



RESILIENCE

UK Medicines Manufacturing
Skills Centre of Excellence

RESILIENCE UK Medicines Manufacturing Skills Centre of Excellence

Innovate UK Transforming Medicines Manufacturing:
Community of Practice Webinar

Prof Ivan Wall (UoB), Prof Gary Lye (UCL)



About RESILIENCE

RESILIENCE is the UK Medicines Manufacturing Skills Centre of Excellence



Department for
Science, Innovation
& Technology



RESILIENCE is funded by the Office for Life Sciences, part of the UK Government's Department for Science, Innovation & Technology, and managed through Innovate UK



Fiona McLoughlin, Office for Life Sciences



Hareklea Markides, Innovate UK

RESILIENCE is the UK Medicines Manufacturing Skills Centre of Excellence



A Front door for industry to access a national network of workforce development initiatives, ensuring national infrastructure investments can access the talent they need to thrive

Outreach

Curriculum-aligned materials
Careers awareness events

Skills & Training

Courses for upskilling in industry
Courses for workplace readiness
Courses building future skills

Coaching

Career planning
Leadership training
Resilience building



Coordinates leading bioprocess training providers across the UK, to achieve **standardisation and quality benchmarking** in training approaches, enabling scalability

Resilient, agile, adaptive workforce

Why RESILIENCE

Sector evolution

- New therapeutics (cell and gene therapies, RNA vaccines, novel format biologics)
- Technology innovation (process technology, single batch, automation, PAT, formulation)

Acute skills shortage

- Awareness of STEM careers
- Availability of home-grown STEM talent pool
- Mobilisation of talent

Government priorities

- Life Sciences Vision 2021
 - Net zero NHS by 2045
 - Future skills needs around digital, data and computational statistics
- MMIP 2023
 - Follow the Green High-Tech Road: A path to UK growth, net zero and health resilience from innovation in medicines manufacturing
- Innovate UK
 - Transforming Medicines Manufacturing (digital and automation, FASST)
 - Sustainable medicines manufacturing

Approach



About RESILIENCE

Our core partners comprise a network of organisations with an unrivalled track record of **delivering training for industry** and supplying new talent to the medicines manufacturing sector.



Ivan Wall
Co-Director



Gary Lye
Co-Director



Nik Willoughby
HWU Lead



Safwan Akram
Teesside Lead



Kirk Malone
BRITEST Lead



Strategic partnerships

We are establishing strategic partnerships to work in synergy with other nationally funded initiatives and a scalable, UK-wide, membership network:

Strategic Partnerships with national funded initiatives

- Industry Skills Accelerator (CGT Catapult, CPI, Cogent)
- EPSRC/BBSRC Future Manufacturing Hubs
- MRC/LifeARC Gene Therapy Hubs



Affiliate Memberships for talent pipeline development

- Companies recruiting and onboarding new staff
- Schools and further education colleges
- Universities



Standard Affiliate Member benefits

For Educators

- RESILIENCE hub advice, guidance and visits
- Access to free teaching materials for:
 - Undergraduate and MSc
 - GCSE, A-level, Nationals
 - T-level / Vocational programmes
- Access to outreach materials

For Industry

- RESILIENCE hub advice and guidance
- Identify suitable courses from the RESILIENCE network (free and ££)
- Access to outreach materials

Enhanced Affiliate Member benefits

For Educators and/or Industry (paid)

Standard Affiliate Member Benefits, plus:

- Access to accelerator materials
 - Undergraduate & 16+ accelerator
- Annual free loan of VR headsets
 - 5 headsets per site
- Annual single site software license for FourPlus software
- Dedicated local RESILIENCE hub contact to scope and establish support
- Support with outreach
- Opportunities to take part in the RESILIENCE networking events



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Example Workforce Readiness Strategies

Bootcamps

- Why: **Agile skills development** responsive to innovation
- Goal: **Upskilling to future-proof** workforce
- Ex. Courses: Data Analytics and Statistics, Introduction to Coding and Data Visualisation
- Who: Company employees

Accelerators

- Why: For **workplace readiness**
- Goal: Building **industry skills and sector awareness**
- Ex. Courses: Workplace Accelerator, Leaders Accelerator
- Who: Students, apprentices, company employees

Immersive Technology

- Why: **On-demand, safe, industry skills training**
- Goal: **Increase competence with zero waste**
- Ex. Courses: Professional Skills, Industry Skills
- Who: Students, apprentices, company employees

What's missing in our talent pipeline for medicines manufacturing ???

From the many skills surveys across life sciences, specialist therapies and UK manufacturing there are key themes on what is missing from our talent pipeline:

Sector Attraction

- What the sector does?
- What jobs are available?
- Different career pathways
- Role of SMEs & large pharma
- Focus on patients
- Career progression
- Talent diversity

Practical Skills

- Basic digital/data skills
- Basic laboratory skills
- How skills apply to a role
- Workplace experience
- Safe working practices
- GMP/GLP/GxP
- Managing expectations

Professional Behaviours

- Working in a team
- Project management
- Effective communication
- Problem solving & critique
- Integrity & reliability
- Independent research
- Values & Behaviours

Workplace Accelerator

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**Workplace
Accelerator**



Designed by employers

- Introduction to sector
- Patient focussed
- Good sector practice
- Safety & sustainability
- Values & behaviours
- Career progression

Delivered by educators

- 3- or 5-day options
- Curriculum aligned
- Delivered in class
- Immersive technology
- Pre-placement skills
- RESILIENCE certified

Created for students/employees

- Excite about careers
- Deep sector insights
- Demonstrate skills
- Placement readiness
- Speed up onboarding
- Independent research

LEADERSHIP ACCELERATOR

IDENTIFYING AND NURTURING OUR NEXT GENERATION OF MEDICINES MANUFACTURING INDUSTRY LEADERS AND ACCELERATING PERSONAL SKILLS DEVELOPMENT, LED BY DR TONY BRADSHAW, (TB) BIOSOCIUS LTD.

OUR FOCUS
EARLY CAREER LEADERS IN INDUSTRY AND FUTURE LEADERS, LATE PhD POST DOCTORAL RESEARCHERS AND EARLY CAREER RESEARCHERS IN ACADEMIA AND INDUSTRY. AIMING TO TARGET 150-200 PARTICIPANTS BY MARCH 2026.

LEADERSHIP ACCELERATOR AIMS
DELIVERED THROUGH 2 SEQUENTIAL 'MY FUTURE PLAN' (MFP) WORKSHOPS, PARTICIPANTS GAIN:

- INCREASED SELF AWARENESS OF THEIR PERSONAL BEHAVIOUR TRAITS AND SKILLS
- UNDERSTANDING OF THE OPTIMAL CAREER OPTIONS FOR THEM
- DEVELOPMENT OF A PERSONALISED CAREER STRATEGY AND RESILIENCE PLAN

ACCELERATOR STRATEGY
BUILDS RESILIENCE AND WORKPLACE READINESS



'MY FUTURE PLAN' WORKSHOP 1 (MFP1)
CREATING THE RIGHT FUTURE CAREER PLAN FOR YOU

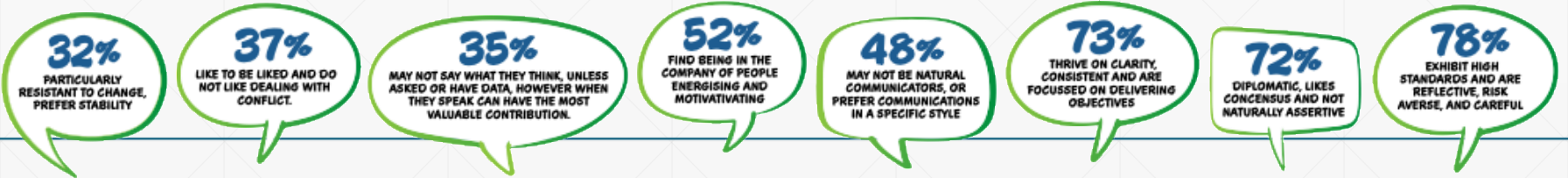
- MFP1 WORKSHOP DELIVERED REMOTELY, TO GROUPS OF 5 PARTICIPANTS:
1. PARTICIPANTS COMPLETE ONLINE PSYCHOMETRIC TEST (1), AND INDIVIDUAL BEHAVIOUR PROFILING REPORTS CREATED.
 2. REPORTS ANALYSED FOR SPECIFIC NATURAL/INHERENT BEHAVIOURAL TRAITS.
 3. TB FACILITATES 1.5 HOUR CO-LEARNING WORKSHOP WITH PERSONALISED INDIVIDUAL TIME BUILT IN. STUDENTS BUILD A DISTINCTIVE PICTURE OF THEMSELVES AND THEIR NATURAL BEHAVIOUR TRAITS.
 4. PARTICIPANTS USE THE 3-4 WEEKS BEFORE THE MFP2 WORKSHOP TO REFLECT ON THEIR LEARNING FROM MFP1 AND DEVELOP PERSONAL INSIGHTS.

'MY FUTURE PLAN' WORKSHOP 2 (MFP2)
UNDERSTANDING THE KEY CAREER SKILLS NEEDED TO ACHIEVE YOUR PLAN

- MFP2 WORKSHOP DELIVERED IN-PERSON, TO GROUPS OF 15 PARTICIPANTS WHO HAVE ALL COMPLETED MFP1:
1. PARTICIPANTS COMPLETE ONLINE PSYCHOMETRIC TEST (2), AND PERSONAL RESILIENCE EXPERT REPORTS CREATED.
 2. REPORTS ANALYSED FOR PARTICIPANT'S CURRENT RESILIENCE CAPABILITY.
 3. TB FACILITATES HALF DAY WORKSHOP WITH PERSONALISED TIME BUILT IN, ON THE KEY SKILLS NEEDED IN EARLY CAREERS. THIS INCLUDES PERSONAL RESILIENCE, MANAGING CONFLICT, BUILDING TRUST, LEADERSHIP AND COMMUNICATION STYLES. AS WELL AS UNDERSTANDING HOW TO MENTOR.

BIOTECHNOLOGY SECTOR BEHAVIOUR TRAITS

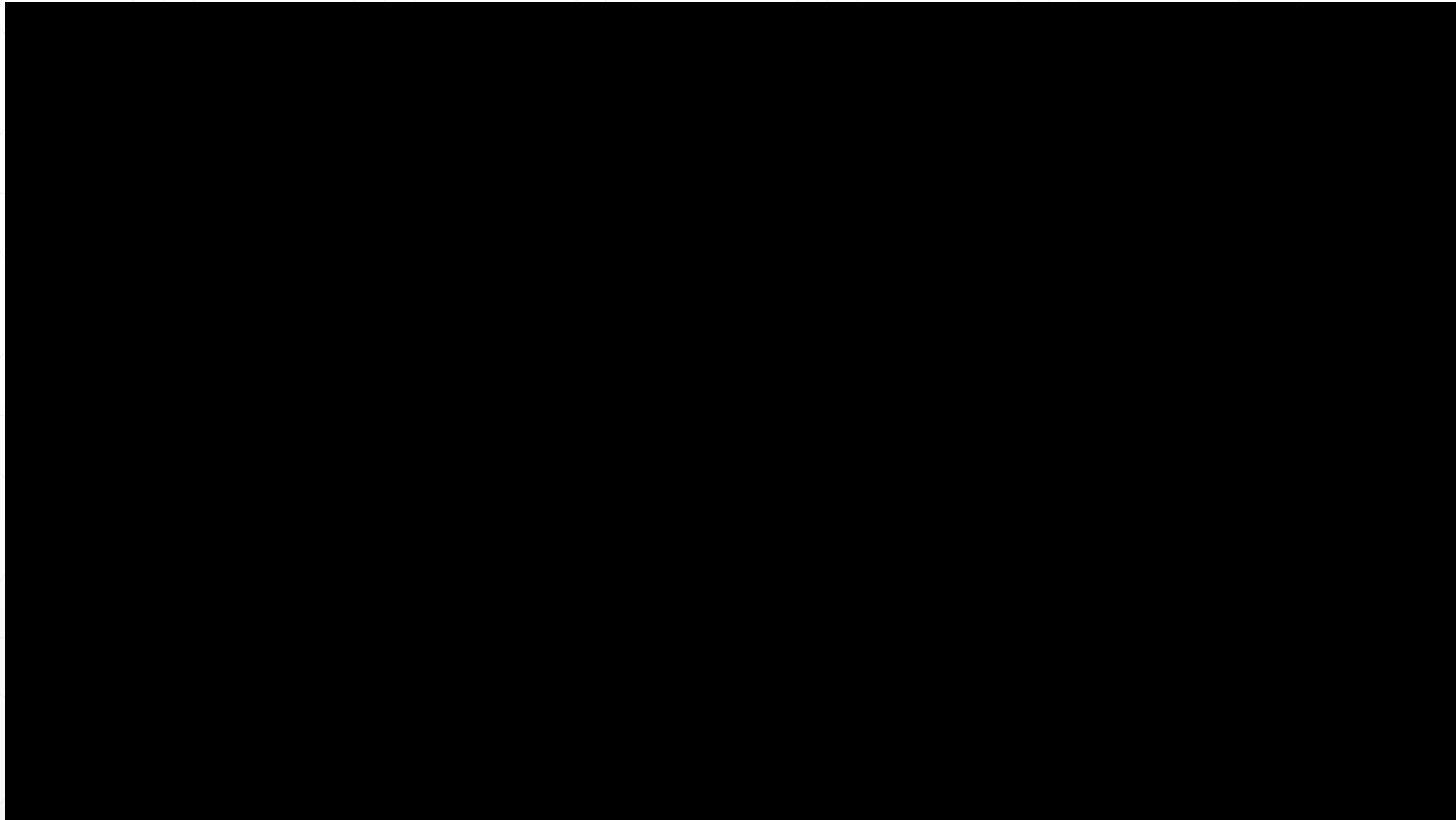
Data: ©Tony Bradshaw, Biosocius Ltd. 2024 based on the Thomas International DISC Model



Use of VR to standardise and scale

Industry skills

GMP cleanroom & manufacturing skills/knowledge
(e.g. GMP cleanroom behaviours, health & safety, lab operations)



Use of VR to standardise and scale

LEARN

Deeper



Gamify training

Faster



Condense multi-day SOPs

Safer



Safe space, Reduce hazard/stress

Flexibly



Own time/pace Increase accessibility

ENVIRONMENT

Goal Net Zero



Reduce waste and carbon footprint of training

STANDARDISE

Scale Out



Increase training throughput, multi-site deployment

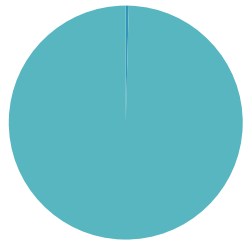
DIGITAL

Digital Skills



Upskill staff via digital skills development

Time taken to go through 1 training cycle



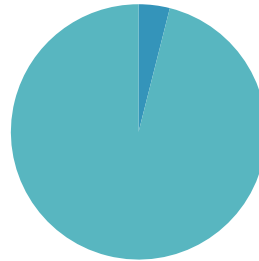
Viral vector USP training

T (real-time): 2 weeks

T (VR): 1hr 30min

■ VR training ■ Real life

Time to complete 10 training cycles in VR versus 1 real life training cycle



4 FOUR PLUS

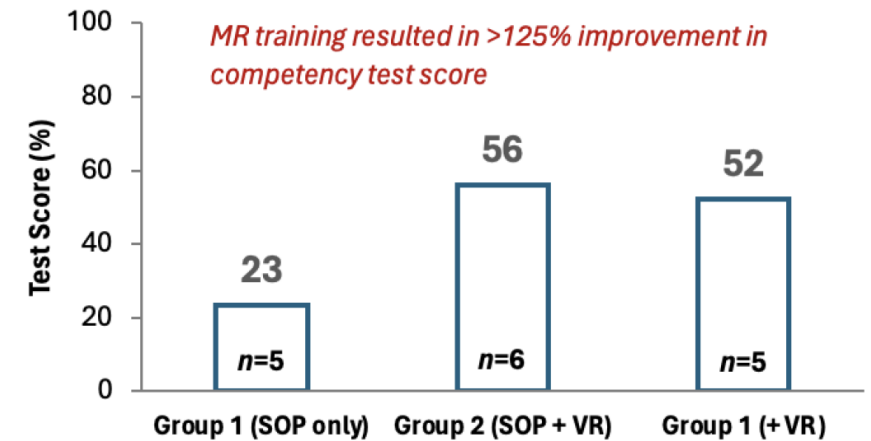
■ VR training ■ Real life

Can train operators in viral vector USP SOPs in 1 day

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Competency Test Score

CATAPULT
Cell and Gene Therapy





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Activities to date

Outreach

Building a talent pipeline

- Inspire STEM talent
- Align to curriculum
- Inform careers

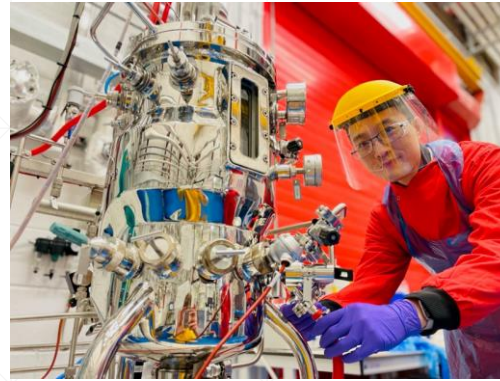


>3,500 UK schools & colleges

800 international schools in 100 countries

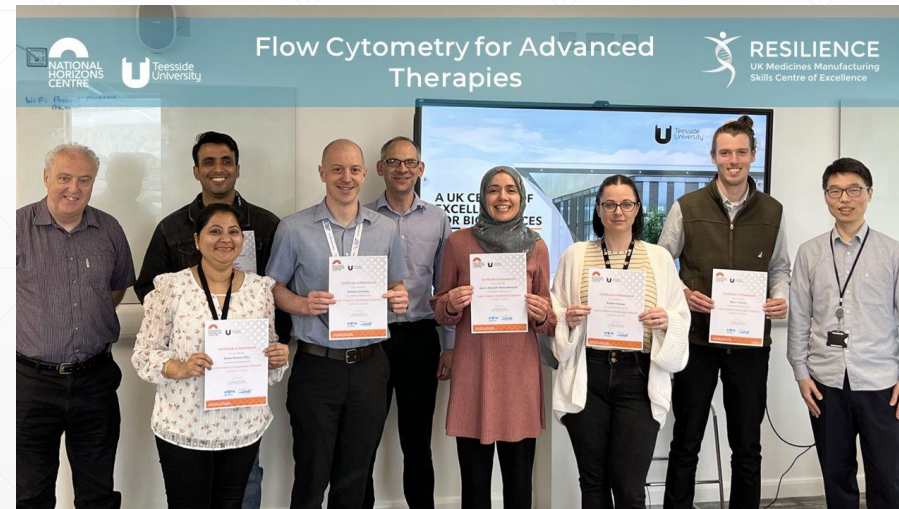
>1.8m students

Industrial Skills and Training



Building competence

- Upskilling current workforce
- Making talent workplace ready
- Address emerging needs



mbi modular training for the bioprocess industries



Cutting edge courses designed for industry

BiolC

4 FOUR PLUS

bodyswaps



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How can we help you?

How RESILIENCE can help your organisation

Single web site to access information on all RESILIENCE training activities

Hands-on and case-study based training modules across multiple aspects of medicines manufacture supporting staff development and reskilling

Contact point to discuss your company's short and longer term training needs and opportunities for customised course delivery

Promotion of the sector to feed the skills pipeline and encourage more graduates into medicines manufacturing

Promotion of your company by participation in local outreach and engagement events

Get in touch

There are numerous ways you can contact us:



www.resilience-skills.com



info@resilience-skills.com



www.linkedin.com/company/resilience-skills/

Or speak directly to one of our partner organisations



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Help us shape the future

Dr Kirk Malone (Britest)

What does success look like?

RESILIENCE will:

- Create & deliver training courses for the UK medicines manufacturing community.
- Develop and nurture the UK talent pipeline through education, mentoring and outreach.
- Target current skills gaps, and evolve with the needs of emerging technologies.



What does success look like?

Training

- Your organisation's key workforce skills priorities?
- Where are the most critical skills gaps?
- What skills should RESILIENCE focus on?



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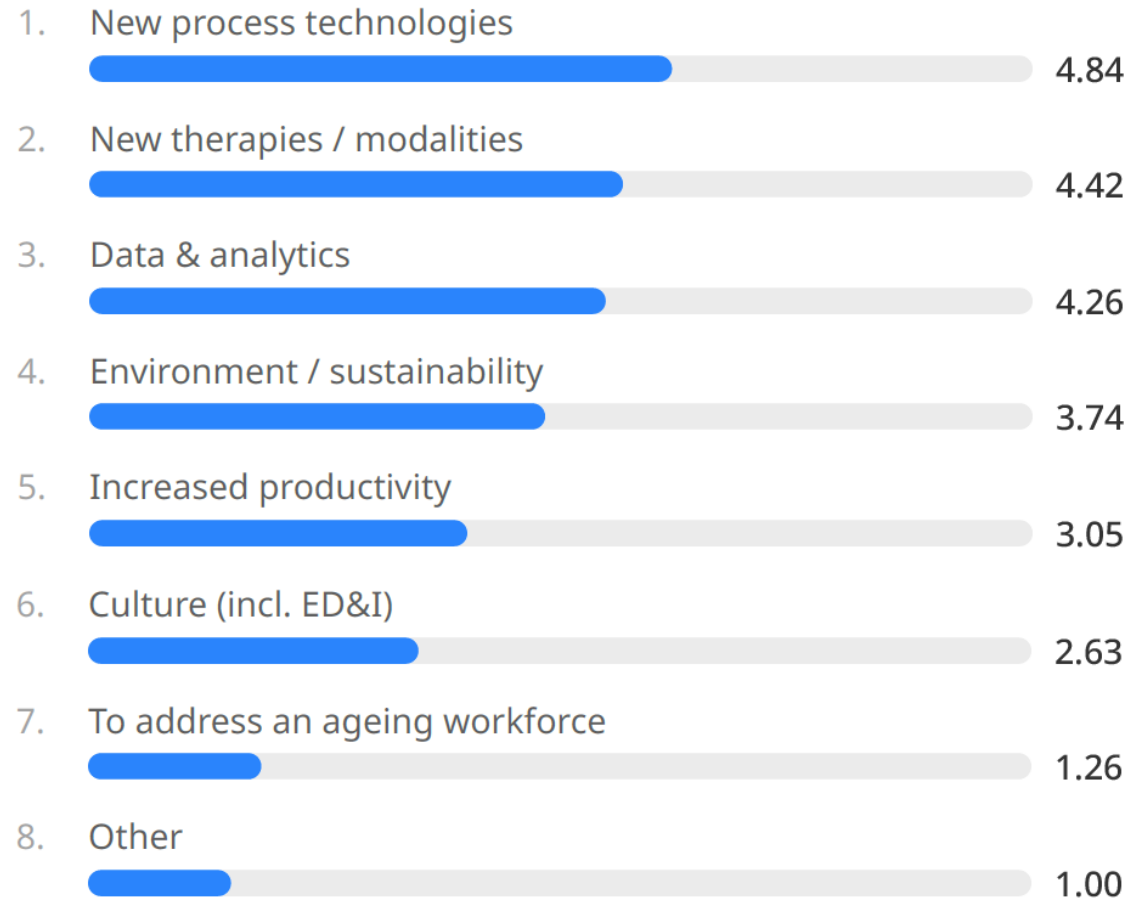
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Key workforce skills priorities?

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What are your organisation's key workforce skills priorities?



8. Other

Tech transfer of lab protocols to GMP

Resource and staff numbers

GMP regulations

Cyber security

Soft skills e.g. presentation, writing

Processional behaviours

Leadership shortages

Regulatory understanding of bioprocesses

Quality Management

Project management and other soft skills

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Where are the most critical skills gaps?

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Where are the most critical skills gaps?

Entry level: school / college leaver



Entry level: graduate



PhD level entrants



Staff entering from other sectors



Middle management



Senior leadership



Existing workforce: research / discovery



Existing workforce: process development / scale-up



Existing workforce: manufacturing



Existing workforce: quality assessment / control



Existing workforce: commercial



Existing workforce: supply chain / logistics



Existing workforce: regulatory affairs

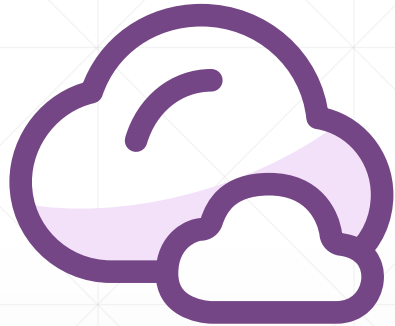


General public



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What skills should **RESILIENCE** focus on?

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What skills should RESILIENCE focus on?





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How to be involved

Dr Kirk Malone (Britest)

A better question:

How would you like to be involved?



Enrol on training courses and workshops.

Shape RESILIENCE for current / future needs.



Contribute knowledge, e.g., as an expert speaker.

Fish from a broader talent pool: help us embed ED&I.



Opportunities for apprentices & work placements.

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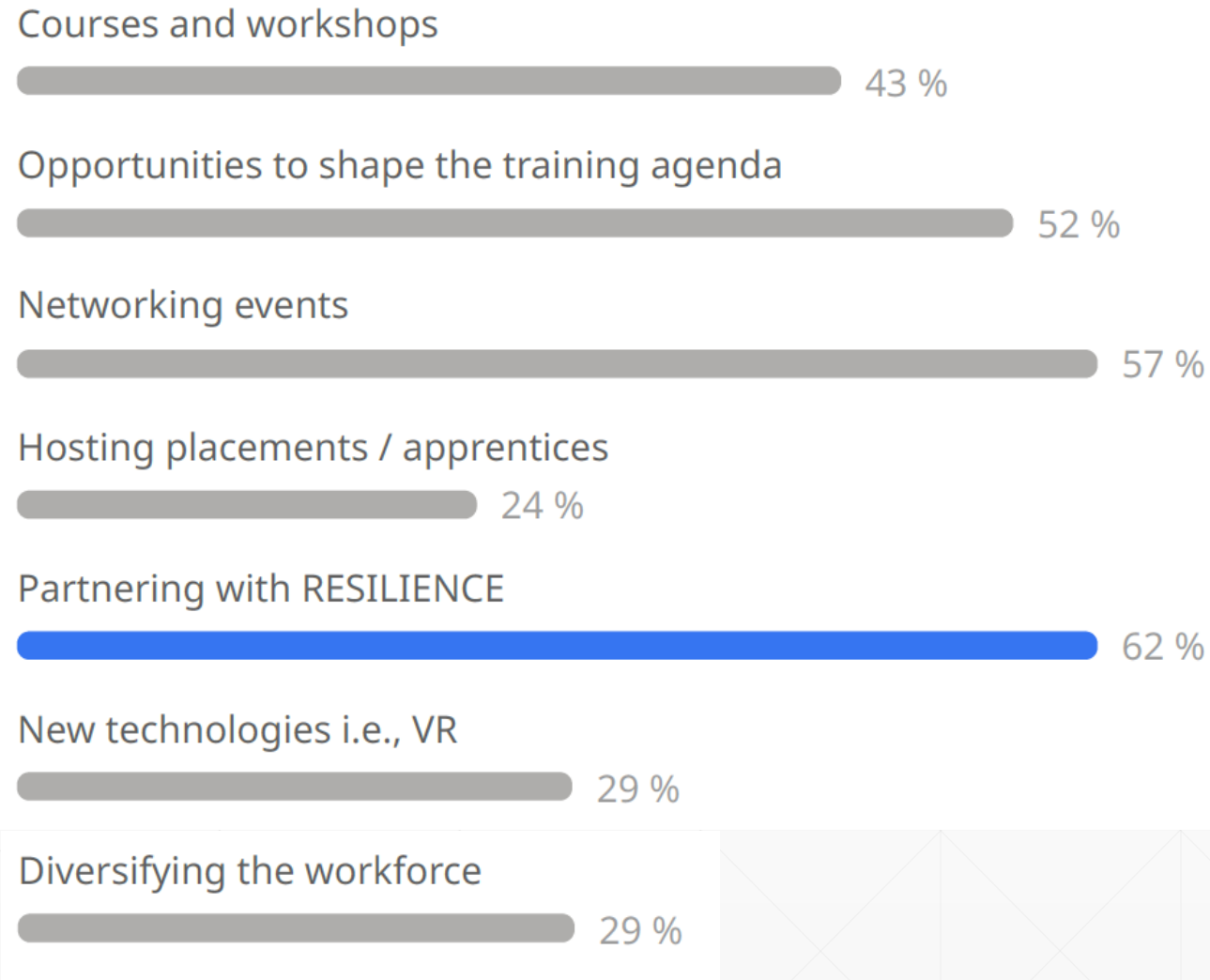
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I'd like to learn more about...

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What skills should RESILIENCE focus on?



Scottish launch event

Glasgow | Thursday 5th December 2024



- RESILIENCE will be formally launched in Scotland at the TIC (Technology & Innovation Centre), University of Strathclyde.
- Coordinated with the Scottish Chemicals and Life Sciences Skills Board (Skills Development Scotland)



Details to follow in due course



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Questions?
