

RESILIENCE: UK Medicines Manufacturing Skills Centre of Excellence

5th November 2025











RESILIENCE partners & funders



A national network pioneering delivery of new, standardised and quality assured training and learning materials for the medicines manufacturing sector.







Innovate UK



Gary Lye Co-Director



HWU Lead



Teesside Lead



BRITEST Lead

Teesside University UNIVERSITY^{OF} BIRMINGHAM

Ivan Wall Co-Director **UoB Lead**





















Strategic Collaborations



We are working in synergy with other nationally funded skills initiatives and a scalable, UK-wide, membership network addressing all medicines modalities:























RESILIENCE events across the nation



England



Scotland



Wales



Northern Ireland

Event scheduled for 12 Nov

Addressing the national skills needs



Acute skills shortage



- How to attract to STEM
- Mobilising diverse talent
- Re-training needs
- Talent pipeline

We need to increase the whole talent funnel

Sector is evolving



- New therapeutics
- New technologies (digital, automation, PAT)
- Emerging tech (AI, robotics)

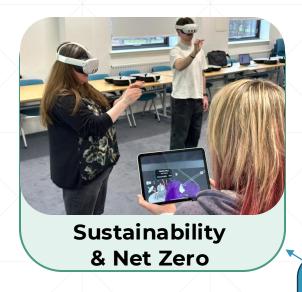
Skills and competency needs of the sector are evolving

Radical change needed



- Traditional approach does not = workplace readiness
- Alternative learning styles
- Net zero

New approaches fit for industry and fit for the learner







Our Mission







Over 40+ Courses in Core Portfolio

Quality-Assured across expert training organisations

Fundamentals in upstream and downstream processing

Certificate of Upstream Bioprocessing (IBioIC) Mastering Protein Purification using Chromatography Techniques (IBioIC) Advanced Downstream Bioprocessing: From Harvest to Purity (IBioIC)

Piolet-Scale Upstream Bioprocessing: 300L

Bioreactor training (IBioIC)

BioProcess360: Integrated Upstream and Downstream BioProcessing training (IBioIC) Applied Skills in Mammalian Cell Bioprocessing (IBioIC)

Introduction to Practical Fermentation (IBioIC) Introduction to Practical Downstream

Bioprocessing (IBioIC)

Practical Skills for Upstream Bioprocessing (TU)

Practical Skills for Downstream Bioprocessing (TU)

Advanced Downstream Bioprocessing (TU)

Advanced Upstream Bioprocessing (TU)

Practical Skills: Cell Culture Methods for Drug

Testing (TU)

Principles of Fermentation Processes (UCL)

Rapid Fermentation Process Development (UCL)

Downstream Processing: Primary Recovery (UCL)

Downstream Processing: Chromatography (UCL)

Cell Culture and Analysis (UCL)

Chromatography (UCL)

Microbial Fermentation (UCL) NEW

Mammalian Cell Culture Bioreactors (UCL)

Membrane Processes (UCL)

Pilot Scale Fermentation and Cell Recovery (UCL)

Cell Culture Boot Camp (UoB)

Process design, modelling and economics

Design of Experiments for Bioprocess

Optimisation (UCL)

Data Analytics, Machine Learning and Al for

Biomanufacturing (UCL)

Bioprocess Design and Economic Evaluation (UCL)

Bioprocess Facility Design (UCL)

Quality by Design for Effective Bioprocess

Characterisation and Validation (UCL)

Process Automation, Big Data and PAT (TU)

Data Analytics 1: Introduction To Statistics (UoB)

Data Analytics 2: Using R for Statistics (Online) (UoB)

Data Analytics 3: How to Use Matlab/Prism (UoB)

Python Essentials for Medicines Manufacturing (UoB)

Demystifying Statistics and Mathematics

for Bioscientists (TU)

Analytical techniques

Flow Cytometry for Advanced Therapies (TU) Mass Spectrometry for Biopharmaceuticals (TU) Host Cell Protein Analysis (TU)

Core GMP training

Cleanrooms and GMP behaviours (UoB) GMP Equipment, Materials Handling, and Manufacturing Processes (UoB) Measuring and Documenting Quality, Risks, and Failures (UoB)

Introduction to GMP & Quality for Medicines Manufacturing (TU)

Fundamentals of GMP and Quality (UoB)

Specialist areas

Vaccine Bioprocess Development and Commercialisation (UCL) Cell and Gene Therapy Bioprocessing and Manufacture (UCL)* NEW Antibody Targeted Therapies (UCL)* Industrial Biotechnology: Sustainable Bioprocesses and Biorefineries (UCL)* Manufacture of Cell and Gene Therapies (UCL) Introduction to Advanced Therapies Medicinal Products (UoB) Manufacturing Technologies for ATMP Production (UoB) Sustainable Medicines Manufacturing (UoB)

^{*} On-line courses

Training examples













'Accelerator' for Returners



Leadership Accelerator



Roslin®





INDUSTRY DEMOS









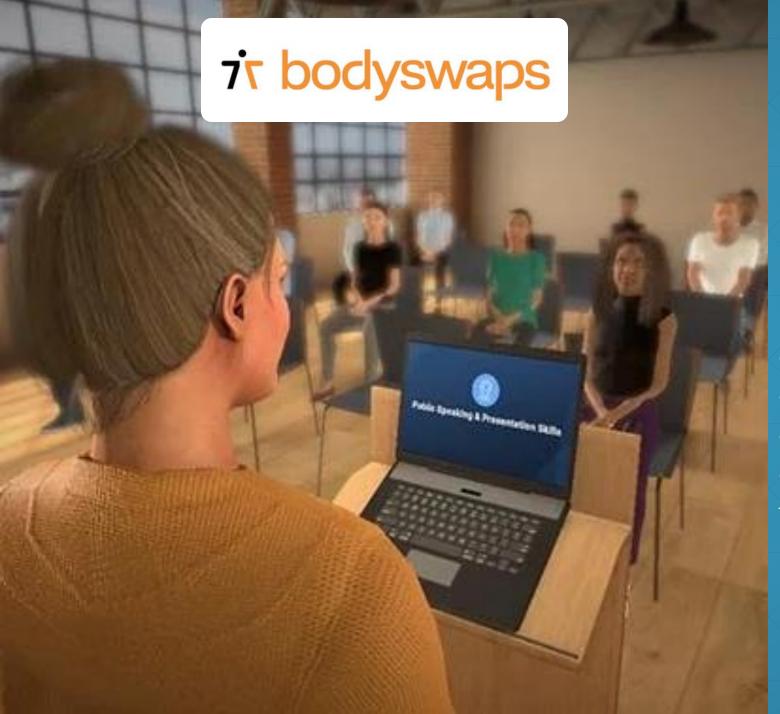






- Access to GMP labs anywhere
- Digital skills development
- Reduce training time and lab waste/plastics
- Scaling of training and talent pipeline
- Safe Space & Flexibility
- Prepare individuals to be 'facility-ready'
- 3000+ future talent have received hands-on training with cleanroom manufacturing equipment







Employability Skills

- Communication
- Leadership
- Teamwork
- Interview practice

True-to-life VR scenarios: step into various roles and experience different perspectives.





Outreach examples





Schools Career Evenings



National Careers Fair School STEM Events



Conferences & Festivals



LEARNING ACTIVITIES











RESILIENCE Resources





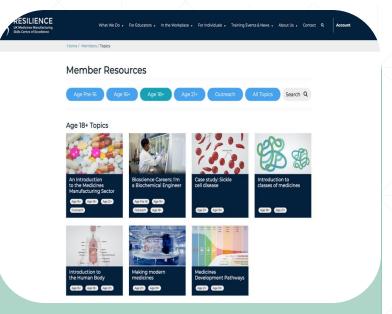
Accelerator Programmes

Post-16; Apprenticeships; Undergraduate; Leadership (Postgraduate / Early Careers)

Educational Materials

Lecture materials; Infographics; Workshops; Outreach materials





Online Resources

UNIFROG videos; Mentoring; Apprenticeships; Careers; Hub support

RESILIENCE website – user organizations





Building and scaling the talent funnel



51,000+

Prospective talent via

210+

member organisations access to our web resources

15,000+

In-person engagement, outreach and education 12,500+

Students viewed received digital careers support via Unifrog 1,500+

Trained on RESILIENCE courses

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Colleges

Universities

Industry

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The AI Skills Hub: A one-stop shop for AI upskilling

Talent & Skills Connect event

Al is redefining competition across countries, sectors and individuals





Al Skills are now becoming an **economic differentiator** at country, sector, and individual level.



Without investment in AI, **inequalities will continue to rise** between countries and business that are early adopters, and individuals with these skills.



Research consistently shows that a **lack of skills is the top barrier** that is holding employers back from adopting emerging tech, such as AI.



This is the context that led to Innovate UK commissioning a new service for businesses – the UK's first free at point-of-use AI Skills Hub.

The AI Skills Hub has been launched to provide businesses with a one-stop-shop for Al upskilling



aiskillshub.ora.uk

The AI Skills Hub is helping employers to tackle two key questions:

- Where do I start with adopting AI into my business?
- 2. How do I access the skills to deliver on my Al adoption plans?

4 key sectors



Agriculture & Food Processing



Transport, Warehousing & Logistics



Creative



Construction

4 key stakeholder groups

Employers

Large corporations, SME's, nonprofits and NGOs and recruitment and staffing agencies

Training and learning providers

Institutions and organisations providing and / or developing training regarding Al-related skills

Technology partners

Organisations supporting AI innovation and infrastructure **Incubators supporting AI startups**

Learners

Entry-level careers, job seekers with prior experience, currently employed workers and freelancers and contractors

The AI Skills Hub provides access to training, research and AI experts



aiskillshub.org.uk



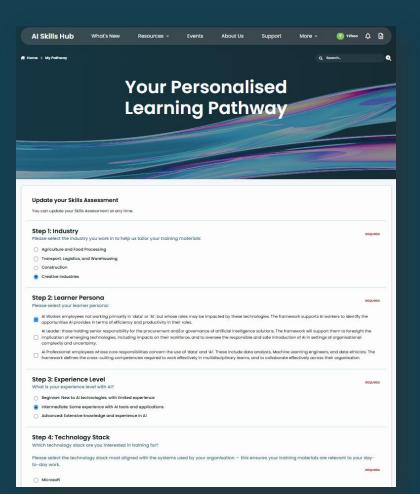
The AI Skills Hub connects employers and workers with sector-specific use cases and trusted, high-quality training to help build AI skills. This includes:

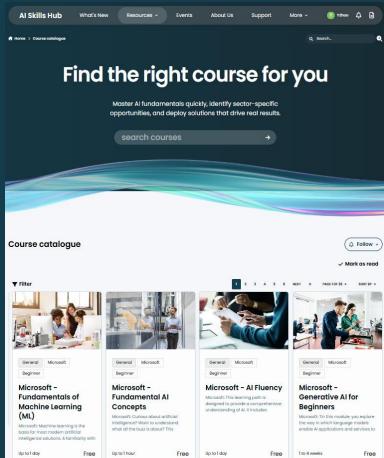
- Training and Development: Find a wide range of courses and training in AI, from beginner to advanced levels.
- Personalised Learning Pathway: Upskill with tailored course recommendations.
- Data and Insights: Access reports and market data on AI trends, skills demand, and workforce needs, helping both employers and workers stay ahead of the curve.
- Connection and Collaboration: Meet fellow sector professionals and AI experts through the Hub's various events.

Explore the Hub – Live demo



aiskillshub.org.uk





The Al Skills Hub is a flexible platform that supports every learner.

Whether you're looking for a **tailored pathway** based on your sector, role, or skill level

- or prefer to **explore Al learning** content at your own pace, the Hub offers something for everyone.

Next steps: Register for the AI Skills Hub and join our AI discussion later this month

What next?

- Access the Al Skills Hub: Register today and share the resources available on the Hub with your colleagues and peers.
- Stay connected: We have a series of events lined up throughout the year, keep an eye out for opportunities to get involved.
- Shape the next phase of insights: Join our virtual sessions on 18th and 20th November to discuss how organisations are using AI and which skills are most in demand. Register via the AI Future Dialogues link to share your voice and support the future training on the Hub.



Scan to explore the AI Skills Hub





Empowering a sustainable workforce for the future of electrification.





ABOUT US



VISION

Empowering a sustainable workforce for the future of electrification.

MISSION

HOW?

Energising a vibrant electrification community through skills, careers and knowledge development.



Creating a common language for electrification to improve communication and understanding across the sector.

Acting as a central hub that unifies skills, jobs, and knowledge sharing to connect individuals with electrification opportunities.

Empowering the community by linking individuals with training providers and showcasing career pathways.

Connecting education and industry to prepare people and organisations for success in the electrification sector.



Deepak Farmah **Commercial Director**



Richard Lane Product Development Director



James Shuttleworth Operations Director



Petar Igic Academic Director



Edita Zieniute Business Development Manager



Bali Kaur **Project Officer**



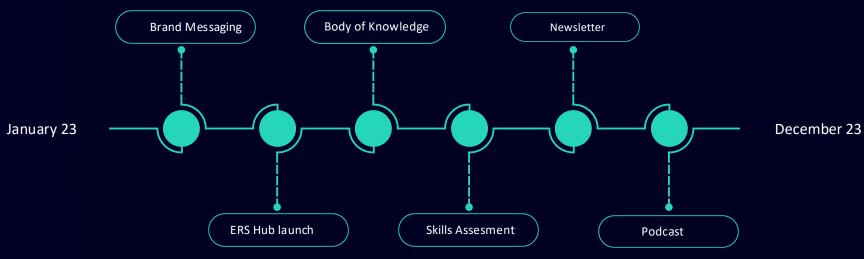
Caroline Trainor Project Manager



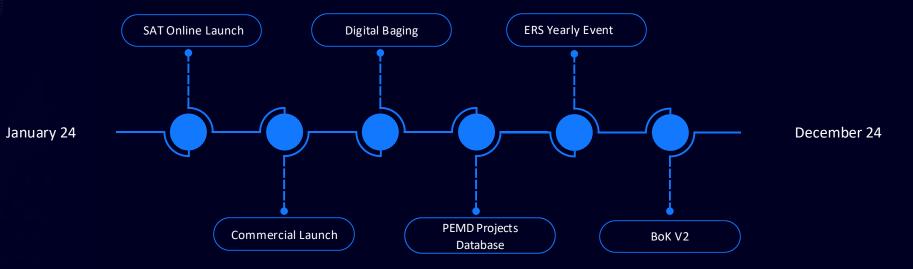
KEY MILESTONES & SUCCESSES



KEY MILESTONES 2023



KEY MILESTONES 2024



ERS LAUNCH CONFERENCE 2023



Academic Integrity



Commercial Sustainability



Technical Excellence







Discussion and Key Presentations











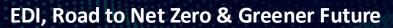








Building Talent for the Future Showcase





















Exhibitors

ENGAGEMENT WITH WORKFORCE AND INSPIRING THE YOUNDER GENERATION















Excited to share that ERS Hub had the opportunity to present how we are driving our mission forward by energising the electrification community 4 through skills development, career pathways, and knowledge sharing at the PEMD Technology Seminar 2024 P

the essential skills and knowledge required in the fast-evolving Power Electronics, Machines, and Drives (PEMD) sector, empowering individuals and ousinesses alike for future success 🚀.

#Electrification #PEMD #SkillsDevelopment #Kn









Fair in Birmingham %

If you're an employer looking for your next hire or to upskill your workforce, then become a part of the ERS Hub community, to advertise your jobs especially within the sector.

DON'T FORGET: Electric Revolution Skills Hub Annual Conference

October 30-31 more Nou and 32 others

















EXTENDED OUTREACH VIA PODCAST



"Switching on Electrified Skills"

- √ 3 key pillars underpin our podcast content strategy: skills, jobs and community.
- ✓ The focus is to educate and inspire our audience. Each episode allows listeners to explore diverse interests as the host welcomes new guests
- ✓ Discuss Electrification skills shortages in a way that is appealing to younger generations and women
- ✓ Create an inspirational series inviting employers, recruiters, female role models and young entrepreneurs













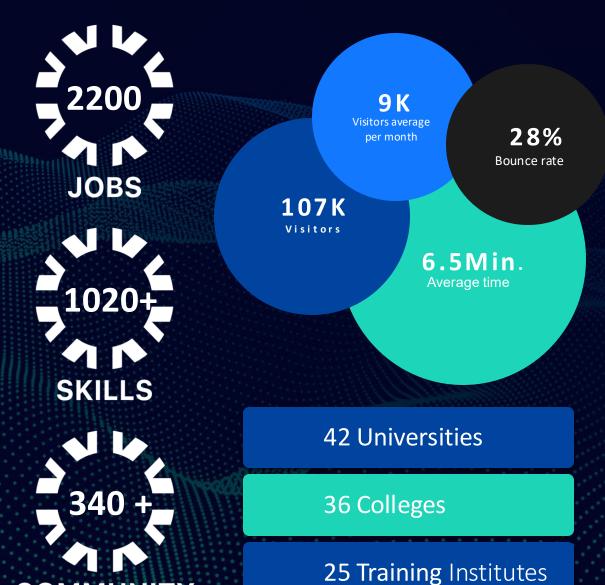




SINCE LAUNCH IN MARCH 2023

COMMUNITY





















































Empowering a sustainable workforce for the future of electrification.

ERSHUB.co.uk



