



Transferring technology to SMEs at Stanford University

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University-Industry Technology Transfer

Research results
from lab



Start-up companies and
large corporations



New products
in marketplace



Mechanisms

Graduated students

Publications

Seminars, conferences, etc.

Faculty consulting

Industry sponsored research

Industrial affiliate programs

Intellectual Property Licensing

Bayh-Dole Act (U.S. Public Law 96-517)

- University may elect to retain title to inventions developed under federally-funded research programs
- University grants royalty-free nonexclusive license to government
- Any company holding an exclusive license must substantially manufacture the product in the U.S.
- **In marketing and licensing of an invention, University must give preference to small business firms (< 500 employees)**
- University must share with the inventor(s) a portion of any revenue received from licensing

(Sources: COGR Publication “The Bayh-Dole Act: A Guide to the Law and Implementing Regulations”, 37 CFR Part 401, 35 USC 200-212)

Stanford Facts for 2006



- **7 Schools**
 - Business, Earth Sciences, Education, Engineering, Humanities and Sciences, Law, and Medicine
- **1,771 Faculty members**
- **Students (6,705 undergraduate and 8,176 graduate)**
- **Finances (FY 2005-2006)**
 - **\$2.9 billion budget**
 - \$975 million in sponsored research, including SLAC (87% by federal government sponsors)
 - additional \$122 million in part through over 53 industrial affiliate programs
 - **\$12.2 billion endowment**

[\(http://www.stanford.edu/home/stanford/facts/\)](http://www.stanford.edu/home/stanford/facts/)

Office of Technology Licensing (OTL)

Mission

To promote the transfer of Stanford technology
for society's use and benefit
while generating unrestricted income to support research and education.

Technology Transfer Portfolio

Patents
Copyrightable Material
Software
Biological Material

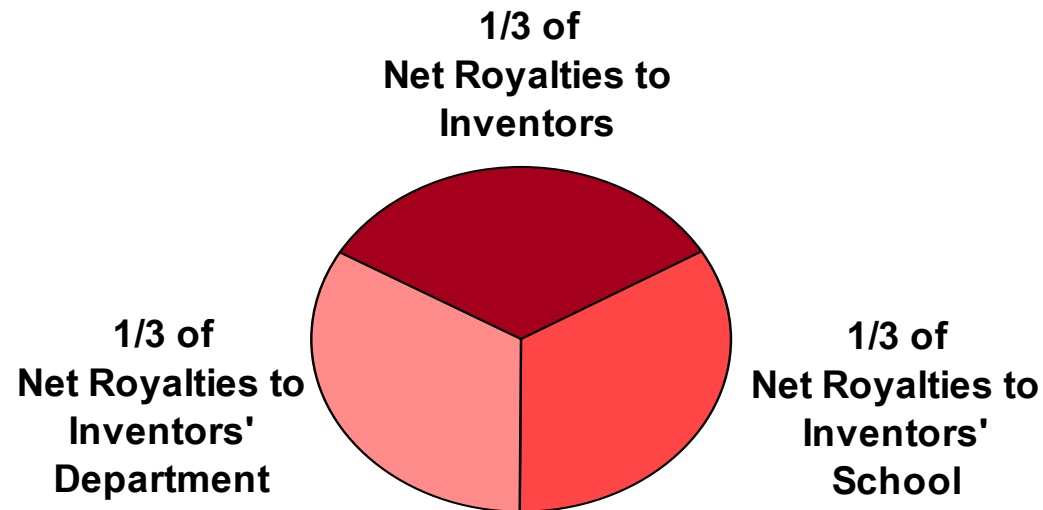
Ownership Policy

University takes title to all inventions created with more than incidental use
of University resources



Stanford's Royalty Distribution Policy

- **Cash Royalties from Issue, Minimums, Earneds**
- **Net Royalties = Cash Royalties**
 - minus 15% for administrative expenses
 - minus out-of-pocket expenses (e.g. patent costs)



OTL: Notable Stanford Inventions



1970 – OTL Established

1971 – FM Sound Synthesis (\$22.9M)

1974 – Recombinant DNA (\$255M)

1981 – Phycobiliproteins (\$46.3M), Fiber Optic Amplifier (\$32M), MINOS (\$3.4M)

1982 – Amplification of Genes (\$30M)

1984 – Functional Antibodies (\$120.6M)

1986 – CHEF Electrophoresis (\$2.1M)

1990-1992 – Discrete Multi-tone technologies for DSL (\$28.7M)

1996 – Improved Hypertext Searching - Google™ (\$336.5M)

2007 – the next big thing ???

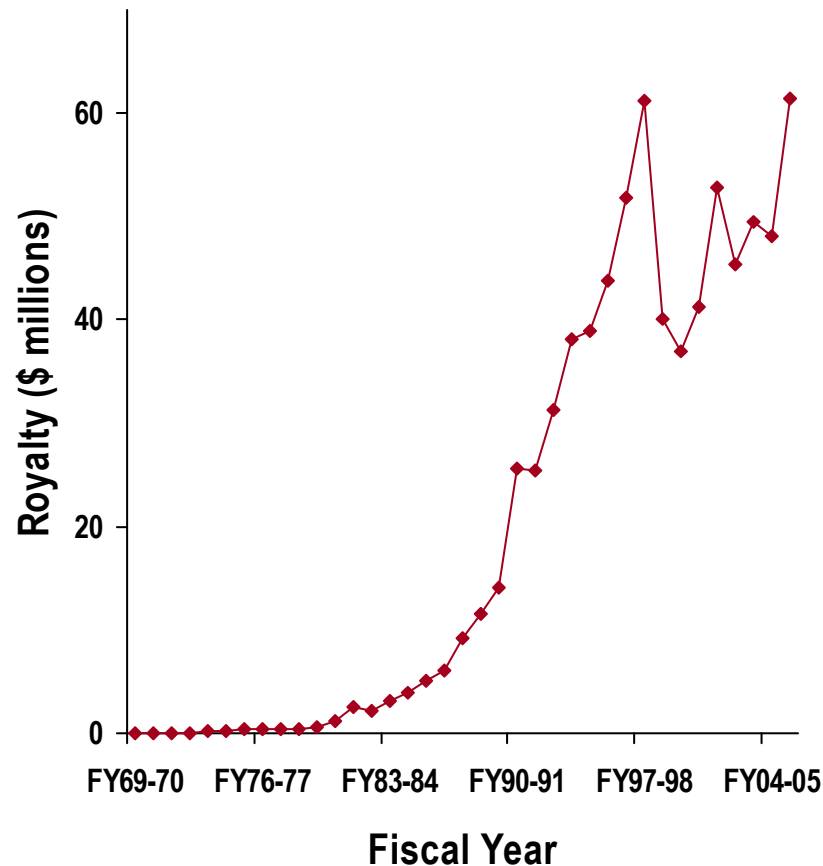
OTL: Disclosure and Licensing History

	<u>1970</u>	<u>2006</u>	<u>Cumulative</u>	<u>Active</u>
Disclosures	28	505	6500+	2450+
Licenses*	3	109	2700+	940+
Royalty Income	\$50,000	\$61.3 M	\$1.09 B	
Staff	2	29		

* Majority of disclosures are never licensed; many disclosures have one license; some disclosures have multiple licenses

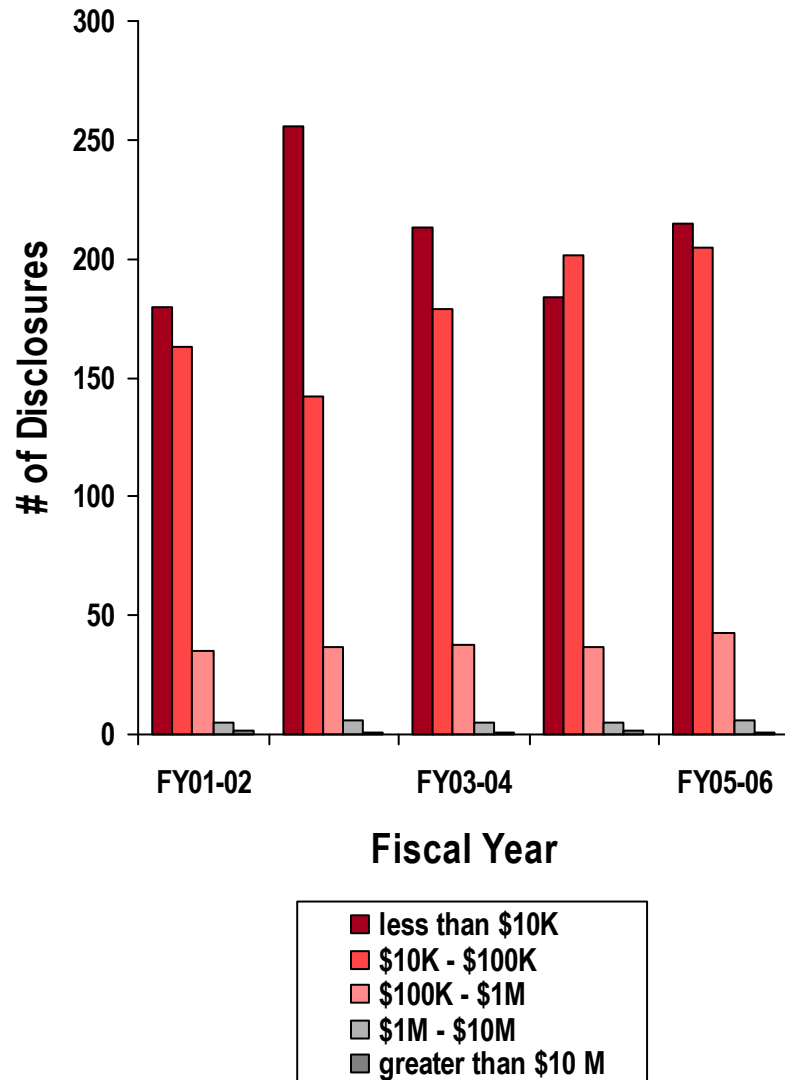


OTL: The Upside



- In FY05-06, \$61.3 million in royalties
- From 1970 through 2006, ~\$1.09 billion cumulative royalties
- Typically, 10 to 15 years may elapse between initial invention disclosure and any significant royalties

OTL: Looking Closely at Royalties



- In FY05-06, \$61.3 million from 470 disclosures
 - 50 out of 470 disclosures generated over \$100,000 each
 - 7 out of 50 generated over \$1 million each
- From 1970 through 2006
 - 53 inventions generated \$1 million or more
 - 3 out of 6500 is BIG WINNER
- Royalties from large portfolio of inventions

OTL: Conversion Numbers



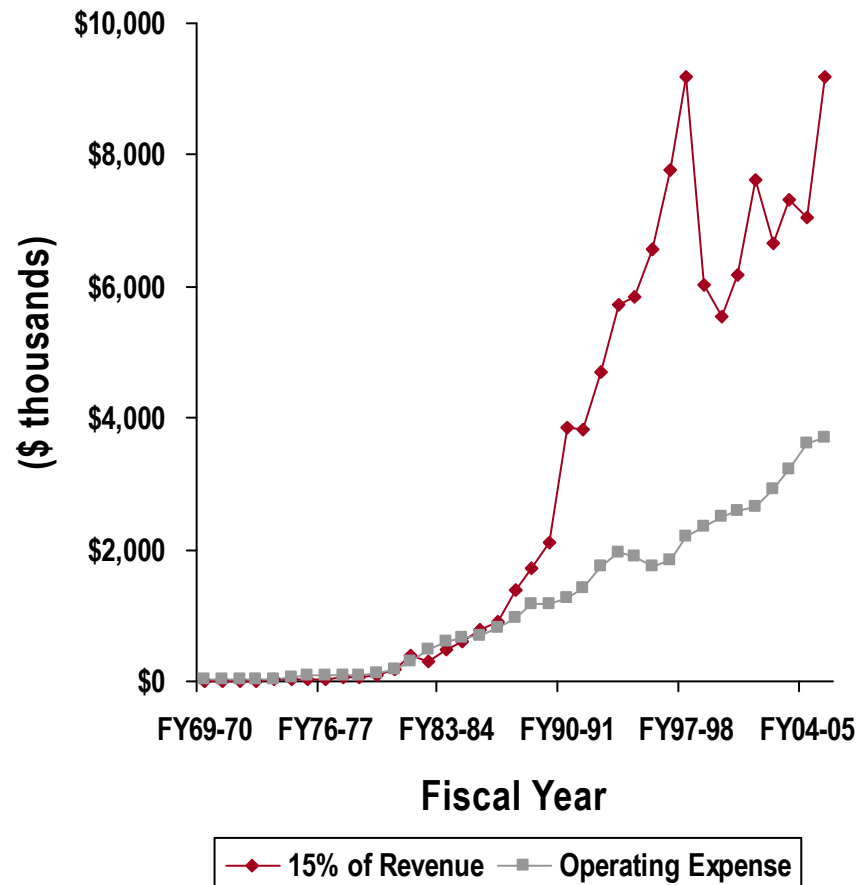
**~9 disclosures
received per week**

- ▶ **~ 60% of disclosures are filed as patent applications**
- ▶ **some disclosures potentially licensable as copyright or biological materials**



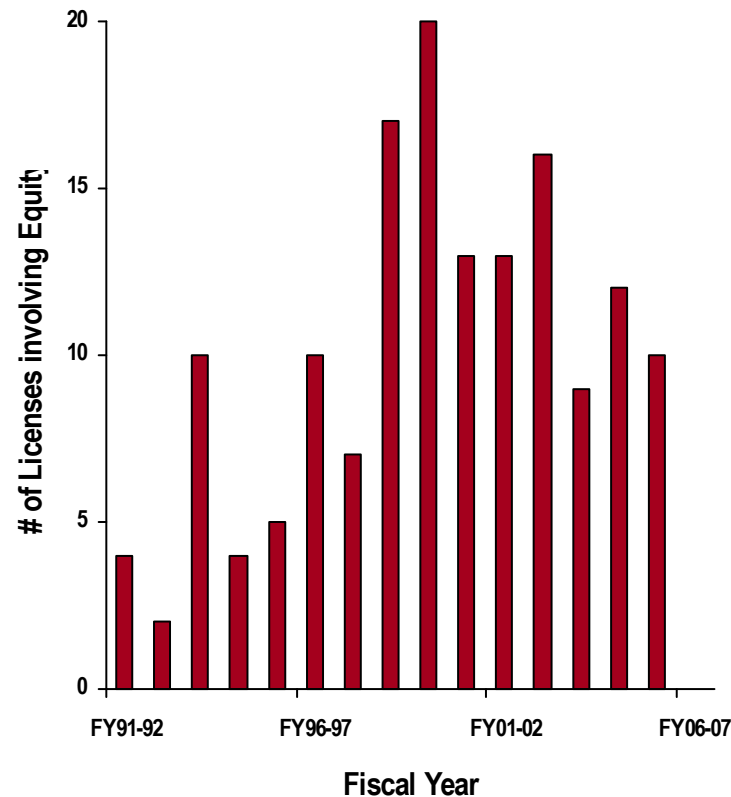
**20 - 25% of disclosures,
including those patented,
are licensed**

OTL: Revenue vs. Expenses



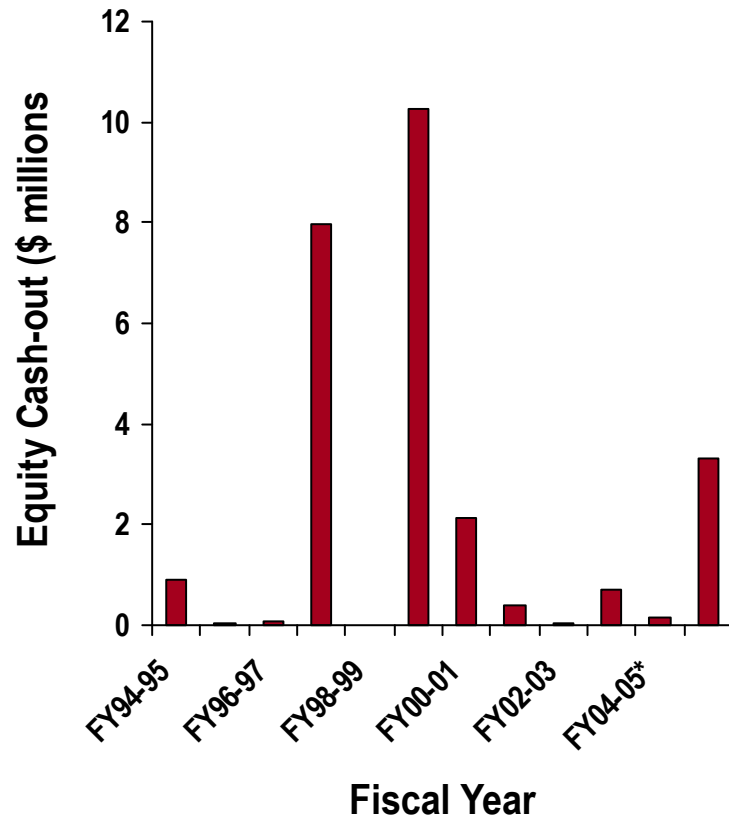
- OTL is self-supporting
 - 15% of revenue > operating expenses
- Operating budget of ~\$3.7 million/year
- Patent expenses of ~\$5.7 million/year
- OTL has given ~\$39.4 million to Research Incentive Fund administered by Dean of Research

OTL: Equity from Licenses



- **Stanford's philosophy**
 - Equity is one component of a whole financial package
 - Historically, most income is generated from earned royalties (~\$729 M vs. ~\$361.8 M)
 - Equity is liquidated soon after IPO
 - We can't hold equity if licensee conducts clinical trials here
- **Equity from licenses**
 - ~162 companies cumulative
 - ~71 companies currently
 - Equity liquidated to date ~\$361.8 million

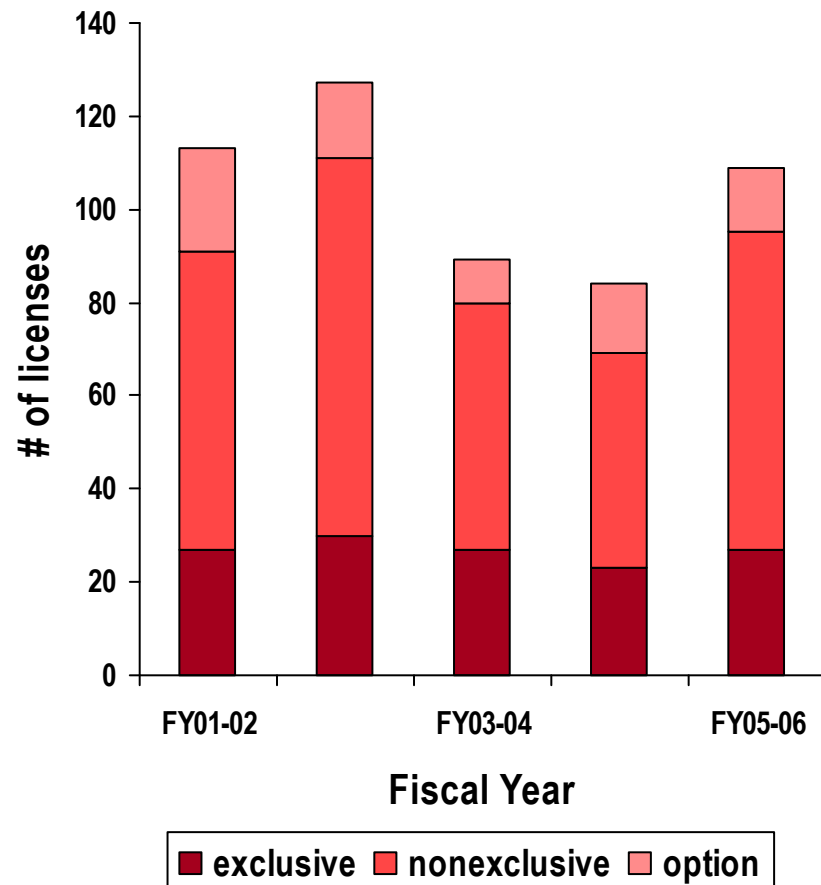
Equity Cash-Out at Stanford*



- **Equity distribution**
 - 15% to OTL
 - 1/3 of net equity to inventors
 - 2/3 of net equity to OTL Research and Fellowship Fund
- **Equity liquidated to date**
~\$361.8 million
 - Amati (Texas Instruments) \$8.0 million
 - Abrizio (PMC-Sierra) \$9.7 million
 - Google™ \$336 million

*Graph does not include liquidation of Google™ equity in FY04-05

Types of License Agreements



- **Option agreement** - mostly taken by start-ups
- **Non-exclusive agreement**
- **Exclusive agreement**
 - Limited by Field of Use
 - Limited Period of Time (e.g. earlier of 8 years from Effective Date or 5 years from first commercial sale)

Key License Terms

- **Financial terms**
 - License issue fee
 - Annual minimum payments
 - Earned royalties
 - % of Net Sales
 - \$ per product sold
 - Reimbursement of patent costs
 - Equity in start-up companies
- **Non-financial terms**
 - Definitions
 - Grant
 - Development milestones & diligence provisions
 - Prototype
 - First Commercial Sale
 - Warranties and indemnities
 - Infringement actions
 - Dispute resolution

Start-ups

- **Universities want to share in the upside and help with economic development**
- **Conflict of interest issues are primary concern**
- **We avoid negotiating with the inventors who are founders due to their conflicted positions**
- **Many start-ups first take option agreements for 6-12 months**
- **Most work with local VC firms**

OTL Interactions with Start-ups

- **Typical situation:**
 - **Researcher discloses invention and states s/he would like to found a company around the technology**
 - **OTL markets technology**
 - **Often start-up is the only interested party**
 - **Start-up submits business plan**
 - **Negotiate financial terms with business person**
 - **OTL initiates conflict of interest review if inventor-faculty member involved**
 - **Remainder of agreement negotiated**

Important terms with SMEs

- **Upfront consideration includes cash and perhaps equity**
- **Annual minimums, ramping up over passing years**
- **Earned Royalties on Net Sales of products**
- **Milestone payments – often large towards time of product sales to account for smaller upfronts**
- **Yearly diligence milestones**
- **Sublicensing – scaled down over time/development**

Considerations when licensing to start-ups

- **If the researcher is new to start-ups, help them use their attorney-time wisely**
 - Highlight clauses that are non-negotiable
 - Keep tabs on “over-lawyering”
- **Be flexible – start-ups are evolving entities – but be firm on your mission**
 - Diligence may be a moving target
 - More renegotiation with start-ups
 - Concentrate on the end goal – products to help people
- **Be efficient and time-sensitive – a bird in the hand...**

Differences with other TLOs

- **OTL does not have the goal of stimulating the local economy**
- **Stanford does not have an incubator**
- **Stanford never assigns patent rights to another party in a license**
- **OTL does not help write business plans**
- **OTL can provide introductions to Venture Capitalists, but the start-ups rarely require them**


Last comments


- **Stanford's OTL does not come close to making enough to cover Stanford's research budget**
- **The majority of TLO's do not cover their office and patenting expenses**
- **Technology transfer is not limited to licensing**
- **Establishing a good relationship can mean other benefits to the institution**

Web Page

otl.stanford.edu

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