

Life Sciences: Investing in Discovery
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Linking Academia to Industry

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Linking Academia to Industry

- **The knowledge economy is absolutely dependent on building productive collaborations between academics and companies**
- **In the past decade the UK has substantially increased its public investment in science**
- **The Government expects payback through the translation and commercialisation of the basic research outputs to produce both economic and quality of life benefits**
- **How can this be delivered in the life sciences sector?**

Outline of Talk

- **Looking from a Scottish perspective at the opportunities and challenges of building a stronger life sciences sector**
- **Examining how to build a stronger “commercialisation culture” in academia**
- **Example of a successful academic entrepreneur (role models are valuable)**
- **Thoughts on academics and investors**
- **The NHS – a business opportunity**

Biomedical Research Environment in Scotland

- **Scotland is at the forefront of investment in health and the life sciences**
- **There is a culture of collaboration illustrated by the Scottish Universities Life Science Alliance (SULSA) linking 6 Universities with £27M investment from the Scottish Funding Council and almost £50M of related investment from the Universities**
- **The life sciences is strongly linked to chemistry, physics, engineering and informatics**
- **There is excellent medical and veterinary research embedded in world class basic science**
- **There is enthusiasm and commitment to translational research supported by the £50M investment from Wyeth and SE**
- **There are excellent links to the NHS fostered through the Scottish Academic Health Sciences Collaboration**

Scotland's Strengths in the Life Sciences include

- **Cell Biology, Functional Genomics & Proteomics, Integrative Physiology and Systems Biology, Molecular Biology and Genetics, Molecular Pharmacology, Parasitology, Structural Biology, Virology**
- **Regenerative and Translational Medicine**
- **Bioinformatics, Biostatistics, Mathematical Biology**
- **Cancer, Cardiovascular Science, Neuroscience**
- **Immunology, Infection & Inflammation**
- **Veterinary Science**
- **Public Health and Nutrition**
- **Ecology, Evolutionary Biology, Plant Science**

Building a Commercialisation Culture in Academia

- **Examples of successful academic entrepreneurs**
- **Recognition that for Life Sciences the path to commercialisation is long and substantial investment is needed**
- **Incentives facilitate changing the academic mind set to be more entrepreneurial**
 - **Enterprise Fellowships pioneered in Scotland by the Royal Society of Edinburgh and Scottish Enterprise**
 - **Proof of Concept Funding**
 - **Funding Council support for Knowledge Transfer**
 - **Research Council support through schemes such as the BBSRC Follow On Fund**

A Successful Academic Entrepreneur

- **Professor Shankar Balasubramanian, University of Cambridge, the inventor of Solexa sequencing**
- **Funded by BBSRC grants he realised in 1997 that his fluorescence tagging approach might improve sequencing cost and speed 1,000 to 10,000 fold**
- **In 1998 he founded Solexa with £2.2M seed funding from Abingworth**
- **By 2004 the company had raised a further £20M**
- **In 2006 Solexa acquired US based Lynx and raised \$100M and launched its first commercial product – *The Genome Analyser***

Successful Academic Entrepreneur continued

- In 2007 Solexa was sold to Illumina for \$600M
- Today the market opportunity is about \$2Bn with nearly 1000 employees world wide
- *The Genome Analyser* has over 50% of the next generation sequencing market share and the latest systems can sequence a human genome for under \$10,000
- Shankar last week received the BBSRC 2010 Innovator of the Year Award

Some lessons from success

- **Starts with world leading basic science**
- **Requires long and sustained support**
- **Intellectual property must be protected, managed and marketed**
- **Requires imaginative investors and the injection of outstanding management skills**
- **Needs to be driven by the ambition to be world leading**
- **Very likely to need commercial partners**

Academics and Investors 1

- **Aligning Goals is important (personal example)**
- **Flexibility is vital – successful businesses need to be agile and responsive to emerging market opportunities**
- **For orphan diseases public/charity/private partnerships may be needed (e.g. malaria, TB, drug resistant bacteria, vaccines)**

Academics and Investors 2

- **Academics must protect their IP but they must not overvalue it and they do need to market it effectively**
- **Big Pharma needs to broaden its pipeline and reduce its risks (costs) by working more effectively with small biotechs and academics**
- **Academia needs more people with an industrial/commercial background – the economic downturn is presenting good recruitment opportunities; SULSA has recently recruited two star professors from Pharma**

The NHS – a business opportunity

Quotation from Lord Drayson:

“By placing innovation at the heart of healthcare delivery, we will help create a pioneering NHS, one that responds to patient expectations, and one where the adoption of new ideas and the diffusion of innovation is encouraged and supported.”

This view of the NHS is very encouraging and it will provide an excellent environment for new companies in the medical devices/medical technology areas as well as for the drug companies

The NHS – a business opportunity

- **Procurement in the NHS is vital**
- **A culture change to embrace innovation is essential**
- **UK SMEs need access to the NHS as a purchaser if they are to build their businesses particularly overseas**
- **The Innovation Pass aimed at giving patients earlier access to licensed medicines is very welcome**
- **We need to work harder to restore the attractiveness of the UK as a location for clinical trials**
- **The TSB investment in Regenerative Medicine is timely**

Encouraging SMEs

- **The RDAs need to continue to provide a supportive environment for SMEs**
- **The Universities need to work harder to support SMEs**
- **Schools, FE Colleges and the Universities need to collaborate more effectively to provide the technically trained people with the practical skills that the growing life sciences sector needs**

Challenges ahead

- **The market is tougher and it remains difficult to raise venture capital**
- **There is much more focus on the early identification of winners through the use, for example, of biomarkers**
- **There is a move to more outsourcing from big Pharma**
- **We must provide a positive environment for SMEs in biotech to emerge and grow**
- **The UK needs to provide a better climate for clinical trials**