

# IP & Technology Transfer

## Getting ideas where they're needed

Presentation given in Belgrade

Dr Hazel Stewart, November 2018

# Technology Transfer – a definition

- **Exploitation by one entity of the results of research undertaken by a second, unconnected entity.**
- Why do we bother?
  - Capabilities of entities differ.
  - Missions of entities differ.
  - Mutually beneficial.

# The Role of Universities and Research Institutes

- **Creating valuable intellectual resources.**
- Teaching and research.
- Teaching – benefit to individual.
- Research – benefit to society.
  - Furthering of knowledge.
  - ***Useful discoveries that improve the lives of people.***
- **Incentives of the patent system are critical in transforming academic research into useful products.**
- **IMPACT**

# The Reality of the Market

- Most innovations require significant investment in order to be commercialised.
  - Especially true in health related technologies.
  - Hundreds of millions of dollars.
- Without a realistic prospect of a return, no one will make this investment.
- The public **will not benefit** from the research.
- Patents give a time-limited monopoly in order to make a return.
- **Patents are essential in bringing new technologies to the market, and hence to the public.**

# Intellectual property – the currency of technology transfer

- Flavours of intellectual property:
  - Copyright
  - Designs
  - Trade marks
  - Know how
  - Patents
- Patents are predominant in the field of technology transfer.
  - Technical nature of subject matter.
  - Powerful, monopoly right.

# The Innovation Lifecycle



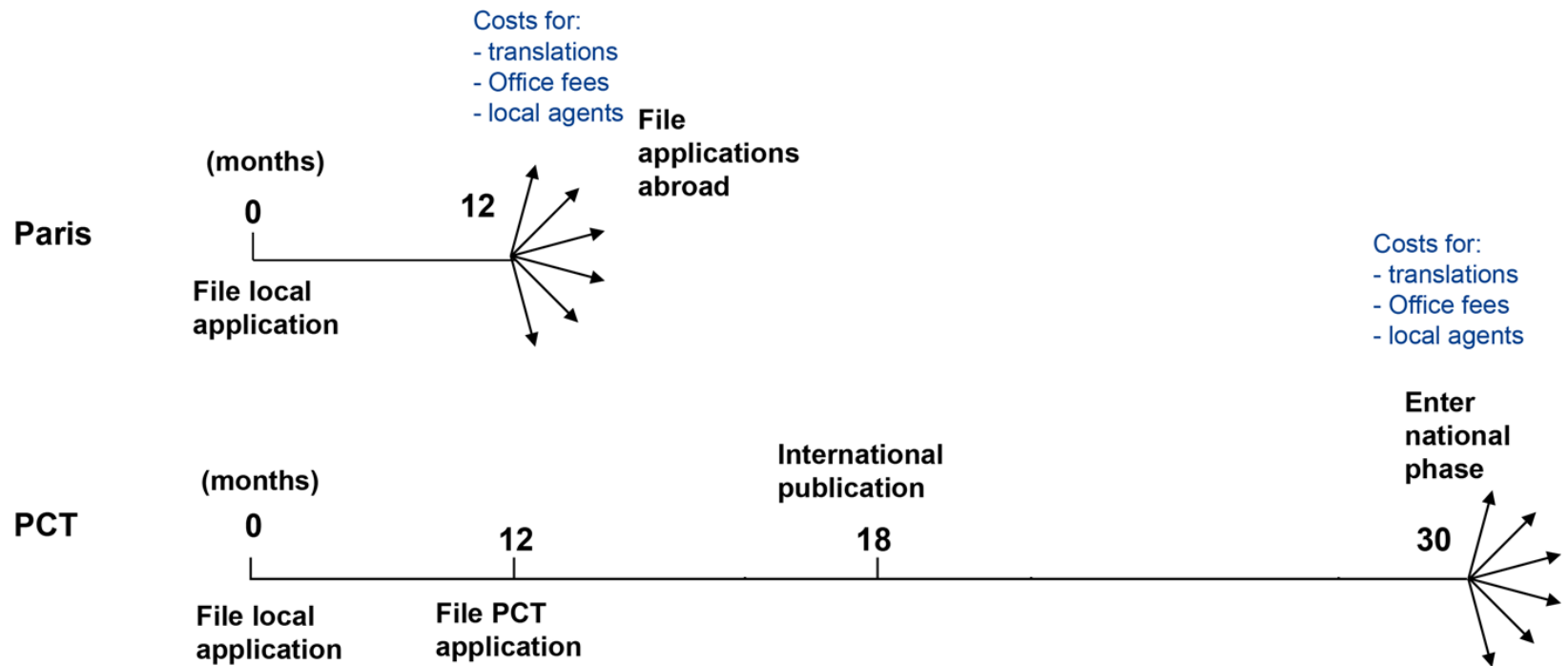
# Patents – a Refresher

- An **exclusive** right.
- Time-limited.
- Granted by a state
- In exchange for complete disclosure of an invention
- To advance the economy

# Claims



# Simplified Patent Timeline



# Exploitation of Patents

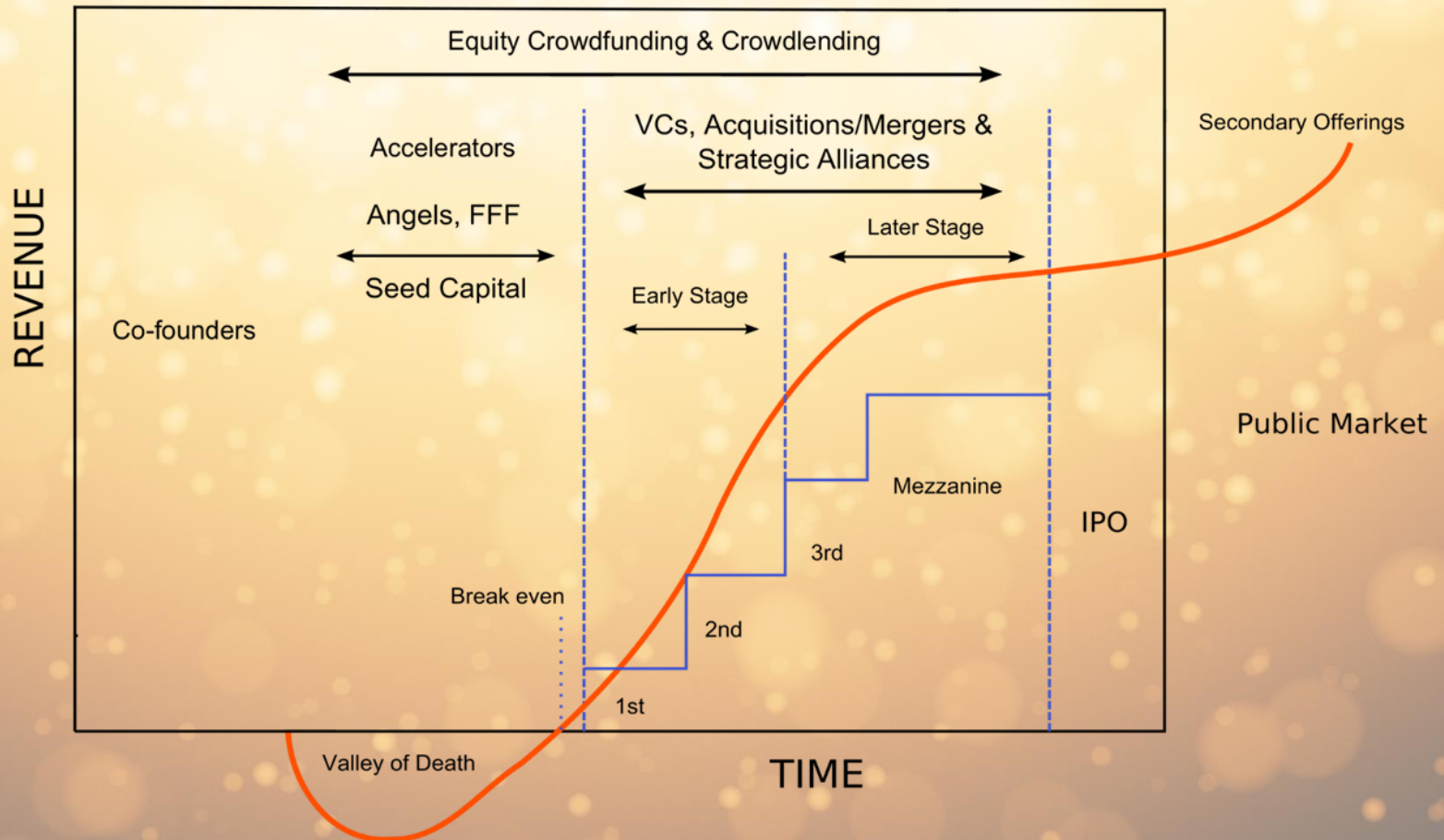
- Patents/applications can be exploited in the same way as other property.
- Used to maintain monopoly position.
- Rented out – licensed – derive royalties.
- Exclusive, sole, non-exclusive.
- Territorial or other limitations.
- Sold - assigned.

# Models of Commercialisation

- A *licence* allows an existing company (licensee) to use intellectual property owned by the university (licensor) in return for consideration.
- A spin-out is a new company formed specifically to develop new technology.
  - Initial shareholders include researchers, host university, investors and management.
- Collaborative research.

# Spinout financing

## Startup Financing Cycle



# Types of licence

- *Exclusive* – appropriate for pioneering technology. Patentee can't exploit.
  - Licensee has right to assert (UK).
- *Sole* - patentee can exploit. Uncommon.
- *Non-exclusive* – appropriate for platform technology.
- Geographical limitations.
- Field-of-use limitations.

# Revenue/risk - licences

- *Issue fee* – upfront payment received on conclusion of agreement.
- *Milestone payment* - payment made upon realisation of certain criteria (e.g. commercial, regulatory).
  - Pharma – pre-clinical, phase I, II, III, approval.
- *Royalties* – proportion of sales.

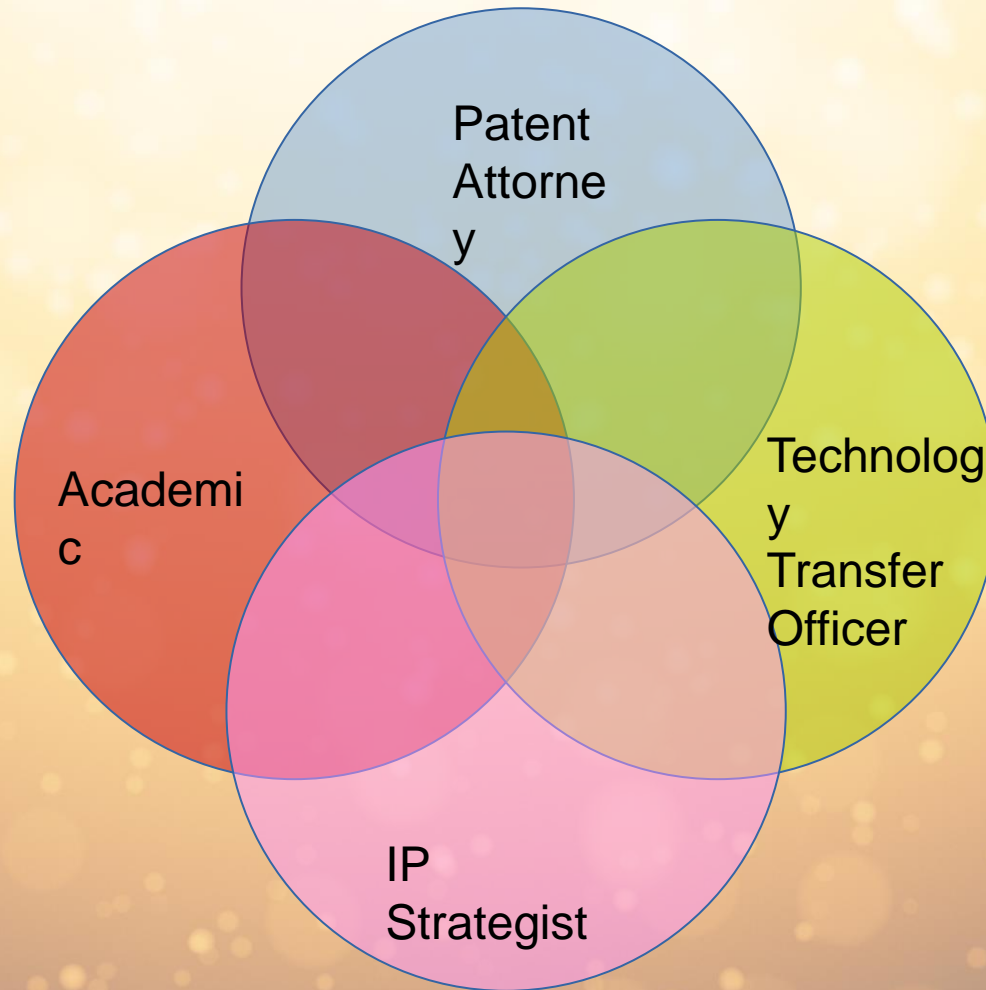
# The Importance of a Well-Drafted Patent

- The scope of a patent application is set very early on in the process.
- It is usually dangerous or impossible to deviate from this after the first year.
- Investors, licensees and competitors will apply **intense scrutiny** to the quality of applications.
- Good technology + bad patent = no revenue.
- Good technology + good patent = revenue.
- A well-drafted patent will have as broad a scope as possible – cover many applications of technology.
- Drafting initial application to save costs is a false economy.

# Patenting Considerations

- A good understanding of the invention is important.
- More important is an understanding of **how value is to be obtained** from the invention.
- Competitors are not interested in your technology, your patent or your product – they are interested in **your customers**.
- Focus of patenting endeavours should be to create a commercially valuable monopoly.

# Collaboration is Essential



# The Situation in the United States

- Before Bayh-Dole not *a single new drug was developed when the government took inventions away from universities and offered them non-exclusively.*
- After Bayh-Dole at least 153 new drugs and vaccines are now in the marketplace protecting health world-wide.
- University patent licensing supported 3 million jobs between 1996-2010.
- Sales of products based on licensed academic research in 2012 totalled \$80 billion dollars.
- Universities also created 10,000 companies since Bayh-Dole was enacted, with 4,000 still operating.
- Enriching universities was not the goal of the Bayh-Dole Act.

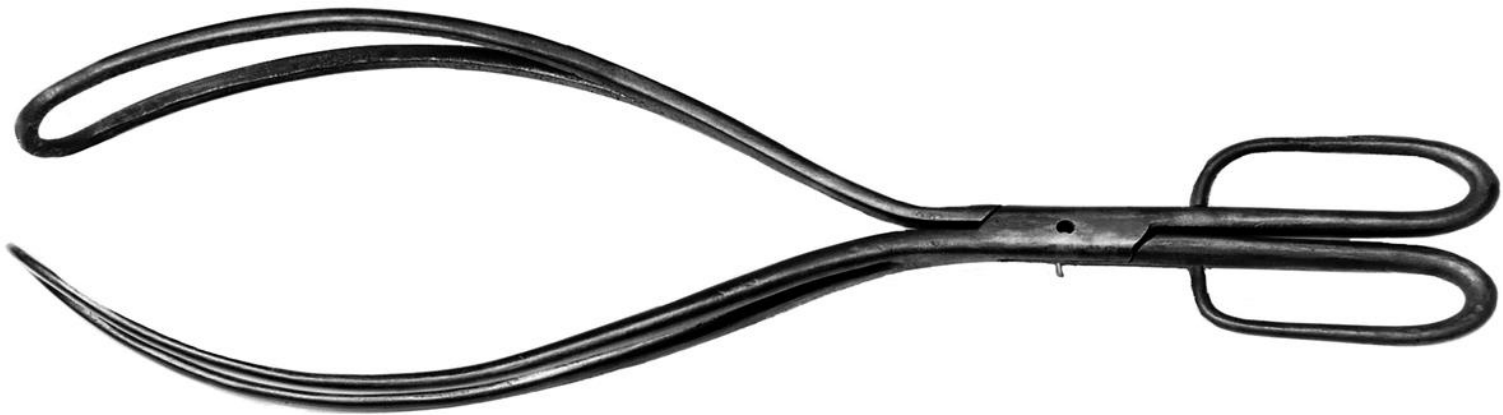
# Genetic engineering

- Recombinant DNA – enables genetic engineering.
- Developed by Stanley Cohen and Herbert Boyer (UC and Stanford).
- Three fundamental patents
  - US Patent 4,237,224 "*Process for producing biologically functional molecular chimeras*"
- Stanford University made \$255 million from licensing.

# Genetic engineering – reasons for success

- Non-exclusive licences with small upfront fee.
- Low running royalties on any product developed using technology.
- Companies only had to pay if a product got to market.
  - Easy to get companies to sign up.

# The patent paradox

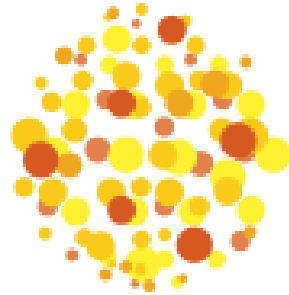


# Onchocerciasis



# Emodepside

- Anthelmintic patented by Japanese pharmaceutical company.
- Licensed to Bayer for animal health use.
- Bayer HealthCare and the Drugs for Neglected Diseases initiative (DNDi) developed for use in river blindness.
- Costs as low as possible to ensure affordability in the current 31 countries affected by river blindness.
- Patents, money and cows in Europe essential to saving sight in Africa.



# cleveland scott york

energise ideas

European Patent Attorneys | Chartered Patent Attorneys | Chartered Trade Mark Attorneys | European Trade Mark Attorneys

## London Office

10 Fetter Lane, London EC4A 1BR T +44 203 077 3499 F +44 207 583 9575

## Reading Office

10-14 Duke Street, Reading, Berkshire RG1 4RU T +44 118 952 0910 F +44 118 956 9186

[mail@cleveland-ip.com](mailto:mail@cleveland-ip.com) | [www.cleveland-ip.com](http://www.cleveland-ip.com)