

The Evolution of Technology Transfer in the U.S.

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Technology Development

Before 1980

- Government owned patents because it had funded the underlying research
- Government would only grant nonexclusive licenses to patents it owned, a wall was erected between academic and corporate research
- Over 20,000 patented technologies sat on government shelves
- Research was perceived as being “contaminated” by government funding because of the government’s licensing policies

December 1980: Bayh-Dole Act

- Institutions had right to claim title to inventions made with government funding.
- The funding agency couldn’t deny the request unless it had made a “determination of exceptional circumstances” in advance.
- Disclosing the invention and claiming title had to be done within defined time limits. A single set of rules governed all funding agencies.

Rules for the institutions:

- Grant licenses rather than assign their interest in patents;
- Disclose the government's interest in patent applications and notify the government before abandoning any patent application;
- Share the income they received with the inventors – how much to share is left up to individual institutions;
- Use the residual income retained by the institution for research and education
- Grant a royalty-free non-exclusive license to U.S. government for its own use
- Require licensees to manufacture products in the U.S. that are sold in the U.S.
- Give preference to small businesses

Why is this important?

Universities conduct basic research – they need licensees to develop research into products



Licensees invest significant resources in development



Licensees will only invest resources if they know who holds title to the invention and the invention is protected (patent or copyright)

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Technology Transfer Office Development

0-5 years

- Embryonic Enterprise
- Horizontal organization - no specialization
 - Contracts, Patents, Prototype, License, Spin-off
- No real professionals with relevant experience
- “Learn as you go – or trial and error ”
- Little revenue - little impact – often high expectations
- Very limited operating cash to grow or do Prototype Development

Data provided by UILO UBC

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Technology Transfer Office Development

5-10 years

- Lead by Professional
- Staff starting to come with relevant qualifications
- “Cradle to Grave” service deliver starts
- Common practices emerge in the environment but “best practices”/standard operating procedures elusive
- Modest revenues start to flow – expectations still high
- Service to the faculty an issue
- Common quandary: “Are we a business or a service?”
- Budget still linked to University direct budget
- Developing PD funds - but small amounts

Data provided by UILO UBC

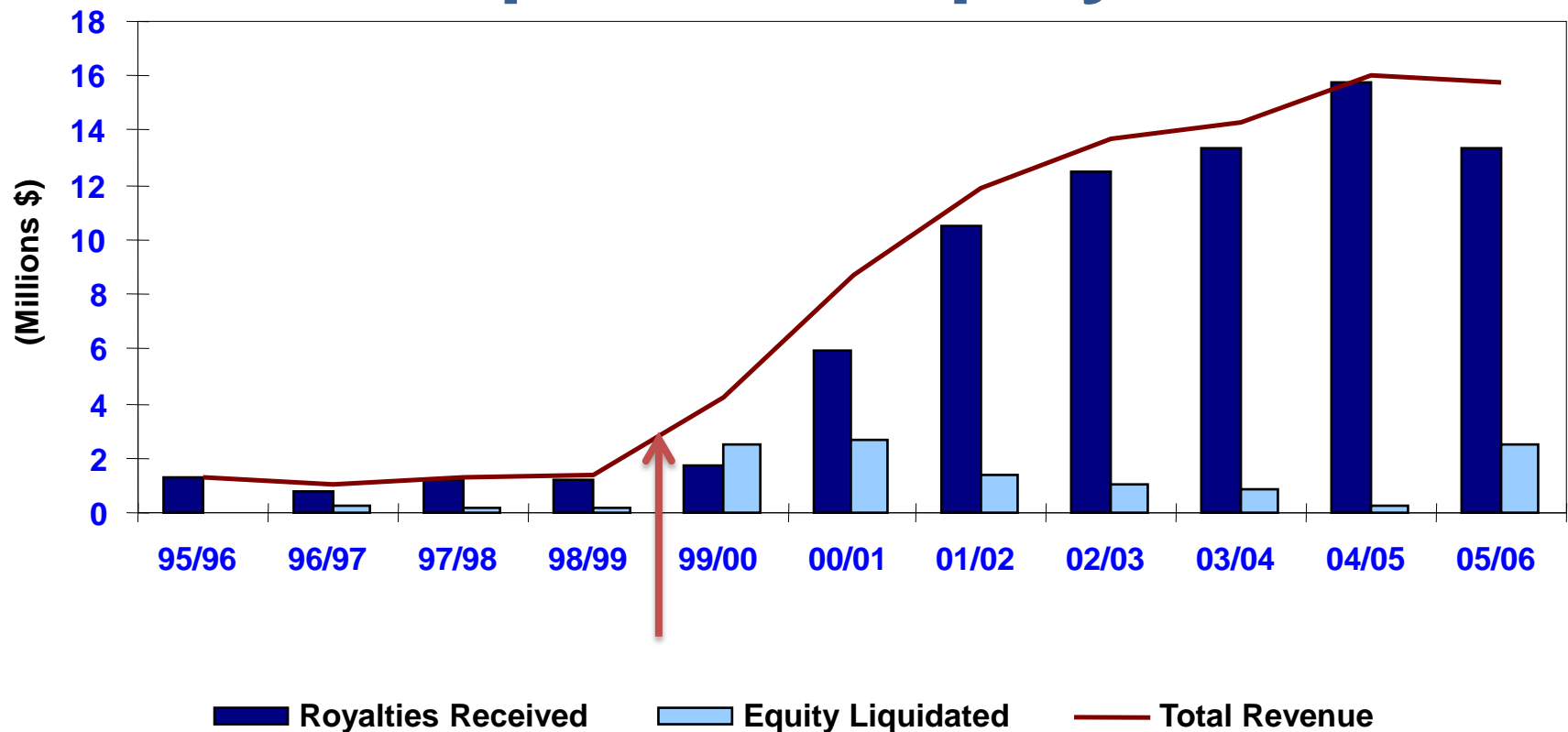
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Technology Transfer Office Development

10-20 years

- Lead by TT professional with deep experience
- Recognized outputs – Identifiable “winners” – satisfies expectations?
 - license or start-ups which are successful or generating revenue
 - industry research support
 - royalty and equity revenues
 - Real economic development realized
- Highly skilled professional staff
 - science/business/experience
- Broad range of complex responsibilities
- Standard operation procedures in place
- Critical mass of resources are at hand
- Operating Budget closer linked to revenue generated
- Highly networked into multiple communities

UILO UBC Royalties & Liquidated Equity



30+ Years of Technology Transfer in the U.S. The Results

- **154 FDA approved drugs** since 1980 which were discovered in whole or in part at a U.S. public sector research institution
- **8570 start-up companies**
 - **3927** of these companies were still operating at the end of 2011.
 - **73%** of these companies have had their primary place of business in the institution's home state.
- V-chip
- hollow optical fibers
- nicotine patch
- PSA test
- Google
- Honeycrisp apple
- Cochlear implant
- lightening detection technology
- Hib vaccine
- Cell phone technologies

The Results cont'd

671 new start-up companies were formed in **2011**

In a study of 100 university start-ups:

- Total employment in 2008 at **81 of the companies** was **167,000**
- Revenues at **31 of these companies** was **\$95 billion**

From 1996 to 2007 university licensed products created **over 279,000 jobs** and **technology transfer contributed as much \$187 billion** to the U.S. Gross Domestic Product.

The Results – One Industry Sector

- 76% of biotechnology companies have a license from a university and **at least 50% of current biotech companies got their start as a result of a university license.**
- Biotech companies represented over **1.42 million jobs in 2008.**
- Today, biotech technologies support an estimated **3 million jobs** in the economy

What is AUTM?

The volunteer organization that brings together over 3000 technology transfer professionals in more than 30 countries ***to support and advance academic technology transfer globally.***

- 65% are employed in academic technology transfer
- 35% are in industry

Membership Profile

- 76.5% USA
- 6.8% Canada
- 16.7% Rest of the World

The Rest of the World is the fastest growing part of the membership (23% average over last ten years)

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Technologies

- May 26** • Method of selective conjugation without unwanted cross-linking
Although there have been continuous efforts to improve various aspects of the assays that are commonly used in clinical medicine and research laboratories, there still exists a problem of preparing a large quantity of an analyte-enzyme conjugate ...
- May 25** • Method and Apparatus for High Quality Video Reconstruction
Researchers at the University of California, Santa Barbara have developed a novel method and apparatus to improve the overall quality of a reconstructed video signal at a given transmission rate, or to maintain the current signal quality at reduced ...

Organizations

- Purdue Res Foundation**
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- Deloitte Financial Advisory Services LLP**
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- IIC Research Campus**
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- Acadia University**
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Success Stories

- Apr 05** • TRICKS Changes the Face of Medicine
In the 1980s, the X-ray technique became the gold standard for diagnostic images. Then in the 1990s, radiologists used MRI exams, sometimes injecting a contrasting agent into the patient to better enhance the study. The trouble was that the ...
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Questions?

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