Commercialisation of Academic Research

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University of Oxford
&
IP Group Plc

Importance

Finance for Universities and the country

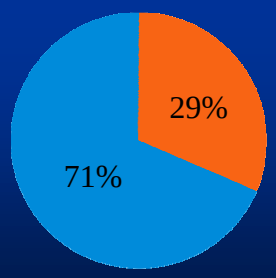
Jobs in new industries

Rewarding and retaining academics

Universities are a good bet

29% of realised capital has been invested in University spin outs and this has generated 44% of the realised return

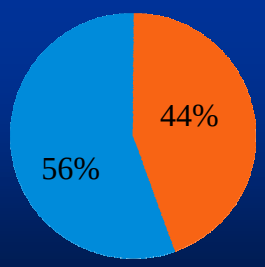
% of realised capital investment



University Spin out

Other

% of realised returns



Take home message

The Oxford Chemistry Department has contributed some £100 million to the central University as a result of spin-outs.

- **£40 million cash**
- **£20 million holding in quoted companies**
- **£40 million fair value in unquoted companies**

The Oxford Chemistry Department

Size

- The biggest Chemistry Department in the Western World
- Each year 180 graduates with a four year degree including one full year of research
- 90 PhDs per year (cf Berkeley 64)
- 150 Post-doctoral researchers
- 80 Faculty

The Oxford Chemistry Department

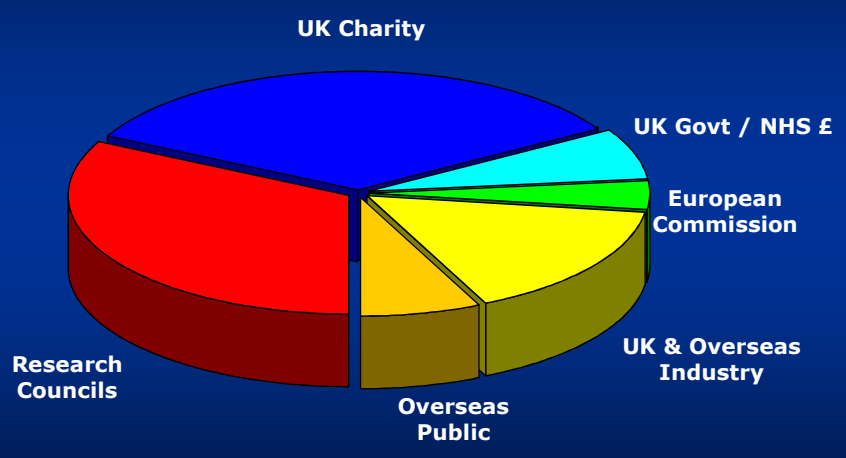
Quality

- Rated 5* and now 5**
- 12 active FRS
- Produced 4 Nobel Laureates
- Annual research income ~ £15 million

Historic Spin-out Companies

- **Medisense**
  (*now part of Abbott*)
- **Oxford Molecular**
  (*now part of Pharmacopeia-Milennium*)
- **Oxford Asymmetry**
  (*now Evotec OAI*)

Oxford Research Funding



Total £250M
+ HEFCE £100m

Oxford Spin-outs Pre 1998

		Capital	Equity	Main Business
1959	Oxford Instruments	£106m	-	Scientific Instruments
1977	Oxford Lasers		-	Lasers
1988	Oxford GlycoSciences	£218m	Yes	Glycobiology
1989	Oxford Molecular	£53m	Yes	Drug design
1992	Oxford Asymmetry	£343m	Yes	Chemistry
1994	PowderJect	£422m	Yes	Drug delivery
1996	Oxford BioMedica	£62m	Yes	Gene Therapy
1997	Oxagen		Yes	Genetics
1997	Oxford Gene Technology		Yes	Gene chips
Valuations (at 22/4/2002)		£1,204m		

Oxford Spin-outs Post 1998

1998

Feb	Opsys	Displays
Mar	Synaptica	Neurodegenerative diseases
Jun	Prolysis	Antibiotics
Nov	Celoxica	IT
Nov	Sense Therapeutic	Pharmaceuticals

1999

Mar	Avidex Pharmaceuticals	Pharmaceuticals
Jun	Oxxon Pharmaccines	Pharmaceuticals
Jun	Dash Technologies	IT
Aug	Oxonica	Nanotechnology
Aug	Abington Sensors	Sensors
Dec	Oxford Medical Imaging	Image analysis

2000

Jan	Third Phase	Clinical trials management
Apr	Mindweavers	Sensory development
May	Oxford BioSignals	Vigilance monitoring
Aug	Oxford BioSensors	Biosensors
Dec	TolerRX	Immunology
Dec	OXIVA	Medical software
Dec	PharmaDM	Drug design

2001

Mar	OxLoc	GPS/GSM tracking
Mar	The Oxford Bee Company	Pollination
Apr	Oxford Ancestors	Genealogy
Apr	Novarc	Press tooling
May	Oxford ArchDigital	Digital archaeology
Nov	NaturalMotion	Neural networks
Dec	Inhibox	Drug searching

2002

Jan	Pharminox	Cancer Drugs
Feb	Minervation	Health Information
Mar	Spinox	Artificial silk
May	Zyentia	Protein Structures
Aug	Oxitec	Insect pest control
Oct	Oxford Immunotec	TB Diagnostics
Nov	ORRA	Risk Analysis
Nov	Glycoform	Cancer drug dev't
Nov	BioAnalab	Pharma Testing

Oxford Spin-outs Post 1998 (cont.)

2003
VASTox Ltd
ReOx Ltd
Riotech Pharmaceuticals Ltd
Oxford Consultants for Social Inclusions Ltd

2004
Oxford Medical Diagnostics
G-Nostics
Surface Therapeutics Ltd
EKB Technology Ltd

2005
RF Sensors
Oxford NanoLabs Ltd
Celleron
Oxford Catalysts

2006
TdeltsS
Oxford Medistress
Particle Therapeutics
Aurox Ltd
Oxford Advanced Surfaces
OxTox

Intellectual Property

Absolutely fundamental to the Oxford situation in the University's ownership of IP.

The University spends £2.5 million per year on patents

History I

Until 1945 Universities neither owned or sought to own IP

due to the Owen Scandal

In 1924 Oxford's Professor of Agricultural Engineering proved to be a swindler and the University was sued for £750,000

History II

1940

After the fall of France and Britain was alone the US provided 50 ships: the "lend lease" agreement. US got bases in the West Indies plus Britain agreed not to patent

- ***Radar***
- ***Jet engine***
- ***Penicillin***

1945

Realising the UK had given away billions, the Atlee Government set up NRDC (National Research for Development Corporation) which owned all Government funded IP

History III

1982 Venture Capital
1987 Ownership of IP to Universities

Typical Equity Split

Funders	**40%**
Management	**10%**
University	**25%**
Academics	**25%**

(Department receives 25% of University benefit on exit)

Royalty sharing

OU Innovation pays all patent costs:~ £2.5m per year

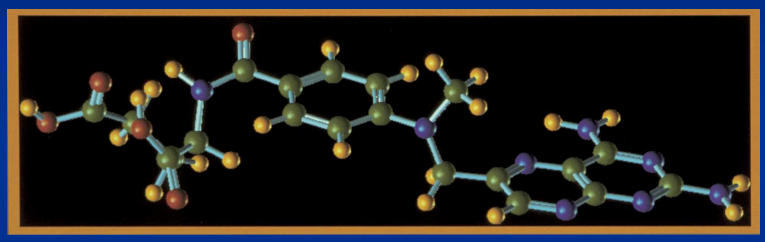
and recovers patent costs from royalties

OU Innovation retains 30% of royalties

The net revenue is transferred to the University and distributed

Total net Revenue	Researchers personally	University general fund	Department funds
To £50k	87.5%	12.5%	0
To £500k	45%	30%	25%
Over £500k	22.5%	40%	37.5%

Oxford Molecular



Admission to the Official List of
The London Stock Exchange

Placing Sponsored by

Henry Cooke Corporate Finance Ltd

Oxford Molecular Group Plc

1989	*Founded with £350,000 Venture Capital by Graham Richards and Tony Marchington. Based in the Science Area*
1991	*Moved to Oxford Science Park*
1992	*Offices opened in Paris and Palo Alto*
1993	*Acquired Biostructure SA*
1994	*Successful flotation on London Stock Exchange Acquired Intelligenetics Inc*
1995	*Acquired CAChe Scientific*
1996	*Acquired Chemical Informatics division of PSI International*
	Acquired Unichem from Cray Research Acquired Health Designs Inc. Acquired MacVector from Kodak
1997	*Acquired GCG Wisconsin Founded Cambridge Combinatorial (now Cambridge Discovery Chemistry)*
1998	*Acquired Chemical Design Ltd.*

Oxford Molecular Group Plc

Capitalization

Highest £450 million

Lowest £30 million

Highlights

Largest share of world bioinformatics market - 25%

Biggest share of Japanese molecular modelling market

60% of sales in USA

400 employees, half in USA

New Research Laboratory

The IP Group Partnership

For 15 years IP Group will receive half of the University equity in any Chemistry spin-out in return for an up front sum.

Modus Operandi

- **'Chemist' is defined by RAE**
- **If another department involved, academics define the split**
- **IP Group adds analysts' knowledge**
- **IP Group sources funds**
- **Similar arrangements apply to licensing**

2001 Inhibox

Based on the screen saver project of
Graham Richards for drug lead discovery
Still private but profitable
www.inhibox.com

2002 Glycoform

Glycochemistry from the research of
Ben Davies and Anthony Fairbanks

www.glycoform.com

2002 Zyentia

Structural modification of proteins derived from Chris Dobson's research

www.zyentia.com

2002 Pharminox

Small molecule oncology originating with Gordon Lowe

www.phaminox.com

2002 ReOx

Drug discovery based on controlling activity of hypoxia inducible factor, incorporating work of Chris Schofield

www.reox.co.uk

Major contract with Amgen

2003 VASTox, now Summit

Drug discovery from Steve Davies using chemical genomics. IPO 2004

Market cap was £60 million

www.summitplc.com

2004 Oxford Medical Diagnostics

Laser based analytical techniques from Gus Hancock

Acquired by Avacta Group Plc

2005 Oxford Catalysts
Now Velocys

Catalysts for clean energy from the research of Malcolm Green and Tiancun Xiao. IPO 2006

Market cap £280 million

www.oxfordcatalysts.com

2005 Oxford Nanopore Technologies

Single molecule detection based on research of Hagan Bayley

Received over £145 million funding

Major investment from Illumina

www.nanoporetech.com

2006 Oxford Advanced Surfaces

Coatings using chemistry of Mark Moloney

Reverse takeover of Kanyon Plc

Market cap £160 million

www.oxfordsurfaces.com

2006 OxTox

Electrochemical detection based on the research of Richard Compton

2013 Oxford Biotrans

Enzyme-based technique which can transform commonly available natural extracts into related flavour and fragrance compounds.

Based on work of Luet Wong.

www.oxfordbiotrans.com

2014 Oxford Advanced Conductors

Advanced materials for high performance thin film coatings for touch panel displays.

Based on work of Peter Edwards

www.oxacs.com

2014 OxSyBio

3D printing techniques to produce synthetic materials for wound healing and drug delivery and even synthetic tissues.

Based on the work of Hagan Bayley

www.oxsysbio.com

2014 OxStem

Use of stem cells and medicinal chemistry to identify new classes of drugs that can re-program or stimulate cells.

Based on the research of Steve Davies and Angela Russell

www.oxstem.com

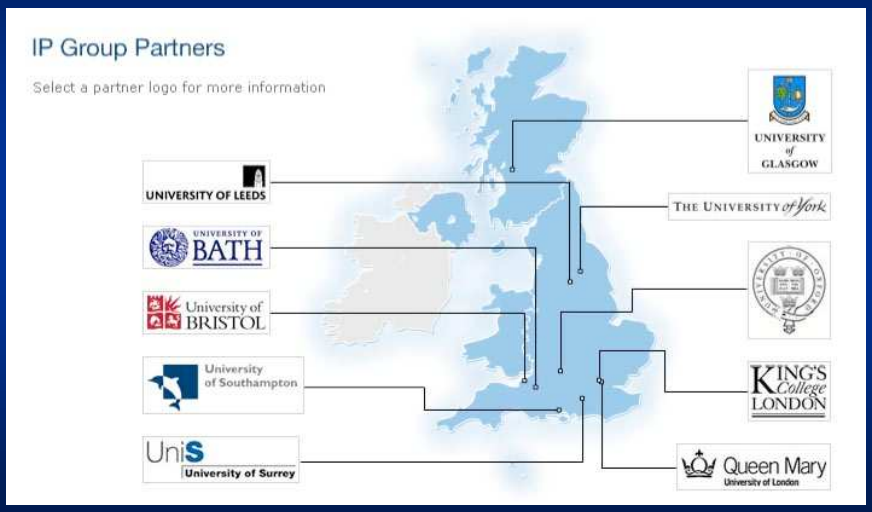
2016 OMass

Native mass spectrometry to characterise complex protein assemblies.

Based on the research of Carol Robinson

www.omasstech.com

IP Group Partners



Current problems

Clarity of IP Ownership and pipelines

Pricing investments, valuation

Appetite for IPOs

Weakness of the Alternative Investment Market

Sources of funds

Weakness of some Tech Transfer Offices

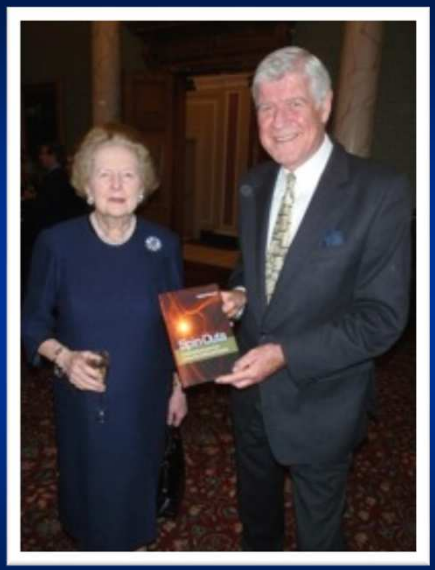
Management

Conclusions

It is imperative that we go down this route

Having some role model helps

Clusters make things easier

It can be profitable and fun

Current market cap of IP Group Plc is £1billion