The use of patents by a university spin-off

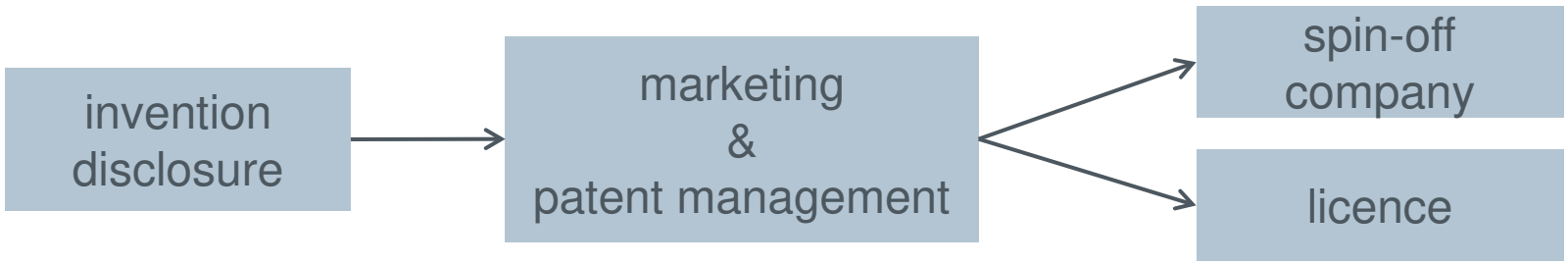


Structure of the case study

- University technology transfer
- The research and the invention
- Filing a patent application
- Marketing intellectual property
- Forming a spin-off company
- Patents as a company asset

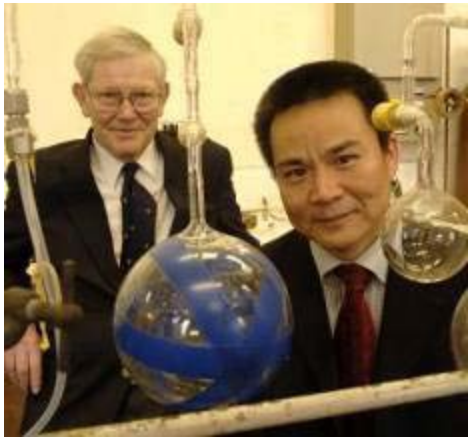
Technology transfer offices

- The University of Oxford owns any intellectual property (IP) created in its laboratories
- The academic founders share in any financial returns
- Isis Innovation is the technology transfer company for the University



The research

- In 1990 Professor Malcolm Green published fundamental advances in partial oxidation catalysis in *Nature* (unfortunately before filing a patent!)
- In 1999 Malcolm was joined by Dr Tiancun Xiao
- They worked together to develop a range of new and improved catalysts
- A catalyst is a material that allows a chemical reaction to take place (or take place using less energy)
- Most chemical manufacturing processes use catalysts



What is a catalyst?

- A catalyst is a material that allows a chemical reaction to take place using less energy, but the catalyst itself remains unchanged at the end
- Some reactions only take place if a catalyst is present
- Most chemical manufacturing processes use catalysts



Some catalyst powder

The invention

- In the year 2000, Tiancun manufactured catalysts that:
  - were cheaper than existing catalysts
  - delivered the same high levels of performance

- Malcolm and Tiancun approached the technology transfer company for the University of Oxford

"I thought this new process if it worked would have many benefits, so decided to give it a try"
Tiancun



Helping to reduce CO2 emissions

- The new catalysts can be used to:
  - produce fuels that burn more cleanly
  - produce biofuels from waste
  - improve the efficiency of fuel cells

- Environmental benefits

- Growth markets



Department of Chemistry

Could a patent application be filed?

- Did the invention meet basic patent requirements?
  - new (prior art searches)
  - inventive
  - industrial application
  - permitted

- Did the University have the rights to own the invention?

Did it make sense to file a patent application?

- Was there **a need** for this technology?
- Did the team think it could make **a profit**?
- Was now the **right time** to file a patent?
- What about "**freedom to operate**"?

The decision was made to file an initial patent in the UK …

Priority patent application filed (28 June 2001)

- Collaboration of
  - inventors
  - technology transfer manager
  - patent agent

- Filed by Isis Innovation Ltd

- After three months: UK search report

Decision to progress to PCT stage

21 June 2002

- 12 months from the initial patent filing
- Initial application filed in the UK was dropped
- International patent application filed (PCT process)

Costs continue to accumulate (2002-2004)

- Patent office and patent agent fees at each stage
- Technical proof-of-concept
- By 2003 four patent applications had been filed
- Original application (PCT) approaching the national phase
  – increasingly expensive!
- The university was still funding all costs

European and national phase patents

December 2003 onwards:

- Continue into the EP/national phase
- At this time none of the patents had been licensed (so no revenues)
- Filed in China and South Africa, Europe and the USA

Some key patent decisions

- Can we file an application for a patent (legal requirements)?

- Do we want to file an application for a patent?
  - Are there other options, like copyright for software?
  - Do we want to consider other routes for technology transfer, like a free, non-exclusive software licence?

- In which countries do we need a patent?
  - Do we continue at the PCT phase?
  - Do we continue at the EP/national phase?

- How do we respond to the search reports?

Marketing intellectual property

- Understand the market
  - Talk to potential partners and customers
  - Draw up confidentiality agreements where appropriate

- Market your technology widely
  - Publications
  - Websites
  - Industry events

- A demonstrator is very useful for explaining new technology

Route to market – licence or spin-off?

- Significant investment was needed
- Different patents relating to
  - petrochemical industry (industry experience needed)
  - emerging fuel cell sector (entrepreneurial)
- Split up patents or keep together?
- Tiancun was keen to keep working on the technology himself
- The decision was taken to "spin off" a new company

Forming a spin-off company (October 2004)

- Management team
- Business plan is continuously refined
- Investors ask many questions about the patents
- The academics are involved in explaining the science to investors and helping to paint a vision for the future



Will, Roy and Tiancun

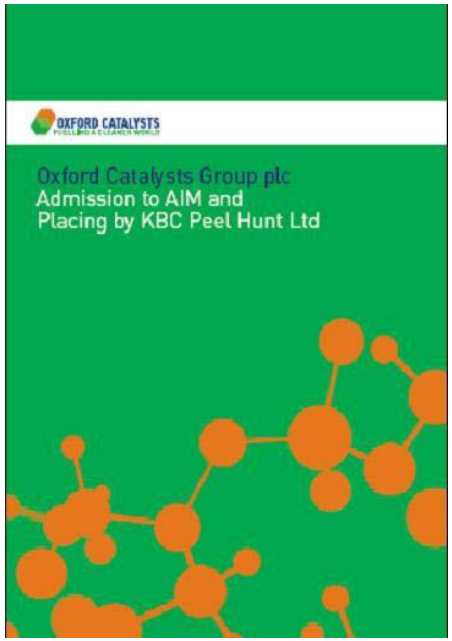
Using patents to help with fund-raising

December 2005

- The patents were licensed into the new company
- In December 2005 Oxford Catalysts raised EUR 640 000
  - Patents essential

April 2006

- Raised EUR 20 million on the London Alternative Investment Stock Market



Oxford Catalysts now

- Publicly listed company with a value of **EUR 90 million** (as of October 2008)

- **Raised EUR 25 million** in funding





Patents have been a key asset for the company

"For a technology company like Oxford Catalysts, intellectual property protected by patents is a key asset for building the business"
Tiancun

- Cost:
  - Patent agents and translators
  - Patent office fees, including renewal fees
  - Legal fees if you need to enforce your patent in court

- Benefit:
  - Essential to attracting investors
    - Create state-of-the-art facilities
    - Recruit top scientists
    - Cover development cost
  - Enables licensing the technology in exchange for royalties

Further information

For further information refer to:
http://www.isis-innovation.com
http://www.oxfordcatalysts.com

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