A Career in Technology Transfer: Getting Started

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Academic Research → Therapies

(Spector et al., Science Translational Medicine, 25 Apr 2018)
Drug development statistics
Average cost\(^1\): $2.7 billion
Average time to market: 10 years
Phase I to approval success\(^2\): 9.6%

Universities need commercial partners to develop their research into products

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\(^1\)DiMasi et al., *J of Health Economics*, May 2016
\(^2\)Clinical Development Success Rates 2006-2015, BIO Report
What is Technology Transfer?

“The formal transfer of new discoveries and innovations resulting from scientific research conducted at universities and non-profit research institutions to the commercial sector for public benefit.”

-Association of University Technology Managers (AUTM)
The Revolution of 1980

Federal government provides the single largest source of funding for research and development in the U.S.

Pre-1980

- Government owned and managed inventions, but limited technology transfer activities.
- Licensed non-exclusively to disseminate research, but not exclusively.
- < 250 U.S. patents issued to U.S. universities per year.
- Few licenses executed per year.

Late 1980

- Bayh-Dole Act passed; decentralized technology transfer activities from the government to universities and non-profit organizations receiving government funding.
- Current technology transfer functions in the U.S. stem directly from the Bayh-Dole Act.
## A Snapshot of UCSF

<table>
<thead>
<tr>
<th>FY2017</th>
<th>Facts &amp; Figures</th>
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</thead>
<tbody>
<tr>
<td>233 New Disclosures</td>
<td>97 Licenses</td>
</tr>
<tr>
<td>56 New U.S. Patents</td>
<td>13 NewCos</td>
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<tr>
<td>1305 Total Issued U.S. &amp; Foreign Patents</td>
<td>100+ Products on the Market</td>
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<tr>
<td>$25.2MM Licensing Revenue</td>
<td>Total Startups 100+</td>
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<td>10 Public*</td>
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<td>VC Backed* 59</td>
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*accumulated through FY 2015
>100 Startups Facilitated by OTM
Core Functions of OTM

- Assess university technologies
- Find commercialization partners
- Alliance building/maintenance
- Negotiate business/legal terms of the agreement
- IP protection
- Advise researchers on IP strategy
- Post-agreement management
- Dispute management
Invention Management Process

1. **Research**
2. **Idea**
3. **Disclosure**
4. **Evaluation**
5. **Marketing/IP protection**
6. **Negotiation**
7. **License**
8. **Feedback**
9. **Inactivation?**
Invention Evaluation

Things to evaluate once we receive a disclosure:

• Technical analysis
  – Type of invention, stage of development, strength of data, enabling description
• IP analysis
  – Patentable, public disclosures, enforceable, licensable, US rights only or worldwide rights available/needed, new case law implications
• Market analysis
  – Market size, me-too product, competitive advantages, manufacturing costs, distribution channels, market demand
• Ownership and inventorship
• 3rd-party obligations
• Regulatory path assessment
  – Type of approval, time to approval, defined clinical endpoints
Why is Patenting Such a Big Decision?

- Patents are $EXPENSIVE$!
  - U.S. patent costs alone >$25K-$50K;
  - Global patent costs > $125K-500K
- Not all inventions can or should be patented.
- Patents only allow the patent holder to exclude others from practicing the invention (value only if others want to practice).
- Must take into account not only patentability but also commercial value. Will it be licensed?
Marketing and Licensing Strategy

**Marketing Process**
- Identify potential companies (inventor tips, databases, market knowledge, Google)
- Draft and provide non-confidential marketing information
- Negotiate and execute confidential disclosure agreements
- Company discussions and meetings

**Licensing Strategy**
- Exclusive or non-exclusive?
- Multiple fields or limited fields?
- Start-up or existing company?
- Products and/or services or internal use only?
- Are there university policy issues to contemplate? (tools, diagnostic)
OTM Stakeholder Engagement

Internal

- CDHI
- CTSI
- QB3
- Alliance Mgt.
- ICD
- EC
- UCOP
- RMS/GBC
- Legal

OTM

UCSF Faculty

External

- Investors
- Companies
- Startups
- Foundations
- Law Firms
There Is No “Typical” Day

- Constantly shifting priorities
- Fast-paced work environment
- Meeting the demands of internal/external stakeholders
- Diverse portfolio management
- Strategic decision-making
Desirable Skills for Tech Transfer

- Strong scientific background
- Broad interests
- Strong analytical skills
- Excellent communicator/interpersonal skills
- Good organizational/time-management skills
- Negotiation skills
Breaking Into Tech Transfer – Job Opportunities

- **Different roles:** Licensing officer, business development manager, commercialization manager, technology transfer officer
- **Different names:** technology management, technology licensing, technology commercialization, innovation & ventures, business development
- Learn about open positions – UCSF Career Center, build a professional network, conduct informational interviews
Breaking Into Tech Transfer – Gaining Experience

- Take course and attend seminars to expand skillset
  - Project management and marketing (UC extension, SFSU)
  - Start-ups 101, QB3 seminars (UCSF)
- Get involved in life science industry/tech transfer organizations
  - CLSA, LES, AUTM, BIO
  - Volunteer at regional meetings, attend free seminars
- Internship programs
  - OTM licensing, OTM marketing, Catalyst, Entrepreneurship Center
What Does An OTM Licensing Intern Do?

- Technology assessments
- Draft marketing summaries
- Attend weekly staff meetings
- Present cases for discussion
- Ad hoc training sessions
- Interface with inventors
Where Are They Now?

44 intern alumni since 2012

- **Career tracks:** management consulting, industry business development, technical writing, patent law, project management, tech transfer, marketing, corporate/product development, research

- **Companies:** 23andMe, Denali Therapeutics, Global Blood Therapeutics, Genentech, CIRM, Wilson Sonsini, Siemens Health, Zitter Health Insights, Takara, Boston Consulting Group, UCSF, Advanced Cell Diagnostics
Frequently Asked Questions

- 6-month commitment
- 10 hours per week
- Weekly staff meetings
- July/January cohort on-boarding
- Contact Catherine.Smith2@ucsf.edu or Ellen.Kats@ucsf.edu to apply
- To find out more: https://innovation.ucsf.edu/jobs_internships
Thank you! Questions?