



BioProcessUK 2019, Liverpool

Derek Ellison

Assoc. VP, Biologics CMC Development Operations

Welcome to Liverpool



Historic Architecture

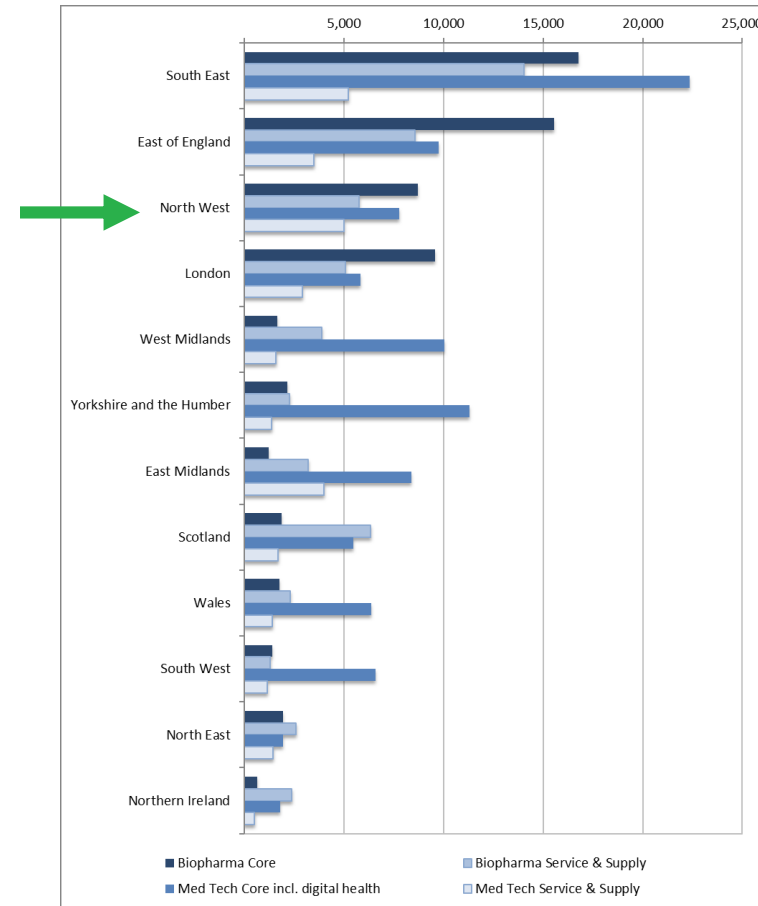


Architects of History!

Life Sciences are Thriving in North West England



- 728 life science companies in the region – major cluster around Liverpool and Manchester
- The Northwest is the UK's third largest life sciences sector by employment no.
- Core company annual compound annual growth rate of 5.1% per annum in the period 2014 to 2019 (average UK growth over the period 2-3%)
- Major sub-sectors: Biotech & Pharmaceutical (22.1%), Medical Technologies (20.4%), Healthcare (20%) and CRO (15.3%).
- The Estimated total Gross Value Added (GVA) in core companies in the Northwest is £1.83 billion*



Life science employment by region, 2018

*Utilising the PwC £104,000 GVA per life sciences employee

Liverpool is a Major Biomanufacturing Hub



- Liverpool is a global Hub for R&D in
 - Infectious disease
 - Biomanufacturing
 - Precision Medicine / Med Tech
 - Digital Health and AI
- Healthcare sector employs over 125,000 people – more specialist hospitals and health centres than any other city outside London, e.g. Liverpool School of Tropical Medicine
- World's first factory to use genetically modified bacteria in the production of medicine was in Liverpool (Eli Lilly)
- First European biologic approval by the centralised procedure was for a vaccine developed in Liverpool
- Now home to major biomanufacturing operations for Elan Co., Astra Zeneca, Seqirus, Allergan

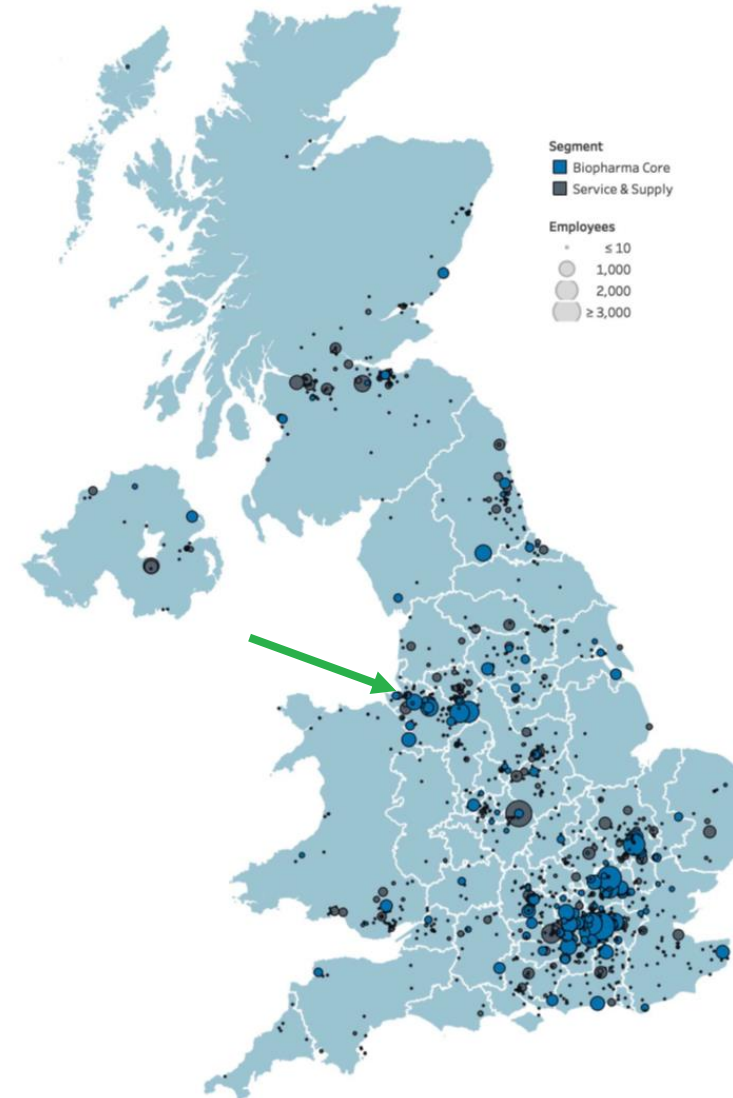


Figure from Bioscience and Health Technology Sector Statistics, 2018 (Office for Life Sciences)

Allergan R&D at a Glance



2018 R&D Investment



Active projects (2019)



Number of studies



Committed R&D colleagues



Countries with active studies



Core Therapeutic Areas

Core Therapeutic Areas



CNS



Med Aesthetics

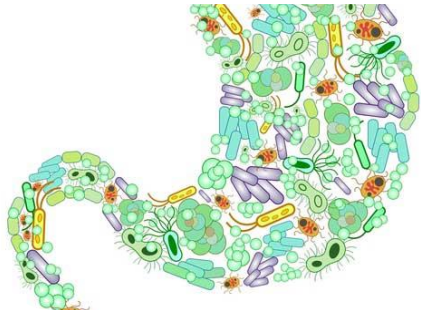


Gastroenterology



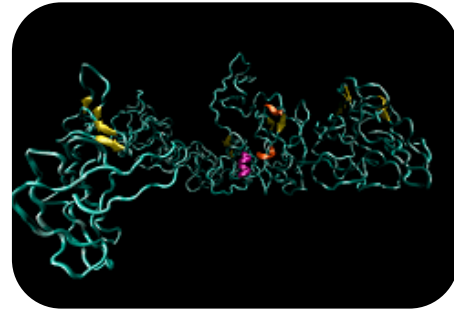
Eyecare

Allergan is a Highly Innovative Pharma Business



Microbiome

Unlocking the therapeutic potential of the human microbiome for the treatment of GI disorders (e.g. UC, CD, IBS)



Tropoelastin

Critical protein found in the skin to be incorporated in next generation fillers with enhanced skin quality attributes



Gene Therapy

New technology to introduce new genetic material into cells as a drug to treat disease (e.g. restore vision to Retinitis pigmentosa patients)

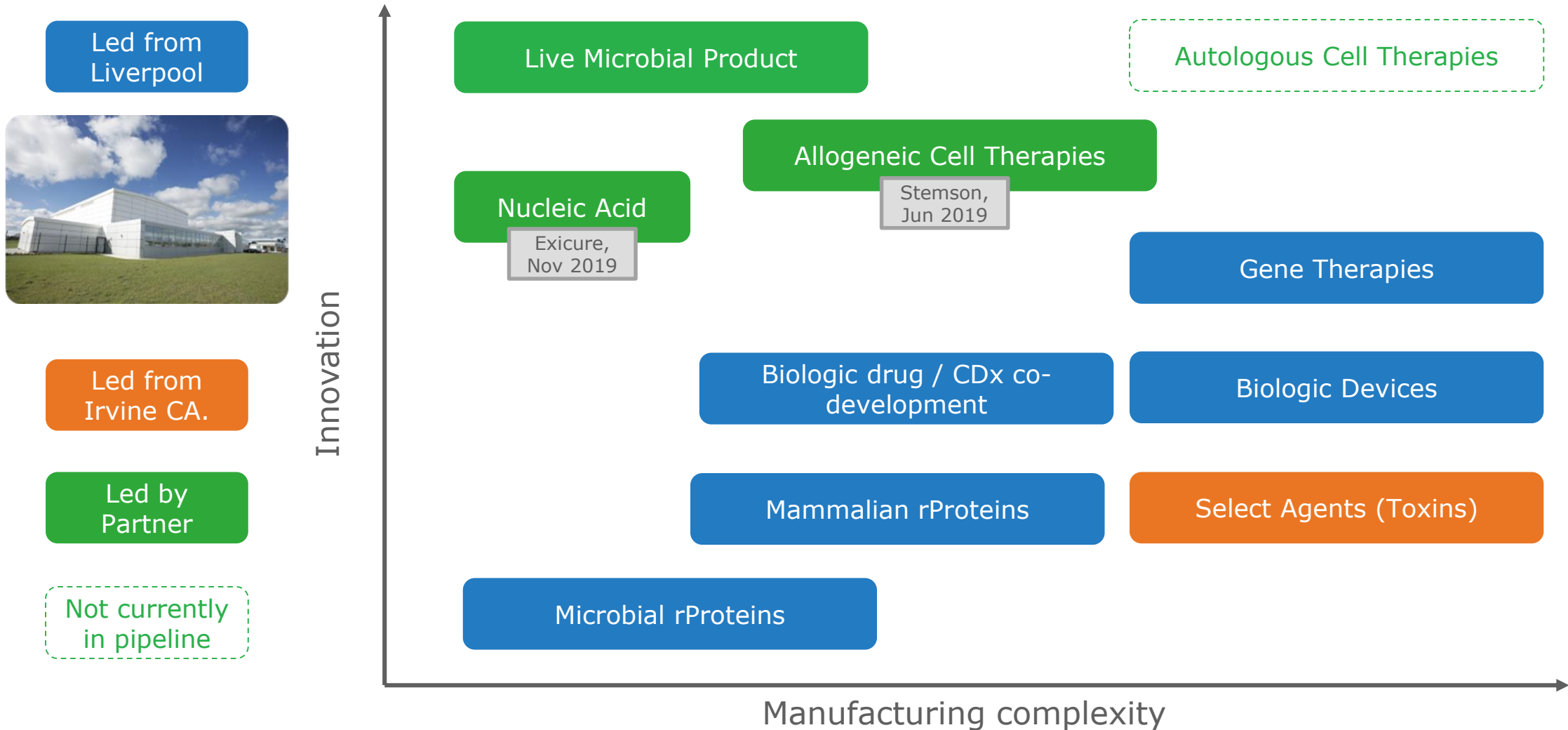


CRISPR

A powerful/ novel DNA technology to correct genetic defects (e.g. Leber Congenital Amaurosis)



Liverpool is Allergan's Biologics CMC Nerve Centre



Liverpool's 'In House' Focus is now on Advanced Therapies



Independent Consultancy and CDMO

- Microbial
- Mammalian
- Viral



Biosimilar focus

- Mammalian

Therapeutic Areas:

- Women's health
- Oncology



Biosimilar focus

- Mammalian

Therapeutic Areas:

- Expanded
Therapeutic areas
(e.g. GI/
respiratory)



Innovator pipeline with broad technology base

- Liverpool contributes to 17 development programs (drug, device, toxin, etc)
- In house focus on Advanced Therapies (Viral)
- Strong collaborative ethos
- Experienced, flexible staff
- Patient centred development

Therapeutic Areas:

- Eyecare
- Med Aesthetics
- GI

2008

2010

2012

2014

2016

2018

Enjoy the Conference and Dinner!

