iiCON

Infection Innovation Consortium

Saving Lives By Supporting Innovation

Annual Report 2023

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Director's Foreword

As we near the end of 2023, iiCON is celebrating its third year in operation. Since launching, the consortium has continued to grow from strength to strength, powered by a collaborative commitment to innovation.

As an impact-driven organisation, a core metric that we measure is the number of new products we have shepherded through the programme. This year, it is incredibly encouraging to note that iiCON has a large and diverse portfolio of different products that it is helping companies develop and has progressed 36 new products to market over the last three years. At an average of one product per month since our launch date, we are considering launching an iiCON advent calendar next year!

Jokes aside, measuring real-world impact is one of the most important yardsticks by which we can judge the efficacy of iiCON's work. We are delighted to be able to showcase such a clear correlation between our activity, the increased economic benefit we are bringing to the region and the companies we work with, and the life-saving products and treatments reaching communities and patients.

The innovations iiCON has supported cover a wide variety of technologies and therapies, ranging from new sensors that can detect when the right amount of insecticide has been sprayed on a wall, surface coatings that reduce the risk of patients or the general public contracting serious infections to vaccines and new diagnostics.

Alongside new drugs and medical devices, our work has involved important education initiatives. This includes the Liverpool Vaccine Equity programme, which resulted in a 20% increase in COVID-19 vaccine uptake in hard-to-reach population groups within the city.

We are also actively unlocking development obstacles for new drugs and vaccines that will be needed in the event of future pandemics. This includes proving the efficacy of a new device to move Monkey Pox (Mpox) samples quickly and safely between labs and collaborating with Pfizer, MSD and ImmBio to refine and validate vital pneumococcal vaccine development via a human challenge model established by LSTM and supported by iiCON.

We are now working with a global network of over 800 companies of all sizes – driving forward pioneering innovation by helping industry to access world-leading infectious disease research facilities and expertise.

This year, we are expanding this network further as we welcome a new core partner, the non-profit medical research organisation, LifeArc. LifeArc's commitment to urgently accelerating new treatments and solutions to combat global health challenges aligns closely with iiCON's purpose and we are delighted to have them on board.

LifeArc has incorporated its antibody humanisation platform within iiCON, providing a streamlined route for companies of all sizes within our network to access their capability for infectious diseases. In partnership with LSTM, LifeArc has also set up a Translational Development Fund to support the progression of new technologies and treatments for emerging viral threats and neglected tropical diseases.

We have also added a new platform this year, led by the Centre for Long-Acting Therapeutics (CELT) at the University of Liverpool, which will provide our collaborators and partners with access to the world-leading capability at CELT.

At a regional level, the UK Government's sustained focus on strengthening and supporting the life sciences sector has continued to bolster the innate capability within the North West. It has also driven a number of pivotal developments over the last 12 months, including the launch of the UK's first Life Sciences Investment Zone, based within the Liverpool City Region. The Investment Zone is expected to unlock c£320 million of private investment and deliver thousands of jobs across the region over the next five years.

The funding will also support three of iiCON's R & D platforms, through investment in technologies including robotics, AI, and machine learning capability. This will drive translational innovation and provide our commercial and academic partners and collaborators with the opportunity to exploit the potential posed by next-generation technologies.

The Investment Zone designation is testament to the region's existing expertise in life sciences, but it also affirms the ongoing efforts of partners and sector stakeholders across the North West who are working together strategically to integrate this capability and ultimately, become more than the sum of our parts.

This collaborative effort to join the dots and bridge gaps within the infection innovation sector has been at the heart of iiCON's purpose and vision since we launched and continues to drive our approach.

As we look ahead, with headlines continuing to highlight the many divisions blighting communities across the world, iiCON and our network are focused on the power of unity and collaboration to drive forward innovative solutions to some of our most complex global health challenges.

We thank you for being a part of our 'innovation journey' and look forward to working with you in 2024.

Professor Janet Hemingway, CBE FRS
iiCON Founding Director

iiCON Overview

A leading global centre for infectious disease R&D, iiCON brings together industry, academia, and the NHS in a collaborative programme.

About the Programme

Decades of under-investment in new therapeutics and diagnostics means the world is ill-equipped to respond to the burgeoning challenge posed by infectious diseases, antibiotic resistance, and emerging pandemics.

In response to this challenge, iiCON bridges the gap in the infection innovation ecosystem. A leading global centre for infectious disease R&D based within the North West of England, it brings together industry, academia, and the NHS in a collaborative effort with a clear aim: to save lives globally by accelerating the discovery and development of innovative new treatments, diagnostics, and preventative products for infectious diseases.

iiCON has an exceptional skill base, an understanding of and access to the disruptive technologies needed to bolster the Infectious Disease Therapeutics pipeline, and networks with local, national, and international stakeholders.

The consortium has access to patient populations (and pathways for drug and diagnostic evaluation and implementation) in the UK and across Africa, Asia and the Americas. It also offers access to the people, skills and supply-chains to support the journey from drug discovery through to manufacturing and deployment.

A Dynamic Ecosystem

iiCON comprises leading UK organisations focused on infectious disease R&D, including Liverpool School of Tropical Medicine, LifeArc, Liverpool University Hospitals NHS Foundation Trust, Unilever UK, the University of Liverpool, Evotec, and Infex Therapeutics as part of a c£200 million programme.

The combined infectious diseases, antibiotic and hygiene R&D portfolio of iiCON's seven partners 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.

iiCON is part of a dynamic, £2 billion infection R&D ecosystem across the Liverpool City Region, Cheshire and Warrington. With world-leading capabilities in drug discovery, diagnostics and clinical trials, all the way through to biopharmaceutical manufacturing, the North West represents one of the largest biopharmaceutical manufacturing clusters in Europe.

Collaborative Innovation

Operating across 11 commercially sustainable specialist research platforms, iiCON's collaborative effort is directly reducing the global burden of infectious disease with a co-ordinated initiative to address key roadblocks in global R&D pipelines and strengthen and regenerate the global anti-infectives supply chain.

The consortium proactively identifies and engages with the most innovative companies working in the sector globally. iiCON forges long-term collaborative relationships with these organisations, and facilitates impactful partnerships that accelerate and enable innovative research and product development. This helps to bring the next generation of game-changing new products to market more quickly, safely, and affordably.

Industry Recognition

The impact that iiCON has had on the health and life sciences sector is exemplified by the prestigious awards the consortium and its staff have been presented with since its founding. This includes iiCON's Founding Director Janet Hemingway receiving both the Wigglesworth Memorial Award for outstanding services to the science of Entomology and BioNow's Outstanding Contribution Award, which recognises excellence in North England's biomedical, pharma and life sciences sectors. Professor Hemingway was also named Liverpool City Region Leader of the Year at the 2023 Northern Leadership Awards. She was also hailed as Overall Leader of the Year 2023.

Dr Shaun Pennington, an immunologist and microbiologist working on iiCON's Organoid Models platform, was the recipient of the ECP Impact Award at Drug Discovery 2022, which celebrates early career professionals making a clear impact on the wider scientific community. While the iiCON-supported Liverpool Vaccine Equity Project won a Building Collaborative Communities Award at the Smarter Working Live Awards, 2023, which celebrate innovation, collaboration, and excellence in the public sector.

> *Decades of under-investment in new therapeutics and diagnostics means the world is ill-equipped to respond to the burgeoning challenge posed by infectious diseases, antibiotic resistance, and emerging pandemics.*

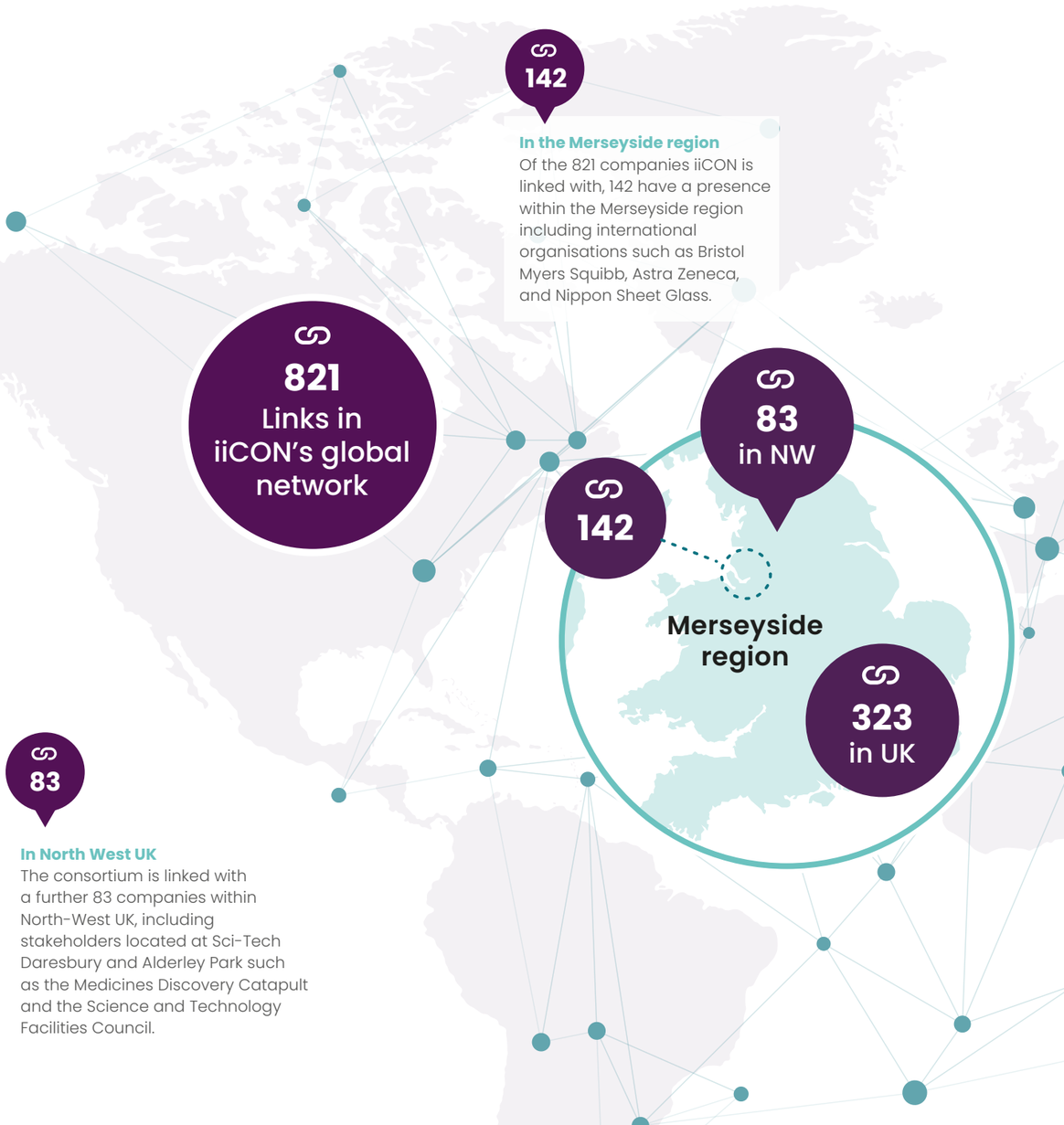
The iiCON Network

Overview

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.

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.



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

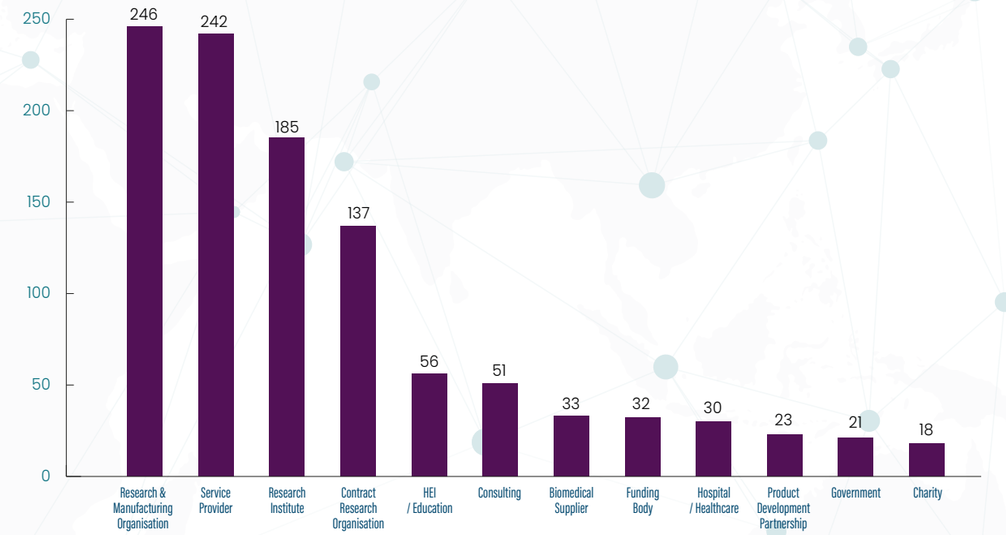
Size of companies engaged with:

MICRO	SME	LARGE	TOTAL
26	469	326	821

273

Global connections
Beyond the North-West, iiCON is currently connected into 269 companies within the infection R&D space including Ondine, Bayer and Syngenta. On a global scale, iiCON is linked with 169 organisations across Europe (not including the UK), Asia, Africa and the Americas. Notable companies include BASF, Against Malaria Foundation, Bill and Melinda Gates Foundation, Sanofi, and Pfizer.

iiCON Impact – Organisation Type



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
iiCON lead Liverpool School of Tropical Medicine (LSTM) is a world leader in the discovery and early development of drug, diagnostic and public health insecticide therapeutics. The first institution in the world dedicated to research and teaching in the field of tropical medicine, LSTM attracts more Gates Foundation R&D funding than any other UK organisation. It has a long history of successful product development with multiple commercial partners and has spun out four companies over the last decade.

LSTM's work in combating diseases such as TB, HIV/AIDS, malaria, dengue and lymphatic filariasis is supported by a research order book of well over £210 million. It has a £600 million partnered R&D portfolio, which includes 30 industrial collaborations, one major Product Development Partnership (IVCC), and a shared Phase 1 Clinical trials unit with Liverpool University Hospital Foundation Trust and The University of Liverpool. LSTM has an extensive track record of establishing public-private partnerships and is working with major organisations in infection including the World Health Organization, the Department for International Development, and The Bill & Melinda Gates Foundation.

Its worldwide reputation and the calibre of its research outputs has secured funding to lead over 10 international consortia and product development partnerships aimed at reducing or eliminating the impact of diseases upon the world's poorest people. Its state-of-the-art facilities continue to develop new drugs, vaccines and pesticides which puts LSTM at the forefront of infectious disease research.

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.

As an iiCON partner, LUHFT facilitates collaboration and partnership working between clinical, research, and industry partners in a clinical setting. This supports the development of innovative novel therapeutics and diagnostics through access to world-class expertise and facilities, particularly high-quality first-into-human clinical trials.

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.

As part of iiCON, Unilever's R&D teams study health and hygiene, and how to prevent the transmission of infectious diseases. The scientific discoveries in this space translate into new innovations in consumer products, benefitting millions of people around the world.

This research collaboration between iiCON and Unilever has already yielded success in rapidly confirming the positive performance of mouthwashes against SARS-CoV-2 and sharing these results with consumers and professionals, with the ongoing research pipeline promising further discoveries.

Infex Therapeutics
Infex Therapeutics is a specialist translational development SME focused on WHO critical priority drug-resistant pathogens. Infex acquires, develops, and licenses innovative new antibiotic and antiviral programmes, with UK and international SMEs 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 and Japanese partners to bring drug programmes into clinical trials in partnership with the NHS in Liverpool. Infex aims to 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 the 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.

In September 2020 Evotec joined iiCON as a co-founding member, bringing with it extensive expertise reaching far beyond conventional antimicrobial agents, into alternative modalities such as targeting virulent attributes, specific pathogen antibodies, combination therapies, antimicrobial peptides and phage technologies. In addition, Evotec adds a highly successful track record in collaborative funding applications in both Europe and US.

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.

As an iiCON partner, The University of Liverpool supports and enables industry innovation with state-of-the-art infrastructure and expertise for the development of new experimental models of infection, antimicrobial drug development, and construction of comprehensive pharmacokinetic-pharmacodynamic (PK-PD) packages that are required data packages for new drug registrations.

The University's Materials Innovation Factory is a joint venture co-developed with Unilever. The Open Innovation Hub for Antimicrobial Surfaces, with multiple commercial contracts, is already recognised as a major driver of surface science and biofilm technology within the UK and brings unique formulation capacity to the Consortium.

The University also supports access to advanced nanotherapeutics expertise through The Nanotherapeutics Hub (NTH) at the Centre of Excellence for Long-acting Therapeutics (CELT).

LifeArc
LifeArc is a self-funded, charitable medical research organisation committed to spending £1.3 billion by 2030 in areas of high unmet medical need. Their 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. They 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.

A Word From Our Partners

Infex Therapeutics: Spearheading Healthcare Advancements

DR PETE JACKSON,
CEO, INFEX THERAPEUTICS

In the ever-evolving world of antimicrobial research, innovation is the driving force behind progress. Infex Therapeutics, a pioneering biotechnology firm and a founding member of the iiCON consortium, stands as an exemplar of innovation in action. Committed to tackling global health challenges presented by critical-priority infectious diseases, Infex has harnessed its strategic partnership with iiCON to expedite and strengthen its core research activities.

Infex acquires, develops, and licenses innovative drugs to treat pandemic infections. We have expanded to develop a broader portfolio of new therapies to meet the rising burden of critical priority infectious disease. Based at Alderley Park in the North West of England, our work addresses unmet patient needs and will bring a new portfolio of drugs into clinical trials to treat patients suffering from life-threatening infections.

> *The company plays a key role in delivering iiCON's hits-to-leads platform, a critical function that involves utilising advanced technologies and methodologies to identify and advance promising drug candidates from initial discovery to the pre-clinical development phase.*

Infex's journey towards innovation and success is deeply intertwined with its role as a founding member of the iiCON consortium. iiCON, a collaborative network comprising leading biotech companies, research institutions, and healthcare experts, shares Infex's vision of advancing antimicrobial R&D through collaboration, and innovative approaches.

Infex Therapeutics also actively helps to drive innovation within the consortium. The company plays a key role in delivering iiCON's hits-to-leads platform, a critical function that involves utilising advanced technologies and methodologies to identify and advance promising drug candidates from initial discovery to the pre-clinical development phase.

A graduate of the hits-to-leads platform is Infex's own COV-X pan-coronavirus programme, funded with £700k of iiCON support. COV-X has moved rapidly through the development pipeline, and Infex has recently nominated a clinical development candidate.

Infex Therapeutics recently also achieved a significant milestone by gaining approval for dosing in the final Resp-X Phase Ia cohort and marking the commencement of its first in-patient Phase IIa trial. This remarkable progress underscores the efficacy of the partnership with iiCON in advancing clinical development efforts.

Infex Therapeutics, as a founding member of the iiCON consortium, and as a research platform leader, is at the forefront of iiCON innovation. Through our collaborative partnership with iiCON, Infex can accelerate R&D efforts, ultimately delivering life-saving therapies to a global patient population. As the collaboration continues to flourish, we can anticipate even more groundbreaking advancements in infectious disease treatment from Infex and the entire iiCON consortium. Together, they are transforming the landscape of healthcare for the better.

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LifeArc: Harnessing the power of collaboration

DR MIKE STRANGE,
HEAD OF GLOBAL HEALTH, LIFEARC

At LifeArc, we help progress early-stage scientific discoveries to the next phase of development, through advice, the application of our own scientific capabilities and funding. We focus our efforts in five health areas of high unmet medical and patient need, that are primed and ready for translation.

One of these areas is global health, where we are specifically focussing on: antimicrobial resistance, emerging viral threats, and neglected tropical diseases. Through our 'translational challenges' in these areas, we want to bring our strengths in antibody humanisation, technology transfer, and drug and diagnostic discovery and development to the field, and work alongside experts to understand where we can make a difference.

Over the last year, we've been building our understanding of the pressing challenges to global health: the gaps, opportunities, disease areas and geographical regions - identifying those areas where we think our expertise and investment can drive the biggest impact.

Our partnerships and investments could include the development and progression of novel diagnostics and therapeutics, through to sharing resources and supporting capacity growth in regions like Sub-Saharan Africa.

From day one, we recognised the power of collaboration and the importance of leveraging our impact by working with high-profile partners in global health, like iiCON and the Liverpool School of Tropical Medicine (LSTM). Our aim is to add our expertise where it will help overcome specific barriers and challenges, or where we can bring something new or different.

In partnership with LSTM, we've already set up a £2.7 million Translational Development Fund to support the progression of new technologies and treatments for emerging viral threats and neglected tropical diseases.

We also made our antibody humanisation platform available via the iiCON network.

As we move forward, we want to be ambitious. First, we want to help streamline how (and how quickly) innovations get to patients, and that when they do, they're affordable and accessible. Second, we want to ensure everything we do will help to create a more equitable and sustainable global health ecosystem.

> *We want to ensure we're part of the drive for equity and innovation that makes a lasting impact in global health. It's a privilege to work with partners who are aiming for the same, and we look forward to continuing to expand into this space, to bring benefits to people around the world.*

Our strategic advisory board will help keep us on track, with its wide range of perspectives and expertise. Likewise, our connections with researchers and organisations working with those most affected will help us continually evolve to meet their needs.

We want to ensure we're part of the drive for equity and innovation that makes a lasting impact in global health. It's a privilege to work with partners who are aiming for the same, and we look forward to continuing to expand into this space, to bring benefits to people around the world.

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.

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.

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.

iiCON's eleven specialist platforms

1. **Platform 1:** *Bioactives Library*
2. **Platform 2:** *Hits to Leads*
3. **Platform 3:** *Organoid Models*
4. **Platform 4:** *Advanced PK-PD AMR Modelling*
5. **Platform 5:** *Human Challenge*
6. **Platform 6:** *Diagnostics*
7. **Platform 7:** *Randomised Control Trials*
8. **Platform 8:** *Mapping and Modelling*
9. **Platform 9:** *Nanotherapeutics*
10. **Platform 10:** *Antibody Humanisation*
11. **Platform 11:** *Long-Acting Therapeutics*

Platform details

1

Bioactives Library

PLATFORM PARTNER: Liverpool School of Tropical Medicine
PLATFORM LEAD: Dr Adam Roberts, Reader and AMR Lead, LSTM

Designed to drive innovation and support companies of all sizes on the discovery journey, this platform offers industry early access to one of the world's largest and most diverse, and completely novel Bioactives Libraries, developed by the Liverpool School of Tropical Medicine. 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 from the expert team at LSTM ensures companies are supported at every stage of the discovery journey. Expert antimicrobial product development support, validation, and consultancy is also available to industry partners at the early stage of the product development journey.

2

Hits to Leads

PLATFORM PARTNER: Infex Therapeutics
PLATFORM LEAD: Dr Derek Lindsay, COO, Infex Therapeutics

Speeding up the response to pandemics and creating new treatments to tackle the increasing global threat of drug resistance are the main focus areas in Platform Two. The work is led by Infex Therapeutics and provides a subsidised, cost-effective mechanism to accelerate the progress of novel therapies. Infex, based at Alderley Park in Cheshire, has a range of projects in advanced stages of development. Its lead clinical candidate is RESP-X, a novel humanised monoclonal antibody. RESP-X is designed to help the body tackle Pseudomonas aeruginosa (Pa) infection, a hard-to-treat drug-resistant pathogen which causes chronic and debilitating respiratory disease. No approved treatments currently exist. RESP-X does not kill the bacteria directly but deactivates one of its critical mechanisms, enabling the immune system to clear the infection. The iiCON-backed project has progressed to a Phase 1 clinical trial in healthy volunteers, which are being conducted by another iiCON partner, National Institute for Health and Care Research Liverpool and Broadgreen Clinical Research Facility, part of the Liverpool University Foundation Hospital Trust.

3

Organoid Models

PLATFORM PARTNER: Liverpool School of Tropical Medicine
PLATFORM LEAD: Professor Giancarlo Biagini, Dean of Research and Innovation, LSTM

This highly innovative platform led by the Liverpool School of Tropical Medicine 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 our repository of human tissue models enables more precise assessment of therapeutic impact and efficacy – helping to de-risk development and support innovation. Organ-on-a-Chip (OOC) technology is transforming industry's approach to drug development and precision medicine. In a pioneering development in infection R&D, iiCON provides access to OOC technology that enables companies to bypass in-vivo studies and connect multiple organs, creating holistic models that enable faster, more accurate 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.

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Advanced AMR Modelling

PLATFORM PARTNER: University of Liverpool
PLATFORM LEADS: Professor William Hope OBE (FRACP, FRCPA, PhD) Dame Sally Davies, Chair of AMR Research, UOL

This platform in molecular pharmacology and pharmacokinetics-pharmacodynamics (PK-PD) led by the University of Liverpool 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.

The multi-drug-resistant pathogens Pseudomonas aeruginosa and Acinetobacter baumannii are key threats to human health at a global scale. New drugs are urgently required, however robust tools to assess these compounds at the early therapeutic lead stage are poorly developed.

To support industrial innovation, we are extending a suite of model systems that enable new therapeutic solutions for Pseudomonas aeruginosa and Acinetobacter baumannii. These include new experimental model systems of hospital acquired pneumonia, which continues to be associated with unacceptably high mortality and developing engineered strains that display a variety of resistance mechanisms while remaining highly pathogenic.

5

Human Challenge: agile end-to-end clinical trials

PLATFORM PARTNER: Liverpool School of Tropical Medicine
PLATFORM LEAD: Professor Daniela Ferreira, Professor of Respiratory Infection & Vaccinology at LSTM & the University of Oxford

This platform provides single-point-access to an advanced clinical trials package that offers first-into-human testing across a full range of antimicrobial products and treatments – from hygiene and sanitation products, diagnostics, AI wearables and devices, to new therapeutics, and vaccines.

Leveraging the world-leading expertise of Liverpool School of Tropical Medicine (LSTM) and Liverpool University Hospitals NHS Foundation Trust's MHRA Phase 1 Accredited Clinical Research Unit (CRU), this all-in-one solution covers each stage of the trial journey from study protocol design to downstream analysis. This removes the need for companies to call on the expertise of multiple partners or Contract Research Organisations.

iiCON's platform provides access to the expert team at the Accelerator Research Clinic (ARC) led by Professor Daniela Ferreira. The state-of-the-art research facility has 18 beds co-located with adjacent laboratories allowing for high clinical and research standards and enabling rapid processing of samples due to clinic and laboratory proximity and the clinic's expert and experienced team.

6

Diagnostics

PLATFORM PARTNER: Liverpool School of Tropical Medicine and University of Liverpool
PLATFORM LEADS:
- Dr Ana Isabel Cubas Atienzar, Post-Doctoral Research Associate at LSTM
- Professor Andy Shaw, Head of the Built Environment and Sustainable Technology Research Institute (BEST) at Liverpool John Moores University
- Professor Rasmita Raval is a Professor in Chemistry and Director of the Surface Science Research Centre at UOL. She is also the Director of 'The Open Innovation Hub for Antimicrobial Surfaces' and a co-founder and director of the UK 'National Biofilms Innovation Centre'

This platform combines the expertise of three regional centres of excellence. It provides industry access to LSTM's broad-based global expertise in diagnostics, break-through sensor technologies developed by Liverpool John Moores University's BEST Research Institute, alongside world-leading surface analysis capability through the University of Liverpool's Surface Science Research Centre.

Sensor technology with advanced AI analysis is being used to help develop point of use non-invasive diagnostics. These range from the measurement of parasites in peripheral blood to quantification of insecticide concentrations on a range of surfaces. The technology is designed to support the real-world development and evaluation of impactful non-invasive diagnostics to quality assure and monitor infectious disease prevention and treatment in order to better protect communities.

Our programme also helps to develop, evaluate and validate more standard point of care and PCR based diagnostics. Our team offers industry access to world-leading expertise and facilities that support every stage of the product journey, from early-stage concept, through evaluation and regulatory approval, to adoption through our Foundation for Innovative New Diagnostics (FIND) and WHO accredited facility. We work with industry to assess analytical sensitivity and efficacy in real-world settings, providing valuable insights to accelerate optimal diagnostic deployment. Industry partners benefit from a broad diagnostic focus and expertise across a range of platforms including lateral-flow, antibody, antigen, and molecular testing.

World-leading surface design and analysis, through the University of Liverpool's Surface Science Research Centre, is enabling 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 enables the interaction between technology and biological systems to be studied with precision., Our expertise is available to support industry in leveraging this technology to bring forward innovation in the anti-infective surfaces space.

7

Randomised Control Trials

PLATFORM PARTNER: Liverpool School of Tropical Medicine
PLATFORM LEAD: Dr Dave Weetman, Reader, LSTM

Led by the Liverpool School of Tropical Medicine 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: Liverpool School of Tropical Medicine
PLATFORM LEADS:
- Professor Nicholas Feasey, Infectious Diseases physician and Professor of Clinical Microbiology at LSTM
- Dr Grant Hughes, Reader and Wolfson Fellow at LSTM
- Professor Nicholas Casewell, Acting Head of Tropical Disease Biology. Head of Centre for Snakebite Research & Interventions, Chair in Tropical Disease Biology & Wellcome Trust Research Fellow, LSTM

Supporting innovation and product development, this platform provides the expert insight required to optimally position health interventions. Industry partners can leverage the 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: University of Liverpool
PLATFORM LEADS: Dr Neill Liptrott, Reader and Coordinator of The Nanotherapeutics Hub, UOL

Led by The Nanotherapeutics Hub, located at the University of Liverpool, this platform provides industry and academic partners access to the Hub's expertise, in addition to its network of UK partner organisations to support the development of innovative new antimicrobials, and vaccines, leveraging nanotechnology.

The benefits, and promise, of nanotechnology, are clear. However, 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 supported by The Nanotherapeutics Hub's partnership with the National Measurement Laboratory and its links to national, and international, activities.

Introducing our new platforms: Antibody Humanisation and Long-Acting Therapeutics

10

LifeArc Antibody Humanisation

PLATFORM PARTNER: LifeArc
PLATFORM LEAD: Dr Preeti Bakrania, Head of Biologics Discovery and Development at 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.

How will Platform 10 drive innovation?
This new platform will make LifeArc's expertise in the field of antibody humanisation available commercially to any organisations collaborating with iiCON domestically or internationally.

LifeArc's expertise and track record of success in this field has helped transform the way many conditions are treated, with more than 90 antibodies humanised over the past 30 years and it has contributed to five marketed therapeutics. These results have been achieved by working with research teams and organisations to optimise and humanise the antibodies they have developed and move them closer towards patient impact.

LifeArc is embarking on a global health strategy that aims to accelerate the progression of affordable and accessible solutions that will help further the understanding, diagnosis and treatment of infectious diseases, reducing their prevalence, emergence and impact on lives around the world.

The partnership with LifeArc underlines a core aspect of iiCON's mission, which is to connect the dots across the health & life sciences sector to ensure that the best ideas and the newest technologies get the support they need to achieve significant, real-world results.

11

Long-Acting Therapeutics

PLATFORM PARTNER: University of Liverpool
PLATFORM LEADS: Professor Steve Rannard, and Professor Andrew Owen, Co-Directors of The Centre of Excellence in Long-acting Therapeutics (CELT) at UOL.

Led by the University of Liverpool, this platform provides access to the expertise within The Centre of Excellence in Long-acting Therapeutics (CELT) - 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.

How will Platform 11 drive innovation?
Long-acting therapeutics can have a huge impact for treatment and prevention of chronic diseases but also other applications for acute diseases where multiple pharmaceutical doses are required for successful therapy.

CELT intends to implement impactful solutions to the critical challenges that affect those suffering from these diseases and work with partners to better understand how these technologies can be of most benefit.

CELT aims to provide a better understanding of a range of technologies, to develop new interventions and harmonise strategies to accelerate long-acting therapeutic development and implementation. CELT collaborates globally with industrial, academic and charitable partners as well as patients and doctors, and is keen to establish new links to programmes that aim to deliver clear patient benefits.

This new 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.

Platform Leads

iiCON's platforms are headed up by leading global experts in infectious and tropical disease research, this world-leading expertise enables outstanding translational research. This unique blend of expertise across a number of therapeutic areas, coupled with best-in-class R&D facilities, creates a remarkable proposition designed to accelerate industry innovation and enable the discovery, development, and successful deployment of highly innovative therapies, vaccines, products, and diagnostics to combat the global threat posed by infectious diseases, resistant bacteria, and the pandemics of the future.

PLATFORM 1 LEAD:

Dr Adam Roberts, Reader and AMR Lead, LSTM.

Adam has been investigating the fundamental mechanisms of transferable AMR for more than 20 years and, since arriving at LSTM in 2017, has focussed on translational aspects of AMR and early-stage drug discovery and development.

His current research activities include investigations into the many drivers of resistance in a One Health context, the molecular genetics of resistance mechanisms and mobile genetic elements and how they contribute to the dissemination of AMR and the use of evolutionary biology to inform antibiotic treatment regimens and drug design. His team also carries out discovery projects, investigating novel antimicrobial natural products, target-site identification, mechanism of action, and determining the resistance development potential of novel molecules within LSTM's drug development pipeline.

Adam's research activities have led to more than 100 peer reviewed publications and reviews on AMR and his group is currently funded by the Medical Research Council, the National Institute for Health Research, UK Research and Innovation's Strength in Places Fund, and the European Regional Development Fund plus various charities including the Wellcome Trust and the Medical Research Foundation. He runs The Transposon Registry and the award-winning citizen-science, drug-discovery project Swab and Send, is the Network coordinator of the JPIAMR Network of European and African Researchers on AMR (NEAR-AMR) and is a policy advisor (Drug Resistance) to the Royal Society of Tropical Medicine and Hygiene.

PLATFORM 2 LEAD:

Dr Derek Lindsay, Chief Operating Officer, Infex Therapeutics.

Dr Lindsay was a co-founder of Redx Pharma and its Chief Operating Officer from 2012-17. His former roles include being a Director of Innovation of pharmaceutical industry consortium Britest Ltd from 2006 to 2012, and R&D Director of Avecia Pharmaceutical Products in a management career of more than 30 years. Derek has worked in R&D, Process Development and Hazards at Avecia and its predecessor businesses, Zeneca and ICI, which he joined in 1988, after initially working in R&D at BP from 1985.

PLATFORM 3 LEAD:

Professor Giancarlo Biagini, Dean of Research and Innovation, LSTM

Professor Biagini's career has focused on the biochemistry, pharmacology and therapeutics of human pathogens most notably Plasmodium falciparum and Mycobacterium tuberculosis. Basic biochemical research includes the characterisation of bioenergetic components in the respiratory chain and of key substrate and drug transporters. This fundamental work has contributed to our understanding of mechanisms of drug action, major resistance mechanisms in malaria and validation of novel targets for chemotherapy in both malaria and TB. He has over 20 years' experience in molecular pharmacology and drug discovery/development from the development of HTS campaigns to candidate declaration working with Industry and with product development partnerships (PDPs).

More recently, he has been involved in the development of new image-based pharmacodynamic platforms to identify and accelerate antimalarial and antitubercular pre-clinical drug candidates, as well as clinical pharmacology projects towards understanding PK-PD determinants of poor patient outcomes again for both TB and malaria patients. He is the drug lead within Research Centre for Drugs and Diagnostics (RCDD) at LSTM. He is chair of the LSTM Research Committee, Director of the MRC Doctoral Training Partnership in Translational and Quantitative Skills in Global Health and co-lead of LSTM's MRC Skills Development Fellowship programme.

PLATFORM 4 LEAD:

Professor William Hope OBE (FRACP, FRCPA, PhD) Dame Sally Davies, Chair of AMR Research – Director, Centre of Excellence in Infectious Diseases Research – Co-Lead, NIHR Infectious Diseases National Specialty Group University of Liverpool.

Professor Hope qualified in Medicine in 1991, before undertaking specialist training in infectious diseases and clinical microbiology. He completed his PhD in antimicrobial pharmacology in 2006, while undertaking fellowships at the University of Manchester, UK, and the National Institutes of Health, Bethesda, USA. He was an NIHR Clinician Scientist and this award focussed on individualised antimicrobial therapy.

Professor Hope leads the Centre of Excellence in Infectious Diseases Research (CEIDR) which focuses on infection therapeutics. Areas of special interest and research are antimicrobial pharmacokinetics and pharmacodynamics, antimicrobial drug development and individualisation of antimicrobial therapy.

He is a Fellow of the American Academy of Microbiology and European Society of Clinical Microbiology and Infectious Diseases as well as NIHR National Specialty Co-Lead for Infectious Diseases. Professor Hope is a Fellow of the Royal Australasian College of Physicians and a Fellow of the Royal College of Pathologists of Australasia.

PLATFORM 5 LEAD:

Professor Daniela Ferreira, Professor of Respiratory Infection and Vaccinology at LSTM and the University of Oxford.

Daniela is a global leader in respiratory mucosal immunity and Controlled Human Infection Models (CHIM) with experience in bacterial challenge, co-infection studies, vaccine testing and immune responses. She leads a large Programme of work on Experimental Human Pneumococcal Challenge and mucosal immunity with collaborators from over 50 laboratories worldwide including South America and Africa and over £20M from various funders including BMGF, MRC, UKRI, NIHR and top global industry partners.

She is the Head of the Liverpool Vaccine Team based at the Liverpool School of Tropical Medicine. To date her Liverpool-based team has safely challenged over 1800 participants with live bacteria in over 20 clinical studies in their bespoke Accelerator Research Clinic. Daniela has played a substantial role in the UK Covid-19 pandemic response including the leadership of the Liverpool's STOP COVID response and the NIHR NWC Vaccine Alliance Liverpool. Her Liverpool-based team was a trial site for several covid vaccine studies including the Phase II/III of the Oxford/AZ vaccine.

Daniela is on the management board of the HIC-VAC consortium SHE obtained a PhD in Immunology in 2009 from the University of Sao Paulo (São Paulo, Brazil). During her PhD Daniela was awarded the prestigious Robert Austrian Research Award in Pneumococcal Vaccinology to develop novel nasal vaccines (2006). Daniela joined the Liverpool School of Tropical Medicine in 2009 as a postdoctoral scientist and was promoted to Professor and Head of the Department of Clinical Sciences in 2018. She joined the University of Oxfordin June 2022.

PLATFORM 6 LEADS:

Dr Ana Isabel Cubas Atienzar, Post-Doctoral Research Associate at LSTM.

Ana obtained her degree in Veterinary Medicine from the University of Murcia in 2013 and obtained her PhD from the University of Salford (UK). Her PhD focused on the epidemiology and genetic diversity of parasite Toxoplasma gondii in the Peninsula of Yucatan, Mexico. Shortly after her PhD she was appointed as Research Fellow at the Roslin Institute, in Edinburgh where she worked on diagnostic development for porcine viral and bacterial diseases.

She joined LSTM in 2019 as a Post-Doctoral Research Associate working on the development and implementation of novel and Point-of-Care diagnostics for the detection of High-Consequence Infectious Diseases such as Crimean-Congo Hemorrhagic Fever, Lassa fever and COVID-19. She is additionally involved in molecular diagnosis of AMR markers and in the evaluation of a number of commercial tests, notably for SARS-CoV-2.

Professor Rasmita Raval is a Professor in Chemistry and Director of the Surface Science Research Centre at the University of Liverpool.

Rasmita is also the Director of 'The Open Innovation Hub for Antimicrobial Surfaces' and is one of the four co-directors of the UK 'National Biofilms Innovation Centre'. Her interdisciplinary research spans knowledge-based design of functional surfaces, molecular nanoscience and bio-interfaces. Her research group combines protocols for targetted assembly of functional nano-architectures and concurrent development and utilisation of powerful scientific techniques to probe the behaviour and performance of these systems at the atomic, molecular and cellular level. This experimental effort is combined with theoretical modelling to yield insights into molecular and biological responses and behaviour at interfaces. She also leads a dedicated innovation team to translate frontier research into technology platforms, with a specific focus on antimicrobial and anti-infective surfaces and materials. Accelerated translation is driven within an active and connected collaboration ecosystem involving multinational companies and SMEs across multiple sectors, healthcare stakeholders and regional, national and international agencies.

Professor Andy Shaw is the Head of the Built Environment and Sustainable Technology Research Institute (BEST) in the Faculty of Engineering and Technology at Liverpool John Moores University.

Andy also leads the RF and Microwave (RFM) research theme within the institute. He became a Reader in Environmental and Sustainable technology in 2010 within the BEST research institute and director of the BEST research institute in 2015 and attained his Professorship in Microwave technology in 2016. He has over 20 years of expertise in developing industrial applications, such as material cutting, vitrification, exhaust gas conditioning for vehicles, pyrolysis, torrefaction and gasification, microwave chemistry and microwave biodiesel production. Along with the design and development of numerous NDT sensor technologies for the process engineering, healthcare and manufacturing sectors. He is also a director of the CO Research Trust which is a charity that funds Carbon monoxide research.

PLATFORM 7 LEAD:

Dr Dave Weetman, Reader, LSTM

Dr Weetman graduated in Zoology (BSc) from the University of Newcastle-upon-Tyne and in Ecology (MSc) from The University of Wales, Bangor. His PhD at The University of Liverpool was followed by postdoctoral positions in the Molecular Ecology and Fisheries Genetics Group at the University of Hull. He joined LSTM in 2006 working as a senior PDRA on IVCC and then NIAID-funded projects on the genetic basis of insecticide resistance in the primary malaria mosquito Anopheles gambiae. He was appointed as Reader in 2020.

His research aims primarily to investigate the genes and mutations responsible for insecticide resistance in mosquitoes and phlebotomine sandflies and how these spread among populations. A goal of this work is to identify and apply DNA markers for molecular surveillance of insecticide resistance in control programmes. A second area of research is in questions related to the causes and consequences of vector speciation and population subdivision and how these regulate transfer of adaptive traits of medical importance. He is also broadly interested in the application of molecular techniques to applied ecological questions in vector biology. He coordinates the Vector Research Support group (VRS), which provides molecular and biochemical collaboration, training and services to students, visiting scientists and for control trials.

PLATFORM 8 LEADS:

Professor Nicholas Feasey is an Infectious Diseases physician and Professor of Clinical Microbiology at LSTM.

He is based at the Malawi Liverpool Wellcome Research Programme in Blantyre, Malawi. His research is focused on the surveillance and management of antimicrobial resistant bacterial infection, and taking a one health approach to exploring the transmission of enteric pathogens associated with invasive disease. His research group uses bacterial genomics, spatial statistics and transmission modelling in collaboration with the Wellcome Sanger Institute and CHICAS at the University of Lancaster.

Dr Grant Hughes, Reader and Wolfson Fellow at LSTM

Dr Hughes' PhD research at The University of Queensland focused on developing a symbiotic control strategy of an agricultural disease caused by a viral pathogen transmitted by Planthoppers. To further his expertise in the vector biology and symbiosis fields he undertook a Postdoctoral fellowship at Johns Hopkins School of Public Health, and then a Research Associate position at Penn State University where he examined the interactions between Wolbachia, a common bacterial endosymbiont of insects, other microbiota, and Plasmodium parasites in Anopheles mosquitoes. In 2015, he joined the Department of Pathology at the University of Texas Medical Branch as an Assistant Professor and focused on examining interactions between the microbiome and arboviruses in Aedes mosquitoes. Professor Hughes joined the Departments of Vector Biology and Tropical Disease Biology at LSTM in 2018 where his group works on arboviruses and microbes of mosquitoes.

Professor Nicholas Casewell, Director of the Centre for Snakebite Research & Interventions and Chair in Tropical Disease Biology at LSTM.

Following completion of his doctoral studies characterising the venom composition of medically important snake species at Bangor University, Prof. Casewell worked for two years for MicroPharm Ltd leading research and clinical development of snakebite treatments known as antivenoms. Thereafter, Prof. Casewell was awarded a NERC Independent Fellowship and returned to Bangor University to investigate the origin and function of fish venoms.

In 2014, Prof. Casewell joined LSTM and his research has since focused on understanding the basis for variation in venom toxin composition in snakes and rationally applying this information to devise new therapeutic solutions for combatting snakebite. In 2020, Prof. Casewell was appointed Director of the Centre for Snakebite Research & Interventions at LSTM, and currently leads a team of 25 individuals focused on biomedical, clinical and public health research activities in the UK and overseas relating to tropical snakebite.

PLATFORM 9 LEAD:

Dr Neill Liptrott, Lecturer of Pharmacology and Coordinator of The Nanotherapeutics Hub at the University of Liverpool.

Dr Liptrott has a background in pharmacology, immunology, immunopharmacology and molecular cell biology. His research is aimed at investigating the biological interactions of conventional and nanotechnology-enabled medicines and therapeutics as well as other novel therapeutic strategies such as cellular therapies. His team is also investigating impacts on cellular health and metabolism that may underpin these interactions and building structure-activity relationships between nanomaterial characteristics and their impact on biological systems using established and novel techniques.

Dr Liptrott was awarded a tenure-track fellowship within the department of Molecular and Clinical Pharmacology in 2015 and subsequently confirmed as a Lecturer in the Department of Molecular and Clinical Pharmacology where he heads a number of advanced therapeutics/materials immunocompatibility research programmes.

PLATFORM 10 LEAD:

Dr Preeti Bakrania, Scientific Director, Biologics Discovery and Development, LifeArc.

Preeti Bakrania, leads the Biologics Discovery and Development team in LifeArc's Therapeutic Translation Platform group within Translational Sciences. She oversees a team of 25 scientists based at sites in Stevenage and the Francis Crick Institute who are dedicated to the successful delivery of high-quality biological therapeutics to support LifeArc's Portfolio. She obtained her PhD in Biochemistry at the National Institute for Medical Research and has more than 20 years research experience working in a number of disease areas including neuroscience, oncology and ophthalmology with postdoctoral roles held within UCL, University of Cambridge and University of Oxford. She joined LifeArc 15 years ago and is an experienced project and portfolio manager. Preeti managed LifeArc's world-leading antibody humanisation portfolio, which has been involved in the development of five commercialized drugs, including Keytruda® and Leqembi®, and also led LifeArc's portfolio to generate fully human antibodies using the Intelliselect® Transgenic Platforms against a number of target classes across a wide range of disease areas for pre-clinical development.

Preeti is a passionate scientist who thrives on the successful delivery of drug discovery programmes to the clinic for the benefit of patient healthcare and has a track record of success with a number of publications, named inventor on four patents and has been a Board Observer for DJS antibodies which was recently acquired by Abbvie.

PLATFORM 11 LEADS:

Professor Steve Rannard, co-director of the Centre of Excellence for Long-acting Therapeutics (CELT)

Steve is a professor of chemistry at the University of Liverpool. He is a co-director of the Centre of Excellence for Long-acting Therapeutics (CELT), the academic lead for Nanomedicine within the Materials Innovation Factory and Director of the Radiomaterials Laboratory within the Department of Chemistry. His therapeutic research primarily focuses on advanced materials science onto unmet medical/clinical needs to target new patient benefits using scalable polymer syntheses, nanoparticle synthesis, solid drug nanoparticle formulation and nanoemulsion platforms. Steve spent 16 years in industry (Cookson, Courtaulds, Unilever) and has co-founded four start-up companies (IOTA Nanosolutions Ltd, Hydra Polymers Ltd, Tandem Nano Ltd, and Polymer Mimetics Ltd). Steve was the first recipient of the RSC/Macro Group UK Young Researcher of the Year medal, sequential RSC Industrial Lectureships at Strathclyde and Sussex, a visiting lectureship at Sussex, visiting Professorship at UOL, and a Royal Society Industry Fellowship.

Professor Andrew Owen, Co-director of the Centre of Excellence for Long-acting Therapeutics (CELT)

Andrew Owen is a co-director of the Centre of Excellence in Long-acting Therapeutics (CELT) at the University of Liverpool. He is principal investigator for LONGEVITY, an international project funded by Unitaid that aims to translate long-acting medicines for malaria, tuberculosis, and Hepatitis C Virus. Andrew also leads a modelling and simulation core and sits on the executive group for the NIH-funded Long-acting/Extended-release Antiretroviral resource Programme (LEAP). He is a Director and Chief Scientific Officer for Tandem Nano Ltd. and co-inventor of patents relating to drug delivery. Since March 2020, he has been intensively engaged in evaluation of SARS-CoV-2 antiviral candidates.

Impact: Driving Forward Life-saving Innovation

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.

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

OVER 154
academic/industry collaborations have been enabled

36 NEW PRODUCTS
have come through the iiCON programme to reach patients and consumers

175 CONTRACTS
with commercial or industrial partners have been signed

OVER £700M
spent on Infection R&D activity within the North West alone since launching

Impact: Case studies

Each iiCON platform is driving forward life-changing innovations and supporting the development of life-saving products and therapeutics. Bringing together industry and cutting-edge research to support co-innovation at every stage of the innovation journey, our programme supports dynamic translational research. Here we explore impact case studies from a selection of our platforms.

Platform Five Impact Study: Enhancing pneumococcal vaccine development

PLATFORM LEAD

Professor Daniela Ferreira
Professor of Respiratory Infection and Vaccinology at LSTM and the University of Oxford

The platform's team is collaborating with both Pfizer and MSD on vital pneumococcal vaccine development projects. These are the two largest global manufacturers of pneumococcal vaccines and they are refining these vaccines via a novel challenge model created in partnership with iiCON.

These projects will develop novel Experimental Human Pneumococcal Challenge (EHPC) models with pneumococcal serotype 3 (SPN3) to understand more about this particular disease serotype and potentially test efficacy of current in use and novel pneumococcal vaccines, with a particular focus on nasal immunology. This will allow researchers to better understand how vaccinated patients are protected against the disease entering the body in the most common way - via the nose. Together, the information gathered by these clinical trials will improve future vaccine production as well as inform roll out by identifying at-risk groups and vaccine efficacy across populations.

Platform Two Impact Study: Futureproofing against outbreaks and pandemics

PLATFORM LEAD

Dr Derek Lindsay
COO, Infex Therapeutics

Covid-19 created global interest in novel therapies which could improve pandemic preparedness. Infex Therapeutic's COV-X programme is one which holds substantial promise and is being supported through iiCON's Hits to Leads platform.

COV-X works by targeting a protein which is essential for viral replication across a broad spectrum of related coronaviruses, including SARS-CoV-1, MERS-CoV and SARS-CoV-2.

Recent research has shown that the structures of key essential proteins are consistent across different coronavirus types, giving the potential to develop new therapeutics with broad spectrum activity across related pathogens with the potential for futureproofing against outbreaks and pandemics.

If successfully developed, COV-X could form a first line of defence against future pandemics. It would be administered as a precautionary measure to vulnerable groups including the elderly, immunocompromised people, and healthcare workers, greatly reducing the health risks and buying time to allow a bespoke vaccine to be produced.

The COV-X programme is supported by the Strength in Places Fund. It has also been supported by the Medicines Discovery Catapult at Alderley Park and a grant of £850,000 from Innovate UK Biomedical Catalyst towards the development programme.

Platform Eight Impact Study: Quantifying pathogen transmissions

PLATFORM LEADS

Professor Nicholas Feasey
Infectious Diseases physician and Professor of Clinical Microbiology, LSTM

Dr Grant Hughes
Reader and Wolfson Fellow, LSTM

Professor Nicholas Casewell
Director of the Centre for Snakebite Research & Interventions and Chair in Tropical Disease Biology, LSTM

IiCON partners LSTM and Unilever are collaborating on a project to quantify the transmission of pathogens between surfaces and people. Through this collaboration, a methodology to quantify the transfer of pathogenic viruses from surface to skin and from skin to surface was developed. This methodology has been utilised to quantify SARS-CoV-2 survival and transfer and to understand the risks associated with people's interaction with contaminated environments.

This work has demonstrated that SARS-CoV-2 is readily transferred from contaminated surfaces to the skin. Once on the skin, SARS-CoV-2 can survive for hours to days, depending on environmental factors such as temperature and humidity. Currently, the developed methodology is being used to evaluate monkeypox virus survival and transfer, and to evaluate the effectiveness of different interventions such as surface and hand disinfection.

Platform Seven Impact Study: Combatting malaria in vulnerable communities

PLATFORM LEAD

Dr David Weetman
Reader, LSTM

Mosquito nets are a key weapon in the battle to protect communities from malaria. iiCON has conducted important research and large-scale trials into the protection offered by insecticide treated mosquito nets. Work from Uganda has shaped the World Health Organisation's (WHO) recommendations for malaria prevention, resulting in a recommendation for WHO Prequalification to change policy advice for PBO-nets.

Following this important work, 33% of the millions of treated mosquito nets distributed in Africa in 2021 were PBO nets – helping to protect communities and save lives.

A second ongoing trial in the Democratic Republic of Congo is expanding the geographical breadth of the work into central Africa, and implementing a novel method for collection of comparative epidemiological data, by testing visitors to ante-natal clinics to measure malaria prevalence. This model, which embeds naturally into ongoing health programmes, can provide continuous, large-scale data at reduced cost to facilitate broader assessments of new products.

Platform Three Impact Study: Developing new organoid models

PLATFORM LEAD

Professor Giancarlo Biagini
Dean of Research and Innovation, LSTM

There are currently no models that will demonstrate the effectiveness of a drug on the Neisseria gonorrhoea bacteria within human cells. This is a significant hurdle in getting a new drug approved to treat this disease.

Within iiCON, consortium lead LSTM and life sciences company Evotec are working together to overcome obstacles in the development of new drug therapies for this disease, which is becoming an ever-increasing problem worldwide.

The consortium partners are working together to develop an organoid model that will overcome this problem and are collaborating closely to create conditions that allow the intracellular growth of the organism.

This work will generate test systems that are more relevant for the discovery of new drugs. In addition to well-characterised reference strains, new clinical strains will also be utilised in the test system. Advanced imaging technology will be employed to visualise the movement of the organism within the human cells. The project will start by studying a single-cell system and then move on to more advanced organoid platforms.

This is a promising project that will help to overcome a significant obstacle in the race to develop new treatments for gonorrhoea.

Bringing together world-leading researchers and industry to tackle the key infection challenges facing communities is at the heart of iiCON's purpose. This is a great example of how collaboration can propel innovative R&D and enable a step-change in the diagnosis and treatment of infectious diseases.

Professor Janet Hemingway, founding Director of iiCON

Regional Impact

iiCON's Merseyside SME Support Programme 2021 - 2023

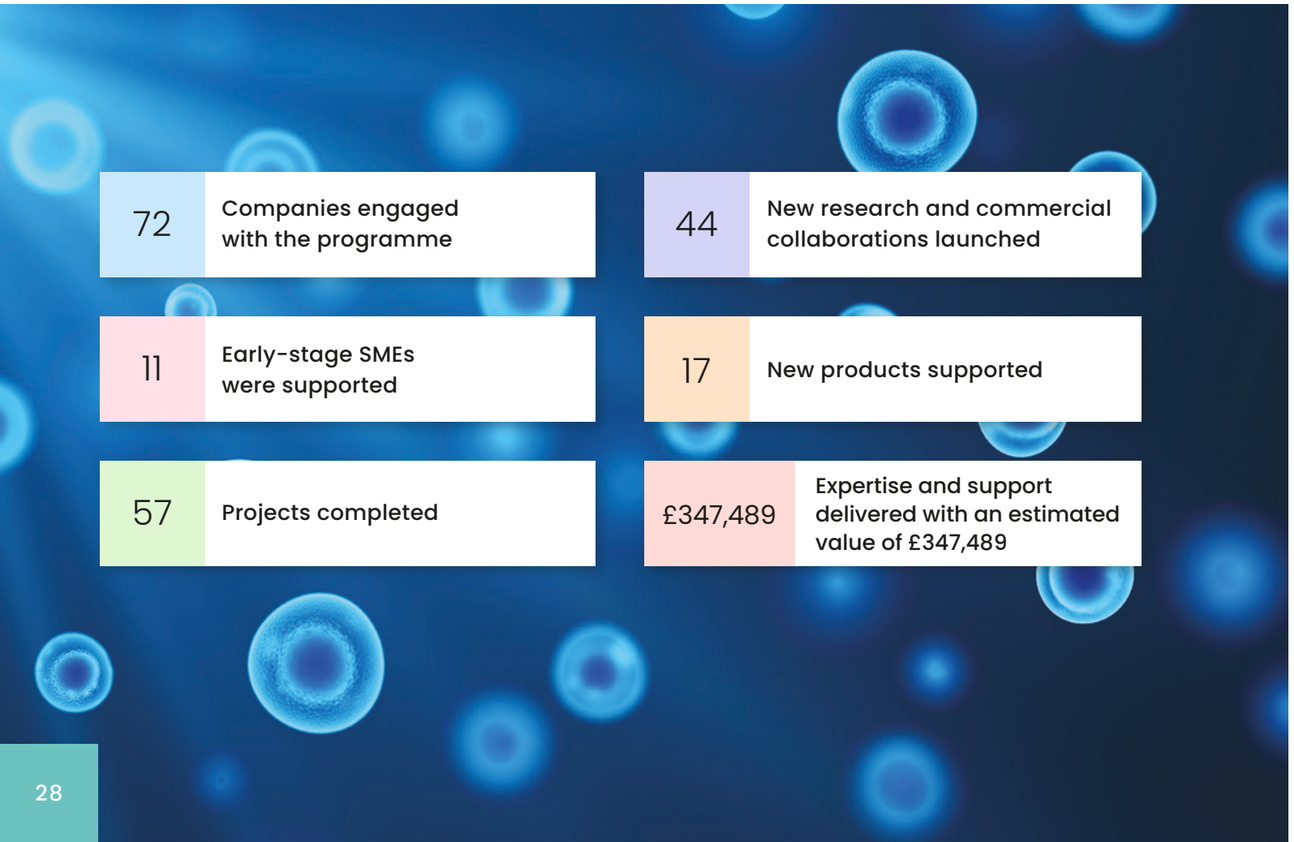
Supported by the European Regional Development Fund (ERDF), iiCON's Merseyside SME Support Programme has successfully propelled some of Merseyside's most innovative new life science businesses – stimulating R&D and economic growth in the region.

Designed to boost regional innovation, the programme has been instrumental in helping specialist companies play a role in combating deadly infectious diseases such as COVID-19 and malaria. The two-year programme, which completed in 2023, had significant impact – supporting a dynamic pipeline of infectious disease products and further establishing the region as a life science incubator and a magnet for international investment.

Delivered in partnership by LSTM and the University of Liverpool, the programme provided Merseyside SMEs access to worldclass expertise and facilities across three key focus areas to support product development: Screening for AMR Emergence; Novel Surfaces and Materials; and Diagnostic Evaluation. Facilities and expertise available included AMR testing platforms combined with a microbiology suite in the Materials Innovation Factory supported by Unilever at the University of Liverpool; a surface chemistry suite at the Open Innovation Hub for Anti-Microbial Surfaces at the University of Liverpool; and a Diagnostics and Engineering suite to enable diagnostic development and evaluation – supported with expertise from the LSTM and Liverpool John Moores University.

Thanks to this support, **17 new products** have been progressed, generating revenue for local businesses and improving the health and wellbeing of people around the world. These include COVID-19 diagnostic products, sewage sampling devices for the early detection of infectious diseases and sensor technology that will help eliminate vector-borne diseases such as malaria.

During the programme, **57 projects** were completed for regional companies. **More than 70 companies** have engaged with the programme, representing a range of sectors, including engineering, chemicals, diagnostics and manufacturing.



SME Impact Studies

Impact study 1: Bio Data Networks

Supported by iiCON, Merseyside start-up Bio Data Networks Limited (BDN) is developing a set of promising new devices that will act as a surveillance tool to provide early warning of outbreaks of infectious diseases.

Regular sampling and analysis of sewage can enable the early detection of infectious disease or resistance markers within a population. This type of monitoring is particularly key in instances like the COVID pandemic where some individuals can be asymptomatic.

To enable BDN to further develop and test its exciting new products, iiCON connected the company to the expertise within the Antimicrobial Chemotherapy and Resistance Group at LSTM, which designed and conducted a comprehensive series of experiments in real-world scenarios.

This initial study has led to an additional £1.2m of funding being awarded from the Joint Programming Initiative on Antimicrobial Resistance (JPIAMR), to further develop the system for microbiological detection and surveillance within sewage systems.

Impact study 2: Gencoa

A study at the Royal Liverpool University Hospital will explore how a new antimicrobial coating can protect the NHS by reducing healthcare associated infections (HAIs). To lower the risk of HAIs by touching contaminated surfaces, a new type of antimicrobial film coating has been developed by vacuum coating solutions specialist Gencoa. This film technology has been used on surfaces in busy public areas and Gencoa is now looking to explore applications in healthcare settings. The initial stage of assessing the product's viability for hospitals was undertaken as part of iiCON's ERDF SME support programme. A fully funded study was conducted to verify the potential effectiveness of Gencoa's antimicrobial coating. The research particularly focused on pathogens for which new antibiotic treatments are required. The results proved that this solution could in principle be applied to a hospital setting and the data was a key part of Gencoa receiving additional funding for a larger study alongside LUHFT and LSTM.

Innovate UK awarded a £584,066 funding grant as part of its BioMedical Catalyst Award to a partnership between Gencoa, Diamond Coatings, LSTM and LUHFT to optimise their coating for use in healthcare environments and look for real world data on efficacy and safety in a clinical environment. Antimicrobial coatings will be installed within clinical environments including touchscreens and door handles in the Royal Liverpool University Hospital.

The coatings will be in place for up to 12 months and will be assessed for how they perform under standard NHS Infection Prevention and Control guidance for cleaning. Systematic environmental testing will be performed of coated and uncoated surfaces to look for differences in contamination. Parallel to this, testing will be conducted in a mock ward environment at LSTM to investigate whether changes to clinical cleaning pathways could be safely considered. To create the coatings, the Midlands based Diamond Coatings Ltd. will transfer the new technology to production and develop a high-volume roll-to-roll capability for coating adhesive pads in order to protect screens and other surfaces.

> *The ERDF funded study that we conducted within iiCON meant that Gencoa could access our advanced research facilities and the skills of a world-leading team that specialises in infectious diseases in order to prove the antibacterial performance of its new film coating. This was significant, as it helped achieve further funding from Innovate UK and a partnership with LUFHT which will move the research onto the next stage and take the results from our laboratories into the real world.*
>
> **Dr Adam Roberts (LSTM), lead researcher on the Gencoa study at iiCON**

Impact study 3: NanoBiosols

Nano Biosols, a Merseyside SME, has filed a patent for novel technology it has developed to enhance the sensitivity of lateral flow tests - enabling their use across a much broader range of diseases.

Lateral flow tests have been routinely used during the pandemic to detect infection. However, although lateral flow tests are a relatively cheap, user-friendly, and effective testing method, they are generally not as sensitive as the gold standard PCR test for detecting

active infection. Nano Biosols' novel gold nanoparticle technology can improve the sensitivity and readability of lateral flow tests in cases where detection lines are only faintly displayed.

Through iiCON's Merseyside SME support programme, Nano Biosols worked with iiCON and partners LSTM to undertake initial testing and evaluation of its novel technology. The diagnostics team at LSTM was able to evaluate lateral flow test performance with and without the addition of the Nano Biosols reagent and showed improved detection limits and readability of tests.

Impact study 4: Assist Hygiene

When considering how to tackle antimicrobial resistant (AMR) bacteria, biofilms are of particular concern in hospital or healthcare associated settings because they can act as reservoirs of AMR bacteria and are inherently challenging to eradicate, a situation exacerbated by the scarcity of biofilm focused cleaning agents on the market.

Under this project, iiCON worked with Assist Hygiene, a Wirral based manufacturer of hygiene products that specialises in the design, development and production of wet and dry wipes for industrial purposes. As a hygiene specialist, Assist Hygiene is acutely aware of the global challenge posed by AMR. The company wanted to establish the antibacterial performance of different formulations by comparing a novel biodegradable wipe material to the standard wipe material.

To achieve this, iiCON evaluated three disinfectant formulations on two wipe materials against multidrug resistant (MDR) bacteria. Wipes impregnated with different formulations were tested against dry biofilms on stainless steel surfaces by simulating real-world wiping conditions.

Assist Hygiene wipes, which are marketed under the Protex brand name, showed no recoverable viable bacteria from MRSA, P. aeruginosa or A. baumannii biofilms, suggesting these products were highly effective against these bacterial dry biofilms on steel surfaces. As it is not possible to completely prevent biofilm formation, eradication of these structures is an attractive strategy for infection control.

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Regional Impact

Creative approaches to community health

iiCON is supporting innovative regional programmes which leverage creative community-led approaches to promote health equity within the Liverpool's most disadvantaged communities.

The Liverpool Vaccine Equity Project

Designed to halve COVID-19 vaccine inequity levels in Liverpool, this award-winning project, led by LSTM and funded by Liverpool City Council, was delivered in 2022. It successfully developed local solutions based on local data, to overcome barriers to vaccine uptake.

> *The project won a Building Collaborative Communities Award at the Smarter Working Live Awards, 2023, which celebrate innovation, collaboration, and excellence in the public sector.*

The Liverpool Vaccine Equity Pilot Project leveraged global health learnings, driven by teams based within local communities. Building on LSTM's experience actively tackling avoidable and unfair differences in health in the Global South, it used COVID-19 vaccination as a lens. It piloted a community-led intervention to understand vaccine hesitancy in the Central Liverpool Primary Care Network (CLPCN) and developed data-driven interventions to tackle health equity.

Community champions and innovation teams improved vaccination uptake among ethnic minorities by 20% in practice data from Liverpool 8; among women of reproductive age by 11% in Central Liverpool PCN data and among white men under 50 years by 11% in Vauxhall data. This was compared to general rates of COVID vaccine uptake which rose by 6% in the routine practice data during the same timeframe.

The project won a Building Collaborative Communities Award at the Smarter Working Live Awards, 2023, which celebrate innovation, collaboration, and excellence in the public sector.

Phase 2 – Health Equity Liverpool Project (HELP)

Following the success of the pilot programme, the project's second phase launched in December 2022. iiCON, LSTM, Capacity Development International and four additional Primary Care Networks across Liverpool are working to scale the original approach to reach more communities. The project is also providing capacity strengthening to three additional PCNs to develop a community-led approach to promote health equity.

The project brings together academics in social science and health systems with global experience addressing health inequity and delivering public health interventions in communities with the greatest gaps in uptake of immunisation and cancer screening; primary health care teams; and community experts, to support public health and behaviour change leaders in Liverpool City Council.

The community-led model is being delivered by three new community innovation teams. Each team has selected its own health equity priority based on community's specific needs. They are focusing on MMR immunisations for children aged 1 to 6 years old; Breast Cancer Screening for women aged between 50 and 70-years old who have missed mammography appointments; women aged between 25 and 64 requiring cervical screening who are asylum seekers or refugees and are on the Learning Disabilities or Severe Mental Illness register.

ReCITE: Building Research by Communities to Address Inequities Through Expression

Culture and the arts support health and wellbeing, shifting the focus from 'disease' to people. In this exciting programme, funded by the AHRC, storytelling is being used to collect data, highlight inequities to policy makers, provide health messages to communities and redirect public agendas to promote health equity.

LSTM, working with Edge Hill University, Liverpool John Moores University, Writing on the Wall and Capacity Development International, was awarded nine months funding between 2022 and 2023 to build a research consortium. The consortium brings together Liverpool-based stakeholders to tackle health inequities in Liverpool's most underserved communities through arts and culture with an initial focus on storytelling.

> *The consortium brings together Liverpool-based stakeholders to tackle health inequities in Liverpool's most underserved communities through arts and culture ...*

The ReCITE consortium aims to scale-up and sustain the integration of storytelling into community and health system efforts to promote health equity by building a legacy of trust and collaborative action. The consortium has created a Theory of Change and expects commissioners and policymakers will see the benefits of scaling-up and sustaining a strategic creative health approach which builds community trust and increases health equity.

Pembroke House

iiCON has been central to establishing a new multi-million pound centre in Liverpool that is developing the next generation of global health leaders.

Pembroke House – located in the heart of the city's Knowledge Quarter – officially opened in 2022. The collaborative centre led by LSTM and iiCON features innovative learning platforms and cutting-edge facilities, increasing capacity to develop the local, national and international health workforce and to train future leaders in public health and translational research.

The centre is designed to bring together industry, education and communities, helping to future-proof the North West's capability in infection R&D excellence, by providing bespoke industry-focused training - engaging and enriching the regional community.

Within the centre, co-located industry and academic activity supports the interface between research and education – driving co-innovation. High-quality simulation and immersive reality suites, digital learning commons and flexible working spaces, are helping to accelerate impactful partnerships and create a globally-connected digital learning environment, facilitating productive interactions with industry, NHS, philanthropic partners, students and local communities.

> *Within the centre, co-located industry and academic activity supports the interface between research and education – driving co-innovation.*

Since its launch, Pembroke House has played a key role in facilitating dynamic collaboration with industry, NHS, philanthropic partners, students, communities, and other local stakeholders.

iiCON and LSTM are utilising the facilities at Pembroke House to develop the skills and capabilities of the sector's talent at all career stages, from local school students to experienced researchers. This is being achieved through a variety of workforce development efforts as well as creative, community based educational programmes with partners such as Everton Football Club.

Specific initiatives delivered since the launch of the building include supporting a number of diverse school outreach and engagement programmes with partners including KQ Liverpool. The centre is being used to host and facilitate visits and engagement activities reaching young people from across the Liverpool City Region, Cheshire & Warrington and the broader North West. While a diverse training portfolio for all LSTM staff from PhD students and Research Managers to Principal Investigators is being implemented by LSTM.

The centre is also acting as a nucleus for events and workshops designed to drive translational activity. Since launching, it has already played host to a rich variety of industry-focused events, all delivered on a non-profit basis.

These include industry networking events; dynamic workshops with partners from industry, academia, and the NHS, exploring topics such as accelerating the adoption of SME innovation across our national health systems; pitching events featuring global venture capitalists and highly-innovative SMEs working at the cutting edge of infection R&D; accelerator events with fast-growing SMEs in the microbials sector in partnership with key regional organisations Lyva Labs and Bio Now; and a selection of events designed to bring together and support the interface between industry and research and drive impactful translational activity.

Going forward, iiCON will continue to utilise the centre to drive forward impactful partnerships between industry, research, and the NHS to support pioneering infection innovation R&D, contributing to the Liverpool City Region target of R&D increasing to 5 per cent of GDP.

Secured with funding from the Liverpool City Region Combined Authority (LCRCA), generous donations from leading philanthropic organisations including The Garfield Weston Foundation and Lord Leverhulme's Charitable Trust have supported the development of the new centre.

iiDiagnostics

iiDiagnostics, iiCON's first spinout, facilitates industry engagement and commercial access to advanced diagnostics, R&D expertise, and facilities.

This dynamic commercial platform supports the discovery and development of innovative, life-saving diagnostics. It supports co-innovation and partnership working, enhancing the delivery of new diagnostic solutions that will ease the global burden of disease.

Previously, iiDiagnostics activities were housed within separate research groups at LSTM. However, this set up lacked the flexibility to fully optimise the skills and unique capabilities of the teams and their facilities.

Now, iiDiagnostics enables industry to directly interact with its game changing scientists to support the assembling, marketing and distribution of innovative new diagnostics, vector control products or sensor technology. The sensor technology is co-developed with Liverpool John Moores University.

iiDiagnostics offers industry access to the UK's only validation site for the Foundation for Innovative Diagnostics (FIND). This encompasses expertise ranging from the development of point-of-care diagnostics such as rapid-diagnostic-tests (RDTs) to simplified molecular diagnostics that can be used at the community level. The team has also worked on a range of targets including emerging infectious diseases, antimicrobial resistance, and neglected tropical diseases.

Through iiCON's new spinout, businesses can access the Liverpool Insect Testing Establishment (LITE). Originally established by LSTM's Vector Biology Department and now incorporated into iiDiagnostics, LITE is world-renowned for its research on insecticide resistance in disease vectors. LITE tests new insecticides or repellent based products against a wide range of mosquito populations for commercial partners.

Professor Hillary Ranson, Professor of Medical Entomology at LSTM and founder of LITE, is iiDiagnostics Chief Scientific Officer.

"iiDiagnostics supports every stage of the diagnostic development journey from early-stage concept and specification design to prototype development, end-stage evaluation and regulatory approval," said Professor Ranson.

> *...enhancing the delivery of new diagnostic solutions that will ease the global burden of disease.*

Professor Janet Hemingway, iiDiagnostics CEO, explains: "With world-leading experts backed by LSTM's FIND and WHO accredited facility, we are the collaborator of choice for industry partners. We are increasingly in demand due to our broad diagnostic focus and skills across a range of platforms including lateral-flow, antibody, antigen, and molecular testing, in addition to access to Biological Safety level 3 laboratories."

Current iiDiagnostics priorities include developing new methods to assess insecticide levels on bed nets. This will help resolve quality control issues encountered when countries or big organisations procure significant quantities of nets.

> *iiDiagnostics enables industry to directly interact with its game-changing scientists to support the assembly, marketing and distribution of innovative new diagnostics, vector control products or sensor technology.*

Future Proofing

Investment & Job Creation

368 Contracts signed with iiCON to date

278 Jobs created and safeguarded in the North West

175 Contracts with commercial or industrial partners

559 Total jobs created to date

Capacity Development – future-proofing the Infection R&D landscape

IiCON has been working to develop the North West's world-leading infection R&D capabilities. The newly completed Capacity Development Centre at Pembroke House is playing a central role in developing the local, national and international workforce required for the future of public health and translational research.

The centre's inaugural event was held on the 7th November 2022 and featured a talk on antimicrobial resistance by Dame Sally Davies as part of LSTM's 125th anniversary lecture series.

Other initiatives to advance the sector's skills and capabilities include iiCON's expert team presenting a series of masterclass lectures and workshops via the Bloomsbury Consortium platform.

Capital Contracts

iiCON has secured capital investment of £37.7 million over the past three years. Key capital projects under development include an in-patient human challenge facility (HCF) at LSTM's Accelerator Building. 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 become 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.

Leverage and Scale of Programme

£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.

£202 million
Total value of iiCON portfolio

177
Total funding awards

Funding income by year

Funding by platform

Core funding: UKRI Strength in Places Fund

iiCON's core £18.6 million government funding was provided through UK Research and Innovation's flagship Strength in Places Fund (SIPF). SIPF is a competitive funding scheme that takes a place-based approach to research and innovation funding, to support significant local economic growth. SIPF helps areas of the UK to build on existing strengths in research and innovation to deliver benefits for their local economy. It aims to support innovation-led regional growth and enhance local collaborations involving research and innovation.

The European Regional Development Fund (ERDF)

iiCON secured £3.3 million from the ERDF to support its Merseyside SME Support Programme and leveraged a further £3.3 million to create a £6.6 million programme. The ERDF aims to strengthen economic, social and territorial cohesion in the European Union by correcting imbalances between its regions.

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, Vice President 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 also Chairman of the UK Chemistry Council Innovation Committee.

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 Pia Thommes

Dr Pia Thommes , Ph.D., Vice President Anti-infectives at Evotec leads the infectious disease operations at Alderley Park, Cheshire, and is part of the infectious disease's 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 as well as NIHR National Specialty Co-Lead for Infectious Diseases.

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.

Dr Mike Strange

Dr Mike Strange, LifeArc Head of Global Health. Mike oversees LifeArc's three Global Health Translational Challenges in: Antimicrobial Resistance, Neglected Tropical Diseases and Emerging Viral Threats. These challenges aim to reduce the burden of infectious diseases by enabling the translation of scientific innovations, accelerating their path to deployment in underserved populations.

Tim Ellis

Tim Ellis is a Senior Business Manager and LifeArc's accountable lead for the iiCON partnership, supporting Mike Strange as LifeArc's Head of Global Health.

iiCON Advisory Panel 2023

Helen Jamet

Deputy Director, Vector Control Bill & Melinda 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

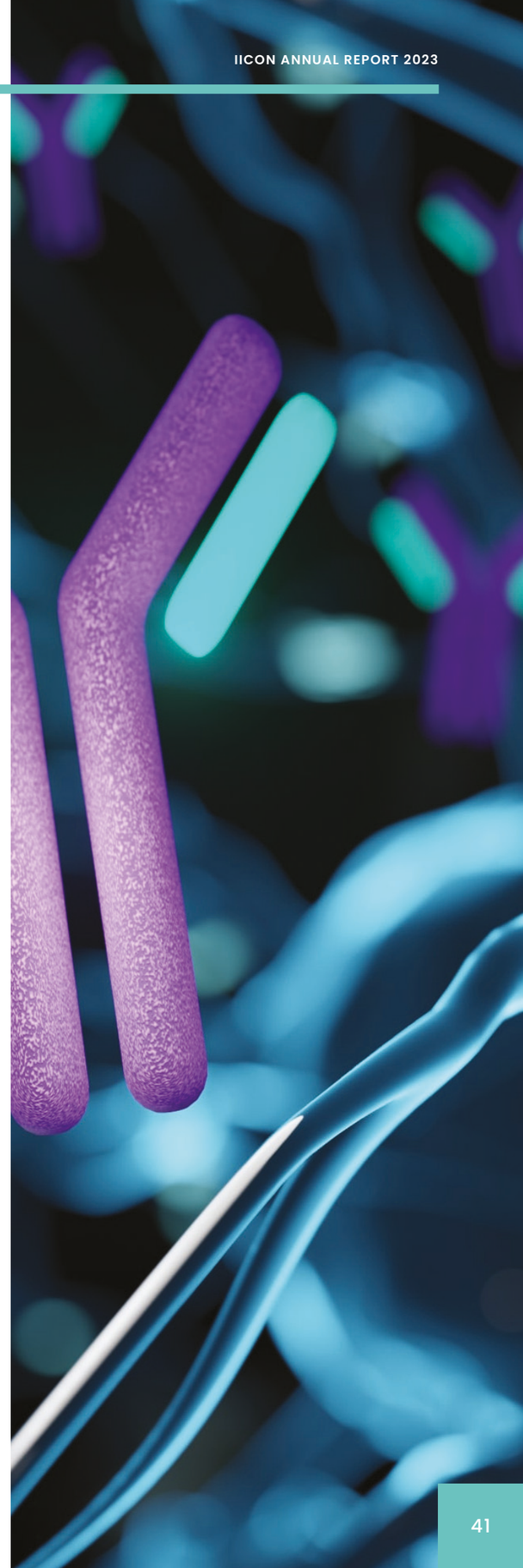
D.Phil, President and Chief Executive Officer of ArrePath, a Princeton University spin-out biotech company harnessing imaging and AI/ML technologies to discover and develop new classes of anti-infectives

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



Closing Comments

“From the world’s first school dedicated to researching tropical medicine to saving and improving millions of lives through collaborative innovation, few places can claim to have made a bigger impact on global health than ours.

“I’m incredibly proud of our region’s legacy in infectious disease control – but I’m not content with resting on our laurels. I want to catapult our area to the forefront of UK science and innovation and take advantage of the thousands of jobs and training opportunities it will bring to our area. iiCON will have a significant role to play in helping us achieve that target and I’m looking forward to watching it continue to grow and expand.”

Steve Rotheram,
Mayor of the Liverpool City Region

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

UK Research and Innovation

NORTHERN POWERHOUSE

European Union
European Regional Development Fund

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