FORUM
Academy of Medical Sciences

wellcome trust

Geographical clusters (March 2015)

Summary of a FORUM workshop held on 3 March 2015 hosted jointly by the Academy of Medical Sciences and the Wellcome Trust.

The Academy of Medical Sciences

The Academy of Medical Sciences is the independent body in the UK representing the diversity of medical science. Our mission is to promote medical science and its translation into benefits for society. The Academy's elected Fellows are the United Kingdom's leading medical scientists from hospitals, academia, industry and the public service. We work with them to promote excellence, influence policy to improve health and wealth, nurture the next generation of medical researchers, link academia, industry and the NHS, seize international opportunities and encourage dialogue about the medical sciences.

The Academy of Medical Sciences' FORUM

The Academy's FORUM was established in 2003 to recognise the role of industry in medical research, and to catalyse connections across industry and academia. Since then, a range of FORUM activities and events have brought together researchers, research funders and research users from across academia, industry, government, and the charity, healthcare and regulatory sectors. The FORUM is a major component of the Academy's work to deliver the strategic objective of 'linking academia, industry and the NHS' and its success relies on supporter organisations who make an annual donation. We are grateful for the support provided by the members and are keen to encourage more organisations to take part. If you would like information on becoming a member please contact FORUM@acmedsci.ac.uk.

The Wellcome Trust

The Wellcome Trust is a global charitable foundation dedicated to improving health. We support bright minds in science, the humanities and the social sciences, as well as education, public engagement and the application of research to medicine. Our investment portfolio gives us the independence to support such transformative work as the sequencing and understanding of the human genome, research that established front-line drugs for malaria, and Wellcome Collection, our free venue for the incurably curious that explores medicine, life and art.

Disclaimer

This document reflects the views of participants expressed at the meeting and does not necessarily represent the views of all participants or of the Academy of Medical Sciences or the Wellcome Trust. For further information, please contact Victoria Charlton, Head of Policy at the Academy of Medical Sciences (victoria.charlton@acmedsci.ac.uk, (0)20 3176 2168).

All web references were accessed in June 2015.

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Summary

On 3 March 2015, the Academy of Medical Sciences, in partnership with the Wellcome Trust, held an event on geographical clusters as part of the Academy's FORUM programme. Its aim was to explore how the UK's various clusters of life science activity – from London's MedCity, through the Stevenage Bioscience Catalyst, to the Northern Health Science Alliance – can work together effectively to drive medical research and innovation, and to discuss current challenges and opportunities for future development.

The meeting provided the first opportunity for a broad range of UK cluster leaders to come together and share best practice. This report summarises some of the key themes that emerged during the workshop, including:

- The **diversity and vibrancy** of the different geographical clusters across the UK.
- The **importance of local networks**, with clusters acting most effectively as facilitators for new connections and partnerships.
- The **importance of self-assembly** and the continued need for clusters to grow from the bottom-up.
- At the same time, the need for **greater collaboration between clusters.** The ability to present a combined UK offering, bringing together the strengths of the separate individual clusters to emphasise a national asset, would increase the UK's global competitiveness.
- The difficulties often associated with **working across regional and national borders,** and the need to share learning as to how to tackle issues such as regional identity and differentiation, transport and travel, workforce mobility and the need to respond to different health systems, policies and practices.
- The challenge of working in a UK innovation landscape that has undergone much change in recent years. Delegates identified **a need for stability** and an environment in which the various organisations tasked with increasing innovation – such as regional clusters, Academic Health Science Networks and Catapult Centres – can work in a **complementary, rather than duplicative, manner**.
- The potential to more fully recognise and capitalise on the UK's **existing research strengths**, at both a local and national level. The relative **lack of financial support** provided to UK clusters, and the limitations that this brings, in terms of the financial stability of cluster organisations, availability of incubator space and access to risk capital.
- The opportunity to **make better use of the UK's other unique assets**, in particular the NHS. This was seen to be a resource that is not yet used to its full potential, with further opportunity to realise the value of its data, infrastructure, people, patients and purchasing power. Delegates considered that more could be done to **make the NHS a 'pull' for innovation**, rather than a barrier to it.
- The **variety of ways in which success is measured** by different clusters and the need to **focus on long-term impact**, rather than short-term metrics, when making the case for continued investment.

Following positive feedback from participants on the value of the meeting in facilitating communication and collaboration, and the importance of sharing best practice, it was agreed that a follow-up event would be scheduled for later in 2015. This will again be

supported by the Academy's FORUM and the Wellcome Trust, and, it is hoped, will form part of a new programme of cluster-wide dialogue going forward. Further details of this meeting will be announced in due course on the Academy's website.

Introduction

The geographical clusters FORUM meeting was held on 3 March 2015 as a joint workshop between the Academy of Medical Sciences and the Wellcome Trust. The main purpose of the meeting was to explore how the UK's diverse clusters of life science activity can work together effectively to drive medical research and innovation, and to discuss barriers to, and opportunities for, future development.

The aims of the meeting were to bring together different regional initiatives to build connections, share experience and consider how cluster organisations can work together to better support and promote UK life sciences. Themes of discussion included: key challenges and opportunities faced by all clusters; the different strategic approaches taken and the particularities of working in certain geographical areas; the priorities and measures of success adopted by different clusters; and potential opportunities for greater communication, cooperation and collaboration. To our knowledge, this event was the first time that such a broad range of UK cluster leaders have met in such a format.

The meeting was divided into two parts. In the first part, representatives from regional clusters, science parks, trade bodies and the pharmaceutical industry participated in a roundtable discussion chaired by Sir William Castell LVO FMedSci, then Chairman of the Wellcome Trust. Representatives from seven clusters gave short presentations about their organisations and the challenges and opportunities in the space in which they operate. These were followed by a lively roundtable discussion, to which all attendees contributed. A full agenda can be found in Appendix I and summaries of the individual presentations are provided in Appendix III.

In the second part of the meeting, chaired by Professor Sir John Tooke PMedSci, President of the Academy of Medical Sciences, participants were joined by senior figures from across the UK life sciences including those from the National Health Service (NHS), industry, Government and academia, for an evening of networking and conversation. Sir John summarised the key findings and points of discussion arising from the earlier session, so that attendees could continue the conversations that this stimulated. A full list of delegates can be found in Appendix II.

This report summarises the discussions and key themes from the meeting. We would like to thank both Sir John and Sir William for chairing the event.

Opportunities

Over the course of the meeting it was recognised that the UK has many assets on which it can capitalise to make it a global leader in the life sciences. However, it was argued that an opportunity exists to maximise the value of the national offering by facilitating greater collaboration between local geographical clusters.

UK geographical clusters: presenting a combined national offering

It was widely acknowledged that the UK offers many benefits as a centre for life sciences research and translation. Benefits include the strength of its science base, its position as a leading knowledge economy, the NHS and the information that it holds, its existing life sciences industry, and history of achievement in this sector. However, it was also noted that the UK invests a smaller percentage of its GDP in research than other leading knowledge economies, making it necessary for the UK research environment to operate efficiently if it is to maintain and build on its position as a global leader.

One asset that some delegates considered to not yet have been fully realised is the UK's relatively small geographical size, which arguably makes it possible for it to operate coherently in a way that many other countries cannot. It was suggested that this provides the UK with the opportunity to clearly articulate a national offer that is underpinned by local concentrations of expertise and activity. This would enable the UK to deliver more than the sum of its regional parts, allowing it to compete with other centres of life sciences excellence such as the New England and San Francisco Bay areas of the United States (US).[1] At present, the UK biotechnology 'cluster' ranks fourth globally in terms of its therapeutic pipeline, but according to some delegates there is an opportunity to *'put the UK on the podium'.*

It emerged that several things would be necessary if this ambition is to be achieved. These included:

- Increasing the amount of collaboration and coordination, both within and between regional clusters.
- Realising the potential of national assets such as the NHS.
- Building on existing areas of strength in our local and national research base.

If regional clusters are to provide the foundation on which this combined UK offering will be built, it was argued that clusters will need to become better connected locally, nationally and internationally, so that the UK can create a truly national asset.

[1] This ambition is described in the BioIndustry Association's (BIA) report (2015) *Vision for UK Life Sciences Sector in 2025.* (https://www.bioindustry.org/document-library/a-vision-for-the-uk-life-sciences-sector-in-2025). The BIA (2013) *State of the Nation* (http://www.bioindustry.org/document-library/bia-ey-state-of-the-nation-report) report in collaboration with Ernst & Young demonstrated that the UK was *'the strongest bioscience cluster in Europe'* and was the fourth largest cluster in the world, after New England, the San Francisco Bay area and San Diego.

Local collaboration within clusters

UK cluster organisations have already demonstrated their ability to significantly increase collaboration within their local area, for example by acting as a vehicle through which smaller organisations can jointly apply for large funding opportunities. The Northern Health Science Alliance, for instance, brings together leading universities and NHS hospital trusts from across the north of England and has successfully coordinated joint bids on behalf of these organisations. This has many benefits, including strengthening links between different institutions and allowing groups of smaller organisations to compete for funding, thereby bringing investment to small- and medium-enterprises spread across a wider UK area.

A key theme was how cluster organisations can find a 'niche' through which to aid their community, while continuing to work with the wider life sciences sector. It was felt that clusters were most effective when they had clear aims and were embedded in their local area, where they could act as facilitators for new connections. Clusters were seen to play a role in facilitating more interdisciplinary research and have increasingly enabled links to be formed between disciplines and specialities operating in local areas, supporting often highly productive relationships. For example, one cluster organisation highlighted how the UK's expertise in the movement of donated organs throughout the country had been drawn on to develop a system for rapidly transporting the cells needed for cell-based therapies, and how it had helped to spread this expertise within the cluster.

An opportunity was identified for cluster organisations to map the capabilities within their geographical region in order to identify areas of potential strength and opportunity. Many had already done this, and are now using this knowledge to bring together stakeholders, acting as 'honest brokers' to aid the formation of collaborations and facilitate data sharing, for example.

National collaboration between clusters

An opportunity was highlighted for UK clusters to develop stronger working relationships with each other; many of those present at the discussion had never met before and the clusters represented did not identify themselves as a coherent group despite having common aims and similar approaches. Many of those present also had some degree of specialisation, suggesting that there is an opportunity for different groups to work together in a complementary fashion.

It was noted that the life sciences sector needs to move beyond historical structural barriers and rivalries between institutions to a state of 'co-opetition', where collaboration and competition exist side by side. UK-wide capability mapping could facilitate this. This could also increase the UK's ability to act as a unified hub in its own right, increasing its international competitiveness.

Opportunities also exist for closer working across devolved nations. Although cluster organisations reported challenges in achieving such collaboration, it was felt that there

was potential to learn from the different systems adopted in England, Northern Ireland, Scotland and Wales. For example, the devolved nations have different mechanisms for integrating health and social care, and so can act as a model to learn from and inform best practice across the UK.[2] Learnings can also be taken from additional systems and processes in single nations such as the Community Health Index number for individual patient identification in Scotland, which is principally used for primary care purposes.[3] It was noted that public trust surrounding this scheme had been successfully generated and that this experience could inform other organisations in the UK involved with patient data.

International collaboration

It was suggested that UK clusters might work more closely with international organisations, including other clusters, to bring additional benefit to the UK and further promote national strengths. Schemes such as the EU's Innovative Medicines Initiative, for example, represent an opportunity to partner with organisations outside of the UK for the benefit of UK life sciences, and raise the visibility of the UK's clusters - and the UK as a whole - abroad.[4] It was unclear to what extent UK cluster organisations had already realised the potential of such opportunities.

Making the most of the NHS

Data and informatics

As one of the world's largest and most sophisticated national health systems, the NHS is a huge potential asset for the UK. The UK also has the benefit of a reasonably well phenotyped and, increasingly, genotyped population. Informatics is a key enabler of innovation in the life sciences and it was felt that more could be done to position the UK to take full advantage of emerging informatics technologies. Existing schemes to collect large sets of genomic and tissue data, such as the 'Generation Scotland' scheme and England's 100,000 Genomes Project, are significant assets to the UK's life sciences ecosystem, and could help attract inward investment.[5,6] Clusters potentially have an important role to play in facilitating such schemes and making sure that their outputs are best used to drive innovation.

Innovation in the NHS and the role of Academic Health Science Networks

It was generally agreed that the NHS is currently not well equipped to act as a recipient and purchaser of new and innovative technologies. It was suggested that this was due to both structural and cultural reasons, including the organisation of the NHS procurement system, an embedded historical culture of risk aversion, and time and resource pressures,

[2] The King's Fund (2013) *Integrated care in Northern Ireland, Scotland and Wales: Lessons for England.* http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/integrated-care-in-northern-ireland-scotland-and-wales-kingsfund-jul13.pdf
[3] http://www.ndc.scot.nhs.uk/Dictionary-A-Z/Definitions/index.asp?Search=C&ID=128&Title=CHI%20Number
[4] http://www.imi.europa.eu
[5] http://www.generationscotland.org
[6] http://www.genomicsengland.co.uk/the-100000-genomes-project

which makes it difficult for NHS staff to embrace new and innovative therapies and technologies.

Academic Health Science Networks (AHSNs) in England were considered to be important tools in helping to resolve some of these problems, with the potential to significantly reshape NHS culture and improve its attitude towards research and innovation. Whilst some barriers to working with AHSNs were identified (see page 13), it was felt there were great rewards to be gained through making them function effectively within the wider UK life sciences ecosystem. It was suggested that the cluster community should better articulate its needs to the AHSNs, and vice-versa, in order for organisations across the sector to work together more effectively.

Patient engagement

Many cluster organisations spoke of the importance of bringing the needs of the patient to the centre of their organisations and decision-making processes, through closer relations, potentially facilitated by the NHS. Some also spoke of the benefits of engaging with patients and directing small and medium-sized enterprises (SMEs) to research and develop products that would fulfil unmet clinical needs. However, the need for such investment to be rewarded was also highlighted, as was the current lack of certainty about the existence of a home market for many UK life science SMEs, even when their products were aimed at areas of patient need.

Building on the UK's existing strengths and the importance of self-assembly

It was noted that the cluster organisations represented were a highly heterogeneous group, but shared the characteristic of being self-assembled from the 'bottom-up'. It was suggested that the vibrancy of these clusters was in part a result of this assembly pattern, which developed to fit the needs of the local area. This was contrasted with the 'top-down' structural arrangements increasingly adopted in government initiatives.

Many cluster organisations spoke about the importance of capitalising and building on existing areas of research strength in their local area. Many had identified key themes on which to focus their work, which aided the allocation of resources to ensure that they were efficiently utilised. Others worked across a broader range of research areas. There were also examples of organisations that were particularly effective at aiding research translation; for example the Institute of Translational Medicine in Birmingham, where the availability and effective use of specialised research nurses was reported to be a key factor in enabling translation and had been facilitated, in part, by the cluster.[7] The Institute reportedly drives a range of economic and health benefits and could be used as a model of good practice for other areas across the UK.

[7] http://www.sciencecapital.co.uk/pdfs/Charlie-Craddock-2013.pdf

Barriers and challenges

As well as exploring opportunities, delegates were asked to identify and discuss some of the challenges that their cluster organisations faced. Several key themes and similarities emerged over the course of the ensuing discussion.

Structure of the UK innovation landscape

Clusters that operate across the NHS, industry and academia noted the challenges of working in a landscape where there are frequent changes to structures and operating environments. Structures to support innovation in the UK have proliferated in recent years and the landscape for life sciences is particularly complex, with a large number of organisations and acronyms. It is important that staff within cluster organisations have the expertise and up-to-date knowledge to be able to inform their community about this landscape, in order to help organisations find appropriate funding, resources and other sources of support.

Several organisations expressed concern that the current system was creating some duplication of effort, either because of overlap between existing clusters or the aims of new organisations operating in the same geographical area (for example AHSNs), or through Government initiatives set up in other areas but focusing on the same research themes as existing clusters (for example Catapult Centres). It was suggested that better communication between cluster organisations, and with other organisations operating in this space, was crucial to identifying overlaps and bringing about more efficient working.

Operating across borders

Some clusters work across a large geographical area, such as Wales or the north of England. For these organisations, there are practical issues relating to operating across a wide geography, such as transport across the region, cluster identity in defining a specific 'offer', and the challenge of creating cluster-like behaviour between organisations which may be quite distant from one another. Despite these obstacles, many organisations reported successes in promoting collaborative behaviour across a large geographical area, for example by raising awareness of membership of a cluster and facilitating closer working with other members.

Similar issues were reported by those clusters spanning national borders. In addition, the challenge of working across devolved administrations, where the policy environment, funding opportunities and eligibility could be very different from other areas in the UK, was highlighted.

Economic factors

It was noted that compared with some other nations, the UK does not have a supportive environment for new start-up companies. This is reflected in the financial position of the cluster organisations themselves, several of whom described the challenges of creating and maintaining stable investment. Different clusters represented at the meeting operated a variety of funding mechanisms, from those who relied solely on income generated through membership fees, to those who had significant income from Government, and variations in between. Some clusters described how their size automatically excluded them from applying for larger grants. Others described a situation where funding moved in 'feast and famine' cycles, making it difficult to make long-term plans. It was generally agreed that a long-term, sustainable funding structure was required for cluster organisations to function optimally. Indeed, longevity was considered to be a key factor in the success of a cluster as, over time, cluster organisations develop their networks and become embedded in the local community.

Across the UK there is a large discrepancy in the availability of incubator space. Where this space is available, it may not compare well with services provided by other international schemes. For example, Lab Central Boston is considered to be a very successful scheme in the US.[8] It provides life sciences and biotech start-ups with high quality laboratory space and flexible tenancy arrangements, as well as access to venture capitalists, intellectual property services and a network of other start-ups, helping these new businesses to grow and flourish. It was suggested that more incubator schemes should be supported in the UK and that these might be modelled on other successful programmes from around the world.

In the UK, new charity research buildings can undertake no more than 5% commercial activity in order for construction to remain VAT exempt.[9,10] It was highlighted that these regulations are preventing the co-location of academia and industry in research institutes.[11] Successful partnerships between academia and industry is a well-documented mechanism for increasing research translation, and it was suggested that greater co-location may aid the development of these partnerships.[12]

Some geographical clusters reported challenges relating to infrastructure and real estate in their area. For example, in London and the south east, prices for real-estate are prohibitively high for many start-up companies and often their employees. Cluster organisations in locations affected by these issues suggested that this could be partially overcome by developing secondary locations for businesses to grow. It was noted by

[8] http://labcentral.org/
[9] HM Revenue & Customs (2014) *VAT Notice 708: buildings and construction*. https://www.gov.uk/government/publications/vat-notice-708-buildings-and-construction/vat-notice-708-buildings-and-construction#zero-rating-the-construction-of-new-buildings
[10] HM Revenue & Customs (2014) *VAT Notice 701/30: education and vocational training*. https://www.gov.uk/government/publications/vat-notice-70130-education-and-vocational-training/vat-notice-70130-education-and-vocational-training#construction-land-and-property
[11] This issue was highlighted in the Academy response to the Dowling consultation: http://www.acmedsci.ac.uk/viewFile/54fd69cf7d54f.pdf
[12] Academy of Medical Sciences (2010) Academia, industry and the NHS: collaboration and innovation meeting. 27 November 2009 http://www.acmedsci.ac.uk/viewFile/publicationDownloads/Collabor.pdf

many clusters that if successful companies are to grow, they require appropriate infrastructure in the surrounding area, including transport networks, housing and schools.

Culture change in the NHS

It was suggested that the NHS remains unreceptive to innovation and that there is a lack of understanding by individuals at all levels of the system – including the most senior – about the importance of innovation. This makes the NHS a difficult market to access for new life science companies, and it was suggested that ideas are sometimes taken abroad for development because of the perceived lack of a UK market. It was noted that if NHS procurement could be restructured to increase purchasing of new innovations, market forces would drive further development of such products and aid their route to market. This sort of culture change could be of particular benefit to SMEs.

The training of healthcare staff was identified as a key lever in generating the required culture change within the NHS to support innovation. In order to take advantage of emerging areas such as regenerative medicine and genomic technologies, healthcare professionals need to have an understanding of the technologies and the skill-set to apply them, necessitating a new approach to education and training.

AHSNs were identified as an important source of positive culture change within the health service; however, several potential barriers were identified to their effective working. Some delegates suggested that the AHSN initiative lacked focus and clear direction and, given their broad remit, AHSNs were considered to be significantly underfunded. It was also noted that AHSNs seemed to *'speak a different language'* in terms of their scope and operation when compared with other clusters, and that this represented a barrier to effective collaboration. There was some concern at the variability in focus of individual AHSNs, with some engaging much more effectively with local clusters than others. However, it was acknowledged that AHSNs are relatively new organisations and would require more time to bed into their role. There was concern that this time might not be provided if government focus shifted elsewhere. As previously discussed, there were also concerns about potential duplication of effort and resources between AHSNs and existing clusters.

Measures of success

Those individuals presenting on behalf of their clusters were asked what success looked like for their organisation and how this was measured. This prompted further discussion amongst the group.

Economic measures

Most clusters identified economic impact as their key measure of success. A variety of metrics were used to capture this, including common indicators such as job and business creation; however, it was noted that translating research from the lab to the clinic can be a very long process, and that such metrics may not always be able to capture some of the value delivered. It was suggested that use of additional economic metrics, such as healthcare efficiency gains, might help to resolve this issue. It was also noted that given the timescales involved in taking a product from 'bench to bedside', focus on long-term performance was required rather than using short-term metrics.

Some cluster organisations included an assessment of how they had helped *other* organisations to access funding in their measures of success. This is particularly important where facilitating access to capital is a key aim of the cluster; for example, at MedCity, which is developing a new angel investor network.[13]

Membership organisations

Many of the cluster organisations present were membership organisations, and defined success partly in terms of their membership. Given the limited resources of many such organisations, continued membership was seen as a sign that the cluster was adding value, and this could also bring greater financial security and flexibility to the organisation. Many clusters also measured their success directly in relation to the success of their member organisations, which often reported their value in quite narrow economic terms.

Retention of innovation

It was noted that historically, the UK has not been good at bringing innovations to market, or retaining innovative ideas in the UK for testing and development. Several cluster organisations therefore considered success to be a vibrant life sciences sector where ideas are created, developed, tested and taken to market, before being exported globally. This can be captured both through the economic measures described above, other quantitative measures such as patent registration, and more qualitative case studies demonstrating the journey of an innovation through the UK life sciences system.

[13] http://www.medcitylondon.com/news/angels-medcity-holds-first-pitching-event/

It was noted that the UK has a particular deficit of medium-sized enterprises and that active intervention was required to help smaller companies to grow into mid-sized companies. The creation of such businesses in the local area represented a significant achievement for many cluster organisations.

Success for UK plc

For many organisations present, a key aim was to showcase the UK to global bioscience companies, and to demonstrate to them the benefits of operating in the UK. Many were keen to illustrate that the UK is 'open for business', and successfully project that message globally, thereby attracting business and inward investment. For others, success was seen to be a UK life sciences ecosystem that was optimised for the creation, growth and success of research-based businesses.

Another measure of success was the ability to influence policymakers in helping to create this environment. It was suggested that when lobbying Government, a united voice was stronger than many individual messages, even when these are broadly consistent. Therefore, it could be beneficial to the cluster community to increase collaboration and find common ground to increase their influence on government policy. Organisations such as the Academy of Medical Sciences and the Wellcome Trust were seen as playing an important role in developing and disseminating these messages through programmes such as the FORUM.

Concluding comments and next steps

At the end of the afternoon, Sir William Castell LVO FMedSci, then Chairman of the Wellcome Trust, provided delegates with a summary of the opportunities and challenges that had emerged from the workshop. At the subsequent drinks reception, Professor Sir John Tooke PMedSci, President of the Academy of Medical Sciences, provided a further overview of the day's discussion for the benefit of evening guests.

In his concluding comments, Sir John noted that the UK's regional clusters are a fundamental part of our national offering and will be an important driver if we are to continue to compete successfully in the global life sciences market. He stated that the UK is in a strong position, but that the afternoon's discussion had revealed some shared challenges. Attracting inward investment and generating regional growth is a key priority for many clusters, but the difficulties encountered in accessing risk capital and the NHS' failure to act as a 'pull' for innovation both act in opposition to these aims. Sir John noted that much of the richness of the UK regional landscape lies in the heterogeneity of its cluster groupings, and that purely structural approaches are unlikely to generate the desired rates of innovation and growth. He highlighted the need for complementarity between the different parts of this landscape; in particular, the need for AHSNs and existing cluster organisations to work together more effectively to support regional communities.

Sir William noted the positive feedback that he had already received from the organisations present at the day's meeting and their evident desire for continued communication and collaboration. In light of this and the value seemingly delivered by the event, it was agreed that further discussions would take place to consider how best to take things forward, potentially through a follow-up event later in the year, again supported by the Academy's FORUM and the Wellcome Trust.

Appendix I Programme

3 March 2015

Wellcome Trust, Gibbs Building, 215 Euston Road, London, NW1 2BE

Workshop	
15:30 – 16:00	**Registration with refreshments**
16:00 – 16:10	**Welcome and introduction** Sir William Castell LVO FMedSci, then Chairman, Wellcome Trust and Professor Sir John Tooke PMedSci, President, Academy of Medical Sciences
16:10 – 16:45	**Introduction to 'geographical clusters'** Brief five minute presentations on: • Opportunities and challenges for each cluster. • What success will look like for each cluster. ***Speakers:*** **Mr Ian Busby**, Practice Leader – SETsquared Open Innovation Programme, SETsquared **Dr Darren Clark**, Chief Executive, Medilink East Midlands **Dr Eliot Forster**, Executive Chair, MedCity **Dr Robert Grundy**, Co-Chair of the Life & Health Sciences Panel, MATRIX – Northern Ireland Science Industry Panel **Professor Guy Orpen**, Chair, GW4 Board and Deputy Vice-Chancellor, University of Bristol **Mr Gwyn Tudor**, Forum Manager, MediWales **Dr Hakim Yadi**, Chief Executive, Northern Health Science Alliance
16:45 – 17:50	**Discussion session** Open discussion to cover: • Opportunities and challenges of regional clusters, and barriers to their development. • Liaison between regional clusters and with external organisations, and how clusters can contribute to UK plc. • What success would look like, and how the benefit of clusters to the regions they represent and to the UK can be measured.
17:50 – 18:00	**Closing remarks** Sir William Castell LVO FMedSci, then Chairman, Wellcome Trust
Evening reception	
18:00 – 18:30	**Drinks reception and arrival of evening guests**
18:30 – 18:45	**'How regional clusters can contribute to UK plc'** Sir William Castell LVO FMedSci, then Chairman, Wellcome Trust and Professor Sir John Tooke PMedSci, President, Academy of Medical Sciences
18:45 – 21:00	**Buffet dinner**
21:00	**Close**

APPENDIX I PROGRAMME

Appendix II Delegate list

Delegate affiliations were correct at the time of the event.

Workshop delegates

Dr Virginia Acha, Executive Director for Research and Medical Innovation, Association of the British Pharmaceutical Industry
Mr Steve Bates, Chief Executive Officer, UK BioIndustry Association (BIA)
Ms Rowena Burns, Chief Executive, Manchester Science Parks
Mr Ian Busby, Practice Leader – SETsquared Open Innovation Programme, SETsquared
Sir William Castell LVO FMedSci (Chair), then Chairman, Wellcome Trust
Professor Charles Craddock, Centre for Clinical Haematology, Queen Elizabeth Hospital Birmingham
Dr Darren Clark, Chief Executive, Medilink East Midlands
Dr Geoff Davison, Chief Executive Officer, BioNow
Ms Sue Dunkerton OBE, Director, Knowledge Transfer Network
Ms Harriet Fear, Chief Executive Officer, One Nucleus
Professor David Ford, Director of MediWales, Professor of Health Informatics at Swansea University and Deputy Director of CIPHER
Dr Eliot Forster, Executive Chair, MedCity
Professor Ian Greer FMedSci, Chair of the Northern Health Science Alliance and Executive Pro-Vice Chancellor, University of Liverpool
Dr Robert Grundy, Co-Chair of the Life & Health Sciences Panel, MATRIX – Northern Ireland Science Industry Panel
Dr Stephen King, Deputy Director, London Stansted Cambridge Consortium
Dr Howard Marriage, Translator and Entrepreneur in Residence, Edinburgh Bioquarter
Mr Brendan McGuigan, Head of Life Sciences, Invest NI
Dr Alan Moodie, Vice President External Engagement, R&D Biopharm & Business Development, GSK
Dr Daniel Nelki, Head of Legal & Operations, Innovations, Wellcome Trust
Dr Seamus O'Neill, Chief Executive Officer, Academic Health Science Network for the North East and North Cumbria
Professor Guy Orpen, Chair, GW4 Board and Deputy Vice-Chancellor, University of Bristol
Professor Chris Packard, Director of Research for NHS Greater Glasgow & Clyde
Dr Menelas Pangalos, Executive Vice President and Global Head, Innovative Medicines & Early Development, AstraZeneca
Dr Martino Picardo, Chief Executive Officer, Stevenage Bioscience Catalyst
Dr Peter Simpson, Director, N8 Research Partnership
Mr Andy Taylor, Executive Director – Government Policy, Association of British Healthcare Industries
Professor Sir John Tooke PMedSci (Chair), President, Academy of Medical Sciences
Dr Mark Treherne, Chief Executive, UKTI Life Science Investment Organisation
Mr Gwyn Tudor, Forum Manager, MediWales
Ms Doris-Ann Williams MBE, Chief Executive, British In Vitro Diagnostics Association
Dr Hakim Yadi, Chief Executive, Northern Health Science Alliance

Evening guests

Mr Rob Berry, Head of Innovation & Research, Kent Surrey Sussex Academic Health Science Network

Dr Adrian Bull, Managing Director, Imperial College Health Partners

Dr Will Cavendish, Director General of Innovation, Growth and Technology, Department of Health

Mr Ian Dodge, National Director Commissioning Strategy, NHS England

Professor Sir David Fish, Director, UCL Partners

Professor William James, Pro-Vice-Chancellor for Planning and Resources, University of Oxford

Professor Sir Bruce Keogh, Medical Director, NHS England

Dr Nicole Mather, Director, Office for Life Sciences

Dr Liz Mear, Chief Executive, North West Coast Academic Health Science Network

Dr Chris Parker CBE, Managing Director, West Midlands Academic Health Science Network

Sir John Savill FRS FRSE FMedSci, Chief Executive, Medical Research Council

Dr David Sweeney, Director – Research Education and Knowledge Exchange, Higher Education Funding Council for England

Mr Matthew Toombs, Deputy Director, Corporate Finance, Business, Innovation & Skills team, Enterprise & Growth Group HM Treasury

Secretariat

Ms Victoria Charlton, Head of Policy, Academy of Medical Sciences

Dr Claire Cope, Policy Officer, Academy of Medical Sciences

Dr Nicola Perrin, Head of Policy, Wellcome Trust

Dr Rachel Quinn, Director of Policy, Academy of Medical Sciences

Ms Rebecca Thompson, Policy Intern, Academy of Medical Sciences

Ms Louise Wren, Policy Adviser, Wellcome Trust

Appendix III Cluster information sheets

These summaries have been prepared by the cluster representatives to provide an overview of the each of the clusters.

GW4

Year established: The GW4 Cooperation Agreement was signed in 2013; informal collaboration has been in place since 2011.

Regions represented by, and organisations that are part of, the cluster
Organisations: University of Bath; University of Bristol; Cardiff University; University of Exeter Geographical regions: West of England; South West England; South Wales

Mission
To combine the intellectual capacity and physical resources of the four leading research-intensive universities in the south west of England and Wales: Bath, Bristol, Cardiff and Exeter. The GW4 Alliance builds leading cross-institutional research communities whose cumulative impact is enhanced through collaboration and develops strategic partnerships with industry, government, the arts and civil society.

Objectives
- To build GW4 research communities of scale and capability that will deliver a step change in world-class research and that will impact on major research and societal grand challenges.
- To maximise research capacity, performance and impact through a series of strategic collaborations with industry, governments and other key sectors.
- To provide a globally outstanding environment in which to develop and train future generations of researchers and leaders.
- To develop and connect international partnerships to enable the four Universities to have a greater global presence and competitiveness in attracting resources and the highest quality researchers and international postgraduate research students.

About
All four GW4 universities are in the top 1 per cent of HE institutions in the world. They have a combined turnover well in excess of £1 billion. In all, 22,000 postgraduates, both taught and research, study in the GW4 universities and over 8,000 academics work in them. We have a combined research income of almost £300M and as an alliance the GW4 Grade Point Average in the REF2014 was higher than that for the N8, M5 or the Eastern Arc regional alliances.

As shown below, GW4 is governed by a Council of the four Vice-Chancellors and a Board whose members are the Deputy Vice-Chancellor/Provost (DVC) and Pro Vice-Chancellor for Research (PVCR) or equivalent from each partner GW4 university. The GW4 has four workstreams each of which has a Board champion who leads on the strategic direction and delivery of the workstream. A programme manager or equivalent manages delivery of the workstream activity. The Chair of the GW4 Council is Professor Colin Riordan, Vice-Chancellor at Cardiff University. The Chair of the GW4 Board is Professor Guy Orpen, Deputy Vice-Chancellor at the University of Bristol. GW4 is funded by the four universities and funding has been allocated to initiatives across the four workstreams. The largest investments to date (£650K) have been allocated to the Building Communities workstream to fund the Initiator and Accelerator programme.

Projects to date and key successes

1. **Doctoral training:** The collaborative strength of GW4 has succeeded in attracting significant funding to train postgraduate researchers and bring the brightest minds to the region. In all, GW4 universities are home to 22 UK Research Council doctoral training centres and partnerships including:

- Nine multi-institution partnerships led by a GW4 university, including five in which all GW4 universities are partners.
- GW4 universities are partners in a further six programmes led by other universities.
- Thirteen specialist single-university centres for doctoral training typically highly collaborative with industry, business, government agencies and third sector partners.

The GW4 alliance has invested in a range of resources and initiatives to support these partnerships and enhance the training and development opportunities for GW4 postgraduate research (PGR) students. These include: cross-institutional PGR training opportunities and resources; a GW4 PGR Partnerships Toolkit – a comprehensive portfolio of evidence-based tools to support all phases in the lifecycle of a PGR partnership; and a doctoral partnerships community of practice who are sharing best practice.

2. **Building Communities:** The Building Communities programme is designed to build new, high-quality GW4 research communities or help existing collaborations to build on their work and secure long term sustainable funding. Academics from across the four universities have put in nearly 100 bids to GW4's Building Communities Initiator and Accelerator programmes to tackle some of the world's grandest challenges. These schemes are awarded on a competitive, peer-reviewed basis. To date 35 have been funded reflecting the breadth of academic disciplines fostered through GW4. Successful bids have come from academics in the humanities and social sciences, science, technology, engineering and mathematics or health related topics and included several multi-disciplinary bids. They vary from quantum technologies to medieval studies. Many of our funded communities involve not only academics but also industry, NHS trusts, charities and other key stakeholders. To view details of the 35 GW4 communities see http://gw4.ac.uk/our-communities/.

3. **Sharing infrastructure and equipment:** The GW4 Equipment Sharing Database (http://equipsouthwest.org.uk) provides access to over 1,300 pieces of state-of-the-art equipment and is open to all GW4 researchers. Whilst aimed primarily at academic and technical staff from GW4 institutions, we welcome enquiries from other universities and businesses that may wish to access our facilities and the associated world-class expertise. Collaboration on sharing goes beyond just enabling the sharing of equipment. We are also working to align our institutional investments and where appropriate locate equipment in a facility at the most appropriate GW4 institution (e.g. a recent MRC award to Bristol will result in a PET/CT scanner to be located at Cardiff). Collaborative equipment awards have been received that have the support of all GW4 institutions and will be made available for sharing (e.g. the UK's first Ultra High Vacuum Photo Electron Emission Microscopy (Nano-PEEM) facility funded by EPSRC and located in Bristol's Centre for Nanoscience and Quantum Information).

Future projects
GW4 is developing a five year vision and plan. Current activities and initiatives are being reviewed with respect not only to strategic alignment and the value-added of doing them as GW4, but also for value for money. An outcome from this process will be agreement on areas of strategic focus, future projects and funding priorities. Until we have completed our consultation it would be premature to identify areas of future activity.

External partners include a range of industrial, governmental and third sector partners in Centres for Doctoral training (CDTs) and Doctoral Training Partnerships (DTPs).

Contact details
For companies and organisations interested in working with the GW4 Alliance contact:
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To contact a specific workstream or GW4 HEI contact the following GW4 Programme Managers:

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- University of Bristol – Building Capacity and Developing People
  Dr Jenny Knapp jenny.knapp@bristol.ac.uk Tel: 0117 3317128
- Cardiff University – Connectivity and Communications
  Jude Bown bownja@Cardiff.ac.uk Tel: 029 2087 9441
- University of Exeter – Building Communities
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MedCity

Year established: 2014

Regions represented by, and organisations that are part of, the cluster
MedCity works across London and the south east of England to support, promote and grow the life sciences sector, with a focus on research, development, commercialisation and manufacturing.

Mission and objectives
The MedCity vision is for London and the south east of England to be a world leading, interconnected region for life science research, development, manufacturing and commercialisation - delivering health improvements and economic growth.

MedCity is promoting life sciences investment, entrepreneurship and industry in the region by:

- Providing a single front door and concierge service for industry and investors looking for partners, infrastructure and expertise.
- Working with academic partners to develop market-facing propositions for collaboration, research and development.
- Fostering an environment that supports and encourages entrepreneurialism.
- Raising awareness globally of the region's rich life sciences ecosystem.

This work is undertaken working collaboratively across a wide range of institutions including Academic Health Science Centre (AHSC) partners, the AHSNs, London & Partners, the Greater London Authority, London Enterprise Panels (LEPs), industry and other private sector organisations.

About
The MedCity programme of work is delivered by MedCity Ltd, a not for profit corporation founded by the Mayor of London and London's three major AHSCs (King's Health Partners, Imperial AHSC and UCLPartners).

Projects to date and key successes
MedCity has set up Angels in MedCity, a business angel investment initiative, delivered on behalf of MedCity by London Business Angels, working with the Angels4LifeSciences network. Angels in MedCity brings together a community of angel investors and provides opportunity for SMEs in the life sciences and healthcare sector to pitch for investment. MedCity is developing a seed fund focused on inter-institutional collaboration, to encourage new entrepreneurs in the life science sector and to support engagement between SMEs and the academic base. Internationally, MedCity participates in overseas promotion and trade visits such as Boston and New York (February, 2015) most recently, promoting the opportunities for London and the south east in the life sciences. Whether in conjunction with London & Partners, UKTI, or independently, MedCity has developed an extensive network of international contacts and links to consulates and embassies across London, routinely assisting overseas companies to understand the life sciences terrain and opportunities within London and the south east.

Future projects

Current projects include the development of work with the London Stock Exchange to encourage a greater understanding of life sciences and healthcare investment opportunities within public markets, focused around a second conference on the Future of Healthcare Investment (to be held in January 2016); examination of options for a 'digital health institute' for London, as recommended by the London Health Commission; devising and delivering a competition in conjunction with the Design Council to bring industrial design expertise into medical technology innovations; and work to create a joined up offer for clinical trials across London.

External partners

London & Partners, University College London (UCL), Imperial College, King's College London, Queen Mary's University of London, London's AHSCs and associated AHSNs.

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Medilink East Midlands

Year established: 2004

Regions represented by, and organisations that are part of, the cluster
Medilink East Midlands (MEM) is the East Midlands life science industry association. Its network of more than 3,400 contacts in over 600 organisations represents all aspects of the sector, including multinationals such as 3M Health Care, high growth SMEs such as Quotient Clinical, Sygnature Discovery, Xenogesis and Cyp Design, as well as the NHS and universities.

Mission and objectives
MEM's mission is to help life science companies in the East Midlands establish, develop and grow.

MEM's objectives:

- To strengthen, develop and stimulate growth in the East Midlands healthcare industries.
- To provide an open forum for healthcare firms to identify and act upon areas of common interest by efficient, co-ordinated action and representation.
- To improve the competitiveness of members by providing them with access to knowledge.
- To establish working relationships with other organisations on all matters which affect members.
- To provide an integrated approach to selling healthcare products in the UK and abroad.
- To provide assistance to SMEs in the licensing and technical areas of product development.

About
MEM is a not for profit, limited by guarantee, membership-based organisation that delivers specialist support to enable product and service innovation, and help companies with market access. MEM facilitates collaboration between the private and public sectors, stimulates economic growth and commercial sustainability, and champions the life science industry in the East Midlands.

MEM is governed by a Board of Directors drawn from its membership that includes representatives from industry, academia, and the NHS. MEM has an executive team of 11 covering four core areas of activity: innovation and market support, skills and professional development, membership services and events.

Projects to date and key successes
The Healthcare and Bioscience Innovation Network (iNet): a long term strategic project, operating since 2008, was established to engender a culture of innovation in East Midlands SMEs. Activities are focussed on improving economic performance by enabling companies to increase their competitive advantage through innovation. The project has provided over 1,000 business assists, over 300 engagements between SMEs and the

knowledge base, helped SMEs introduce more than 30 new products to market, and provided £1.5M of funding directly to SMEs and over £2M for local collaborative research and development (R&D) projects.

BioMatIn: a transnational project to develop a biomaterials cluster across Northern Europe. Vouchers for feasibility assessment of collaborative projects are provided to cluster SMEs.

Med Tech sector skills programme: part of the wider Science Industry Partnership initiative. Grants for 50% of the costs of training are available to Med Tech SMEs based in England. A pilot traineeship programme is also being delivered, involving NHS and industry work experience.

Future projects
The continuation and expansion of innovation and skills support programmes across both East and West Midlands are in development.

External partners
- 3M Health Care
- BioCity & MediCity Nottingham
- Shakespeare Martineau
- Loughborough University
- Nottingham Trent University
- University of Leicester
- University of Nottingham
- De Montfort University
- Nottingham University Hospitals NHS Trust
- Derby Hospitals NHS Foundation Trust
- University Hospitals Leicester NHS Trust

MEM is a founding member of **Medilink UK**; a national network with **1,500 members across the UK**.

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MediWales

Year established: 1992

Regions represented by, and organisations that are part of, the cluster
MediWales represents the network of life science organisations in Wales but also has members from England and Ireland who wish to work with our network.

MediWales has 150 members, the majority of which are life science companies based in Wales.

Mission and objectives
MediWales' mission is the advancement of human life science in Wales.

MediWales creates opportunities for its members by providing one-to-one advice on research and development, market access, commercialisation, international trade, finance and funding and the supply chain.

Through extensive links with both UK and international organisations, MediWales helps to identify local and international collaborative partners as well as increase the profile of Wales' thriving life science sector.

MediWales works to:
- Maintain a high level of support in the life science sector.
- Support our members' efforts to trade successfully both in the UK and abroad.
- Create opportunities for organisations to promote their products and services, to seek collaborative partners and to share good practice and concerns.
- Maintain detailed, up to date, market intelligence about the life science sector in Wales.
- Improve access to both market and clinical expertise, for the life science sector in Wales, for the benefit of patients and the economy.
- Ensure that the successes of the Welsh life science sector are publicised and celebrated.
- Raise the profile of Wales to UK and international audiences as a leading place to do life science business.

About
MediWales is the Life Science Network for Wales.

MediWales members are comprised of life science, pharmaceutical services and medical technology companies and the network actively encourages engagement from the clinical research community with membership including both NHS Health Boards and Universities.

Driven by its members' interests and sector needs, MediWales runs a very popular events programme, which includes regulatory updates and advice on NHS procurement issues, finance and funding, and clinical unmet needs.

Projects to date and key successes

- Through advising Government, MediWales assisted in the establishment of Health Research Wales, which is a one-stop source of information and support for companies wishing to undertake clinical research in Wales.
- UK Lifescience Industry magazine is a national publication, which is produced by MediWales and published on behalf of Medilink UK and other UK partners. Distribution to 39,000 direct contacts.
- MediWales is financially independent through the delivery of its membership programme which includes a national conference, UK HealthTech.

Future projects

The MediWales Academy – this is a training programme, along with student placements, that will be delivered in partnership with regional institutions.

Ongoing engagement with Welsh Government to improve access to medical technology for NHS patients in Wales.

External partners

Formally, MediWales has partnerships with Medlink UK, United Life Sciences and the Council for European BioRegions (CEBR). Informally, MediWales has relationships with Association of British Healthcare Industires (ABHI), UK Trade & Investment (UKTI), Knowledge Transfer Network (KTN) and numerous other UK organisations.

Contact details

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The Northern Health Science Alliance

Year established: 2012, formally registered as a Company Limited by Guarantee in 2013

Regions represented by, and organisations that are part of, the cluster
The Northern Health Science Alliance Ltd (NHSA) is a new partnership established by the leading Universities, NHS Hospital Trusts and AHSNs in the North of England and includes:

- **The Medical Schools of the N8 Universities**: University of Leeds; University of Liverpool, Hull York Medical School; Newcastle University; Lancaster University; University of Sheffield; University of Manchester; and Durham University.
- **Eight affiliated NHS Trusts**: The Leeds Teaching Hospital Trust; The Royal Liverpool and Broadgreen University Hospitals NHS Trust; Hull and East Yorkshire Hospitals NHS Trust; York Teaching Hospital NHS Foundation Trust; Lancashire Teaching Hospitals NHS Trust; Sheffield Teaching Hospitals NHS Foundation Trust; Manchester Central University Hospitals NHS Foundation Trust; The Newcastle upon Tyne Hospitals NHS Foundation Trust; and South Tees Hospitals NHS Foundation Trust.
- **Four Academic Health Science Networks**: North West Coast AHSN, Greater Manchester AHSN, York & Humber AHSN and North East & North Cumbria AHSN.

The N8 is a partnership of the eight most research-intensive universities in the North of England and an important partner for the NHSA. The NHSA also has strong links with BioNow, a business-to-business cluster support organisation. BioNow has linkages to around 1,000 businesses in the North and over 225 subscribing members; BioNow is currently the fastest growing life sciences membership organisation in the UK. Working alongside the N8 and the NHSA, BioNow is driving innovation in the sector by catalysing the engagement of the Northern Universities and NHS with an active and engaged local business base.

Mission and objectives
The NHSA's mission is to establish an internationally recognised life & health science system in the North of England providing unrivalled access to healthcare innovation for the benefit of industry, academia and patients. Our aim is to secure both commercial and public research funding and encourage inward investment to the North ensuring that UK life science continues to compete on a global scale with our international competitors.

About
The NHSA is a new partnership established by the leading Universities, NHS Hospital Trusts and AHSNs in the North of England to improve the health and wealth of the region by creating an internationally recognised life science and healthcare system. It has been established as a Company Limited by Guarantee. The NHSA is globally unique in its approach, linking eight universities, eight teaching Trusts and four AHSNs that encompass a patient population of over 15 million people. The NHSA represents an exciting opportunity to recognise and promote the value of the North of England to the global Innovation, Health and Wealth agenda. The members of the NHSA have agreed to collaborate to create a single-portal, bringing together their research, health science

innovation and commercialisation to provide benefits for researchers, universities, hospitals, patients as well as commercial partners. The NHSA acts as focal point for NHSA members and partner organisations to work collaboratively and all members are agreed on the need for the UK's research community to receive the very best training, ensuring that the UK remains a competitive country for life and health science research.

Projects to date and key successes

- £2.9M HEFCE Catalyst Funding to maintain NHSA corporate function through to 2019.
- The NHSA has demonstrated it can act both with, and on behalf of, its members through the submission of five funding submissions in the past twelve months with several successes and a number pending review, three examples in ageing, neuroscience and population health include:
  a. **Ageing**: £40M National Centre for Ageing Science and Innovation (NASI) at Newcastle University was supported by the NHSA.
  b. **Neurodegeneration**: Founding partner in a £30M NeuroMap Project with MRCT which includes: Alzheimer's Association, Alzheimer's Research UK, Alzheimer's Society, ALS Association, Michael J Fox Foundation, Motor Neurone Disease Association, MRC Technology, Parkinson's UK.
  c. **Population health**: The £20M Health North Connected Health Cities initiative will establish combinatorial health innovation centres that assemble data, experts and technology, at critical mass, producing intelligence to power continuous improvement in health and care for population health.

Future projects

- Growth of Health North
- Well North

External partners

- N8
- BioNow
- MedCity (MoU in place)
- UKTI
- NHS England North
- Public Health England
- Silicon Valley Comes to the UK
- Regional LEPs
- Well North
- Tech North
- NWeHealth
- Manchester AHSC
- Commercial partners on a project by project basis

Contact details

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The Northern Ireland Life and Health Sciences ecosystem

Year established: 2011

Regions represented by, and organisations that are part of, the cluster
The Northern Ireland (NI) life & health sciences ecosystem represents the entire region, engaging a wide variety of stakeholders across NI with a vested interest in life and health science. The ecosystem is a collaboration between government departments including Enterprise Trade and Investment (DETI) and Health, Social Services and Public Safety (DHSSPS), Health Delivery bodies (Health & Social Care Board and five Health Trusts), academia (Queens University Belfast and Ulster University), a range of clinical research networks, Invest NI and over 100 industry partners.

Mission and objectives
The Mission of the NI ecosystem is to provide a focal point or 'nerve centre' for the life and health sciences sector in NI, stimulating interaction, innovation, networking and collaboration, across business, academia and clinical communities, facilitating investment and promoting economic opportunities.

Objectives:
- Establish NI as an internationally recognised location for innovation in life and health sciences.
- Double the size of the NI life and health sciences sector by 2020, through continued investment in innovation and R&D, collaboration, key infrastructure and foreign direct investment (FDI).
- Position NI as a test bed or 'living lab' for new product/service development, taking advantage of our small size to act as a microcosm for the NHS and social services across the rest of the UK.

About
The NI Ecosystem is not currently a formal organisation but rather a cluster of collaborative networks and working groups representing all the various stakeholders in the regions life and health sciences sector. These groups consist of high level representatives from industry, government, academia and health, who work collectively to develop the sector in NI. Examples of these groups (but not exclusive) include:
- **MATRIX** – The Northern Ireland Science Industry Panel, which is a business led expert panel, formed primarily to advise government on the commercial exploitation of R&D and science and technology in NI.
- **Connected Health & Prosperity Board (CHAP)** – A senior Government lead group established to realise significant benefits for NI through both improved care for patients and providing commercial development opportunities for researchers and industry.
- **The European Connected Health Alliance (ECHAlliance)** – Head quartered in NI the Alliance facilitates focused leadership for the development of connected health markets across Europe and beyond.

However, NI is in the process of establishing a formal Life Sciences Hub whose remit will be to improve the health and wealth of the region by providing visible and committed leadership for the sector and through the creation of an internationally recognised life and health science ecosystem. The Hub is being established as a partnership for sustainable and effective interaction between the quadruple helix of Government, health and social care (HSC), private sector and academia with the aim of creating synergies, and accelerating growth, and innovation.

Projects to date and key successes

1. **Completion of the Matrix Life & Health Sciences Report** – Mapping areas of overlap between NI areas of capability and the key trends or areas of market opportunity going forward – providing recommendations for future actions.
2. **Establishment of key life sciences infrastructure** – £11.5M NI Centre for Stratified Medicine, £7M NI Connected Health Innovation Centre, £5.2M Functional Brain Mapping centre.
3. **Securing regional investment in life and health sciences** of £200M resulting in overall all sector growth of 10% year on year.

Future projects

1. Development and implementation of a new coherent cross departmental life and health sciences strategy for NI.
2. Establish HSC as a major driver of innovation in NI, maximising the benefits of the NI integrated health care system, electronic care records and close proximity of academia. Industry, government and HSC, creating a solid foundation for future collaboration.
3. Focus on five key areas (precision medicine, connected health, clinical trials, big data and diagnostics) where NI has built significant capability in order to drive success for the life and health sciences sector.
4. Establishment of a Precision Medicine Centre of Excellence in NI as part of the UK Precision Medicine Catapult network.

External partners

Massachusetts Medical Device Development Center (M2D2) - Provides support to US medical device companies, offering inventors and executives easy, affordable, and coordinated access to world-class researchers and resources at the Lowell and Worcester campuses of the University of Massachusetts. NI has a strategic link allowing NI companies to participate in M2D2.

Science Foundation Ireland (SFI) – Uniquely within the UK, NI has an agreement with SFI to use the Republic of Ireland's research infrastructure and participate in ground-breaking cross-border collaboration in leading edge, discovery and fundamental research.

The Northern Ireland Massachusetts Connection (NIMAC) – A group dedicated to advancing business, research and clinical collaboration between Massachusetts, NI and Europe. Collaborative focus on research in diabetes, connected health and tissue engineering.

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The SETsquared Partnership

Year established: 2003

Regions represented by, and organisations that are part of, the cluster
The members are the Universities of Bath, Bristol, Exeter, Southampton and Surrey. The regions that SETsquared operates in covers: the South West, the West of England, the South of England, and the South East of England south of London.

Mission and objectives
SETsquared is a focus for enterprise activity and new business creation for the five University partners. SETsquared's mission is to "help turn an innovative spark into a thriving commercial business."

About
Since 2003, the objectives of SETsquared have been very much in alignment with the themes and direction of the Witty Review and the current Dowling Review, in creating economic benefit, and SETsquared has paid particular attention to demonstrating the scale of net economic impact arising from its activities.

Excluding the extensive contributions made to the economy by each of the individual five universities, SETsquared itself has been independently assessed as producing some £3.5bn in Gross Value Added (GVA) and some 9,000 additional direct jobs since its inception. Assuming these trajectories are held into the future (in practice they will be increased), SETsquared is forecast to create a further £10bn in GVA over the next decade.

SETsquared has also been independently assessed by UBI Index (an independent Swedish based research organisation) as part of a review of the performance of some 800 universities globally, as being the leading business incubator in Europe and number two in the world.

Projects to date and key successes
SETsquared delivers long term programmes. These include:

1. Accelerating the growth of high tech start ups (through five university-located incubation centres), but with new centres being created where there is only limited higher education infrastructure such as recently in Basingstoke. In any given year there are up to 250 start ups in incubation. Over the last decade some £1bn in investment and finance has been raised to support these companies grow.
2. Student Enterprise: Developing the entrepreneurial talents of students at each university through initiatives such as the Researcher to Innovator programme and the Entrepreneurship Programme.
3. Helping academic researchers realise the commercial impact of their work through access to the Business Acceleration programme and also through initiatives such as OpenDoor that brings entrepreneurs and academics together in joint working environments.

Future projects

Three current new initiatives include:

1. **The Health Innovation Programme**. This is a collaboration between SETsquared and, initially, the four South of England AHSNs (West of England; South West; Wessex; Kent, Surrey and Sussex). This initiative, that we aspire will become a sustainable and growing programme, will initially deliver coaching, mentoring and support for over 250 healthcare innovators from Cornwall to Kent, both within the NHS and externally.
2. **The Open Innovation Programme**. This programme helps a growing number of SETsquared's Corporate Partners (defined as corporate organisations with global reach) to access new technologies, solutions and innovations across our university members and innovation centres by a structured process of brokering where SETsquared acts as an intelligent and trusted third party. Elements of this programme are focused on the medical sciences and healthcare sectors.
3. **The i-Cure Programme**. This 'Innovation to Commercialisation' programme is pilot funded by HEFCE and Innovate UK and is designed to move ideas and innovations out of universities and into the marketplace where they will have greatest impact.

External partners

SETsquared's policy is to work with the widest range of external partners both in respect of its long term programmes and in respect of ad hoc initiatives.

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