IP and University Technology Transfer

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About Me

• 6 years as a Consultant for Isis Enterprise
• First non Oxford spin out of Isis Innovation - PM
• Work with policy makers as well as research organisations
• In Europe, Latin America and Asia
• Incubators, Seed Funds, Strategy and Capacity Building
• On the Panel of the EP at Said Business School
• Debt structuring experience from Lehman Brothers
• Oxford MBA, BA in business administration and economics (AUBG)
A profitable company 100% owned by the University of Oxford

Oxford Technology Transfer
IP, Patents, Licences, Spin-outs, Material Sales, Outcome Questionnaires, Seed Funds, Isis Angels Network, Isis Software Incubator, Oxford University Hospitals NHS Trust

Oxford Expertise
Consulting, Services

Isis Consulting Business
Technology Transfer and Innovation Management

Winner ‘Technology Transfer Unit of the Year’
Global University Venturing 2014
Isis Innovation, year-ending March 2015

**Annual Turnover**: £23.5m

**Returned to University & Researchers**: £16.5m

**Employees**: 93

**New Companies**: 13

NB Unaudited figures
Isis Innovation, year-ending March 2015

- **379 Disclosures**
- **103 Patents Filed**
- **75 Licence Deals**
- **454 Consultancy Engagements**
Oxford Research Funding 2013-14: £612million

- Highest University Research Spend in UK
- 5,809 academics and researchers, and 10,173 postgraduate students
- Submitted the largest volume of world-leading (4*) research and impact in the UK – REF 2014
- Charts show £478m grants and contracts by source, and University Division

**Pie Chart:**
- UK Charity, £145m (30%)
- Research Councils, £135m (28%)
- EU Government, £53m (11%)
- Industry, £53m (11%)
- UK Public Sector, £47m (10%)
- Other UK and Overseas, £45m (10%)

**Bar Chart:**
- Medical Sciences: £305m
- Maths, Physical, Life Sciences: £118m
- Social Sciences: £40m
- Humanities: £13m

Total: £478m
+ HEFCE: £134m
22 October 2014: Technology Transfer Unit of the Year (2014-15)

Exit of the Year 2014: NaturalMotion
Oxford spin-out NaturalMotion picks up Exit of the Year for its $527m cash sale to Zynga.

Sequenom licensing deal: £15 million
NaturalMotion, an Isis Innovation spin-out from 2001, was bought by Zynga for $527m in February 2014.

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

Isis worked with Reil to protect his IP, develop a business plan, and introduce 1st round investors.

£33.6m profit returned to the University from the sale, with reinvestment into seed funds.
“Commercialisation activity undertaken by Isis Innovation contributed more than £0.4 billion GVA\(^1\) to the global economy in 2012/13 and supported almost 5,000 jobs. This includes:

- £264m GVA and almost 3,400 jobs in the UK (of which £129m GVA and around 1,630 jobs were estimated to be in Oxfordshire);
  - £9.9m GVA and 150 jobs elsewhere in Europe;
  - £109m GVA and around 1,200 jobs in the USA; and
  - £25.7m GVA and almost 240 jobs in the rest of the world.”

See summary flyer and full report at - www.isis-innovation.com/about/index.html

\(^1\): Gross Value Added

Source: Evaluation by BiGGAR, an independent economics consultancy, for Isis in February 2014
Facilitating Impact

Research Outcomes

Academic Understanding

Professional Understanding

Commercial Opportunities

Policy

Societal Benefit

Department

Division

Collegiate University

Research Collaborations

Public Understanding

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Delivering Technology Transfer

IDENTIFY
- Internal Marketing
- Ownership
- Evaluation

PROTECT
- Patenting
- Patent Strategy
- Other Protection

TRANSLATE
- Proof of Concept
- Development
- Design

MARKET
- Valuation
- Customer
- Promotion

LICENSE
- Market
- Negotiation
- Legalise

SPINOUT
- Planning
- Fundraising
- The Team

POST DEAL
- Billing
- Distribution
- Re-Negotiation
- Audit

Methods & Resources

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Identifying IP - Models

Lighthouse Model vs. Technology Audit
- continuously raise awareness; encourage researchers to come to you
- a formal systematic review involving interviews with all academics

Disadvantages of Technology Audit
- Researchers feel obliged to disclose: but have little desire to participate later
- A snapshot - researchers have a really good idea the week after the audit

All Isis Projects start with an approach from an academic
- We make them welcome and they participate in all decisions but they have to decide to start any new project
- We devote much effort to *internal marketing* to researchers
Transfer of Intellectual Property Rights

Inside the University

Research funding source
- Government
- Charities
- Industry

Assignment of intellectual property rights

Research Services
Includes: IP Rights Management Team
- 80 Staff
- 85% Graduates
- 33% Post grad degrees

Research Services

Outside the University

Route to market
- Spin-outs
- Consulting
- Licences

Isis Innovation
- >90 staff
- 75% Graduates
- 49% Science doctorates

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Global University Venturing 2014

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Intellectual Property Policy (from October 2000)

- University claims ownership of all employees’ and students’ IP rights resulting from University research activities

- The University **helps** researchers **who wish to** commercialise their research
  - by patenting, licences, spinout companies & consultancy

- Researchers share the benefits
  - Royalty shares from licences
  - Equity in spinout companies
  - Income from personal consultancy
## Commercial Routes for Researchers

<table>
<thead>
<tr>
<th>Licensing</th>
<th>Creating a company using a research organisation’s intellectual property (spin-out)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating a company where there is no organisational intellectual property, or the academic owns it (start-up)</td>
<td>Consultancy</td>
</tr>
</tbody>
</table>

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Some (but not all) university inventions are early
Publications are typically the focus of academic research
  - Sufficient results for a paper
  - Maybe enough data for a patent application

However...
  - Potential ‘customers’ often want more evidence
  - Maybe require more data to support a patent application

Translational funding is often required to bridge the ‘technology readiness gap’
  - Proof-of-concept, translation or early-stage seed funding
Investment, Donations and Funds

Oxford University Challenge Seed Fund (UCSF)
- Launched 1999 with £4m (£1m OU)
- Over £7.5m invested in 143 projects
- One of the few UCSF funds still running in its original form

Oxford Invention Fund (OIF)
- Donate to support development of new technologies from Oxford
- Part of Oxford Thinking, the University’s fund raising Campaign
- £1.5m raised to date

University of Oxford Isis Fund (UOIF)
- EIS/SEIS funds for investors managed by Parkwalk Advisors
- Isis Innovation is Portfolio Advisor
- 1st fund £1.25m fully committed, 2nd closed

Isis Angels Network (IAN)
- For Business Angels and early-stage VCs
- 216 registered members
- No membership fee
- Twice-yearly meetings, newsletters
£320m Spin-Out Investment Fund

- **Oxford Sciences Innovation** formed to invest in spin-outs from Oxford (MPLS & Medical Sciences Divisions), Harwell & Culham laboratories

- Investing in **new and existing** spin-out companies, working **inclusively with other investors**

- **Investors**: Invesco, IP Group, Lansdowne Partners, Oxford University Endowment Fund, the Wellcome Trust, Woodford Investment Management, Google Ventures and Sir Charles Dunstone
Researchers awarded £124,500 in June 2001 from the UCSF
• Led to equity in the Co. in Dec 2005
• A patent
• Significant value back to fund – an evergreen fund (£1m to date)

Proof of concept award September 2004
• £24,500 for building a prototype – impressing potential investors
• The power of the prototype was immense
Route to Market: Licensing

• Isis currently manages 2,333 Patents & Patent Applications; and 432 active licensing deals
• Technologies marketed to Oxford Innovation Society Members and then other companies
• License partners selected on:
  • Resources and intent to develop technology to market
  • In healthcare, awareness of access of final products to developing countries
• Exclusive & Non-exclusive, Geographical Territory and Technology Field controls
• Fees, milestones, running royalties appropriate to technology and marketplace
• Royalties:
  • Patent budget £3.1m per annum
  • Isis pays patent costs & recovers these from royalties

<table>
<thead>
<tr>
<th>Total net revenue</th>
<th>Researchers personally</th>
<th>University General Fund</th>
<th>Department Funds</th>
<th>Isis Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>To £72K</td>
<td>60%</td>
<td>10%*</td>
<td>0%</td>
<td>30%</td>
</tr>
<tr>
<td>£72K to £720K</td>
<td>31.5%</td>
<td>21%</td>
<td>17.5%</td>
<td>30%</td>
</tr>
<tr>
<td>Over £720K</td>
<td>15.75%</td>
<td>28%</td>
<td>26.25%</td>
<td>30%</td>
</tr>
</tbody>
</table>

* pays National Insurance employment tax

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Non-Patent IP – Isis Outcomes

- PDQ-39

- Oxford Health Outcomes Questionnaires developed at the University’s Health Services Research Unit
  - PDQ-39 is a “Gold-standard” measure of health status for Parkinson’s Disease
    - Widely validated and translated into over fifty languages
    - Isis has licensed the questionnaire to 17 pharmaceutical companies for use in clinical trials
  - Knee, Hip, Shoulder and Elbow scores also licensed
### Oxford Spin-outs (pre 2000)

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959</td>
<td>Oxford Instruments *</td>
</tr>
<tr>
<td>1977</td>
<td>Oxford Lasers</td>
</tr>
<tr>
<td>1988</td>
<td>Oxford Glycosciences *</td>
</tr>
<tr>
<td>1989</td>
<td>Oxford Molecular *</td>
</tr>
<tr>
<td>1992</td>
<td>Oxford Asymmetry *</td>
</tr>
<tr>
<td>1994</td>
<td>PowderJect *</td>
</tr>
<tr>
<td>1995</td>
<td>Oxford Gene Technology</td>
</tr>
<tr>
<td>1996</td>
<td>Oxford Biomedica *</td>
</tr>
<tr>
<td>1997</td>
<td>Oxagen</td>
</tr>
<tr>
<td>1998</td>
<td>5 Opsys, Synaptica, Prolysis, Celoxica*, Sense Therapeutic</td>
</tr>
<tr>
<td>1999</td>
<td>6 Medigene(Avidex)<em>, Oxxon Pharmcines, Dash, Oxonica</em>, AuC Sensing, OMIA</td>
</tr>
</tbody>
</table>

*Stock Exchange Listing*
## Oxford University Technology Spin-outs (2000-2010)

<table>
<thead>
<tr>
<th>Year</th>
<th>Count</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>7</td>
<td>OxLoc, Oxford Bee Co, Oxford Ancestors, Novarc, Oxford ArchDigital, Natural Motion, Inhibox</td>
</tr>
<tr>
<td>2002</td>
<td>9</td>
<td>Pharminox, Minervation, Oxford Biomaterials(Spinox), Zygentia, Oxitec, Oxford Immunotec, Oxford Risk, GlycoForm, BioAnalab</td>
</tr>
<tr>
<td>2003</td>
<td>4</td>
<td>Summit(Vastox)*, ReOx, Riotech, OCSI</td>
</tr>
<tr>
<td>2004</td>
<td>4</td>
<td>Avacta(OMD)*, G-Nostics, Surface Therapeutics, EKB Technology</td>
</tr>
<tr>
<td>2006</td>
<td>7</td>
<td>TDeltaS, Oxford Medistress, Particle Therapeutic, Aurox, Oxford Advanced Surfaces*, Cytox, OxTox</td>
</tr>
<tr>
<td>2007</td>
<td>4</td>
<td>Eykona Technologies, Clinox, Oxford Biodynamics, Crysalin</td>
</tr>
<tr>
<td>2008</td>
<td>4</td>
<td>Semmle, Oxford-Emergent TB Consortium, Navetas(ISE), Organox</td>
</tr>
</tbody>
</table>

* Stock exchange listing
<table>
<thead>
<tr>
<th>Year</th>
<th>Count</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>5</td>
<td>Oxyntix, Oxtex, Oxford Multi Spectral, Oxford Imaging Detectors, OCB</td>
</tr>
<tr>
<td>2012</td>
<td>4</td>
<td>Intelligent Ultrasound, OxEHealth, Oxford Vacmedix, Run3D</td>
</tr>
<tr>
<td>2013</td>
<td>4</td>
<td>Perspectum Diagnostics, MuOx, Oxford Mestar, Oxford Biotrans</td>
</tr>
<tr>
<td>2014</td>
<td>8</td>
<td>Oxsonics, Oxcept, NightstaRx, Genomics, Designer Carbon Materials, OxSyBio, Oxford Deontics, Oxbotica</td>
</tr>
<tr>
<td>2015</td>
<td>3</td>
<td>Diadem, Animal Dynamics, Mixergy</td>
</tr>
</tbody>
</table>

Total external investment to date in **84** spin-outs since 2000: **£535m**

**£67m** 1st round Seed/Business Angels – **£468m** follow-on Investment Capital
Post-Deal Support

- Signing the agreement is only the beginning of the partnership

- Regular communication and review
  - Technical support requirements?
  - Development milestones being achieved?
  - Patent maintenance costs covered?
  - Is sales revenue being generated?

- Both parties need to work to ensure success
Why audit?

- Mistakes are made more often in royalty reports than you may think:
  - incorrect royalty rate and deductions
  - under-reported revenue/products/sales in specific territories
  - new products
- Enhances relationship with licensee
- Tool to identify weaknesses/ambiguity in agreement
- Increased knowledge and information flow to both parties
- Creates stronger internal controls for licensor and licensee

Desk audit good method to check whether wish to commit to full audit
- check whether basic provisions of licence being followed
Isis Enterprise – A Global Innovation Management Consultancy

Providing expertise and advice since 2004

- Policy and benchmarking studies
- Technology Commercialisation
- Commercialisation Training
- Technology & Market Due Diligence
- Innovation Management
- Translational Funding Impact Reviews
- Innovation Ecosystem Development
- Technology Scouting

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