisation type



941
organisations in iiCON's global network

Size of organisations engaged with:

34
MICRO

553
SME

354
LARGE

941
IN TOTAL

Leverage and scale of programme

The iiCON consortium continues to move forward with momentum, channelling investment to bring forward new programmes of activity, deepen capability, and deliver pioneering facilities – building on the region's world-leading strengths in infection R&D.

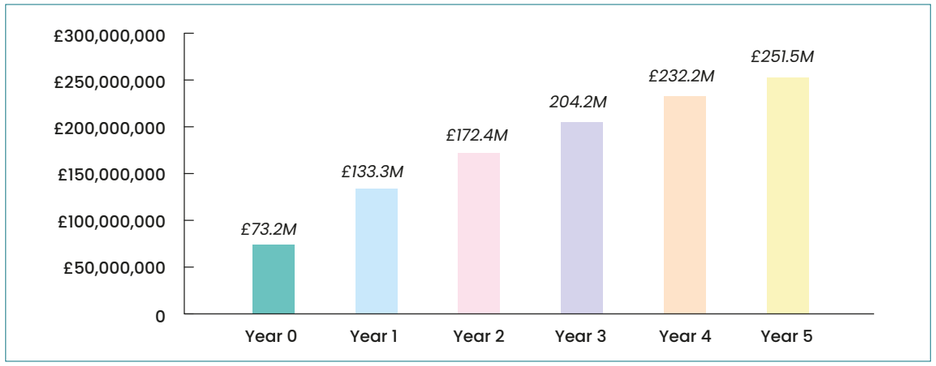
Funding income by year

£18.6 million
Core funding secured through UKRI's flagship Strength in Places Fund (SIPF) with a further £1.7M through the UKRI RED fund in 2022.

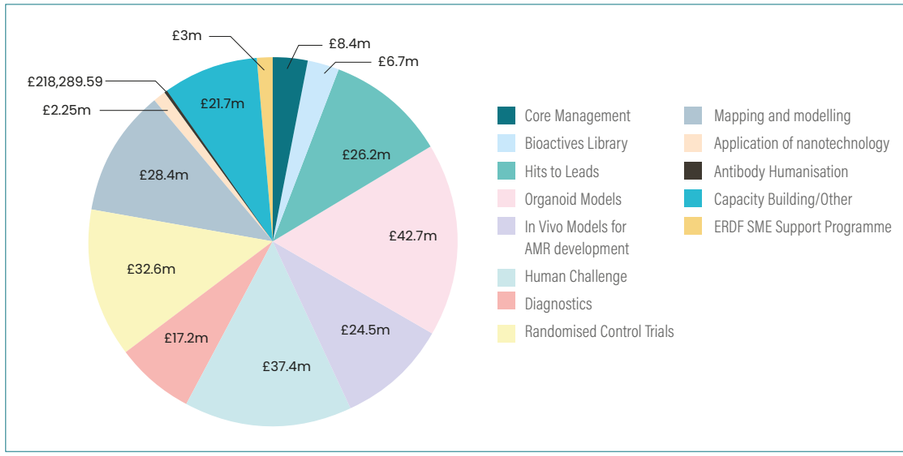
£251.5 million
Total value of iiCON portfolio

288
Total number of funding awards

Funding income by year



Funding by platform



Future proofing

Future-proofing the infection R&D landscape

iiCON continues to play a key role in developing the North West's world-leading infection R&D capabilities. The Capacity Development Centre at Pembroke House is contributing to the development of the local, national and international workforce required for the future infection R & D translational research.

Initiatives to advance the sector's skills and capabilities include working alongside regional collaborators to deliver SME focused Accelerator programmes, pitching events, and masterclasses. These are bolstering regional networks and helping innovative SMEs and start-ups access the expertise, facilities, and finance needed to progress their activity and strengthen regional infection R&D activity.

The consortium has supported and hosted a diverse array of events throughout the year. This activity includes inspiring the next generation through school visits and workshops; promoting the sector to our global network; connecting potential collaborators; and supporting synergistic partnerships to advance infection innovation.

Capital funding

iiCON has secured capital investment of >£37M over the past five years. Key capital projects under development include the ground-breaking £20 million Liverpool Robotic Infection Research Laboratory. The facility, due to complete in 2027, will be one of the UK's first high containment Category Three infection research laboratories.

iiCON secured £10 million funding from the Liverpool City Region Life Sciences Investment Zone to develop the new facility, which was also supported by funding from UKRI's Expanding Excellence in England (E3) fund and the Wolfson Foundation.

Another recently completed key project is the in-patient human challenge facility (HCF). A £4.7 million grant from Research England and a £2 million grant from The Pandemic Institute has been secured to support this significant development. LSTM's HCF will be the largest academic in-patient human challenge isolation facility in the UK, working in partnership with the Liverpool University Hospitals Foundation Trust and The University of Liverpool to increase national capacity for human infection research. iiCON is directly funding expansion of the unit's activity to include a challenge model for multi-drug-resistant tuberculosis, alongside support for commercialisation of the unit's activity.

Investment and Job Creation

409
409 CONTRACTS SIGNED WITH iiCON TO DATE

195
195 CONTRACTS WITH COMMERCIAL OR INDUSTRIAL PARTNERS

315
282 JOBS CREATED WITH 33 SAFEGUARDED

770
770 DIRECT AND INDIRECT JOBS CREATED TO DATE

Innovation impact

iiCON is driving innovation – supporting discovery and commercial development at all stages of the innovation journey and pivoting platforms to respond to public health needs nationally and globally.

Credit: Matt Thomas

Impact in numbers:

553

553 SMEs working with iiCON to drive the discovery and development of new products and treatments

£1BILLION+

£1,060,371,904 spent on Infection R&D activity within the North West alone since launching

36

36 new products have come through the iiCON programme to reach patients and consumers

117

117 engagement activities delivered over the year

195

195 contracts with commercial or industrial partners have been signed

Celebrating five years of pioneering innovation through partnership

DR JONATHAN HAGUE,
CHAIR, LIVERPOOL CITY REGION INNOVATION BOARD

As we mark five years since the launch of iiCON with this report, it's incredible to reflect on the consortium's achievements.

As Chair of the Liverpool City Region Innovation Board, it's been inspiring to see the consortium's impact. Situated at the heart of a rapidly developing North West infection 'Super Cluster', iiCON is a core component of the Liverpool City Region's Health and Life Sciences Innovation Zone and has been a dynamic driving force in the region's innovation ambitions.

Fuelled by a powerful collaborative commitment to save and improve lives, often in some of our most overlooked and undervalued communities, the strategic partnerships that iiCON has convened over the past five years have brought life to truly pioneering innovation and driven investment at an impressive scale.

> ... the strategic partnerships that iiCON has convened over the past five years have brought life to truly pioneering innovation and driven investment at an impressive scale.

The consortium's model, founded on collaborative innovation, leverages the synergy of strategic partnership - closing gaps, sharing knowledge, driving efficiency, overcoming barriers and bringing life to visionary new concepts and approaches.

This approach aligns closely to the Liverpool City Region's commitment to realising our North Star ambition to invest 5 per cent of our GVA in R&D by 2030. The LCR's Asset-Based Cluster Development (ABCD) approach focuses on leveraging the region's existing strengths and resources to foster economic growth and innovation.

iiCON is a poster child for this approach. Its model of pioneering co-innovation has created an outstanding replicable template to scale other innovation assets across the Liverpool City Region - helping maximise our potential to be one of the UK's leading lights in place-based innovation.

The consortium's collaborative activity has already generated an additional £223 million of investment for infection R&D in the region. It is driving the regional R&D investment target from its base of £2 billion per annum to £3 billion by 2030.

iiCON is deepening and developing the region's world-leading infection R&D capabilities. Since launching iiCON has created 770 direct and indirect North West jobs. A vibrant schools engagement program is supporting the next generation of innovators - providing valuable real-world careers insight through workshops, visits and talks. While the Capacity Development Centre at Pembroke House is developing the workforce required for the future of public health and translational research.

Working with a global network of over 1,000 companies – it is driving forward pioneering innovation, helping companies overcome market entry barriers by accessing world-leading infectious disease research facilities and expertise from its partners. Powered by strategic partnerships, it has supported 36 products to market, with over five billion units of medical devices and products, vaccines and therapeutics reaching global populations.

Crucially, iiCON has not lost momentum. The consortium continues to innovate, grow and evolve at pace; welcoming new partners, launching pioneering projects, and securing investment to take forward ambitious new developments, such as the £20 million high containment robotic AI labs it is developing with Liverpool School of Tropical Medicine.

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In an increasingly fragmented and polarised global landscape, working in partnership to share knowledge and resources is ever more critical. As we reflect on five years of outstanding activity and look forward to many more, it's clear iiCON's model is opening out new horizons and delivering significant impact through strategic partnerships which mean we truly are more than the sum of our parts.

Pioneering new therapeutics to combat AMR

DR PETE JACKSON,
CEO, INFEX THERAPEUTICS

AMR is expected to cause over 10 million deaths by 2050, comparable to cancer as a leading cause of death. This global impact, coupled with the poor state of research and development investment into new antimicrobials, has led the WHO to designate AMR as a key global health threat.

Based at Alderley Park in Cheshire, Infex Therapeutics, a partner and founding member of iiCON, is developing innovative approaches to drug development to treat AMR. A clinical-stage SME, Infex acquires, develops and licenses innovative drugs to treat pandemic infections and unmet patient needs. It is developing a broad portfolio of new therapies to meet the rising burden of critical priority infectious diseases - bringing a new portfolio of drugs to treat life-threatening infections to clinical trials.

The development of new antibiotics and infectious disease treatments has long been hindered by insufficient investment, long product development timelines, and the complex regulatory environment. Like many SMEs working to combat AMR, Infex Therapeutics, has faced challenges in securing investment, particularly during a difficult funding climate for the life sciences sector.

However, iiCON's model of collaborative, non-dilutive funding, alongside the expertise and resources provided by its partners, has provided Infex with the crucial resources needed to accelerate its R&D programmes and progress toward life-saving therapies.

Infex's successes underscore a fundamental need for continued non-dilutive funding for UK SMEs focused on AMR and infectious diseases. Such funding mechanisms are essential for bridging the gap between discovery and clinical development, ensuring that ground-breaking research does not stall due to financial constraints.

Currently, there is a significant gap in clinical-stage non-dilutive funding mechanisms in the UK when compared to other regions like the EU and US. The lack of funding for early-stage clinical trials in the UK has made it difficult for many promising therapies to advance, putting the UK's world-class science base at risk of stagnation. Infex's experience highlights the importance of continued, targeted funding to sustain innovation and ensure the development of life-saving treatments.

To progress its programs into late-stage clinical trials over the next three years, Infex will need to raise in excess of £20m in new funding. This will unlock over £100m of identified co-development partner funding from Japan, India, Europe and the USA. This international leverage will make Infex's world-class innovative treatments available first to patients in North West England, and help build substantial long-term value for the UK. The collaborative support of iiCON and its partners will be essential to this ongoing success.

The iiCON and Infex Therapeutics' collaboration exemplifies the power of integrated support, expertise, and funding in tackling the global challenge of infectious diseases and AMR. Infex has also benefited from its membership of iiCON through access to high-impact funding, access to clinical infrastructure, and iiCON collaborative approach.

As part of iiCON, Infex has been able to run its clinical trials in Liverpool with fellow iiCON members Liverpool University Hospital and the Liverpool School of Tropical Medicine, and retaining additional project spend in the UK with other iiCON partner organisations. The partnership now has the opportunity to contribute to the UK's leadership in global health innovation by taking Infex's new drug programs into late-stage clinical trials, leveraging over £100m in international partner funding.

Most important of all, patients in the North West, and in the rest of the UK, have been the first in the world to receive RESP-X in Phase 2 clinical trials to treat their serious chronic lung disease. By working with iiCON and with new grant support to unlock significant international partner finance, Infex has the opportunity to scale up this success across its pipeline, to bring forward new cures for life-threatening infections.

Key outcomes and achievements:

1. Infex's funded programmes through iiCON

iiCON's grants and collaborative support have played an essential role in helping Infex move forward with its promising treatments. To date, iiCON has contributed £4.5m in non-dilutive funding grants, which accounts for approximately 20% of Infex's total programme funding. This non-dilutive funding has enabled Infex to advance its work on novel antimicrobial therapies without surrendering equity or control at an early stage. Infex's funding has also benefitted the wider consortium, as trials have been run at Liverpool University NHS Foundation Trust, benefitting patients in the region.

2. Critical support for AMR SMEs

The funding landscape for SMEs focused on AMR and infectious diseases has been particularly challenging, with global investments in antibiotic research continuing to decline. iiCON has played a pivotal role, not only by providing high-impact support to Infex, but also by offering invaluable access to clinical trial expertise, infrastructure, and strategic partnerships. By bridging the skills and funding gap, iiCON has supported Infex's ongoing work, enabling us to continue developing treatments for resistant infections that larger pharmaceutical companies often overlook.

3. RESP-X – clinical readiness and Phase 1 trials

One of Infex's major programmes, RESP-X, focused on developing treatments for respiratory infections, was supported by iiCON in reaching a significant clinical milestone. This included access to key resources such as the University of Liverpool and Liverpool Royal Hospital Clinical Research Facility, expert clinical trial design guidance, and essential operational support. With iiCON backing, RESP-X reached a major milestone, entering Phase 1 clinical trials in healthy volunteers in Liverpool. The programme is now completing Phase 2a trials with non-cystic fibrosis bronchiectasis (NCFB) patients, marking a critical step toward addressing the urgent need for new therapies in AMR and respiratory infections.

4. MET-X – pre-clinical development

Another of Infex's promising programmes, MET-X, which focuses on treating multidrug-resistant bacterial infections, also benefited from iiCON's non-dilutive funding and its network of partners. iiCON's support helped Infex reach a crucial stage in the MET-X programme – Phase 1 clinical trials.

Infex has signed a MOU with ADVANCE-ID, a clinical trials network in Asia to conduct clinical trials to explore the use of MET-X alongside existing licensed therapies. Infex has also signed an exclusive license agreement for MET-X within the Indian market with Venus Remedies Ltd, which will conduct a Phase I trial for MET-X in combination with meropenem.

MET-X is a vital tool to combat broad-spectrum drug-resistant Metallo-beta-lactamase infections, which can cause serious or life-threatening illnesses in patients.

5. COV-X – from hits-to-leads to pre-clinical development

The COV-X programme, focused on tackling COVID-19 and broad spectrum coronavirus infections, also received critical backing from iiCON. The programme progressed from hits-to-leads (the identification of potential drug candidates) with the aid of iiCON's expertise, before receiving further funding from Innovate UK for candidate nomination. Additionally, the programme received grant funding from US Federal Government Agency, the National Institute of Allergy and Infectious Diseases (NIAID), for pre-clinical development, ensuring continued progress of the asset to tackle pandemic infections.

Harnessing the power of technology to drive forward infection innovation

DR MIKE EGAN,
SENIOR BUSINESS DEVELOPMENT MANAGER, iiCON

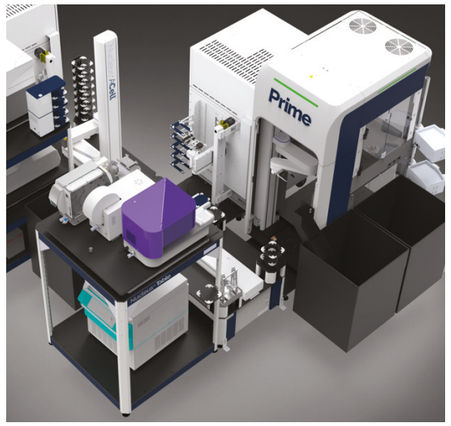
One of the UK's first robotic High Containment Level 3 laboratories, purpose-built to support cutting-edge research into infectious diseases is being delivered by iiCON and LSTM in Liverpool. Dr Mike Egan, Senior Business Development Manager at iiCON, is spearheading the delivery of the new £20 million facility.

A growing threat

With threats including future pandemics, antimicrobial resistance (AMR), and bioterrorism racing up the global risk register, the need to invest in innovation to develop new solutions has never been greater.

In a world increasingly vulnerable to biological threats, having the right infrastructure in place to safely research dangerous pathogens and proactively develop new treatments and diagnostics is critical.

As these risks rise – innovation is responding. The Liverpool City Region Combined Authority has announced funding for a bespoke £20 million facility delivered by iiCON and Liverpool School of Tropical Medicine (LSTM) located at LSTM.



Leveraging the power of technology

Designed to harness advanced robotics, AI-driven data analytics, and high-throughput screening systems in a secure, high-containment environment, the High Containment Level 3 labs are set to open in 2027.

> In a world increasingly vulnerable to biological threats, having the right infrastructure in place to safely research dangerous pathogens and proactively develop new treatments and diagnostics is critical.

The labs, which are being delivered by a world-leading team, will be among the first in the UK to integrate robotics and AI-driven workflows into a lab capable of handling schedule five pathogens. Equipped with automated tools for liquid handling, incubation, and collaborative robotics, the facility will enable high-throughput organoid generation and precise manipulation of sensitive biological samples.

This facility will accelerate the preclinical development of new therapeutics, vaccines, and diagnostics using organoid technology; reinforcing the UK's global leadership in health innovation.

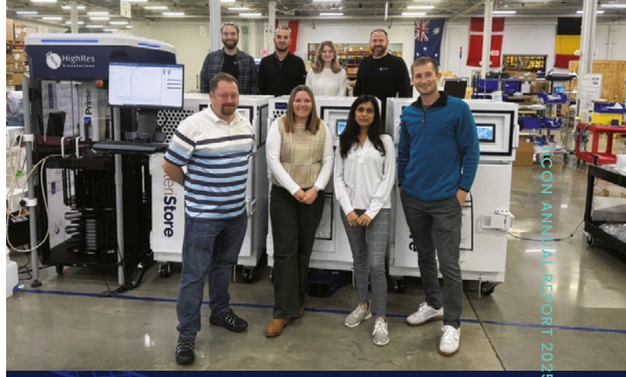
This will facilitate rapid and accurate testing of new anti-infectives, ensuring the safe and effective development of treatments for some of the world's most dangerous pathogens.

Organoid technology, miniature, lab-grown tissue models that mimic human organ functions, holds significant promise for reducing vaccine development timelines by providing more predictive preclinical models for human responses.

> By automating complex processes and analysing large-scale datasets, the integration of robotics and AI can transform every stage of the R&D pipeline...

There are significant benefits to be gained from leveraging AI-based computational modelling, human organ model-based lab testing, and real-world human data, to get safer treatments to patients faster and more reliably, while also reducing R&D costs and drug prices.

By automating complex processes and analysing large-scale datasets, the integration of robotics and AI can transform every stage of the R&D pipeline, from compound screening to preclinical validation. This fusion of technologies will not only accelerate research but also provide the infrastructure necessary for the safe deployment of AI technologies in health science.



Advancing regional capability

This investment highlights the region's commitment to advancing health science and ensuring the Liverpool City Region remains at the forefront of global health innovation, driving both regional prosperity and impact.

Recent global health crises, most notably COVID-19, have offered many lessons to the life science sector, but critically they have showcased the power of collaboration and partnership to supercharge ingenuity and innovation.

We have drawn on iiCON's commitment to collaborative partnership-led innovation as we design and develop the new facility – leveraging the expertise and capability of iiCON partners across academia, industry, and the NHS to bring together world-leading multi-sector expertise.

Crucially, we are taking a co-development approach to AI/ML tool creation — working closely with industry and academic collaborators to ensure these tools are designed to address real-world challenges in anti-infective development.

This includes the use of high-throughput automated platforms to process thousands of compounds rapidly, with AI algorithms then deployed to analyse biological responses, identify promising leads, and predict efficacy and resistance profiles.

Through active collaboration with organisations operating Containment Level 2 robotic laboratories and commercial AI platforms, we are also building a robust knowledge base. This will underpin the successful deployment of AI in the new facility

By leveraging shared global knowledge, we are creating a blueprint for best practice. This will support broader implementation and uptake of these advanced technologies to protect against growing bio threats and drive forward new solutions to the most pressing global health challenges.

iiTECH: a pioneering technology laboratory

PROFESSOR PATRYK KOT,
HEAD OF iiTECH AND SENIOR BUSINESS DEVELOPMENT MANAGER, iiCON

iiCON launched the Infection Innovation Technology Laboratory: iiTECH this year. This pioneering centre combines cutting-edge sensor technology with advanced AI analysis. Located at the Liverpool Life Science Accelerator building, iiTECH is the centre of activity for iiCON's international, multi-partner sensor portfolio and is now working on projects across Africa, Asia, and Europe.

Microwave sensors are helping to protect communities in Africa and Asia by monitoring insecticide use

The iiTECH team is further developing an innovative portable handheld microwave sensor created in partnership with Liverpool John Moores University (LJMU), with projects developing and expanding across India, Nepal, and Africa.

As part of a collaboration with LJMU, Care-India, EDCD, and DPHO-Nepal funded by the Gates Foundation, this ground-breaking device is being developed to improve the coverage and efficacy of insecticide sprayed within homes in Southeast Asia, which is used to protect communities from sandflies which cause deadly 'Black Fever' or Visceral Leishmaniasis.

The sensor is designed to accurately monitor the concentration of alpha-cypermethrin on various wall surfaces. It has undergone rigorous validation for implementation in both India and Nepal – bringing forward a new device which has the potential to save lives in some of the region's most vulnerable communities.

This ground-breaking technology is now being further developed for use in Africa as part of a Gates Foundation funded collaboration between iiTECH and LJMU. Working in collaboration with locally-based partners including IFAKARA Health Institute and AgaMal, the project aims to broaden the scope of the technology to monitor the optimum application of various insecticides used to protect communities in homes across Ghana and Tanzania.

Lymphatic Filariasis sensor: enabling early detection of a life-changing hidden infection

The team is also developing a transdermal sensor to detect Lymphatic Filariasis. Over 657 million people in 39 countries worldwide remain threatened by this condition and require preventive chemotherapy to stop the spread of this parasitic infection.

> Over 657 million people in 39 countries worldwide remain threatened by this condition...

Lymphatic filariasis impairs the lymphatic system and can lead to the abnormal enlargement of body parts, causing pain, severe disability and social stigma. The majority of infections are asymptomatic, showing no external signs of infection while contributing to the transmission of the parasite. These asymptomatic infections still cause damage to the lymphatic system and the kidneys and alter the body's immune system, so early diagnosis is critical to prevent transmission.

An innovative transdermal sensor for the detection of lymphatic filariasis is being developed as part of a collaborative project between iiTECH, LJMU , and AIIMS Patna India, and is being funded by the Gates Foundation.

> Utilising machine learning, the iiCON team has built on the initial prototype to develop a wearable sensor device...

Utilising machine learning, the iiTECH team has built on the initial prototype to develop a wearable sensor device which is cable-free and uses a Bluetooth transmitter that allows remote data acquisition – creating a more comfortable user experience and providing testing teams with more flexibility. The original prototype design has been trialled on 96 participants within a local community in India in collaboration with AIIMS Patna. The team will focus on the miniaturisation of the wearable prototype and the implementation of larger-scale clinical studies to further advance and refine the technology.

Supporting military partners in the field

iiTECH is collaborating with LJMU on an innovative project for the United States Armed Forces Research Institute of Medical Sciences (AFRIMS) in Thailand and funded by Deployed War-Fighter Protection (DWFP) Program. The team is in the process of developing and testing an innovative microwave sensor that is able to scan material and assess the concentration of insecticides impregnated in military uniforms to protect soldiers from insects, ticks, and mites.

Looking ahead

The iiTECH team specialises in developing cutting-edge sensor solutions for healthcare applications; innovative wearable devices; AI-driven predictive assessments; human-centred clinical testing; comprehensive quality assurance through non-destructive testing tools; and long-term monitoring systems for continuous patient care.

The facility is designed to support research and commercial partners to accelerate their innovation.

The iiTECH team is keen to explore collaborations to progress infection detection, monitoring, and prevention.

To find out more, email Professor Patryk Kot: Patryk.Kot@lstmed.ac.uk

Developing a new targeted vaccine for pneumococcal disease in Malawi

PROFESSOR STEPHEN GORDON,
DIRECTOR OF EXPERIMENTAL MEDICINE, iiCON

Earlier this year, the Infection Innovation Consortium: iiCON and partners launched the first human challenge trial for a new vaccine for pneumococcal disease – marking a key milestone in a collaborative global project that is offering new hope in the fight against the disease. Professor Stephen Gordon, Director of Experimental Medicine at iiCON, is leading the team which has manufactured the vaccine and is now conducting the trial.

Pneumococcal disease is a leading preventable cause of death in children globally, responsible for hundreds of thousands of deaths annually. Like many infectious diseases, it disproportionately affects children in low-income countries, particularly in South Asia and sub-Saharan Africa.

Some of the world's most impoverished countries are beset by strains of the disease which are not impacted by current vaccines. This is exacerbated by the more generalised global problem of growing antimicrobial resistance to vaccines.

Malawi, in south east Africa, faces a particular threat from vaccine-resistant pneumococcal disease, Serotype 3 pneumococcus (SPN3). This strain has increased in prevalence in both carriage and disease, with high rates of antimicrobial resistance. This is a significant public health concern, particularly among children and individuals with HIV. The dangers posed by SPN3 are not isolated to the Malawian population, as this strain is also the most common cause of severe pneumonia in children in Europe.

Credit: MLW

A groundbreaking response

In response to this growing problem, iiCON and partners are together leading the development of a novel vaccine that may prevent SPN3 disease. We are using a novel method in the first ever controlled human infection model (CHIM) to test a vaccine for efficacy against pneumococcus in Africa.

> Some of the world's most impoverished countries are beset by strains of the disease which are not impacted by current vaccines.

This ground-breaking human challenge trial will test a new vaccine model, PnuBioVax, developed by UK SME ImmunoBiology Ltd (ImmBio), that targets proteins common across all pneumococcus serotypes. The trial is part of a collaboration between iiCON and ImmBio, funded with a £3.2 million Medical Research Council (MRC) grant, to bring forward PnuBioVax.

The novel platform technology that ImmBio has developed generates a self-adjuvanting multi-component vaccine, needed to elicit a broad response, including SPN3 and other types of pneumococcus.

The Phase 2 trial currently underway is designed to generate data supporting prior evidence that the vaccine response is strain-independent, able to protect against both current and new variants, cost-effectively. Positive data from the trial will support the progression of other bacterial vaccines currently at pre-clinical stages, where strain variation is also a key challenge.

The journey so far

ImmBio developed PnuBioVax and successfully conducted Phase I safety and immunogenicity studies. iiCON then worked with ImmBio to lead on the next phase of development of the vaccine and bring it to Phase 2 clinical trials.

To do this, iiCON helped secure MRC funding for the next phase of development. The consortium then collaborated with ImmBio to identify a new European manufacturer, Recipharm Advanced Bio, to develop the vaccine to the stringent Good Manufacturing Practice (GMP) standards required for clinical trials. The iiCON team then prepared the vaccine for clinical trials, securing UK permissions and Malawi regulatory approval.

The Malawi Liverpool Wellcome Programme (MLW) is now carrying out the clinical trial. MLW is iiCON lead partner Liverpool School of Tropical Medicine's largest and longest established partnership in Africa. This trial will build on the MARVELS (Malawi Accelerated Research in Vaccines by Experimental and Laboratory Systems) programme at MLW. MARVELS is a programme to develop CHIM studies in pneumococcus, salmonella and TB, of which the leading project is the now well-established pneumococcal CHIM.

The programme will trial ImmBio's protein-based pneumococcal vaccine on young healthy adults in Malawi. The sample group will be vaccinated and then inoculated in their noses to understand if they are carrying a strain of the disease or not. This will be compared to the existing PCV13 vaccine and a placebo.

The trial will enrol over 400 people – it is the largest human challenge trial ever conducted in the country and will have direct local relevance by testing the dominant Malawi SPN3 strain in the human challenge.

This represents the first time that researchers have taken the local Malawi relevant pathogen, the single most important circulating strain, and conducted a human challenge trial with this strain. This approach will give the research team a bespoke result that is relevant to the country's community and responds to their needs in a clinical trial being delivered by an entirely local investigative team.

> The trial will enrol over 400 people – it is the largest human challenge trial ever conducted in the country and will have direct local relevance by testing the dominant Malawi SPN3 strain in the human challenge.

The challenge agent for clinical trials is most commonly outsourced, often out of country. In this project, the challenge agent has been made in Malawi while the vaccine has been manufactured by partners at Recipharm Advanced Bio. There are still no vaccines manufactured in Malawi. Interestingly, the vaccine manufacture process in this study is similar to that used to make the challenge inoculum. The MARVELS team has therefore closely replicated much of the process that would be used to develop a complete vaccine. This gives hope for increased in-country manufacturing of the vaccine following the successful completion of clinical trials.

Looking ahead

Following successful trials, the vaccine will be targeted at people at risk of disease and those with a high risk of transmitting infection to others to prevent the transmission of SPN3 in communities in Malawi. The highest transmitting populations in target areas are immunocompromised children and adults, particularly those with HIV. These communities are also exposed to high levels of antibiotics and so prevention of the spread of the SPN3 strain in these people will reduce the emergence of antimicrobial resistance.

Our hope is that following successful trials, the vaccine will be taken forward by an industry partner which could develop and deliver a low-cost vaccine at scale – with potential for manufacturing and distribution within Africa. iiCON and ImmBio are now working to identify commercial partners to support the next stage of development.

Credit: MLW

Exploring new frontiers to revolutionise the drug discovery pathway

DR ELIZABETH CRAWFORD,
SENIOR BUSINESS DEVELOPMENT MANAGER, iiCON

As one of the UK's first high-containment automated infection laboratories, The Liverpool Robotic Infection Research Laboratory represents an opportunity to drive leading-edge collaborative commercial and academic research.

It will create a step-change in how we develop automated reproducible organoid models and leverage these to deliver advances in pioneering infection R&D.

This commercially facing facility will provide industry (including start-ups and SMEs) with access to leading-edge tools and research expertise to shape the next generation of vaccines and therapeutics for our most challenging infectious diseases.

Organoid models hold tremendous potential to reframe how we approach drug and vaccine development and transform and improve on current models. By automating this R&D process and linking it to AI and modelling, we will accelerate and scale throughput, open up novel therapeutic pathways and creating the ability to pivot rapidly to address new threats.

This pioneering approach also holds the potential to delink animal testing from the clinical approval pathway. Although this is likely some way in the future, regulators are increasingly expressing positive interest in the possibility that organoid models could replace animal models, providing more accurate representation of patient impact – particularly for infectious diseases, and ultimately taking us closer to bespoke personalised treatments.

Working with global collaborators to shape our industry engagement model

To develop a model that facilitates industry and research requirements and enables optimum commercial engagement with this new facility, iiCON is supporting a new international collaboration that will shape the model for future industry engagement with the laboratory, when it opens fully in 2027.

> iiCON is supporting a new international collaboration that will shape the model for future industry engagement with the laboratory...

As part of this new project, iiDiagnostics, a company formed by iiCON and the Liverpool School of Tropical Medicine, has secured funding from Innovate UK and National Research Council Canada for a £750K collaborative project with Canadian biotech, Eyam Health.

Part of this collaboration will explore how best to enable commercial collaborators, particularly smaller SMEs and start-ups, to access this new facility and the world-leading expertise of the team at LSTM. The funding will also support activity to bring forward novel vaccine technology developed by Eyam Health using advanced automated organoid models.

Under the agreement with Eyam Health and iiDiagnostics, a sophisticated tonsillar organoid model will be designed and developed by a project team led by LSTM's Professor Giancarlo Biagini and Dr Shaun Pennington. This model will be used to test Eyam Health's novel SARS COV2 vaccine candidate, helping to accelerate the speed and throughput of the programme into clinical trials. A separate study will further validate its Gemini saDNA platform.

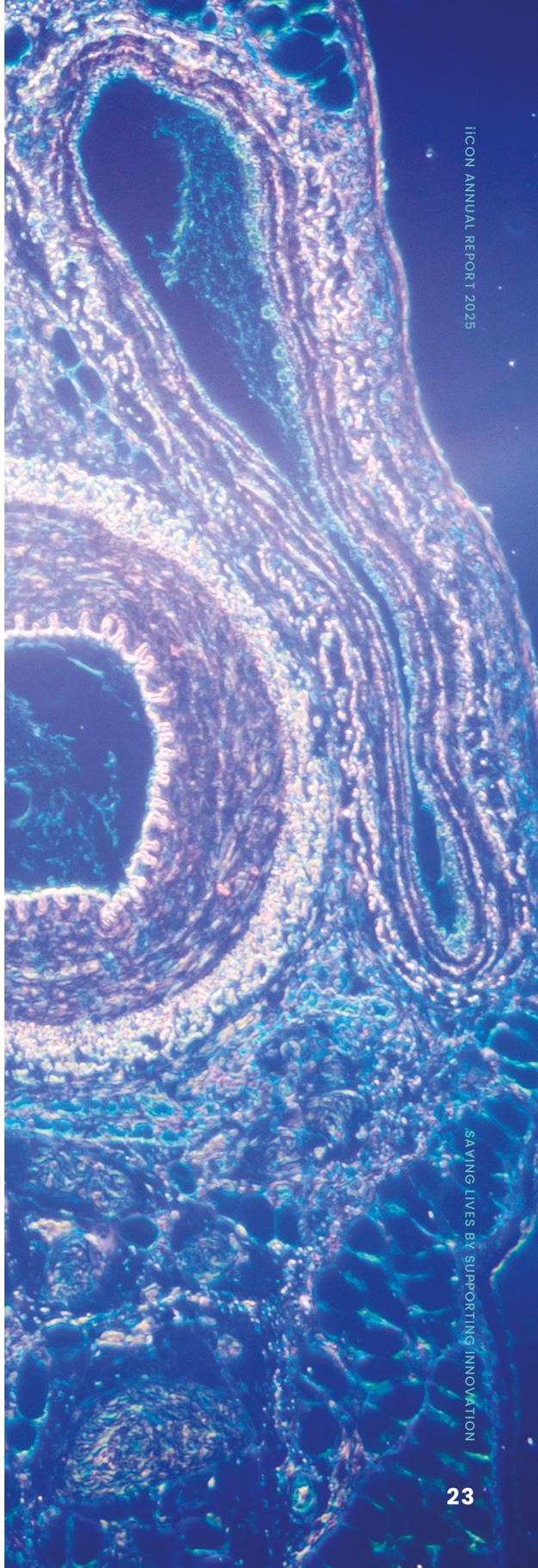
> This is an important step in realising the huge potential this facility holds to revolutionise the R&D journey for companies working at the cutting edge of drug discovery...

Eyam Health's innovative vaccine was designed by the company's AI and machine learning design platform Jennerator. It uses self-amplifying DNA, an emerging vaccine technology which can be used to drive long lasting immune responses at low-doses – potentially allowing vaccination against multiple diseases in a single dose. The collaboration will help to progress the vaccine to clinical trials and validate Eyam Health's AI design system.

As part of the project funded by Innovate UK, the collaborators will also work to explore how industry can most optimally engage with the facilities within the laboratory – working with Eyam Health and a diverse range of industry stakeholders to assess industry need.

This will support iiCON in building a commercially viable service offering around organoid modelling for biotech and pharmaceutical companies developing novel drugs. We are looking forward to working with our partners to shape a truly accessible and impactful model of engagement that will support genuinely pioneering R&D using leading-edge technology and removing barriers to innovation.

This is an important step in realising the huge potential this facility holds to revolutionise the R&D journey for companies working at the cutting edge of drug discovery and support UK and Canadian pandemic preparedness, and we are excited to be beginning this important journey with our international partners.



Shaping the UK's response to infection transmission

UK Research and Innovation

As part of a unique initiative to stimulate innovation funded by UK Research and Innovation (UKRI) and delivered by iiCON, companies and research groups with novel solutions to tackle infection transmission were offered the opportunity to bid for funding to progress projects and networks to shape the direction of the UK's infection response.

After successful 'sandpit' workshop events held in 2024, iiCON announced 11 new projects had received a share of £1.5 million in funding from UKRI as part of its ongoing work to support innovative ways of tackling infections.

Under the programme, iiCON brought together and supported the formation of diverse cross-disciplinary networks. These are now propelling the development of new concepts and solutions that leverage disruptive technologies such as Artificial Intelligence (AI), digital and automation, advanced humanised infection models, and novel diagnostics to combat the spread of infection.

Two sandpit events were held in Liverpool and London. These intensive sessions helped to spark ideas, foster innovation, and create new collaborative approaches to tackle this urgent challenge and drive forward novel projects.

Complementing the work of UKRI's flagship AMR and epidemic preparedness programmes, the sandpits have acted to pump-prime radical new approaches to tackling infections by engaging new communities and capabilities with the challenge.

The 11 new projects that received funding are developing new ways of tackling infection challenges ranging from innovative diagnostics for TB to self-disinfecting coatings to stop infection spread.

To find out more, please visit:

The funded projects are:

1. Development of a scalable blood test to determine heterosubtypic immunity to avian influenza
2. Use of novel technologies to tackle infections: a one stop sputum-free diagnosis for Tuberculosis
3. An open innovation network to drive commercialisation of microbiome research
4. InfectiScan™: Pioneering rapid diagnosis of antimicrobial resistance in bodily fluid samples – A feasibility pilot study
5. Improving knowledge of antibiotic use and antimicrobial resistance in migrant, refugee, and asylum seeker populations in Liverpool through community-based participatory research
6. The comprehensive understanding of disease and AI research (CURE) project
7. Developing a robust self-disinfecting coating to reduce transmission of pathogens via touch surfaces in hospitals and beyond
8. From Theory to Practice: Mathematical approaches to disrupt infectious disease transmission
9. Rational engineering of inorganic crystals as novel therapeutics to induce antimicrobial activity in host cells
10. Infection model based on multi-layer vascularised skin-on-a-chip for the evaluation of antibacterial products
11. Efficacy of nitric oxide releasing coatings and fibres against monkeypox virus

**The development of new antibiotics and companion diagnostics were out of scope for the new fund, as these were covered by the recently announced PACE initiative.*

Tackling infections case study: ImmunoServ

immunoserv

Here, we explore how one of the successful UKRI Tackling Infections projects, ImmunoServ, is utilising their funding to progress an exciting project to create a scalable test assessing both T cell and antibody immune responses to the latest circulating strains of avian influenza (H5N1).

The challenge

The recent emergence and spread of H5N1 avian influenza among cattle herds in the United States have intensified global concerns about zoonotic transmission and the potential for human-to-human spread.

A critical gap in pandemic preparedness is the uncertainty surrounding pre-existing immunity within the population, in particular, whether prior influenza exposure or vaccination offers cross-protective immunity against emerging avian strains.

Traditional immunity assessments have predominantly focused on measuring antibodies, which may not provide a complete picture of immune protection. Emerging evidence points to the critical role of specific cells of the immune system called 'T cells' in conferring protection against symptomatic influenza, independent of antibody titres. However, measuring T cells at the scale required to identify population-level immunity has proven challenging.

The response

During the COVID-19 pandemic, ImmunoServ successfully developed the world's first scalable and standardised T cell test. The 'Immuno-T' test, which uses a capillary blood sample obtained by an individual at their home, was able to identify individuals at increased risk of SARS-CoV-2 infection.

With the funding from the iiCON / UKRI Tackling Infections pilot grant, ImmunoServ is now adapting the Immuno-T platform for avian influenza (H5N1), with the aim of creating a scalable test assessing both T cell and antibody immune responses to the latest circulating strains. T cell responses to H5N1 have the potential to protect from avian influenza infection and/or severe disease, should the virus spread to humans.

> "A critical gap in pandemic preparedness is the uncertainty surrounding pre-existing immunity within the population"

ImmunoServ has developed a scalable blood test to measure critical components of the immune response to avian influenza viruses and has carried out a pilot study to help to optimise and validate the test.

A large pilot study was completed in June 2025, with 131 adult participants from across the UK over four months. Recruitment was also targeted at poultry farmers and bird handlers to better understand whether higher-risk individuals (those in regular close contact with birds) exhibit higher or lower levels of immunity. The results of the study are currently being assessed and analysed by ImmunoServ in collaboration with researchers at the University of Birmingham.

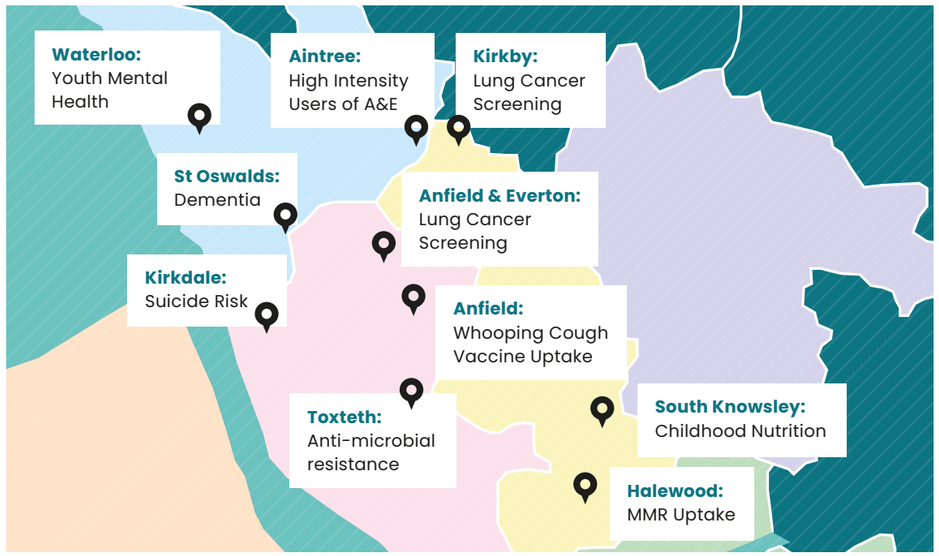
This activity is helping to develop a blood test that would offer significant public health and commercial value: Public health authorities can better estimate population-level immunity and risk; vaccine developers would gain critical insights into T cell-driven immunogenicity during clinical trials; and the general public, in particular those who are immune compromised, would receive personalised information on their immune status and potential risk profile.

Together, this pilot study marks a significant step toward pandemic preparedness, addressing both scientific and societal needs for a more nuanced understanding of immunity to emerging avian influenza viruses.

ReCITE: BUILDING RESEARCH BY COMMUNITIES TO ADDRESS INEQUITIES THROUGH EXPRESSION

Tackling health inequities through creativity & storytelling

ReCITE, led by the Liverpool School of Tropical Medicine and funded by UKRI/AHRC, aims to bridge entrenched health disparities across Liverpool, Knowsley, and Sefton. By weaving storytelling and creativity into community and healthcare systems, the project tackles mistrust and promotes wellbeing through co-created narratives and local engagement.



2025 achievements: creative engagement & co-research

Community Innovation Teams (CITs) and co-research
The ReCITE Community Innovation Teams (CITs) bring together community organisations, health providers, community champions, volunteers, public health teams and creatives. By using the power of storytelling, the teams aim to tackle the unfair and avoidable differences that affect people's health. There are 12 CITs working across Knowsley, Liverpool and Sefton. Each team identifies a key health equity issue, gathers insights from the community alongside routine data, and then conducts a root cause analysis to identify local solutions. The impact the CITs are having is already being felt across communities. In Everton and Anfield, one CIT launched a creative campaign encouraging breast cancer screening, using poetry, humour, music, and storytelling to engage in over 2,000 conversations. The result? A measurable 25% drop in missed mammogram appointments. Meanwhile, in Knowsley, school children took centre stage, through interactive drama workshops where they shared their knowledge and experiences about health. Their insights are now shaping immunisation strategies in their schools and community.

Advocacy networks & creative health strategy
Alongside its community work, ReCITE is building advocacy networks to engage decision-makers, secure sustained funding, and champion creative, community-rooted approaches as essential to healthcare planning. As part of this work, ReCITE is actively advocating for, and helping to build momentum toward, a co-designed Creative Health Strategy for the Liverpool City Region.

What's your story? Workshops
From late 2024 into early 2025, three workshop series were held across Kirkby, Bootle, and Toxteth, each led by a local writer. Twenty-six participants shared personal stories of health inequality and transformed them into creative writing. These culminated in a shared storytelling event in February 2025, where participants presented to family, peers, and health professionals.

> "For the first time ever, I have started to believe that my voice is important and has value.

Read more on the profound impact of this initiative in the blog: ***ReCITE & What's Your Story: Amplifying Voices, Transforming Healthcare***

Creative Health Exchange
On *18 March 2025*, ReCITE hosted the first *Creative Health Exchange* at Liverpool Light House a dynamic event bringing together 138 creatives, health professionals, community groups, and academics. The day featured performances, taster workshops, and networking opportunities aimed at sparking cross-sector collaborations and celebrating existing creative approaches to health equity.

> "We used creative methods I've never seen before in medicine – and it worked. Screening numbers soared.

More here: ***Creative Health Exchange Rocks: When Stories Change the Ecosystem***

Impact & learning

- **Empowered communities:** Participants in creative workshops gained confidence and a renewed sense of belonging, with storytelling offering a powerful vehicle for personal and collective expression.
- **Strengthened connections:** Creative Health Exchange fostered new collaborations across health, arts, and voluntary sectors.
- **Embedded expertise:** CITs and community co-researchers increased ownership and shaped evaluation processes, ensuring interventions remain grounded in lived experience.
- **Strategic influence:** Advocacy networks and momentum-building around a Creative Health Strategy highlight the shift from individual projects to structural, systemic change.

Looking ahead: building creative health resilience

ReCITE will:

- **Expand the network of co-researchers and CITs to ensure sustained, community-led evaluation.**
- **Continue advocacy to embed creative approaches in policy and commissioning.**
- **Advocate and build a shared vision for a co-designed Regional Creative Health Strategy as a guiding framework for long-term action.**
- **Broaden participation, strengthen impact measurement, and amplify community narratives at regional and national levels.**

Acknowledgments

ReCITE is made possible by UKRI/AHRC funding and the collaboration of partners including iiCON, University of Liverpool, Liverpool John Moores University, Edge Hill University, University of Bristol, Writing on the Wall, Capacity Development International, and Collective Encounters.

Our platforms

Operating across iiCON's 11 open-access specialist research platforms, we remove barriers to market by providing companies access to world-leading research expertise, market intelligence, and cutting-edge facilities. This supports every stage of the discovery journey from discovery to adoption.

Supporting innovation

iiCON provides access to 11 commercially sustainable specialist research platforms, co-developed and operated by our industrial, academic, and clinical partners.

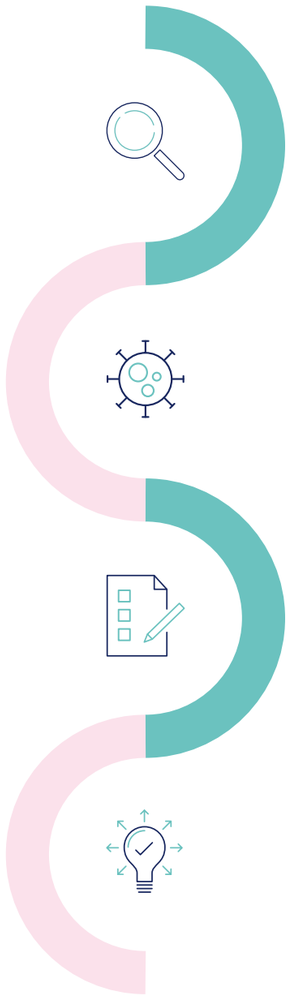
These specialist platforms provide industry with world-leading research capability and facilities - enabling access to resources and expertise that can transform the product discovery and development journey.

Our open-access platforms bridge the gap in the infection innovation ecosystem to support co-innovation and accelerate the product journey from concept to deployment.

Companies from early-stage start-ups to industry giants have leveraged the expertise and facilities available through the platforms in their discovery and development journeys.

We work with companies at all stages of the innovation journey – from very early-stage conceptual work, through to clinical trials, manufacturing, and market positioning, helping to fast-track new products and treatments to patients and communities.

The discovery journey



1 Discovery

Our early-stage-discovery platforms offer sophisticated expertise & facilities to support world-leading innovation. This knowledge & capability enables the discovery of innovative diagnostics & antimicrobials, bringing forward transformative novel candidates to combat global challenges including multi-drug resistance.

2 Translation

Our Translation platforms support the development of novel antimicrobials & diagnostics. Specialist support is available to progress novel therapeutics from hits to leads. Highly innovative technologies including nanotherapeutics, innovative humanised tissue & microfluidic models, including organoid systems & Organ-on-a-Chip are accessible to industry to fast-track drug discovery. New drug development pathways are being developed to support the industry effort to combat multi-drug-resistant superbugs.

3 Evaluation

World-class facilities & expertise support product evaluation & validation. Our expertise in Human Challenge trials offers industry co-located research & clinical facilities, with impactful first-in-human trials run by world-leading researchers available for all antimicrobial applications, significantly de-risking the transition into humans. Our platforms also offer validation & verification of non-invasive diagnostics & advanced surface science capability from leading research institutions.

4 Adoption

Our Adoption platforms shape & inform global health policy and support market access, helping to protect communities from diseases including Malaria. Our experts also work closely with industry & policy makers to position health interventions & products to enable maximum public health benefit.

iiCON's eleven specialist platforms

PLATFORM 1
Bioactives Library

PLATFORM 2
Hits to Leads

PLATFORM 3
Organoid Models

PLATFORM 4
Advanced PK-PD AMR Modelling

PLATFORM 5
Human Challenge

PLATFORM 6
Diagnostics

PLATFORM 7
Randomised Control Trials

PLATFORM 8
Mapping and Modelling

PLATFORM 9
Nanotherapeutics

PLATFORM 10
Antibody Humanisation

PLATFORM 11
Long-Acting Therapeutics

Platform details

1. Bioactives Library

PLATFORM PARTNER LEAD:
Liverpool School of Tropical Medicine

This platform offers industry early access to one of the world's largest and most diverse, and completely novel Bioactives Libraries. This vast, untapped pool of thousands of environmental, bacterial, and fungal isolates has the potential to shape the next generation of transformative novel antimicrobial products and therapies. The library is designed in a modular format to improve usability and increase efficiency. This enables a targeted approach, where specific isolate groups can be screened quickly and cost-efficiently. World-class end-to-end expertise and after-care ensures companies are supported at every stage of the discovery journey.

2. Hits to Leads

PLATFORM PARTNER LEAD:
Infex Therapeutics

This platform is speeding up the response to pandemics and creating new treatments to tackle critical respiratory infections and the increasing global threat of antimicrobial resistance. The work provides a subsidised, cost-effective mechanism to accelerate the progress of novel therapies to meet the rising burden of critical priority infectious disease. This work addresses unmet patient needs and is bringing a new portfolio of drugs into clinical trials to treat patients suffering from life-threatening infections.

3. Organoid Models

PLATFORM PARTNER LEAD:
Liverpool School of Tropical Medicine

This platform offers industry access to pioneering technologies which support the development of game-changing novel therapeutics. A range of sophisticated technologies including innovative human tissue & microfluidic models, are available to industry to fast-track drug discovery. Any infection can be rapidly screened, and a repository of human tissue models enables more precise assessment of therapeutic impact and efficacy – helping to de-risk development and support innovation.

This platform provides access to Organ-on-a-Chip (OOC) technology that enables companies to generate human tissue data, including multiple organs, that enables faster, more efficient drug development. This expedites the drug development journey and significantly de-risks late-stage clinical efficacy failures, creating a bridge to Controlled Human Infection Models and/or Phase I and Phase II clinical trials - accelerating product registration and commercialisation and introducing new drugs to market.

4. Advanced AMR Modelling

PLATFORM PARTNER LEAD:
University of Liverpool

This platform in molecular pharmacology and pharmacokinetics-pharmacodynamics (PK-PD) provides new drug development models and approaches to help industry develop new agents to meet the challenge of antimicrobial resistance. It supports the discovery and development of novel therapeutics to tackle the world's most critical, multi-drug-resistant infections.

5. Human Challenge: Agile End-to-End Clinical Trials

PLATFORM PARTNER LEAD:
Liverpool School of Tropical Medicine

This platform provides a comprehensive clinical trials package that supports first-in-human testing for a wide range of antimicrobial products and treatments, including hygiene and sanitation products, diagnostics, AI wearables, devices, new therapeutics, and vaccines. Clinical trials are led from a state-of-the-art facility with beds and adjacent laboratories based at the Liverpool Life Science Accelerator. This ensures high clinical and research standards and enables rapid sample processing. The platform brings together the biomedical science commercial sector, the NHS and academia. Co-location with one of the UK's largest NHS trusts and high containment laboratories make this a unique proposition for the critical expansion of first in man clinical trials.

6. Diagnostics

PLATFORM PARTNER LEADS:
Liverpool School of Tropical Medicine and University of Liverpool and Liverpool John Moores University

This platform combines the expertise of leading centres of excellence. It provides industry access to:

- Liverpool School of Tropical Medicine's global expertise in diagnostics through its Foundation for Innovative New Diagnostics (FIND) and WHO accredited facility. Industry partners benefit from broad diagnostic expertise and focus across a range of platforms including lateral-flow, antibody, antigen, molecular testing and pathogens. This expertise helps to accelerate market access and enables optimal diagnostic deployment.
- Breakthrough sensor technology, advanced AI and machine learning through iiCON's Infection Innovation Technology Laboratory: iiTECH. This pioneering facility located at the Liverpool Life Science Accelerator is the centre of collaborative activity for iiCON's international, multi-partner sensor portfolio. It focuses on developing cutting-edge sensor solutions for healthcare applications; innovative wearable devices; AI-driven predictive assessments; human-centred clinical testing; comprehensive quality assurance through non-destructive testing tools; and long-term monitoring systems for continuous patient care.
- World-leading surface design and analysis, through the University of Liverpool's Surface Science Research Centre which enables anti-infective and vector control surfaces to be evaluated, optimised and upscaled via knowledge-based engineering. This Interdisciplinary Research Centre features sophisticated surface sensitive spectroscopic and imaging techniques. These allow surfaces to be mapped at the nanoscale level and enable the interaction between technology and biological systems to be studied with precision.

7. Randomised Control Trials

PLATFORM PARTNER LEAD:
Liverpool School of Tropical Medicine

Led by LSTM and partners in Democratic Republic of Congo and Uganda, this platform provides robust data to inform global health policy and support and enable market access, helping to protect communities from malaria. This work is already helping to protect communities and save lives by advancing innovative interventions. In many low- and middle-income country settings, vector control products often need to be on a WHO recommended list before donors will make large scale purchases. This requires at least two epidemiological impact randomised control trials, which are inevitably time-consuming and usually limited in geographical scale. Pathways to implement trials in a more streamlined manner, which can improve the evidence base for newer products, could greatly assist the decision-making process for policy makers and procurers in order to expedite product roll out.

8. Mapping and Modelling

PLATFORM PARTNER LEAD:
Liverpool School of Tropical Medicine

Supporting innovation and product development, this platform provides the expert insight required to optimally position health interventions. Industry partners can leverage Liverpool School of Tropical Medicine's world-leading expertise in mapping and modelling of the transmission and dissemination of pathogens at a micro and macro level. A major focus has been the creation of a new study to explore reducing the risk to vulnerable patients of drug-resistant bacterial infections in residential care homes and hospital settings. The study seeks to improve the care of some of the most vulnerable people in society through enhanced infection prevention and control, allowing better stewardship of our last line of defence antibiotics, one of our most precious healthcare resources.

9 Nanotherapeutics

PLATFORM PARTNER LEAD:
University of Liverpool

Led by The Nanotherapeutics Hub at the University of Liverpool, this platform provides access to the Hub's expertise and network of UK partner organisations to support the development of innovative new antimicrobials, biotherapeutics and vaccines leveraging nanotechnology. The benefits and promises of nanotechnology are clear. However, the robust characterisation of their interactions with biological systems is vital to their translation to clinical use. This platform offers the expertise to determine critical quality attributes for nanotherapeutics to assist in the future rational design of advanced materials. This is further strengthened by The Nanotherapeutics Hub's strategic partnership with the National Measurement Laboratory as well as its active involvement and leadership in national and international programmes and infrastructures in complex medicines.

10 LifeArc Antibody Humanisation

PLATFORM PARTNER LEAD:
LifeArc

Led by the self-funded medical research charity, LifeArc, this platform has been designed to provide partners and researchers in the field with streamlined access to LifeArc's leading capabilities in humanising antibodies for therapeutic applications and so help solve vital challenges in infectious diseases. Antibody humanisation enables promising antibody candidates from non-human species to be modified so that they are applicable to humans. This platform makes LifeArc's expertise in the field of antibody humanisation available commercially to any organisations collaborating with iiCON domestically or internationally.

11 Long-Acting Therapeutics

PLATFORM PARTNER LEAD:
University of Liverpool

This platform provides access to the expertise within The Centre of Excellence in Long-acting Therapeutics (CELT) at the University of Liverpool - a cross-faculty research initiative combining world-leading expertise in pharmacology and materials chemistry. CELT works with international partners to disseminate research findings in long-acting medicine and change the global landscape of drug administration. This platform within iiCON enables companies of all sizes access to CELT's expertise in long-acting therapeutics supporting impactful collaborations to enhance product and therapeutic efficacy and drive innovation.

Partners

Led by the Liverpool School of Tropical Medicine, iiCON brings together leading UK organisations focused on infectious disease R&D, including Liverpool University Hospitals NHS Foundation Trust, LifeArc, Unilever UK, the University of Liverpool, Evotec and Infex Therapeutics.

The combined infectious diseases, antibiotic and hygiene R&D portfolio of our seven partners currently exceeds £2 billion. The expertise of each partner is highly complementary and covers the full spectrum of product discovery, development, manufacture, marketing and impact assessment – representing a concentration of expertise not replicated anywhere else in the UK.

LSTM

Liverpool School of Tropical Medicine (LSTM) is the world's oldest centre of excellence in tropical medicine and international public health. It has been engaged in the fight against infectious, debilitating and disabling diseases since 1898 and continues that tradition today with a research portfolio of over £745 million and a teaching programme attracting students from dozens of countries.

Liverpool University Hospitals NHS Foundation Trust (LUHFT)

Liverpool University Hospitals NHS Foundation Trust (LUHFT) runs Aintree University Hospital, Broadgreen Hospital, Liverpool University Dental Hospital and the Royal Liverpool University Hospital. Bringing together a combined workforce of over 12,000 staff, the Trust serves a core population of around 630,000 people as well as providing a range of highly specialist services to a catchment area of more than two million people in the North West region and beyond. It has an annual turnover of more than £1billion.

The NIHR Royal Liverpool and Broadgreen Clinical Research Facility (CRF) opened in 2009 and is embedded within the Royal Liverpool University Hospital. It has been MHRA Phase 1 Accredited since 2013. The CRF consists of 12 beds and is primarily designed to support and conduct early phase academic and commercial clinical trials in patients and healthy volunteers across a wide variety of disease areas, including infection and most recently, COVID-19. The Liverpool Life Sciences Accelerator is a collaboration between the Trust and Liverpool School of Tropical Medicine (LSTM). This co-locates Life Sciences companies which support the NHS research agenda, with LSTM and the Trust, and provides patient access to the latest healthcare innovations.

Unilever

Unilever is one of the world's largest consumer goods companies, known for famous brands and driven by the purpose to make sustainable living commonplace. Unilever invests €800 million into innovation every year to enable their global team of 5,000 R&D experts to make new breakthroughs for everyday products that care for the planet and improve people's health, confidence and wellbeing.

Infex Therapeutics

Infex Therapeutics is a clinical-stage specialist translational development SME focused on WHO critical priority drug-resistant pathogens. Infex acquires, develops, and licenses innovative new antibiotic, antiviral, and antifungal programmes, with UK and international SMEs, universities, and pharma companies. Its mission is to ensure that all new, novel and needed drugs can get to market in the shortest possible time. It has agreements with UK, Swedish, US, EU, and Japanese partners to bring drug programmes into clinical trials in partnership with the NHS in Liverpool. Infex will capture significant long-term value from future commercial sales around the world.

Evotec

Evotec is a life science company with a unique business model to discover and develop highly effective therapeutics and make them available to patients. The company's multimodality platform comprises a unique combination of innovative technologies, data and science for the discovery, development, and production of first-in-class and best-in-class pharmaceutical products. Evotec utilises this "Data-driven R&D Autobahn to Cures" for proprietary projects and within a network of partners including all Top 20 Pharma and over 800 biotechnology companies, academic institutions, as well as other healthcare stakeholders. Evotec has strategic activities in a broad range of currently underserved therapeutic areas, including neurology, women's health, as well as metabolic and infectious diseases.

Evotec is committed to meeting patient needs in the field of infectious diseases and with partners, is advancing a broad portfolio of programmes targeting key pathogens in the areas of virology, mycology and antibacterials. In addition to these strategic activities, Evotec provides bespoke research and development solutions in the anti-infective disease area ranging from target identification to investigational new drug ("IND") applications, with an established leading-edge platform enabling the discovery and development of new therapies and therapeutic approaches to treat and prevent serious and life-threatening infections in multiple classes of anti-infective agent including small molecules, natural products, peptides, antibodies, other biologics and vaccines.

The University of Liverpool

The University of Liverpool is one of the UK's leading research institutions and a centre of world-class teaching and learning. A member of the prestigious Russell Group of the UK's leading research universities, Liverpool has over 5,600 staff and an annual turnover of over £583.5 million.

The university is globally recognised for its research in health and life sciences, science and engineering, and humanities and social sciences. Its interdisciplinary research centres include the National Centre for Zoonosis Research and the Stephenson Institute for Renewable Energy.

LifeArc

LifeArc is a self-funded, medical research organisation and charity committed to investing in areas of high unmet medical need. The teams are experts in drug and diagnostics discovery, technology transfer, and intellectual property focused on translational science – bridging the gap between academic research and clinical development. LifeArc provide funding, research and expert knowledge, all with a clear and unwavering commitment to having a positive impact on patient lives. They have been doing this for more than 25 years and their work has played a role in five licensed medicines, including cancer drug pembrolizumab (Keytruda®), and a diagnostic for antibiotic resistance. LifeArc is embarking on a global health strategy that aims to accelerate the progression of affordable and accessible solutions, which can help understand, prevent and treat infectious diseases around the world.

Steering group

Professor Janet Hemingway
Professor Janet Hemingway CBE FRS is the former Director of Liverpool School of Tropical Medicine (LSTM). She is the founding Director of iiCON: Infection Innovation Consortium, CEO of iiDiagnostics, and Professor of Tropical Medicine at LSTM. She is a Past President of the Royal Society of Tropical Medicine and Hygiene.

Dr Jonathan Hague
Dr Jonathan Hague, Head of Clean Future Science and Technology for Unilever Homecare. Outside Unilever, Jon is Chairman of Penrhos Bio, a start-up biotech company that licences technology to eliminate harmful biofilms, is Chairman of the Liverpool City Region Innovation Board, and is a Trustee of the Society of the Chemical Industry.

Professor Steve Ward
Professor Steve Ward, Walter Myers Professor of Parasitology at Liverpool School of Tropical Medicine (LSTM). He has a role as an external advisor in Translational Science to a number of international organisations including the Medicines for Malaria Venture (MMV) and the German Centre for Infection Research (DZIF).

Dr Greg Whelan
Dr Greg Whelan MRCVS, Ph.D., Vice President Anti-infectives at Evotec leads the infectious disease operations at Alderley Park, Cheshire, and is part of the in vivo pharmacology leadership team.

Professor William Hope
Professor William Hope (UoL) (BMBS, FRACP, FRCPA, PhD), Dame Sally Davies Chair of AMR Research at the University of Liverpool. Professor Hope is a Fellow of the Royal Australasian College of Physicians and a Fellow of the Royal College of Pathologists of Australasia. He is a Fellow of the American Academy of Microbiology and European Society of Clinical Microbiology and Infectious Diseases.

Carolyn (Cali) Hall
Cali is Alliance Manager, Global Health at LifeArc. Prior to this she was at Novartis Foundation where she was working on health system strengthening community health models in India, Vietnam and SSA.

She has more than 25 years of industry experience initially in Europe then in Asia /Africa focused on International Access to Medicine work with LMICs. She also set up her own health consultancy to gain new perspectives & support projects with PDPs, NGOs and institutional players (e.g. WHO, GARDP etc). Cali holds an MPH from LSHTM & has extensive experience in LMIC country programs in infectious diseases, NCDs, (CVM, diabetes & oncology), NTDs and rare diseases.

Dr Sam Naghibi
Dr Sam Naghibi, PhD, is the Operations Manager at the Centre of Excellence for Long-Acting Therapeutics (CELT). In this role he is engaged with the strategic and operational aspects of the centre, supporting innovative activities and collaborations in the field of long-acting therapeutics.

Dr Mark Wigglesworth
Dr Mark Wigglesworth, founder and Chief Executive Officer for Alderley Lighthouse Labs Ltd, is a laboratory-based testing facility, specialising in human diagnostics. Mark has been part of leadership teams spanning collaborations with the Medical Research Council, Charles River Laboratories, Cancer Research UK, the European Laboratory Research and Innovation group, Imperial College BioDesign Engineering Industry Advisory Board, Bionow, the UK governments Lighthouse Laboratory Test and Trace network.

Dr Peter Jackson
Dr Peter Jackson, CEO, Infex Therapeutics. Dr Peter Jackson is an experienced UK-based serial entrepreneur in the life sciences sector. Dr Jackson is a member of the Project Advisory Group for NHS England and NICE on the new UK antibiotic reimbursement trial and is a member of a UKRI/BBSRC panel reviewing academic AMR investments and cross-departmental AMR strategy. He is a special advisor on AMR and pandemic preparedness to the Washington DC-based Milken Institute and has recently joined the board of the BEAM Alliance.

Dr Richard Fitzgerald
Dr Richard Fitzgerald, Director of the CRF and a Consultant Physician in Clinical Pharmacology and Therapeutics / General Medicine at the Royal Liverpool University Hospital. He is a qualified first-in-human principal investigator as part of the CRF's MHRA Phase I accreditation. Richard is also an honorary senior lecturer in the Wolfson Centre for Personalised Medicine, where his major research interests include stratified therapies in cardiovascular disease, optimisation of anti-platelet therapy, adverse drug reactions and systematic reviews and meta-analyses.

Advisory panel

Helen Jamet
Deputy Director, Vector Control, Gates Foundation

John Whaling
Lead Officer – Innovation & Commercialisation, Liverpool City Region Combined Authority (LCRCA)

Lorna Green
CEO, LYVA Labs

Dr Peter Gallagher
Board-level FMCG R&D Executive successfully developing and executing breakthrough global business strategies with established and emerging technologies to deliver innovative product solutions

Jo Pisani
Strategic Advisor, Non-Executive Director and Charity Trustee

Norman Molyneux
Acceleris Capital founder, Strategic Advisor

Dr Lloyd J. Payne
D.Phil, President and Chief Executive Officer of ArrePath, a Princeton University spin-out biotech company harnessing imaging and AI/ML technologies to discover and develop new classes of anti-infectives

Professor Mark Sculpher
Professor of Health Economics and Director of the Centre for Health Economics, University of York. He is also Co-Director of the Policy Research Unit in Economic Evaluation of Health and Care Interventions, a programme of research for the UK Department of Health and Social Care funded by the National Institute for Health Research (NIHR)

Dr Kath Mackay
Director of Life Sciences for Bruntwood SciTech – the UK's leading property provider dedicated to driving the growth of the UK science and technology sector

Professor Nicola Wilson
Professor Nicola Wilson is Programme Director for the Mersey Care NHS Foundation Trust and Deputy Chief Executive and Chief Operating Officer of Liverpool Health Partners

iiCON

A Global Centre of Infection R&D Saving Lives by Supporting Innovation

iiCON is a world-leading collaborative infectious disease R&D programme established in 2020. It brings together industry, academia, and the NHS in a concerted effort with a clear aim: to combat the growing global threat posed by infectious diseases and save lives through collaborative innovation.

The consortium is revolutionising the discovery, development, and rapid deployment of new antimicrobial products, diagnostics, and therapeutics – bringing these to patients and communities more quickly, safely, and affordably.

To find out more about iiCON or explore opportunities to collaborate, please contact us at:
iicon@lstmed.ac.uk

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