

OXFORD UNIVERSITY INNOVATION



Innovation at Oxford: a framework
for generating impact from research

Dr Mairi Gibbs

Agenda



- Introduction – Mairi, Oxford, Oxford University Innovation
- Working with researchers
- Commercialising IP
- Venture formation
- Consultancy
- Future developments

Introduction: Mairi Gibbs



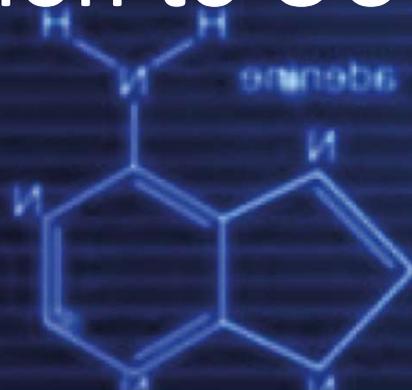
- Chemistry – Oxford, Bristol, industry
- Technology transfer since 2002

- Head of Operations for OUI
 - Member of strategy team
 - Influencing and implementing policy
 - Process, operating procedure, standard legal documents
 - Relationship with key administrative functions in University
 - Professional development for tech transfer staff
 - Managing support functions: licensee alliance management, patent and licence administration, IT

- Member of Oxford's Conflict of Interest Committee



Introduction to OUI



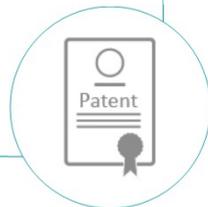
Oxford University Innovation Ltd

Commercialising technology and expertise from
the University of Oxford



- **Transferring technology** through Licensing, IP and Patents, Spinout formation, Material Sales, Clinical Outcomes, Startup Incubator, Oxford University Hospitals NHS Foundation Trust

Licensing & Ventures



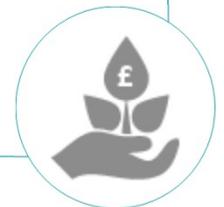
- **Supporting researchers and external partners** to use academic expertise and technical services

Consulting Services



- **Enabling ventures to grow from concept to maturity** through Seed Funds, Oxford Angels Network, Spinout Equity Management

Funding, Investment & Management



Creating and facilitating impact in society



University entrepreneurial culture

Industry, business & the wider world

Innovation from Oxford

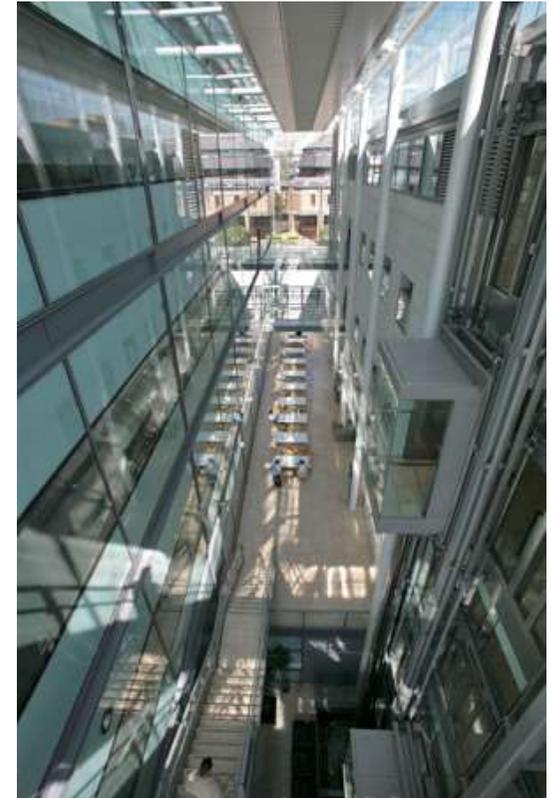


University of Oxford *(formed c. 1096)*

- **Largest volume of world-leading (4*) research** in the UK¹
- **Highest University Research Spend in UK** at £708m (2017)

Oxford University Innovation Ltd *(formed 1987²)*

- Helps researchers to commercialise results and expertise arising from their research
- A world-class Technology Innovation business
 - **25 new companies** formed, **685 deals** and **3425 patents** under management in financial year 2017.
- 10th highest British PCT patent applicant
- Highest university PCT applicant in Eu, 25th highest worldwide



¹ : Source: 2014 Research Excellence Framework

² : 100% owned by the University of Oxford

Delivering returns to the University and the wider economy



Oxford University invests in Oxford University Innovation to protect, develop and create impact from University intellectual property

Financial Returns

- Distributions of royalties back to University
- Research Funding from spinouts to University
- Spinouts cash & shareholding portfolio value
- Oxford University Challenge Seed Fund & Oxford Invention Fund
- Value of new patents and patent applications
- Research Funding from Translation Awards to University
- Supporting Strategic IP Deals
- Managing the Oxford Innovation Society

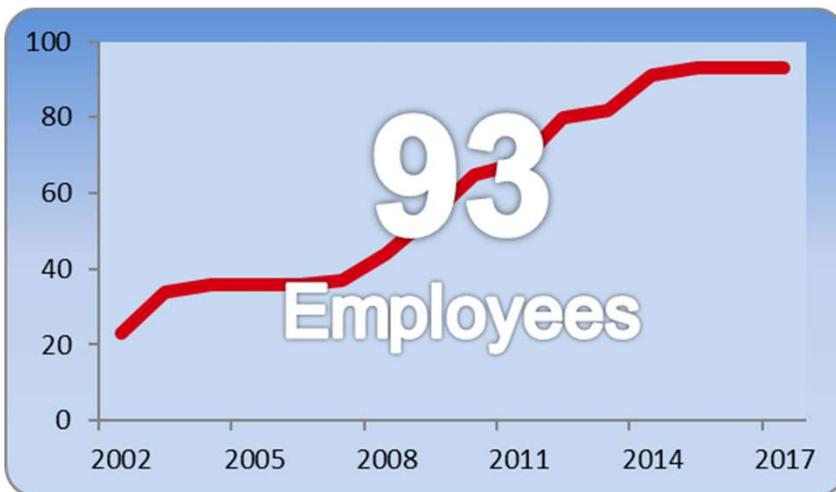
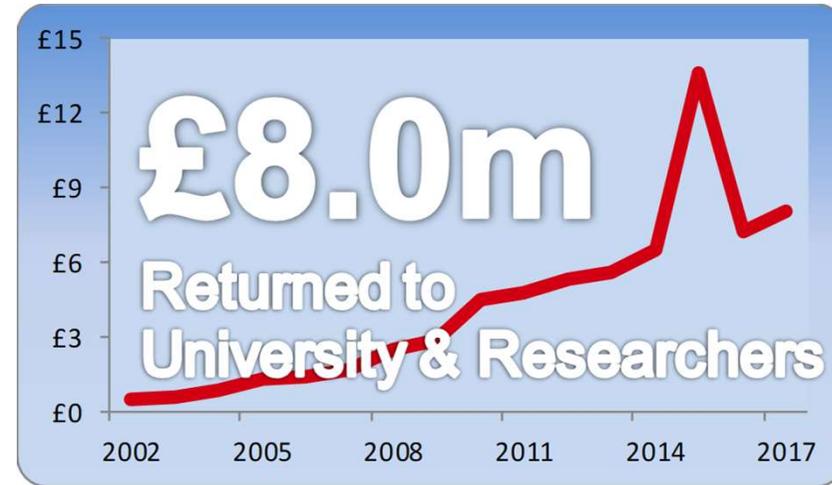
Other, non-financial, benefits

- Transferring technologies to improve lives
- Contributing to the 'Impact' of the University
- Promoting good news stories from University
- "Oxford again way out at the top for spinouts" – UK Life Science Report
- Local engagement and local economic activity



Financial Performance

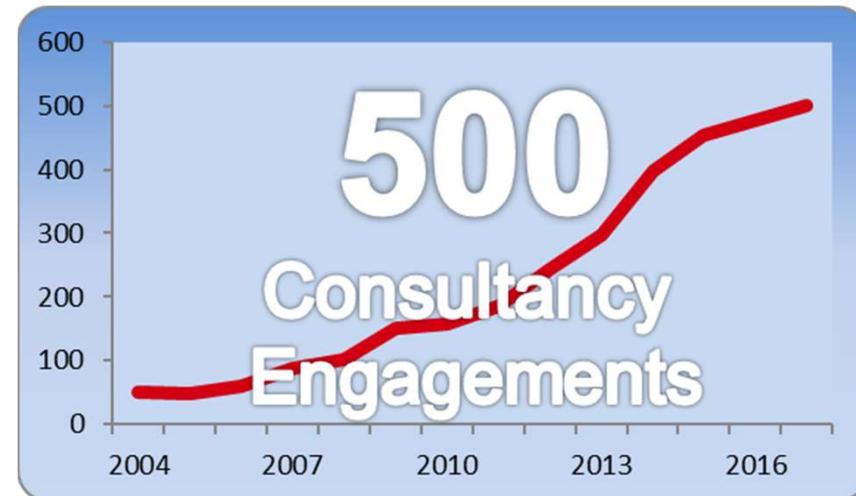
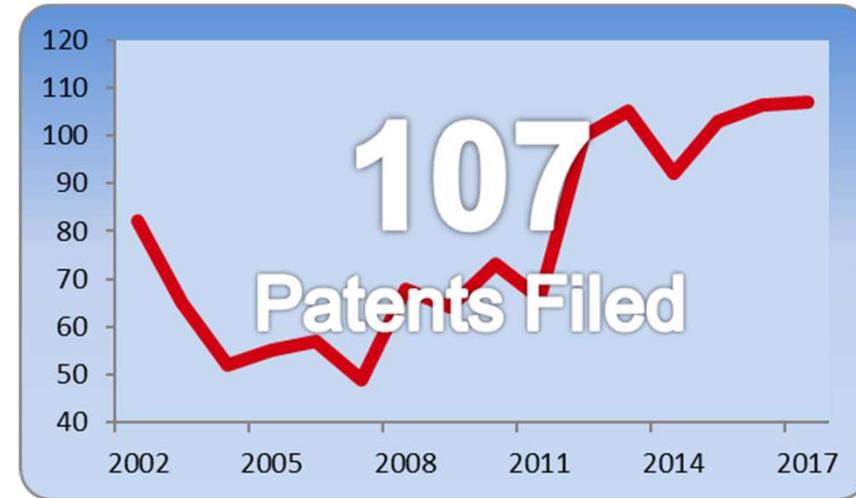
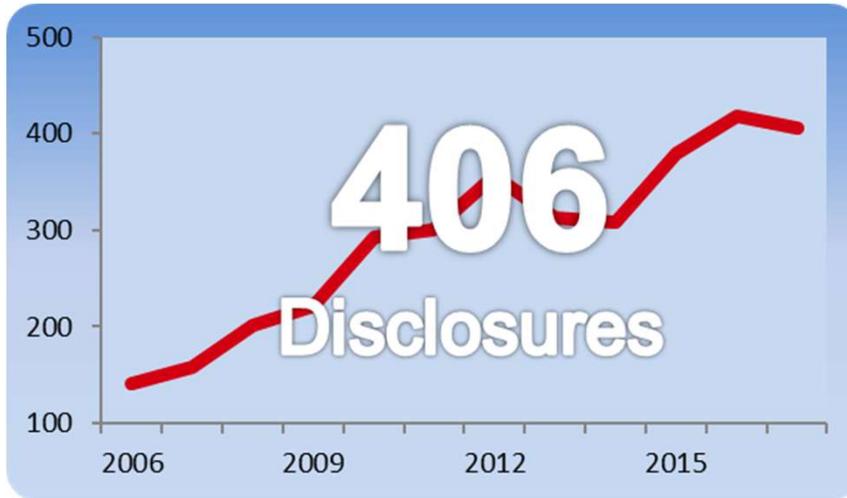
Oxford University Innovation, period ending July 2017



NB 2016 data normalised to 12 months, tho' FY 2016 ran for 16 months due to a change in OUI's accounting period

Disclosures, Patents & Deals

Oxford University Innovation, period ending July 2017



NB 2016 data normalised to 12 months, though FY 2016 ran for 16 months due to a change in OUI's accounting period

Technology Funding Sources

Funding from proof of concept to spinout and beyond



Oxford University Challenge Seed Fund

Launched 1999 with £4m, over £9m invested in 162 projects, 42 spinouts created, still operating

Oxford Invention Fund

Launched 2010 with £1.5m, donations from benefactors. Over £2.5m invested in 42 projects, 11 spinouts created

University of Oxford Innovation Fund



Tax-efficient funds for investors managed by Parkwalk Advisors. 4 fund rounds raised £5.1m, invested in 20 companies.

Oxford Angels Network

For Business Angels and early-stage VCs, 270 registered members. Meetings & newsletters, no membership fee



Spinout Equity Management

£4m invested per year. Supported 41 companies with £20m of follow-on investment



Oxford Sciences Innovation

Oxford's £600m Spinout Investment Resource



- **Oxford Sciences Innovation** formed in 2015, initially with £350m
Investing in spinouts from Oxford (MPLS & Medical Sciences Divisions), Harwell & Culham laboratories
Additional £230m raised in 2016
- Investing in **new and existing** spinout companies
working **inclusively with other investors**
- Works in **collaboration with others** to stimulate and support innovation from Oxford
EG investing in **LAB282**, with Evotec, to accelerate drug discovery from Oxford

ft.com > companies >

Technology

Home UK World Companies Markets Global Economy Lex Comment
Energy Financials Health Industrials Luxury 360 Media Retail & Consumer Tech

May 14, 2015 12:09 am

University of Oxford receives backing for £300m science venture

Harriet Agnew



The University of Oxford has lined up a roster of high-profile investors to back a £300m joint venture that will develop science and technology businesses, one of the largest attempts to commercialise intellectual property in the UK.

The University and Isis Innovation, its technology commercialisation subsidiary, are partnering with a new company, Oxford Sciences Innovation, to develop research from the university's mathematical, physical, life sciences and medical sciences divisions, and commercialise their ideas into companies. The divisions will also advise companies as they grow.

OSI is raising £300m, of which £210m has been committed by six cornerstone investors. These include hedge fund Lansdowne Partners; Woodford Investment Management, an asset manager and the Wellcome Trust.

[IP Group](#), a London-listed intellectual property business that invests in technology companies, is also backing the venture. David Norwood, who founded IP Group is

Portfolio

Since 1998 we have formed over 170 companies



OXBOTICA

Autonomous vehicles



Research management services



Artificial Intelligence for coding



Genetics research solutions

Bibliotech

Online academic course books



Electric motors



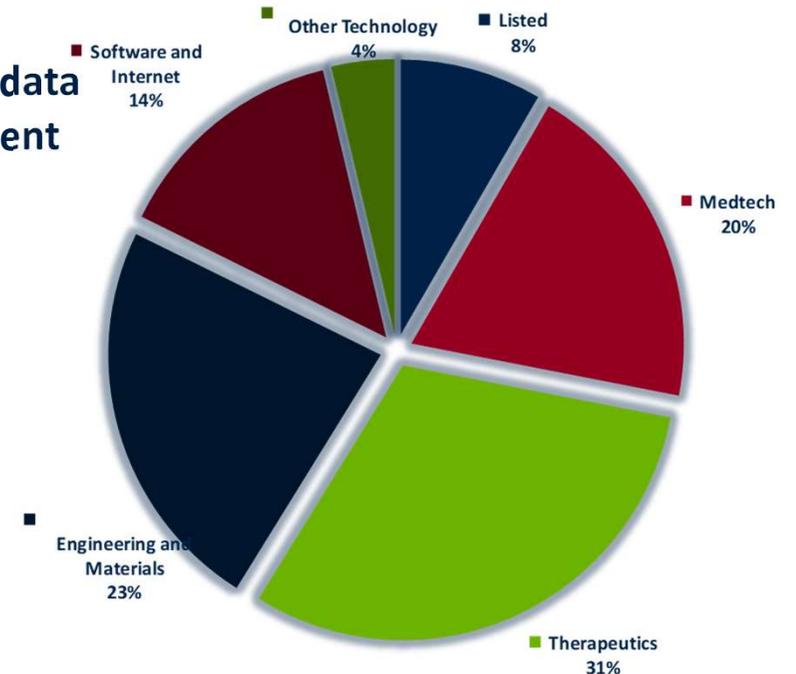
Image and data management

CYCLE.LAND

Bike sharing platform



Liver transportation



University Spinouts

Oxford is a global leader



UK Spinout Activity 2000-2017

Name	Rank	Spinouts
University of Oxford	1	130
University of Cambridge	2	120
Imperial College London	3	107
University College London	4	81
University of Edinburgh	5	80
University of Manchester	6	76
University of Strathclyde	7	62
Queen's University Belfast	8	57
University of Warwick	9	53
University of Bristol	10	49

Source : Spinouts UK, 2017

NaturalMotion, a spinout from 2001, bought by Zynga for **\$527m** in February 2014.

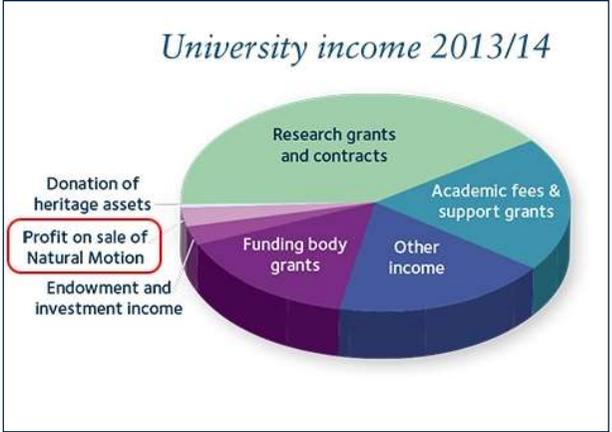
Technology came from a researcher in Zoology Department, offering real-time simulation of nervous systems and biomechanics. Used in films and games.

Oxford University Innovation worked with the inventor to protect his IP, develop a business plan, and introduce 1st round investors.

Total first round investment to date in **136** Oxford spinouts since 2000

£163m

£33.6m profit returned to the University from the sale, with reinvestment into seed funds.



Consulting Services

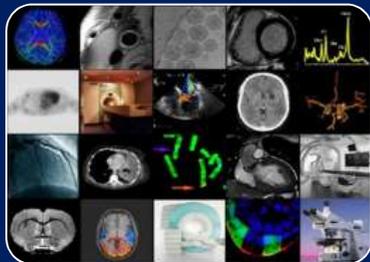
Enabling Oxford expertise to have impact in the wider world



Providing external organisations with access to University expertise & facilities.



Helping academics identify and manage consulting opportunities.



Supporting Departments in arranging external services (including consultancy) work.

Networks and Marketing

Encouraging & seeking engagement



Networking

Oxford Innovation Society

- Fosters business-university links
- Exclusive access to new technology

Oxford Angels Network

- Receive new investment opportunities
- Attend pitching events

Publications

Printed publications

- Annual Report
- Innovation Insights (3 per year)
- Brochures

Online

- Website with news and content for academics, investors, industry, consultancy clients, media etc.

Social

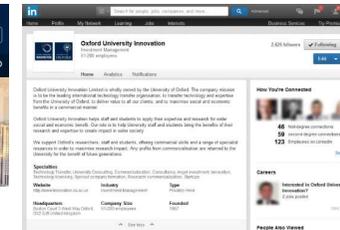
LinkedIn

- Follow oxford-university-innovation



Twitter

- Follow @OxUInnovation



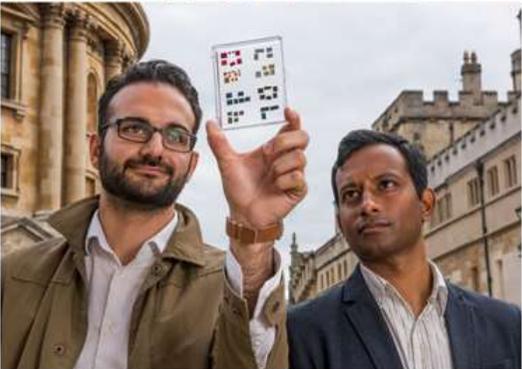
Oxfordshire's Innovation and Entrepreneurship ecosystem



Our Vision



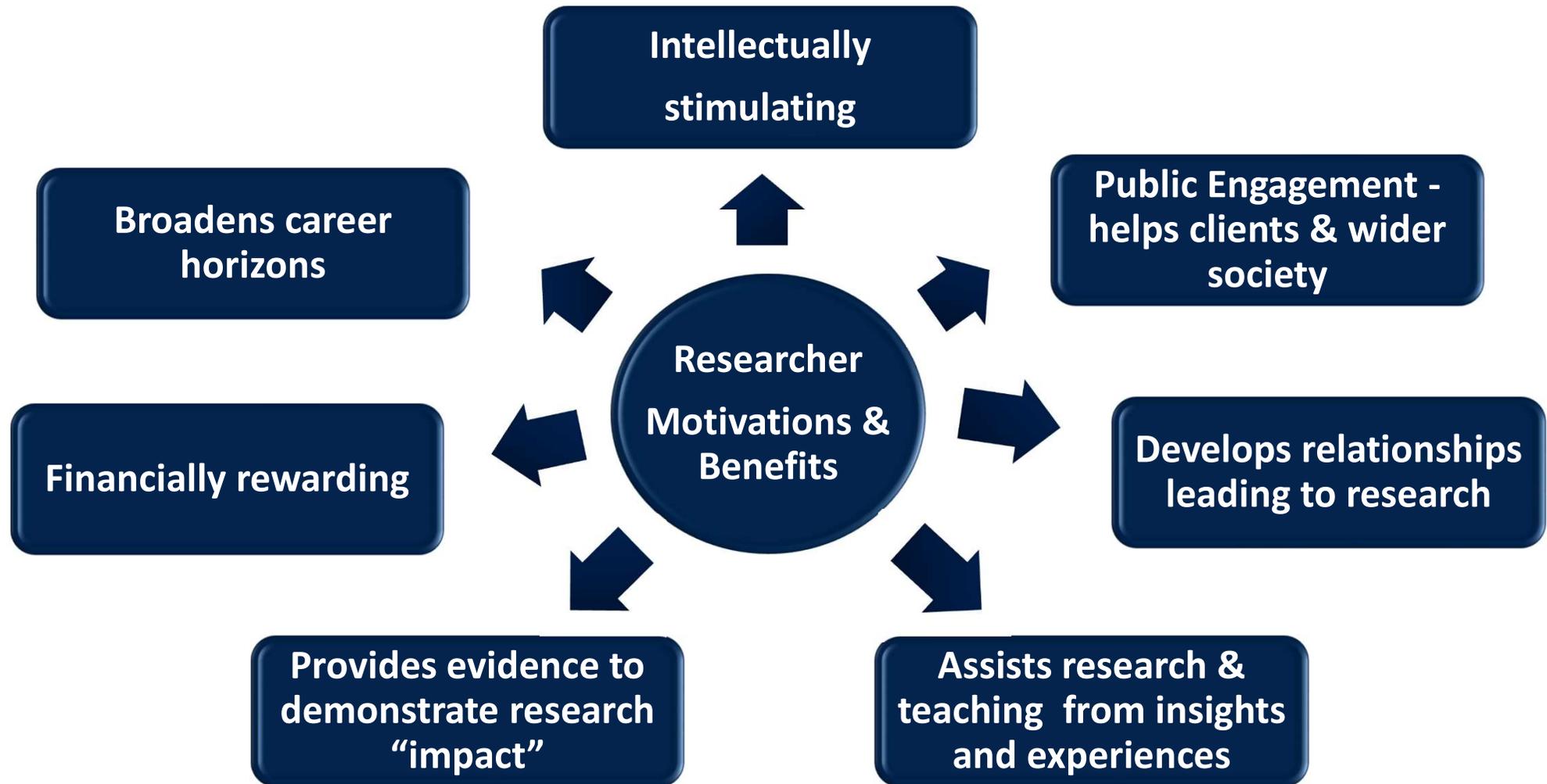
*A world-leading innovation ecosystem
with Oxford University at its heart*



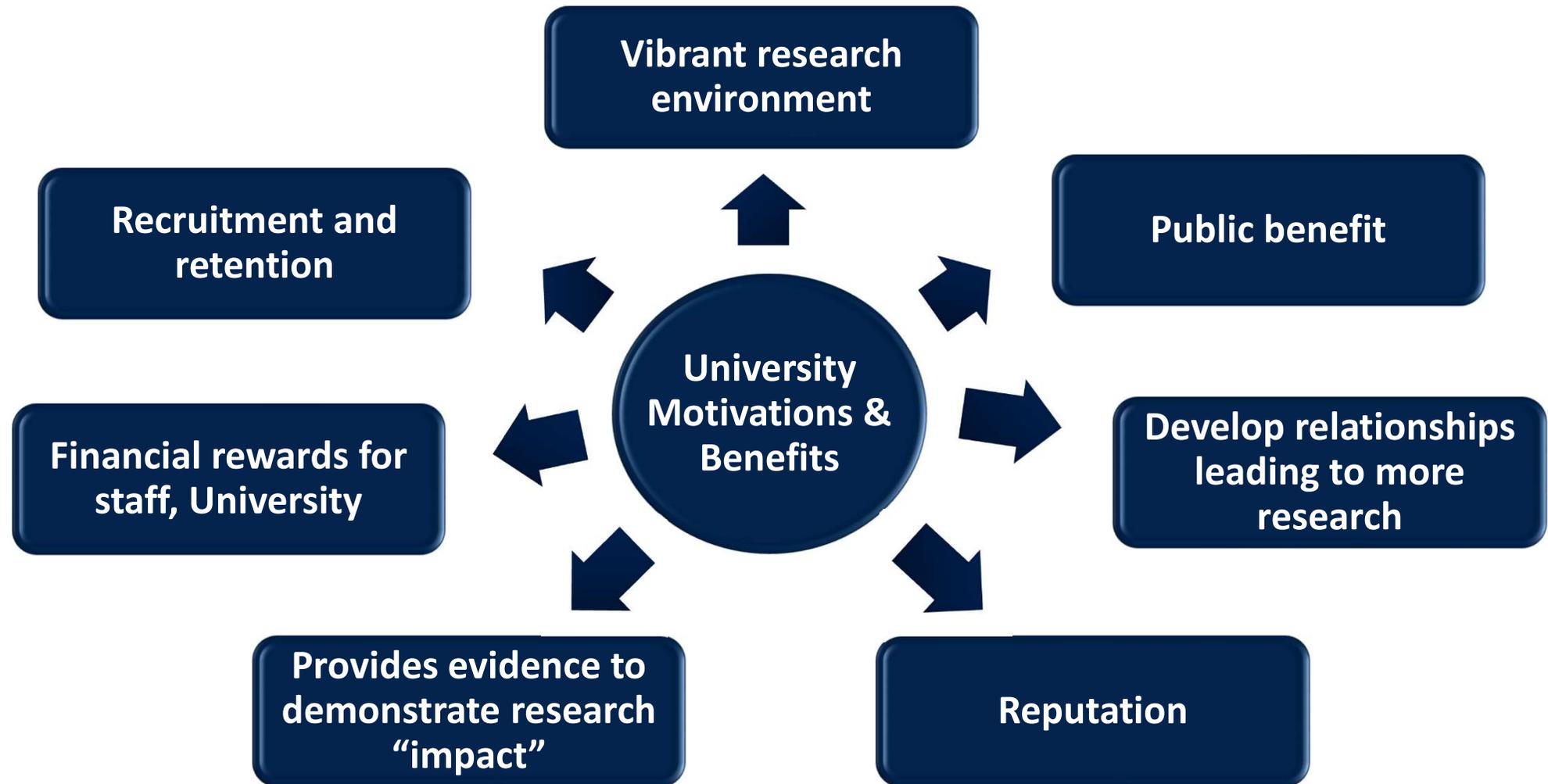


Working with researchers

Why do researchers commercialise research?



Why do Universities commercialise research?



“Impact” in the UK



- Research Excellence Framework
 - 7-year audit of research institutions
 - Determines Government funding allocation to Universities
 - Impact score is rising to 25% of overall score in 2021 (from 20% in 2014)
- “an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia.”

Oxford University Innovation

Providing a dedicated service to researchers

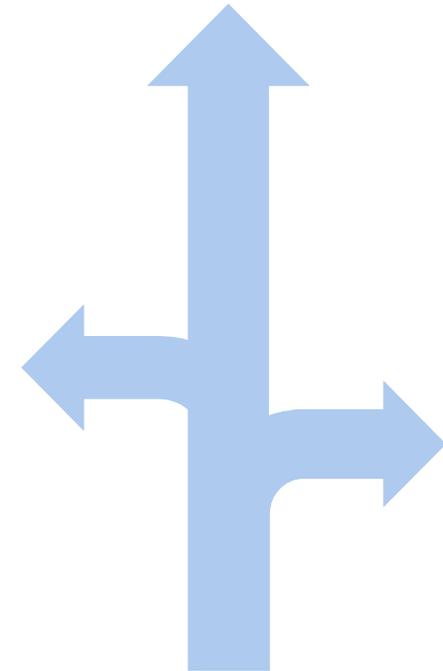


- Active presence throughout the University supporting staff wishing to commercialise technology and expertise
 - All Divisions and Departments
 - The entire research community, all levels
- Designated support staff for each Department
- OUI supports a network of [Innovation Champions](#) in many departments
- Details and availability at www.innovation.ox.ac.uk/hotdesks

Pathways for Commercialising Research



- Protecting Intellectual Property
- Academic consultancy
- Material sales
- Partnership with research sponsors
- Patenting and licensing
- Creating new ventures



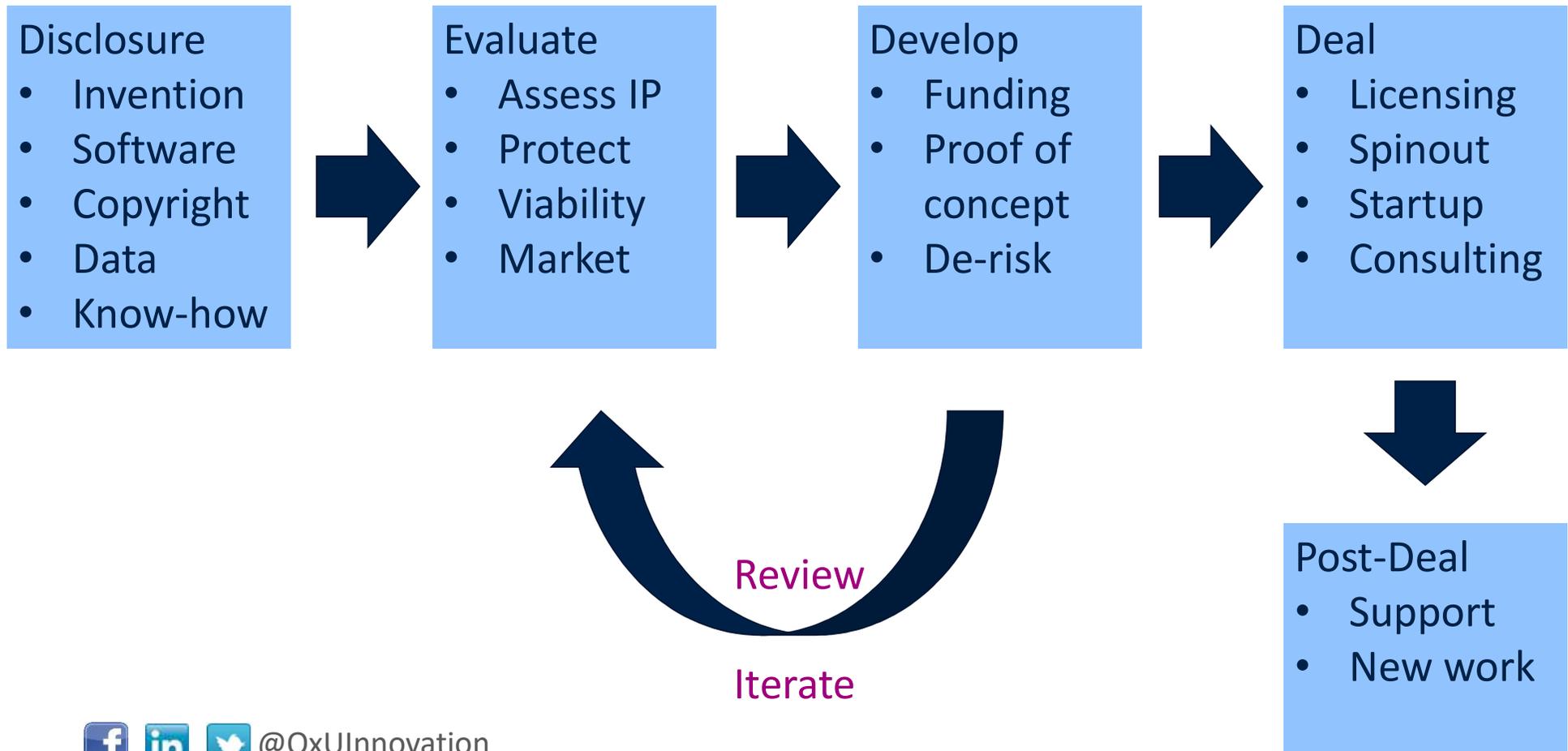
Technology transfer: how OUI helps



Technology Transfer – an overview



Licensing and Ventures



Oxford's deal



- University claims ownership of IP
- No product liability for researchers
- If exploitation is abandoned, researchers can apply to take assignment of the IP themselves
- Revenue sharing, after costs and 30% tech transfer fee

<i>Total net revenue</i>	<i>Researcher(s)</i>	<i>General Revenue Account</i>	<i>Department(s)</i>
Up to £50K	85.7%*	14.3%*	0%
Band from £50K and up to £500K	45%	30%	25%
Over £500K	22.5%	40%	37.5%

- <https://www.admin.ox.ac.uk/statutes/790-121.shtml>
- <https://www.admin.ox.ac.uk/statutes/regulations/182-052.shtml>
- * this amount may change if employers' tax rules change

Information Collection

Intellectual Property Forms



Invention Record

INVENTION RECORD Project number (for OUI use)

The invention record is a written description of your invention. It fulfils several important purposes:

- It helps Oxford University Innovation (OUI) to assess whether the work is patentable.
- It helps the patent attorney to prepare the patent, if OUI decides to proceed with patenting.
- It helps OUI and the University's Intellectual Property Due Diligence team to identify potential commercial opportunities of your invention, which may be used to be sold or licensed to other organisations.
- It provides an important record of the date of invention, which can become important in future patent proceedings.

IMPORTANT: Discussions between you and OUI about your invention are confidential. To avoid any inadvertent public disclosure of your invention please consider all discussions about the invention confidential. Please use Confidential Disclosure Agreements to protect discussions with anyone outside the University. Please ask OUI for advice.

Please answer the following questions, either on these two pages or on separate sheets.

1. Descriptive title of the invention.

Choose your name:
2. Who was involved? Please tell us for each individual who contributed, invented or authored IP software:
 - a. Their names and if any are foreign nationals;
 - b. Who their employer is, and if this is not Oxford, are any contracts or arrangements in place?
 - c. What they contributed to the development of the technology (e.g. came up with the original idea, designed experiments, carried out experimental work, wrote code).

Name	Nationality	Employer(s)	What did this person contribute?

IMPORTANT NOTE: Inventors must be legal inventors according to the definition in patent law (please ask your OUI Technology Transfer Manager for guidance if necessary). Software authors are those who actually write the code and thereby create the copyright. The University also has a mechanism for rewarding contributors who are not inventors or authors but who have made a significant and identifiable contribution to the intellectual property, and revenue distribution for all individuals is dealt with through the IP2 form.

Please add notes or supply further detail on a separate sheet if there is not enough room.



IP1



IP2

*Written description
Records the date
Helps due diligence
Helps patent drafting*

*Information for due diligence
Funding background
Who, what, when, how*

*Income distribution
Agreed among the researchers*

identify

protect

translate

market

license/
spin-out

post deal

How does OUI evaluate IP?



Plan for commercialisation, review every 6 months



Intellectual Property Protection

Different forms of intellectual property rights (IPRs)



IPR	For What	How	Length
Patents	New Inventions	Application and Examination	20 years + 5 for some medical (renewed every year)
Copyright	Original Creative or Artistic Forms	Exists Automatically	Life + 70 years (variations in different jurisdictions)
Trade Marks	Identification of Products or Services	Use and/or Registration	Indefinitely (Until a period of 5 years without use)
Designs	External Appearance	Exist Automatically + Registration	Max 25 years (renewed every 5 years)
Trade Secrets	Certain Methods, Source Code, etc...	Employee Contracts/ Confidentiality Agreements/Firewalls	Until it is no longer secret

identify

protect

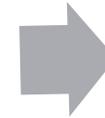
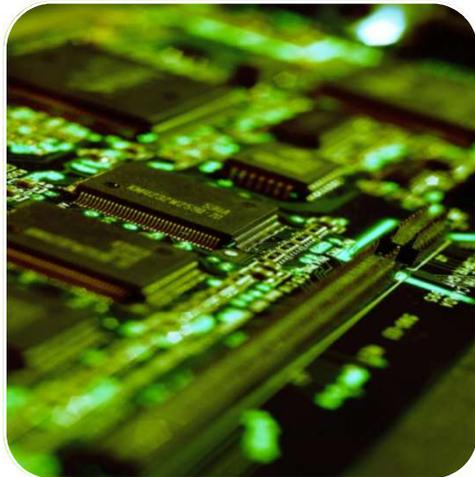
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Software Commercialisation



Research-based software

- Genomics
- MRI analysis
- Chemical structure
- Image analysis
- Biodiversity

Intellectual Property

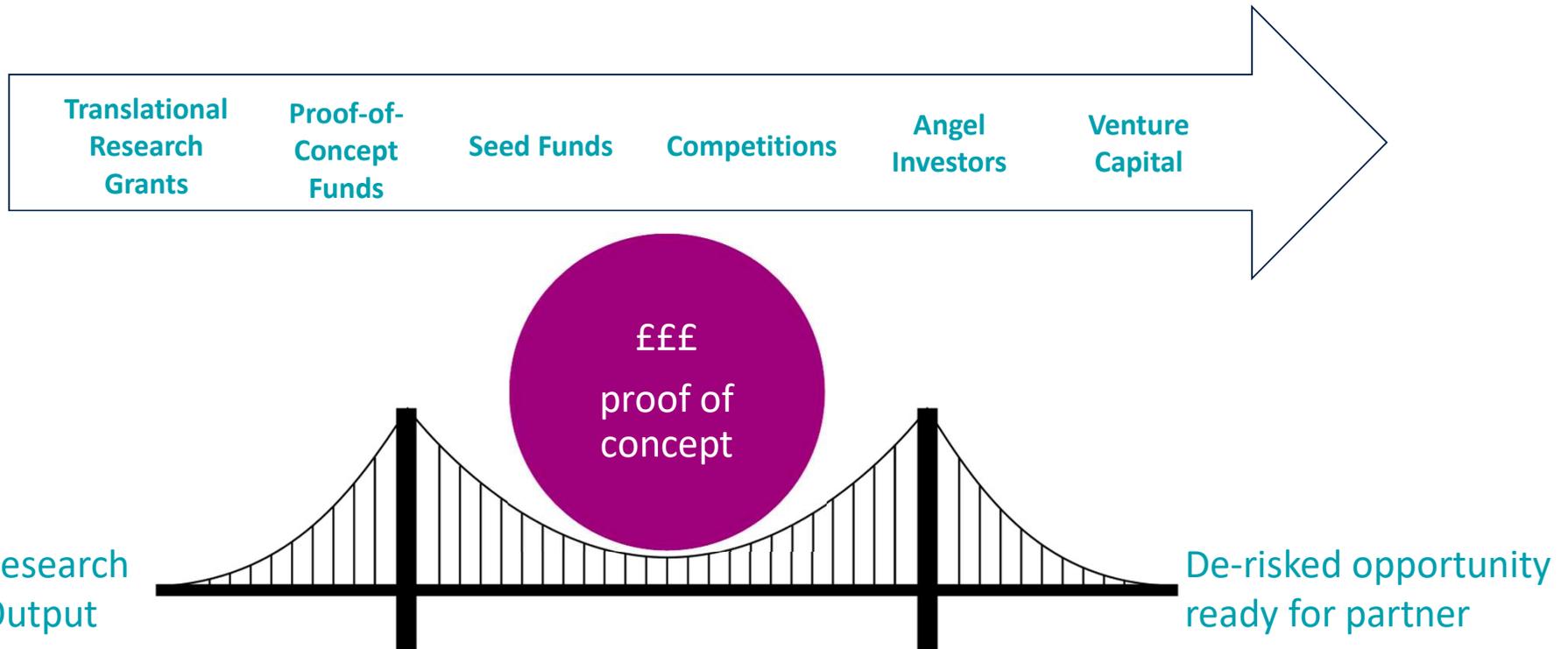
- Copyright (automatic)
- Patent (where possible)
- Expertise and know-how

Commercial use

- Licensing
- Software Start-up
- Spinout
- Consultancy Services

Translation

Basic science to practical applications

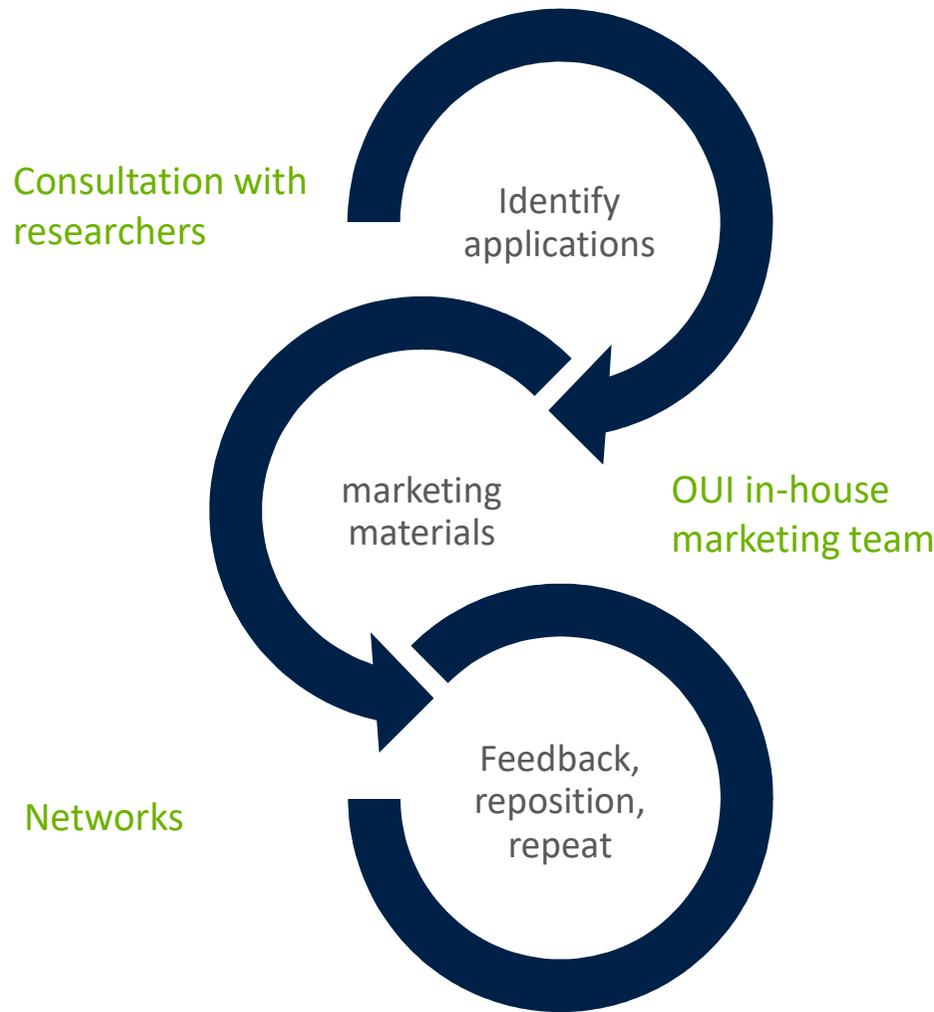


Further information at:

<https://innovation.ox.ac.uk/university-members/translational-funding/>



Marketing



<p>Rotational deformation stage for the characterisation...</p> <p>Oxford academics have developed a innovative piece of apparatus to characterise deformation of materials whilst using a sc...</p>	<p>Small molecule lipid lowering agents for monotherapy...</p> <p>Pre-clinical squalene synthase inhibitors with in vivo efficacy as both monotherapy/synergistic therapy with stat...</p>	<p>Metal-organic frameworks for application in photochem...</p> <p>A synthetic protocol which can access MOFs containing a range of guest species</p>	<p>Anti-angiogenesis therapy</p> <p>Non-Oxford source: A novel fusion protein has potential as an angiogenesis antagonist for targeted therapy in cancer. It targets pathways the...</p>
<p>Disposable capillary electrophoresis detecting chip</p> <p>Non-Oxford source: A portable miniaturized analysis instrument has been made for clinical and environmental use. The new design is simple and...</p>	<p>Homogeneous Glycoprotein</p> <p>New technique to assess the quality of biotherapeutic...</p> <p>Oxford University academics have developed a new technique to quantitatively assess the quality of glycosylated biotherape...</p>	<p>Improved production of lentiviral vectors</p> <p>Disruption of a number of genes leads to increased (doubled) lentiviral vector production</p>	<p>Multi-parametric MRI to assess portal pressure</p> <p>An accurate and non-invasive method for assessing portal hypertension using MRI mapping of the liver or spleen.</p>

See: <https://innovation.ox.ac.uk/technologies-available/technology-licensing/>

identify

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Licensing of Intellectual Property

Access to technologies and IP developed in Oxford



- **>100 commercial licenses/year** concluded with companies small and large
 - Licensing copyright in **Clinical Outcomes** questionnaires
- Example : suite of digital health products for data analysis, decision support and patient safety information
 - **Machine learning artificial intelligence software**, developed at Oxford University's **Institute of Biomedical Engineering**.
 - Will improve **patient health outcomes** and reduce **healthcare costs**.
 - Licensed to **Sensyne Health** (formerly Drayson Technologies) to lead evaluation and deployment across the NHS.



identify

protect

translate

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Licensing Agreements

- Partners selected on
 - Resources and intent to develop technology to market
 - In healthcare, access for developing countries where appropriate
- Terms and conditions

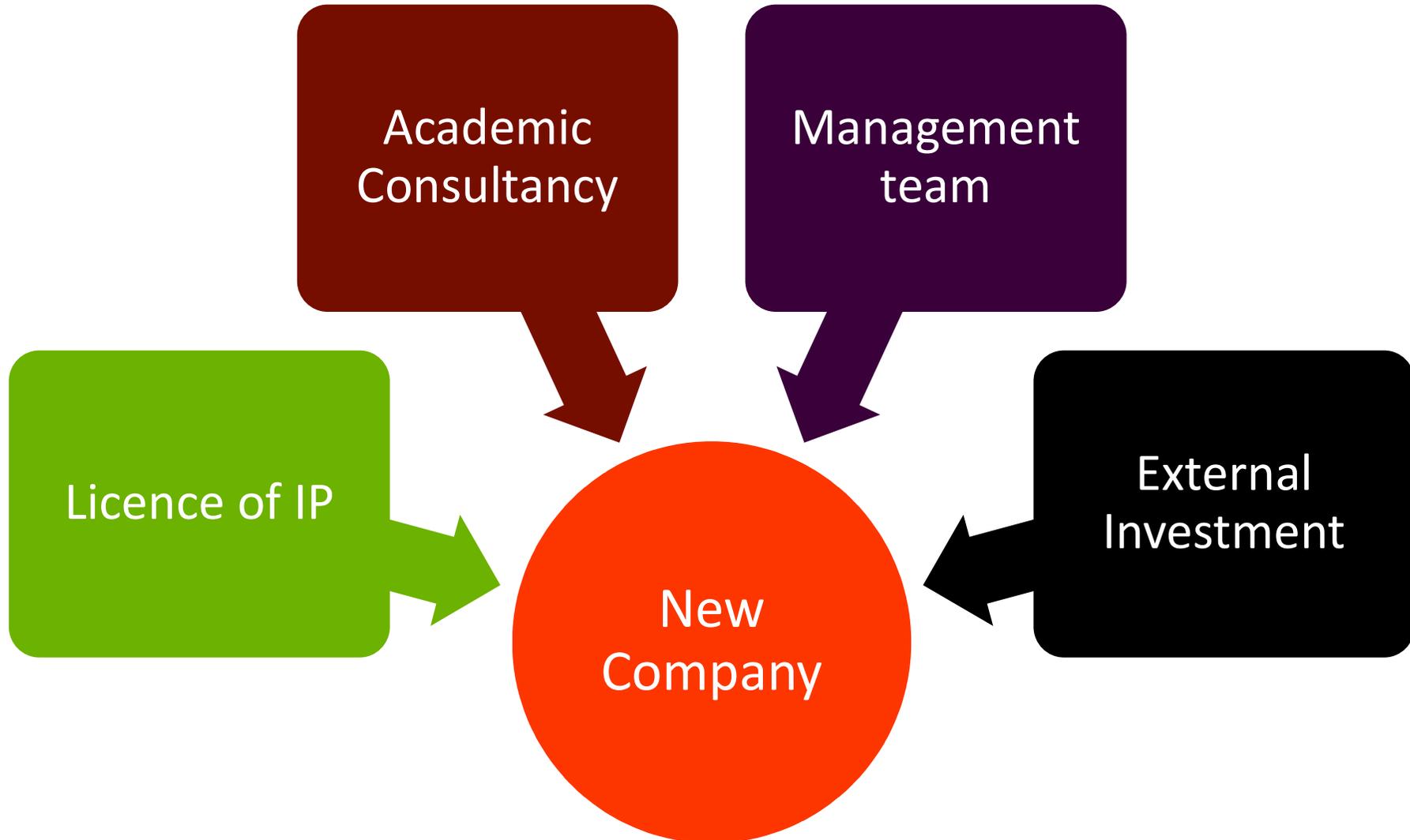
Commercially:

- Exclusivity
- Territory & field of use
- Upfront payment
- Patent costs
- Milestone payments
- Royalties, reporting, audit
- Development plan

Legally:

- Patent management and infringement
- Warranties
- Protection of publication rights
- Reputation of University
- University rights for non-commercial (research) use
- Improvement clause

Spinout Companies



Business Plan



A spinout company requires a plan that considers:

Who is going to own it

What funding will be needed

How the investors will make a return on their money

What it is going to sell

Who is it going to sell to and how

Who is going to work in it

Where the funding will come from

What the company is going to do

Where it is going to get it

...and more

Oxford Startup Incubator

Supporting entrepreneurial ventures from Oxford



- Assist in the creation and development of non patent-led businesses
 - Open to researchers, employees, students and alumni
- Comprehensive support includes
 - commercial advice & mentoring;
 - workshops and training sessions;
 - desk space; and
 - access to business and investment networks.



Outside consultancy work at Oxford



- Staff may do up to 30 days of personal consultancy per year
- University approval is required
- Background IPR must be protected
- Conflicts of interest should be avoided
- Appropriate insurance must be held
- Researchers must indemnify the University against any financial risk
- Professional support is available



The future



The next things on Oxford's journey



- Entrepreneurial renaissance
- Impact
- Humanities and Social Sciences
- Social enterprise
- Long term evolution

Summary



- Oxford aspires to lead the world in research and education, benefitting society on national and global scale
- Technology transfer and knowledge exchange is a key part of academic activity, alongside teaching and research
- Oxford has a clear framework, professional support and thriving ecosystem
- Relationships make it all work

QUESTIONS?



www.innovation.ox.ac.uk

 [linkedin.com/company/oxford-university-innovation](https://www.linkedin.com/company/oxford-university-innovation)

 twitter.com/OxUInnovation

