

University of Birmingham Business Club

Breakfast Briefing



**‘Innovation in
Manufacturing’**

Thursday 8 June 2017



EPSRC
Engineering and Physical Sciences
Research Council



**Business with
Birmingham**

**UNIVERSITY OF
BIRMINGHAM**

Nick Haigh

Business Engagement Manager AMCASH

AMCASH project highlights

- Run by the Metallurgy and Materials School in UoB
- £6m budget over duration (50% ERDF & 50% UoB funded)
- Target of 180 supported SMEs
- Project runs until 31/05/2019
- 4 Local Enterprise Partnership areas:
 - Greater Birmingham & Solihull
 - Black Country
 - Coventry & Warwickshire
 - The Marches

Aims of project

- Metallurgy and Materials school to engage more with local businesses
- AMCASH is a way for businesses to try out services available
- Longer-term collaborative projects between local businesses, Metallurgy and Materials and the University as a whole

Metallurgy and Materials

- Provides an understanding of how materials behave and how they can be used and improved; essential to the development of new products
- Mission: To maintain Metallurgy and Materials Science at the University of Birmingham as world class teaching and research activities, to develop interdisciplinarity with engineering and science and to further the aim of Sustainable Development

AMCASH support available

- 2 days work for qualifying SMEs in one of the themed areas
- No cost to the SME (State Aid applicable)
- Wide range of support ranging from access to expertise and equipment to consultancy

Main themes

Polymers

primarily concerns the effect of chemical structure, processing methods and morphology on the thermal and mechanical properties of polymers

Electron Microscopy

Microstructure evaluation, Micro-analysis and Mechanical testing of metals, alloys, ceramics and composites using unique characterisation facilities

Modelling

Advanced materials simulation and manufacturing modelling

What do we offer to Business?

- Access to R&D facilities
- Analytical services
- Mechanical testing
- Software simulation of metallic alloys
- Consultancy
- Training
- Collaborative projects
- Contract research

Team structure

- Polymers: 2 full-time technical staff with 1 lead academic
- Microscopy: 2 full-time technical staff with 1 lead academic
- Modelling: 2 full-time technical staff with 1 lead academic
- Business Engagement: 2 full-time staff
- Project Management: 1 full-time staff
- Project Director

All staff are dedicated to AMCASH project

Examples of support so far

- Polymers: mechanical strength testing of car components, equestrian equipment and sports goods
- Microscopy: closer looks at contamination on medical equipment, close ups of human hair for an eyebrow company
- Modelling: predicting strength performance of alloys at high temperature, simulating performance of plastic construction materials

Qualifying criteria

- Small/Medium Enterprise
 - < 250 full time or equivalent employees
 - < €50m turnover or < €43m balance sheet
- Based in eligible Local Enterprise Partnership
 - Greater Birmingham and Solihull
 - Coventry and Warwickshire
 - Black Country
 - The Marches

Thank you

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[@uobbw](https://twitter.com/uobbw)

W: birmingham.ac.uk/partners/sme-support/AMCASH

Pitches



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Innovation Engine

What we do

Provide free support to local SMEs to help them develop innovative products in healthcare, transport and sustainability

What we need

Local SMEs with great ideas/businesses to collaborate with

What we offer

12 hours minimum free consultancy for your business

Our USP

People, knowledge, skills and facilities you would find it hard to otherwise access

Innovation Engine Project Partners

University Hospitals Birmingham 
NHS Foundation Trust



Birmingham Community Healthcare 
NHS Foundation Trust



Please Contact Us to Discuss Opportunities to Work Together

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Corporate INTL
Legal Awards 2011

Corporate INTL
Global Awards
Patents Law Firm of the
Year in England 2012



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We can help you identify, protect and exploit your company's IP rights such as:

- **Patents** – technical innovations
- **Designs** – appearance or aesthetic quality
- **Copyright** – range of works: software, website content
- **Trademarks** – branding of a company

Do you know what your competitors are doing and how it could affect your company?
affect your company?



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Knowledge Transfer Secondments

THE TIMES
THE SUNDAY TIMES

University
of the Year
2013-14

UNIVERSITY OF BIRMINGHAM

Knowledge Transfer Secondment (KTS)

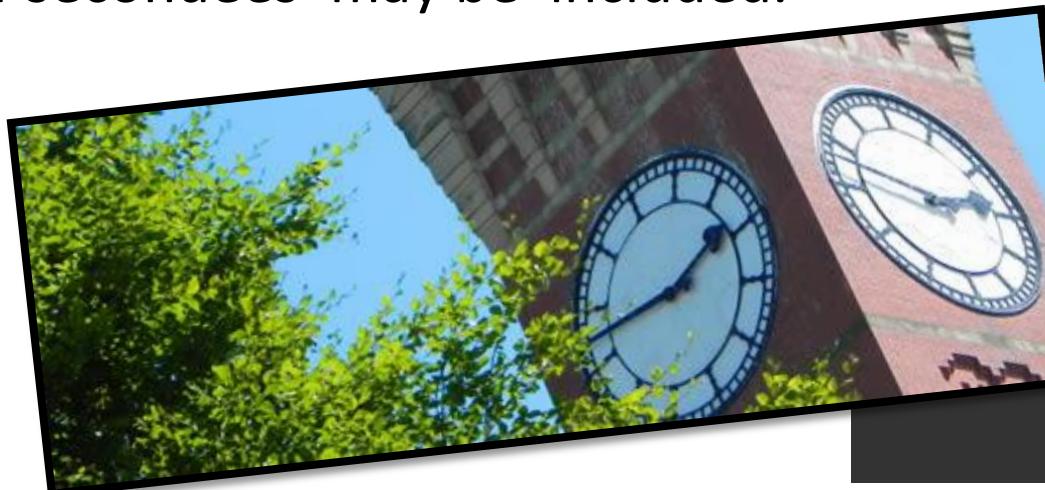
Aim: Transferring knowledge through secondments

- Seconding University staff to external organisations
- Seconding staff from external organisations into the University



Who benefits from a KTS?

- Outward secondees': postgraduate researchers, postdoctoral researchers, technical/experimental officers/ permanent members of academic staff.
- Inward secondees' may be any relevant employee of a user organisation.
- Any number of secondees' may be included.



Benefits for lead PI's..

- Leverage secured contributes to achieving funding targets
- Developed networks with industry
- Maximising the impact of your research
- Achieving a strategic target for the University
- Personal and professional development



Outward secondments

The KTS will support:

- KTS - up to 75% of the outward secondees' salaries, superannuation and NI contributions
- reasonable travel and subsistence costs as necessary to support the secondees'
- up to 50% of the costs of consumables

For outward secondments, the *User Organisation* will be expected to provide:

- 25% or more of the secondees' salaries, superannuation and NI contributions
- appropriate infrastructure and equipment to enable the secondees' project work
- 50% or more of the cost of consumables



Inwards secondments

The KTS will support:

- KTS- up to 75% of the inward secondees' salaries, exclusive of pension and NI contributions
- reasonable travel and subsistence costs as necessary to support the secondees'
- reasonable research consumables

For inward secondments, the *User Organisation* will be expected to provide:

- 25% or more of the secondees' salaries and 100% of their pension and NI contributions



KTS funds may not be used for..

- Estates or Indirect costs associated with the secondee(s) or for equipment costs.
- Any costs involved in the management /supervision of seconded staff.



Secondment terms

- To work more than 20hrs per week, PhD students, would have to have completed their thesis before the secondment begins but do not have to have had their viva or been awarded their degree.
- Broad remit: industry, includes UK based spin-outs, government departments, NHS, non-profits. **Not HE/Schools or for public engagement.**
- KTS funds may not be used for Estates or Indirect costs associated with the secondee(s) or for equipment/management /supervision costs.
- Secondments from 6 weeks to 2 years/ full/P/T.



KTS Impact

Metric	Value
New Collaborations	8
Patent applications	4
Publications	4
Jobs (new & safeguarded)	5.2
Subsequent funding applications	£4,25 M
Spin outs	2

**Data from 10 projects funded by the EPSRC
between 2008 - 2012**



Funding range

- KTS - £10k - £50k
- **All spend must be complete by March 2020**

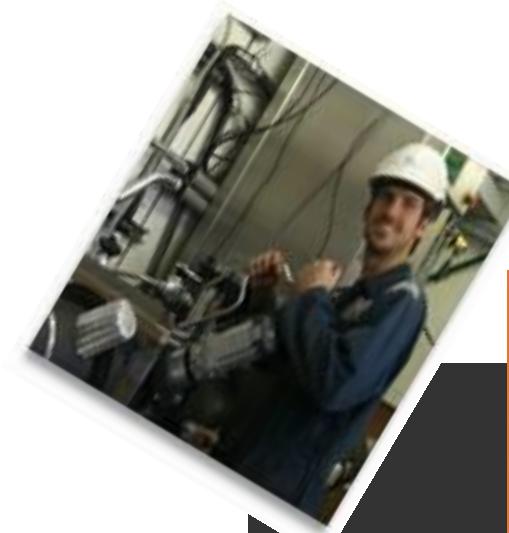
Application process for the KTS Scheme

- Calls quarterly
- Next deadline – 26.6.17
- Complete the form available online
- Please read the guidance notes



Help available

- Guidance notes
- Research support Teams
- Anthony Khan, Research Development Officer,
Research Innovation Services x 47093/
a.khan.7@bham.ac.uk



THE TIMES THE SUNDAY TIMES

University of the Year 2013-14

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Next...



1.8 million UK students
spend £1bn and >0.5bn
hours commuting 7.5bn
miles to campus each
year

<https://www.timeshighereducation.com/news/students-spending-millions-commuting/2005786.article>

<http://www.universitiesuk.ac.uk/facts-and-stats/Pages/higher-education-data.aspx>



ALiS
online

Lecture Theatres



Lecture Theatres



Events



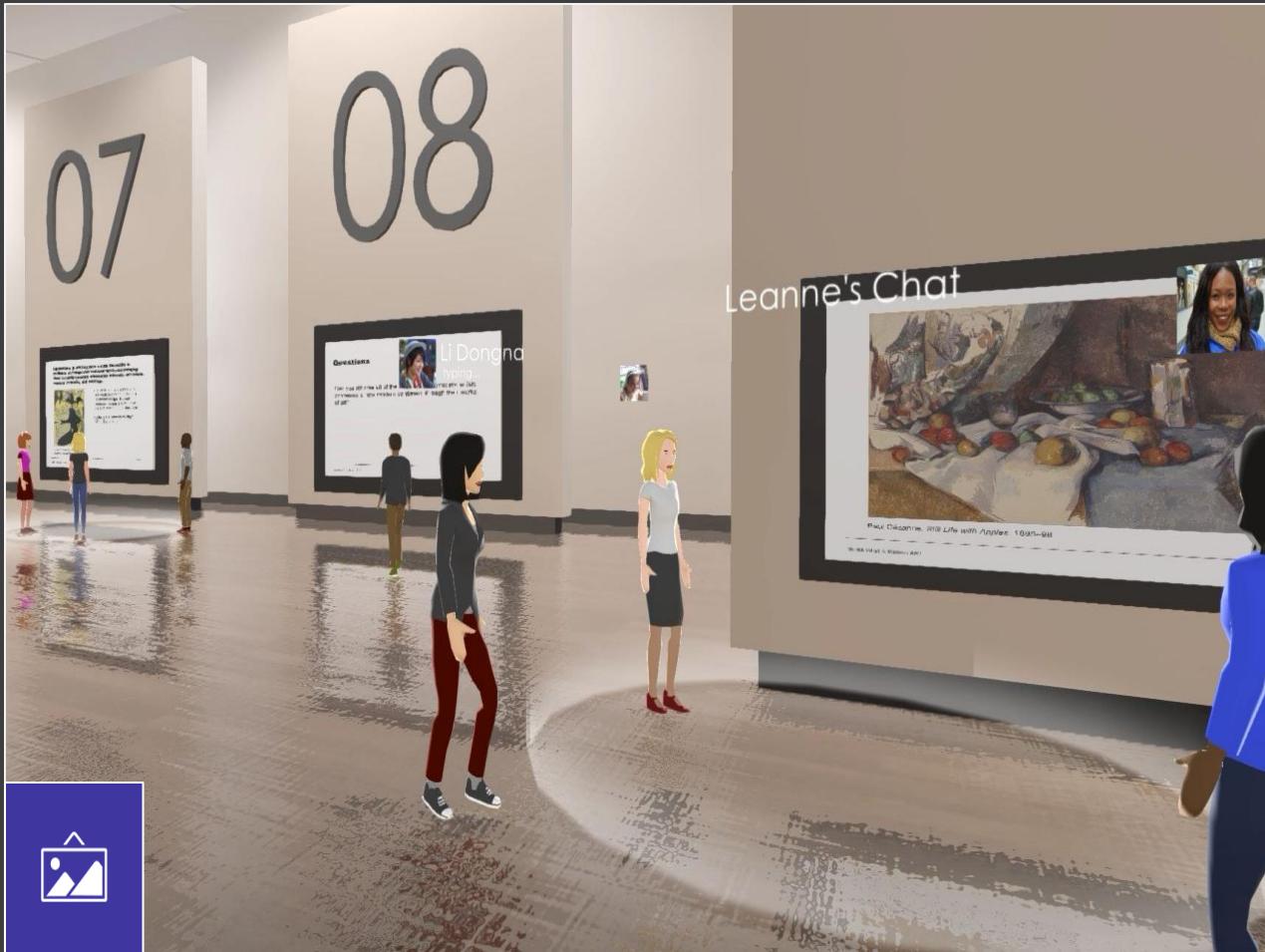
Events



Galleries



Galleries



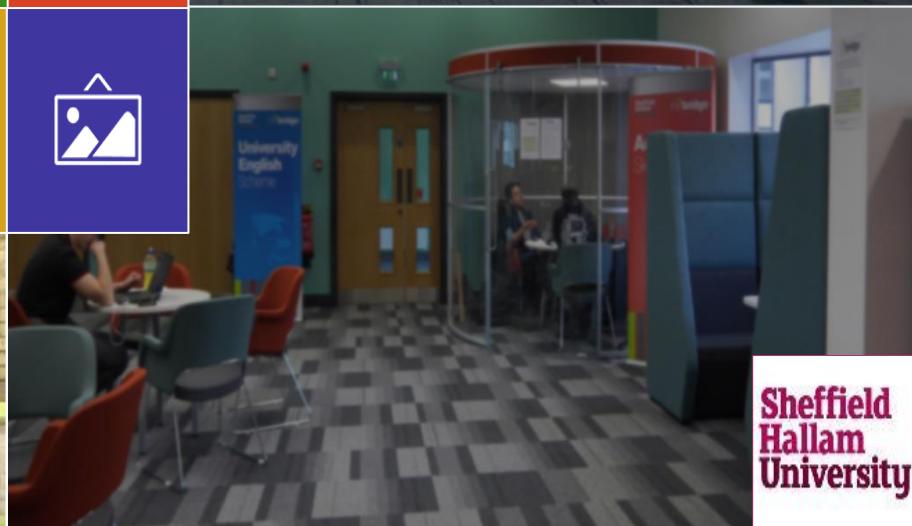
Meetings



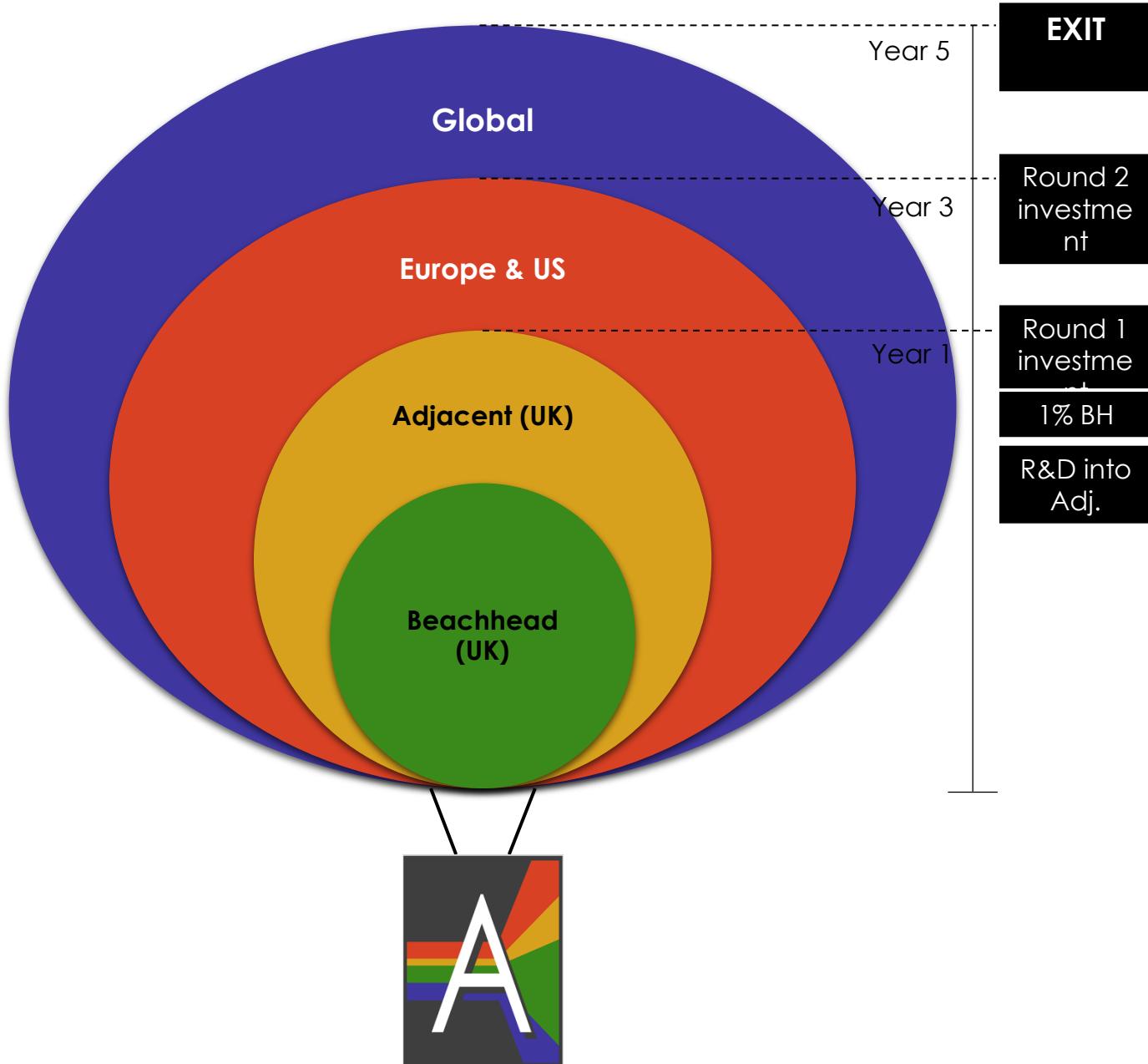
Meetings



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Sheffield
Hallam
University



 Doug Belshaw Retweeted



Stephan @dotsandspaces · Feb 8

Enjoyed this video with @dajbelshaw innovative and engaging way to present
youtu.be/GW-A1dQ1hSQ (great presenter tho!) #ALiSOnline



Liver Immunology @BirminghamLiver · 6 Dec 2016

Replying to @mirradorltd @unibirm_MDS

#alisonline

Great session just now - students comfortable asking questions as lecture
proceeds. Great for tutor



“ALiS Online, in comparison to video-conferencing tools, provides a more intuitive student and lecturer experience by emulating the natural lecturing process, thereby enhancing the learning experience.”

— DR. SARAH MONTANO, DIRECTOR OF UNDERGRADUATE PROGRAMMES,
BIRMINGHAM BUSINESS SCHOOL



Richard Pountney @dead_of_night · Jan 28

Virtual chat with @dajbelshaw in gallery after his talk @Bett_show on Open Badges #alisonline @mirradorltd great ideas for @mentor_shooc

The sessions in this space can be very interactive, encouraging participants to ask questions using a mic or through text. There is also a feature that allows you to create polls.

Next...



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Institute of
Translational
Medicine
Birmingham

Manufacturing future healthcare technologies

Dr. Richard Williams

Bench to market translation of biomaterials
Healthcare Technology Institute

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 @RLWillers



Innovating in healthcare to meet modern day needs

- But innovating can be challenging....

“OLD”, but known to work



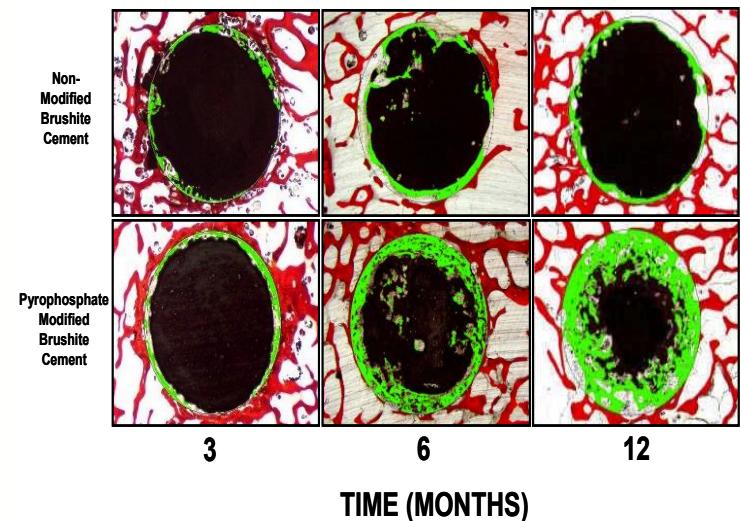
e.g. PMMA cements
Set at 70-90°C
inside the body

Trying to move on from these

How can we
innovate??

“NEW”, too many unknowns

New bone cement

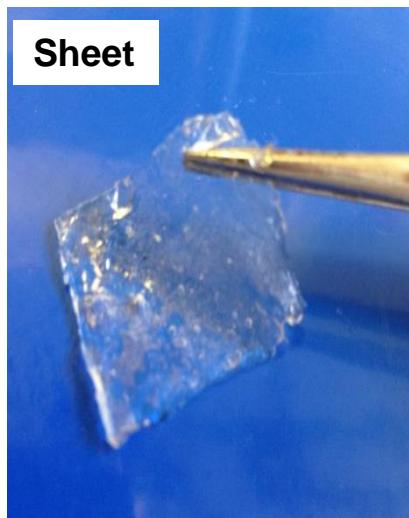


Amazing pre-clinical data!
Dead end – limited reagent supply

Hitting barriers due to novelty

Generating innovative technologies and moving them to the clinic

- Exploiting polymers already well used in the food industry (gellan, alginate) or already FDA/MHRA



- We can tailor handling properties by physical processing. No change in chemical composition
- Likely to have a good safety profile. Scale up manufacture technology already exists

Generating innovative technologies and moving them to the clinic

- Same technology formulated into two products to deliver an anti-scarring molecule

Wound dressing to prevent skin scarring



Eyedrop to prevent corneal scarring



wellcome trust

MRC | Medical
Research
Council

- From proof of concept to clinical trial in 3 years. Eyedrop will go to trial in 2017

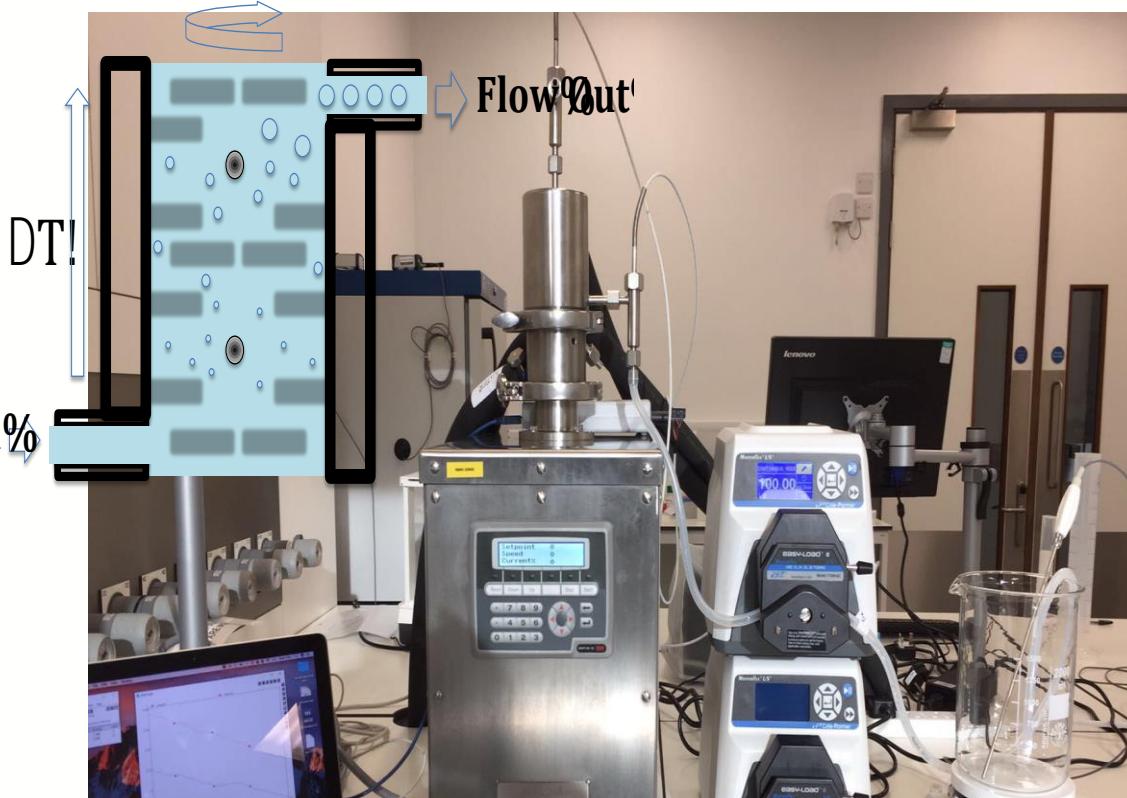
Challenges in getting innovations to clinic

Lots of challenges to navigate...most can be grouped under 'manufacturing'

- **Short supply of small-medium scale contract manufacturing organisations (CMOs)**
- **Novel materials often require new manufacturing approaches. CMOs can be (rightly) cautious about this.** Be prepared to design, commission and educate them on your own process!
- **Sterilisation methods? Quality Control methods?** Most CMOs don't have the same vast facilities a University does.
- **Supply chain logistics** – you may find multiple specialist companies to address these issues collectively, but feasibility depends on stability/shelf-life of the product
- **Avoid “paralysis by over-analysis”** – balance 'good science' with pragmatic and simple tests to answer go/no-go points in projects

Innovating in manufacture – risk reduction is key

S!



- Designed and built our own manufacturing process
- Inspired by the food industry
- Commissioned at a 'GMP-simulation' lab under the watch of our CMO
- Earned CMO's trust in the process.
- Process transferred – first clinical grade products end of 2017

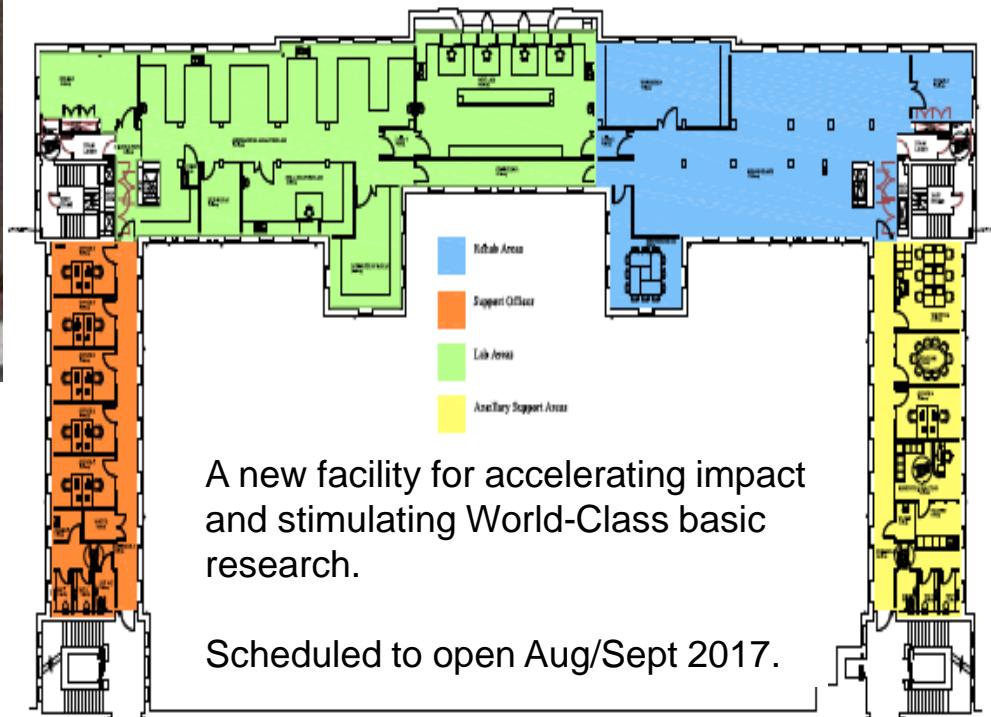


Healthcare Technology Institute

Providing support to academics and local SMEs with interests in the medical technology sector to make sure new technologies don't fail

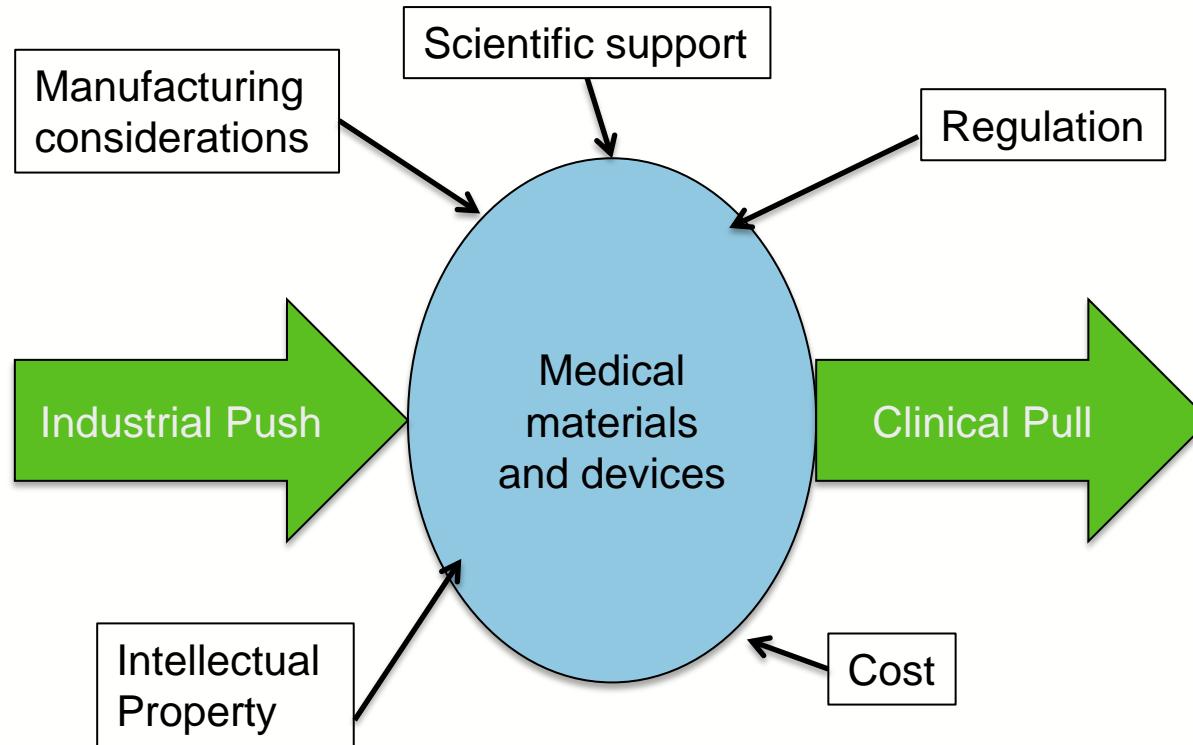


**Free to access if
you are an SME
within the
GBSLEP area**



Healthcare Technology Institute

- Practical support and advice in converting science into a finished product ready for clinical trial



- We also want to support new manufacturing and processing methods to bring new materials to the medical technology sector

What we need/want

Need companies on ‘speed dial’ for contract work:

- Contract medical packing
- Contract manufacturing / prototyping
- Precision engineering (making bespoke small scale manufacturing lines)
- Food / pharma grade clean rooms
- Consultants (pharmaceuticals. Medical devices, ISO accreditation)

Want to support new technologies potentially underpinning future healthcare products:

- Packaging technology ('smart' packaging, green packaging)
- Moulding/machining of novel polymers and alloys for medical use

Getting the word out about the service:

Got a new material or product concept? Developing methods of processing materials?
Bring your project to us!

Why work with us?

- **The Institute was built upon experience** – not just a sum of technical expertise on paper. Are translating technologies into products and taking them to clinic.
- **Can empathise with the pressures healthcare tech SMEs** – tight budget and huge pressure to deliver a product as soon as possible
- **Bigger picture – we want to facilitate growth in the life sciences/medical technology economy.** Manufacturing knowhow and capability in the local area is essential to help deliver innovations to the clinic.
- **Not in the GBSLEP?** Materials development / manufacturing – if you are thinking of expanding into the medical sector, get in touch...

In time, we would love to be able to say...



***Developed in Birmingham,
Made in Birmingham,
Trialed in Birmingham.***



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Manufacturing future healthcare technologies

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Bench to market translation of biomaterials
Healthcare Technology Institute

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 @RLWillers



Thank you to our
speakers and for
your attention