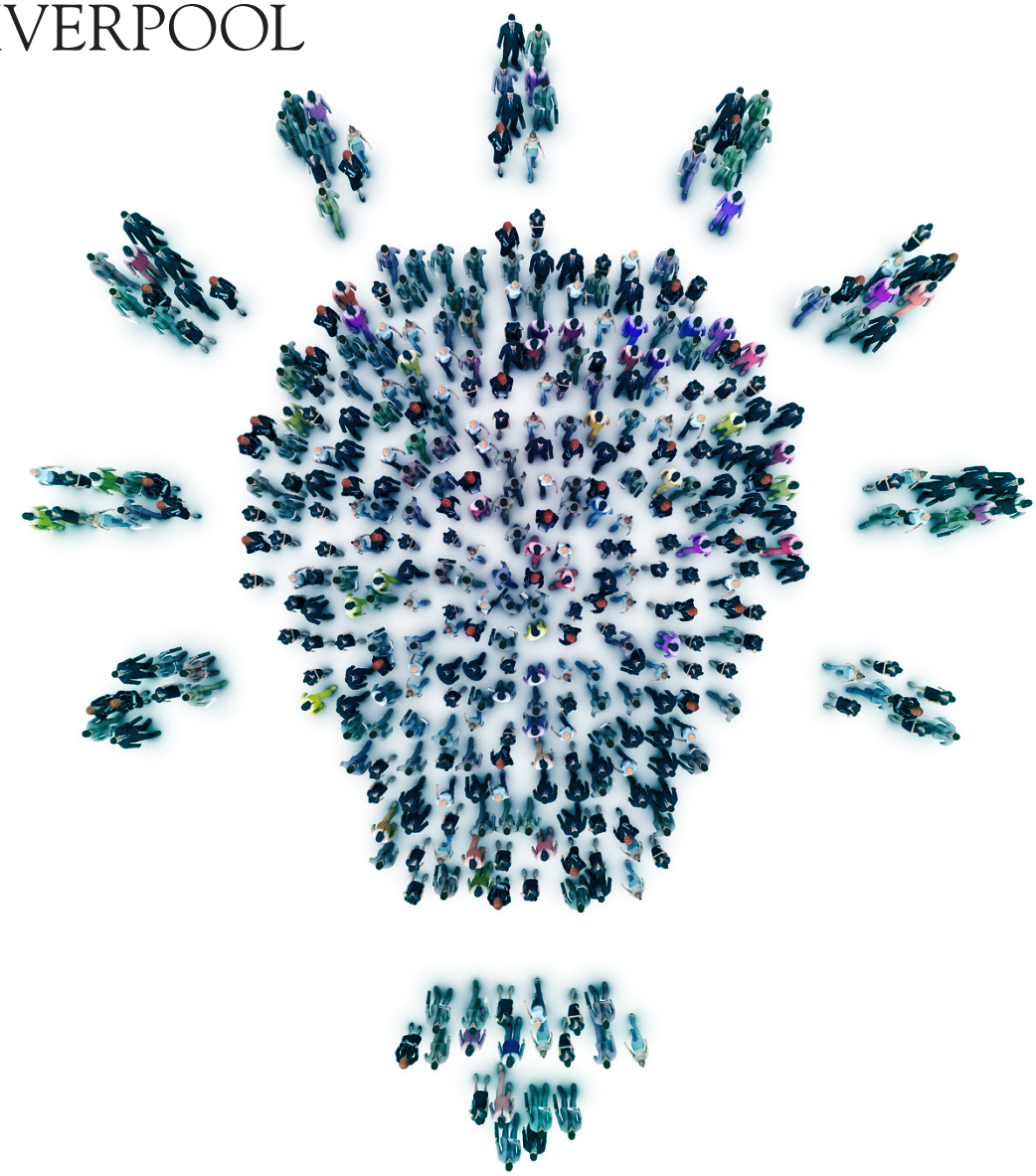
UNIVERSITY OF LIVERPOOL



FROM IDEAS TO IMPACT

ENTERPRISE YEAR IN REVIEW 2023/24

We are the Original Redbrick

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INTRODUCTION

FROM IDEAS TO IMPACT

Welcome to **From Ideas to Impact**, our 2023-24 year in review, highlighting the University of Liverpool's progress in academic enterprise - licensing and ventures.

At the heart of our mission is the University's commitment to driving technology transfer through innovative research. By investing in academic entrepreneurs, we empower them to create spin-out companies and license pioneering technologies that are shaping a better, more sustainable future.

With our portfolio expanding each year – 24 spin-outs supported over the past six years – we showcase how some of the University's high-growth companies are making an impact across the Liverpool City Region (LCR) and globally.

FOREWORD

PROFESSOR ANTHONY HOLLANDER

PRO-VICE-CHANCELLOR FOR RESEARCH & IMPACT

We are living through a period of profound transformation, where the research and ideas fostered within academia are essential in tackling some of society's most pressing challenges.

Through our ground-breaking research and collaborations, we are not just keeping pace with global shifts, we are leading the way toward a more sustainable, equitable, and technologically advanced world.

Over the past year, we've made significant progress in executing our enterprise strategy and are beginning to see the benefits of our investments in enhancing capabilities and building partnerships to support the growth of successful spin-out companies.

Under the leadership of our Vice-Chancellor, Professor Tim Jones, who joined in January 2023, we have made strong progress in advancing our agenda. His commitment to making enterprise a strategic priority will continue to drive us forward.

In July 2024, the University received a transformative £1M donation from The Sir Peter Rigby Charitable Trust to establish the **Sir Peter Rigby Centre for Enterprise.** This Centre will enhance student employability and enterprise education both across the University and throughout the LCR, with the goal of reaching 50,000 people during its three-year pilot. Aligned with the Vice-Chancellor's mission, this gift will help drive a step change in our work, supporting the wider ambitions of our valued partners across the LCR.

In May 2024, we supported the launch of the Liverpool City Region Combined Authority's (LCRCA) **LCR Life Sciences Innovation 'Investment' Zone,** a transformative initiative aimed at unlocking £800M in investment and creating 8,000 new jobs. This funding will drive the expansion of some of the University's world-leading research and innovation assets, opening exciting opportunities for both new and existing spin-out companies.

In November 2023, the UK Government published an **independent review of university spin-out companies,** examining the UK's spin-out landscape and outlining a vision to make the country a "science and technology superpower." The review calls for the creation of a

world-class centre of spin-outs that exceeds the Silicon Valley model. Anticipating these recommendations, we undertook a consultation in 2023/24 to review our IP and equity sharing policy and spin-out guidelines, which are now aligned with the **recommendations from Research England**. We will continue to assess these findings to identify further opportunities to increase the impact of this critical area of our work.

Our excellent progress in IP and Commercialisation was recognised in Research England's **Knowledge Exchange Framework (KEF4)***, where we now sit in the highest quintile amongst the country's leading universities for knowledge exchange. This reflects our renewed strategic focus and investment in resources and projects to support an entrepreneurial culture.

Our ambition remains high. Over the next five years, we are committed to building on these successes as we work together to put the University on the UK's innovation map.

Professor Anthony Hollander
Pro-Vice-Chancellor for Research & Impact

"I am thrilled that the University of Liverpool's IP and Commercialisation activity has progressed to the highest quintile in the KEF results. This shows the University's commitment to exploiting its world-leading expertise and knowledge assets to contribute to solving global challenges. I look forward to seeing what the future holds as we work together to put the University and the Enterprise Team on the UK's innovation map."

Alison Campbell, CEO of the UK Government Office for Technology Transfer

"The University of Liverpool is arguably our main anchor institution for maximising our world-leading innovation assets and driving growth. Everything we do across the City Region is done in partnership; our watchword is 'collaborative leadership,' and the University is integral to all those efforts."

John Whaling, Lead Officer – Innovation and Commercialisation, Liverpool City Region Combined Authority.

* Led by Research England, KEF is a metrics-driven assessment framework providing a range of information on the knowledge exchange activities of universities in England, and how they work with external partners for the benefit of the economy and society.

DRIVING IMPACT: A YEAR OF GROWTH AND INNOVATION

EMMA NOLAN, HEAD OF UNIVERSITY OF LIVERPOOL ENTERPRISE

This year has been focused on consolidating and strengthening the expanded Enterprise Team, ensuring that we continue to provide support to aspiring entrepreneurs and our growing portfolio of spin-out companies.

To better support academic innovators, we have recruited specialists across our teams. In 2023, we established the **MedTech and Bioscience Enterprise Team**, employing technology transfer practitioners in fields such as drug discovery and digital health to support these rapidly growing areas across the University and the LCR. In 2024, we expanded the capabilities of the Science & Engineering Team, including additional capacity in Advanced Materials and Manufacturing sectors, where the University holds world-class research expertise. To drive this agenda forward, we appointed **Dr Thomas Pugh** as the new Head of Enterprise (Science & Engineering). His role is central to guiding the commercialisation of research for long-term success, addressing global priorities, including Net Zero.

Howard Duffy recently joined the team in a newly created post of Spin-out & Portfolio Manager, increasing team resources and capacity to streamline and accelerate our spin-out process. Howard will also focus on building strong investor relations and expanding our talent pool of mentors, coaches, CEOs and NEDs (Non-Executive Directors).

Creating investible founders

We remain committed to investing in enterprise training and entrepreneurial activities. Our partnership in the **North by Northwest consortium continues,** and since 2018, we have participated in 30 ICURe programmes. Our research teams have secured over £2.4M in ICURe follow-on-funding, resulting in eight spin-out companies. ICURe is the UK's leading early-stage research pre-accelerator programme, funded by Innovate UK.

We also **deliver in-house training,** including the Future Founders Programme, now in its third year. This six-week programme offers professional development and bespoke coaching to help researchers transition from academia to the start-up world.

In April 2024, we launched the 'Commercially Curious Programme' to foster a more entrepreneurial culture across the University. This six-week programme offers insights into how IP can generate impact and is designed for those new to enterprise, with a focus on early-career researchers.

A year marked by success

We have celebrated many notable achievements this year alongside our spin-out founding teams. Some key highlights include:

Thiotech won the Royal Society of Chemistry's (RSC) **2024 Emerging Technologies Competition** in the Environment category. This spin-out company has developed a new patented technology to capture highly toxic compounds of mercury in addition to recovering precious metals, such as gold, more efficiently and sustainably. Founded by Dr Tom Hasell (Chief Scientific Officer) and Dr Bowen Zhang (CEO) from the **Department of Chemistry**, the company continues to explore markets and develop technology under the direction of Liam Dodd, who recently joined as Chief Operating Officer. Thiotech has developed a series of sulfur containing materials that bond selectively with certain dissolved metal ions, making it an ideal technology for both waste management and recovery of precious metals from mining effluent, and many other industries.

Two University of Liverpool spin-out companies were shortlisted in the **Liverpool City Region Tech Climbers 2024 list,** showcasing the growing stars of the Region's tech sector:

- **Atomik AM,** founded by **Professor Kate Black,** was shortlisted for the 'Tech Climbers Main List' as one of the six 'Trailblazing Newcomers' companies. The company heralds a new model for manufacturing businesses. Their solution-focused ethos, cutting-edge chemistry and solutions-based engineering combine to help fulfil the business needs and ambitions of manufacturers.

- **Plasma2x Limited,** founded by **Mike Craven** and **Xin Tu** from the University's Department of Electrical Engineering and Electronics, was recognised as 'Tech Climbers Ones to Watch'. The company is revolutionising the production of ammonia. Their plasma and electrocatalysis process enables environmentally sustainable production of ammonia from air and water. Powered by renewable energy, their technology provides a solution for the growing demand for sustainable ammonia production in energy, agriculture, and maritime sectors.

InnotiveDx (previously PhenUTest) has gone **from strength to strength.** In July 2024, the company

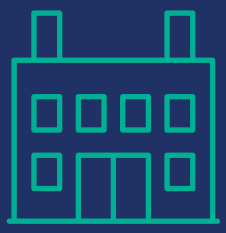
secured a further £2.5M equity investment in Series A Tranche 1, set to accelerate its product development towards the market. InnotiveDx is developing a rapid, accurate, point-of-care diagnostic system for urinary tract infections (UTIs), which have a major global healthcare impact, with 8M people suffering from the infection every year in the UK alone. Based on science discovered in **Professor Douglas Kell's** laboratory in the Institute of Systems, Molecular and Integrative Biology, by co-founder and Chief Scientific Officer **Dr Srijan Jindal**, the company is led by **Will Wijnberg** and **Guy Reynolds**. It now has a team of 20 full-time employees working on developing its late-stage prototypes, with a clear route to market in the United States.

Robotiz3d now part of Exa Robotic Systems, is advancing its mission to create safer, more sustainable road infrastructure for the cities of the future. Specialising in autonomous pothole detection, prevention, and repair technology, Exa Robotics is driving innovation with transformative solutions. Building on the progress made in previous years, the company recently secured further investment from **Praetura Ventures** to accelerate its market development efforts. Moving forward, Robotiz3d plans to further expand under the guidance of a newly strengthened board, continuing to push the boundaries of road technology.

These successes, along with many other achievements, continue to lay a solid foundation for our spin-out portfolio. We reported a more than three-fold increase in investment received into our spin-outs and anticipate that a number of our companies will close further Seed and Series A rounds in 2024/25.

2023/24

YEAR IN REVIEW ENTERPRISE



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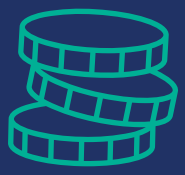
Number of spin-outs supported in the last 6 years



£23m+

in intellectual property (IP) related income to the University since 2018

(HE-BCI in 2023/24)

£2.7m

IP-related income to the University

(HE-BCI in 2023/24)

131

Number of jobs created

(HE-BCI in 2023/24)

£8.9m

Industry, grant and translational funding secured for projects in our pipeline (2023/24)

£5.6m

University Enterprise Investment funding invested since 2018*

£28m

Leveraged investment, industry or grant funding into spin-out companies/ the University in a 6-year period**

* Committed from the Enterprise Investment Fund (EIF) since 2018, which, to date, has resulted in **£28 million of investment, industry, and grant funding into spin-out companies or the University. Figures up to 31st July 2024.

SPIN-OUT CASE STUDY

AI-SIGHT

Revolutionising Diabetic Retinopathy Screening with AI Technology

Diabetic retinopathy, a leading cause of blindness, affects 40% of people with diabetes globally, which equates to over 500 million individuals. To address this growing issue, AI-Sight, a University of Liverpool spin-out, is developing an innovative artificial intelligence (AI) screening solution to reduce vision loss caused by diabetes.

Founded in 2022, AI-Sight aims to commercialise a next-generation AI system for diabetic eye screening. The company's technology interprets retinal images to assess the severity of diabetic retinopathy, reducing reliance on expensive medical expertise. Trained on over 1.6 million retinal images, the AI system is highly sensitive, specific, and web-based, making it easily integrated into healthcare systems worldwide.

AI-Sight's technology works by combining machine learning with human expertise to deliver more accurate, cost-effective screening. It can be deployed across various healthcare settings, interpreting images from any retinal camera. This innovation addresses the global challenge of scaling diabetic retinopathy screening and improving access to early interventions that can prevent blindness.

The company, led by an experienced commercial management team, medical professionals and researchers from the University of Liverpool, has already secured significant investment, including support from the University's Enterprise Investment Fund. AI-Sight also recently concluded a successful seven-figure funding round, with investors including Pitalia Capital (the family office of Anil Pitalia, Founder of SpaMedica) and Deepbridge Capital.

AI-Sight's first commercial product, a Class 1 medical device, supports the training and diagnostic decision-making of human graders.

The company has partnered with the InHealth Group, the UK's largest specialist provider of diagnostic solutions, to conduct clinical studies and further develop its technology. InHealth has been working closely with the NHS for over thirty years.

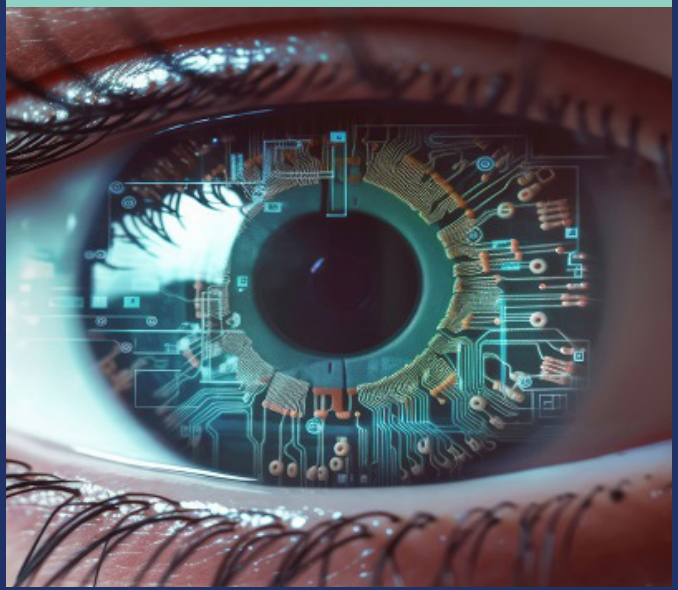
With regulatory approval underway, AI-Sight is positioned to launch its diagnostic platform in the UK and internationally. The company's work promises to have a profound impact on public health systems by improving patient outcomes and promoting more efficient use of healthcare resources.

AI-Sight is a prime example of how University research can translate into life-changing technologies with global social and economic impact.

Department: **Department of Eye and Vision Science**

Lead Researcher: **Prof Simon Harding**

Company: **www.ai-sight.co.uk/**



SPIN-OUT CASE STUDY

ATOMIK AM

Reshaping Advanced Manufacturing for a Sustainable Future

The manufacturing industry is constantly evolving, and staying competitive requires constant innovation. Atomik AM, a recent spin-out from the University of Liverpool, is at the forefront of this change, offering a unique blend of advanced chemistry and engineering expertise to drive cost reduction, waste minimisation, and positive social impact within advanced manufacturing.

Founded by Prof Kate Black, Chief Executive Officer and Professor of Manufacturing at the University's School of Engineering, Atomik AM brings a fresh approach to manufacturing challenges. The company specialises in providing tailor-made solutions to businesses in the automotive, aerospace, and energy sectors. Atomik AM's flagship service, Customer Innovation Projects (CIPs), empowers manufacturers to define, drive, and optimise their innovation strategies, helping them remain competitive in an increasingly fast-paced industry.

At the heart of Atomik's offering is the use of cutting-edge advanced manufacturing technologies that manipulate materials at the molecular level. The company employs a hybrid of additive and subtractive manufacturing processes to create bespoke materials and designs, delivering the precise functionality required at the product level. Whether offering material-only solutions or full machine design and build services, Atomik's approach ensures that manufacturers can meet their unique needs with precision and efficiency.

Atomik AM's technology is already making an impact across multiple industries. The company works with major names such as Unilever and Ricoh, offering consultancy, training, and access to state-of-the-art manufacturing technologies. The multi-disciplinary team of 12, including chemists, designers, and engineers, is focused on delivering both economic and societal benefits by helping customers innovate in a sustainable manner.

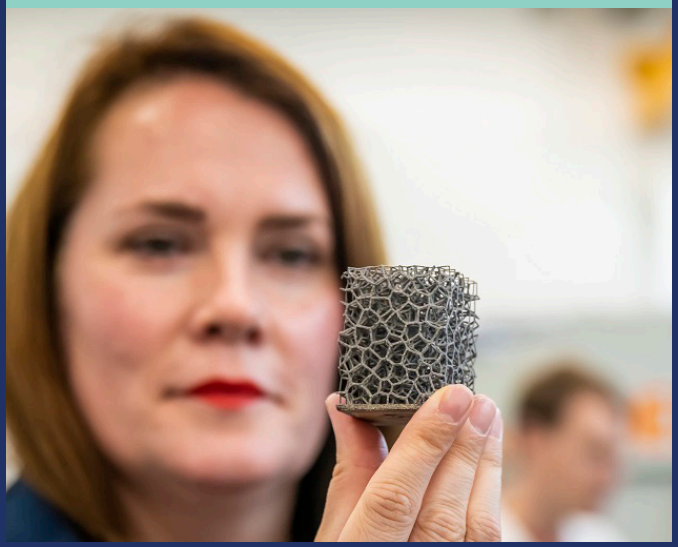
The company's innovation and success have not gone unnoticed. Atomik AM was named one of the "Trailblazing Newcomers" in the Liverpool City Region Tech Climbers Main List 2024, recognising it as one of the standout companies in the region's tech sector. In addition, Atomik has attracted significant investment, including funding from the University's Enterprise Investment Fund, further solidifying its position as a leader in advanced manufacturing.

As Atomik AM continues to expand its impact and secure further investments, it stands as a prime example of how innovation in advanced manufacturing can drive both business growth and positive societal change.

Department: **School of Engineering**

Lead Researcher: **Prof Kate Black**

Company: **atomik-am.com/**



SPIN-OUT CASE STUDY

GALYTX

Developing Novel Drugs for Cancer and Fibrotic Diseases

Galytx, a University of Liverpool spin-out, is at the forefront of developing innovative therapeutic drugs targeting galectin-3, a protein linked to the progression of fatal diseases such as cancer, fibrosis, and inflammation.

Galectin-3 has gained significant attention in recent years for its role in the pathogenesis and progression of these diseases. Pharmaceutical companies are already working on galectin-3 inhibitors, with some undergoing clinical trials. However, Galytx's breakthrough comes from research led by Lu-Gang Yu, Professor of Glyco-oncology at the University of Liverpool and Co-Founder/CSO of Galytx, which identified several non-carbohydrate, synthetic small molecules as potent galectin-3 inhibitors. These novel compounds show great promise for developing new treatments for these life-threatening diseases.

Galytx's portfolio includes both clinical and pre-clinical assets. The company's lead clinical asset is a repurposed drug with a proven safety record, allowing for a faster clinical development pathway. Its pre-clinical compounds have the potential to become injectable therapeutics for acute use. This combination of assets uniquely positions Galytx to lead in the development of galectin-3 targeted therapies.

Professor Yu, a pioneer in the field, highlighted the potential of these inhibitors to treat fatal diseases associated with cancer and fibrosis-related organ failures in the heart, lungs, and kidneys. He expressed excitement about the opportunity to translate years of research into potential patient benefits.

The Galytx team includes Dr Karen Sullivan (CEO), an experienced leader in technology commercialisation, along with Helen Delahaye (Operations Director) and Dr David Cook (Specialist Advisor), both with extensive backgrounds in pharmaceutical drug discovery and development.

The company has received funding from the University of Liverpool's Enterprise Investment Fund and Innovate UK and is working to secure Series A investment for further development. Galytx aims to bring innovative, effective treatments to market quickly, offering a promising solution to a broad range of galectin-3 related diseases.

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

Lead Researcher: **Prof Lu-Gang Yu**

Company: **www.galytx.com/**

MEET OUR ENTERPRISE TEAM

Emma Nolan
Head of the Enterprise Team

Dr Carolyn Horrocks
Head of Enterprise (Health)

Dr Sarah Brumskill
Senior Enterprise Manager (Health)

Dr Tansi Khodai
Senior Enterprise Manager (Health)

Dr Nicolas Nunn
Associate Enterprise Manager (Health)

Ruth Tittle
Innovation and Entrepreneurship Co-ordinator

Dr Zining Wang
Senior Enterprise Manager (Digital & Data)

Dr Thomas Pugh
Head of Science and Engineering

Charlotte Relf
Senior Enterprise Manager (Science and Engineering)

Dr Stephen Casabella
Senior Enterprise Manager (Science and Engineering)

Howard Duffy
Spin-Out and Portfolio Manager

Dr Michal Filus
Enterprise and Entrepreneurship Manager

Chris Walters
Intellectual Property Manager

Cijo Varghese
Assistant IP Manager

Danielle Main
Legal & IP Associate

Debbie Yates
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Research, Partnerships and Innovation

For enquiries related to student start-up and entrepreneurship, contact the **Careers and Employability Department.**