Commercialization of University Technology

Innovation, Technology Transfer and Licensing

IEEE Entrepreneur Network

2 February 2010

Jack Turner

MIT Licensing Office

MIT - October, 2009

- Students — 10,384
  - 4,232 undergraduates
  - 6,152 graduate students
- Faculty and staff — 10,500
  - 1025 Professors
  - 679 additional teaching staff
- Nobel laureates – 73 total; 7 current

MIT Financial (FY 2009)

- Operating Expenditures — $2.5 billion
- Endowment — $8 billion
- Research sponsorship — $1,319 million
  - $718 million on campus (14% from industry)
  - $749 million at Lincoln Lab (99+% government)
- Tuition — $37,782
  - Plus ~$14,218 living & other expenses
  - Financial aid provided to 62% of undergrads

MIT Academic Organization

- 5 Schools
  - Architecture & Planning
  - Engineering
  - Humanities, Arts & Social Sciences
  - Management
  - Science
- 27 Departments
- 100+ Laboratories & Research Centers

Bayh-Dole Act

- Basic “Technology Transfer” Legislation
  - University takes title to inventions made through federally funded research
  - May issue exclusive licenses
- University is obligated to commercialize
  - Small business preference
  - Job creation & economic development focus
  - Revenue received
    - Share portion with inventors
    - Remainder goes into research

MIT TLO ("Technology Licensing Office")

- 25 years in operation
- 32 employees
  - 10 Licensing officers (scientists/engineers with extensive business experience)
  - 7 Licensing associates (junior professional staff)
  - 15 support and finance staff
- Reports to the M.I.T. VP for Research

MIT Licensing Office Mission

- Foster commercial investment in development of inventions and discoveries
- Through these investments – and the economic development and products that follow – provide direct benefit to public
- Generate goodwill: faculty, sponsors, licensees
- Financial benefit to M.I.T. and inventors

MIT Policy

- MIT owns the patent or copyright
  - Federally funded research – Bayh-Dole Act
  - Industrially sponsored research
- Industrial sponsor license rights
  - Non-exclusive, royalty-free, pays patent costs
  - Royalty-bearing, limited term exclusive, pays patent costs
- Royalty Distribution (after expenses)
  - 1/3 inventors
  - 2/3 inventor's Department and MIT General Fund

Myths

- Royalties are a significant source of revenue for the University
- Expect a quick return of technology transfer investment
- Companies are eager to accept new technology from universities
- You should broadcast availability of technology for licensing
- The technology transfer office finds the licensee

Reality

- With the exception of the occasional "blockbuster," licensing revenue is small.
- Don't expect product royalties for 8 -10 years
- Most companies want quick time-to-market
- Publishing lists of available technology is not effective
- The inventor is the best source for leads

MIT Approach

- Primary objective is technology transfer, not to maximize income
- Leverage intellectual property
- License exclusively when appropriate
- Don’t let greed obstruct license agreement
- Modest royalties geared to product success

License Agreement Factors

- Given a potential licensee, tailor terms to fit
  - Shared risk
  - Low initial fees
  - Equity in partial-lieu of up-front fees
  - Modest royalty rates
  - Diligence provisions
    - Investment, personnel, milestones (development and sales), sublicensing requirements

Elements of a License Agreement

- Definitions, especially field of use
  - Example: "…automotive safety applications related to occupant sensing."
- Grant of rights
  - To make, have made, use, sell, lease and import
  - To sublicense
- Retained rights
  - For M.I.T. and other non-profits for research, teaching and educational purposes
  - For government
  - For industrial sponsor
- Exclusivity
  - For specific field of use
  - Limited term, if appropriate – depends on the time necessary for development and magnitude of the required investment.

License Agreement (continued)

- Diligence
  - Business plan
  - Obtain $xx Million capitalization
  - Fund $yy million in research (internal or at M.I.T.)
  - Perform against product development plan
  - Working model by <date>
  - Cumulative product sales (units and/or $$) by <dates>

  Failure to perform as specified may result in loss of license!
- Royalties
  - License issue fee
  - Equity (only for start-ups)
  - License maintenance fee, creditable to royalties
  - Royalty on product sales, generally a % of sales
  - Share of sublicense income
- Patent cost reimbursement

Typical Terms

- Exclusive
- Field of Use: Limited
- License Issue Fee: $25K - $100K
- Equity: 5% after significant funding
- Royalty: 3-5%
- Minimum annual royalty: escalates over time
- Patent expense reimbursement

Sample Companies

- OmniGuide – flexible optical waveguide for laser surgery
- Luminous Devices – high power LEDs
- Elesys – smart sensor for airbag deployment
- Alnylum Pharma - SiRNA
- Sony, Moto, Panasonic, Samsung, LG, etc. - DTV
- Carl Zeiss Meditec – Optical Coherence Tomography
- LightLabs Imaging – OCT
- Zimmer - protheses
- Neurometrix – neural monitors
- Cytec – water purification polymers
- Momenta Pharma – heparin (anticoagulant) products
- Z Corp – 3D printers
- A123 - Batteries

Valuation

- Embryonic technology
- Large risk to company
- Difficult to convince company to invest
- IP is essential
- Exclusivity

University Valuation Perspective
(Accurate valuation not very important)

- Minimal investment (patent costs)
- If licensed at all, university will recover patent costs
- License issue fee provides early return on investment
- Modest royalty provides handsome reward if commercially successful; proportional to sales

Industry Valuation Perspective
(Accurate valuation is very important)

- Patent cost plus license issue fees
- Large research and product development cost
- Market and sales expense
- Patent may not issue or be substantially weaker
- Competing products
- Perceived market demand may erode

Finding Licensees

Technology Transfer is a Contact Sport!

- Most licensees/venture investors knew us or the researcher before they knew about the invention!
- The “lead” for completed deals comes directly or indirectly from the inventor more than 50% of the time!

Finding Licensees: What doesn't work for us

- Web Listing of Inventions (We do it, but…)
  - Almost never generates useful leads
  - Consumes a lot of staff time if you have many inventions (unless you manage it well)
  - May discourage visitors who would otherwise come personally and make better contact
- Mass mailing (or emailing) of invention letters
  - Lost in the flurry of everyone else's untargeted mass mailings
  - Annoys the company with "junk mail"

Finding Licensees: What works for us

- Interviewing the faculty member for leads
- Having companies/investors come to us to ask “what do you have”?
  - We spend a LOT of time simply “interviewing” companies/investors—and having them interview us.
- Contacting people at companies/investors whom we already know
- Occasionally doing very targeted cold calls

The inventor is the best sales person!

- Try for an early introduction of the inventor to the RIGHT person in the company or the RIGHT investor
  - Sell the Vision—not just the patent application!
- If the inventor won't meet with the potential licensee, abandon the patent!
  - But don't send "junk candidates"!

Keeping in touch with current licensees

- Require annual reports
- Monitor past-due financial accounts monthly; follow up with phone calls if significant amounts overdue.
- Require self-audits and do formal audits periodically (particularly the larger accounts)
- We should (but don’t) notify licensees when their Licensing Officer changes

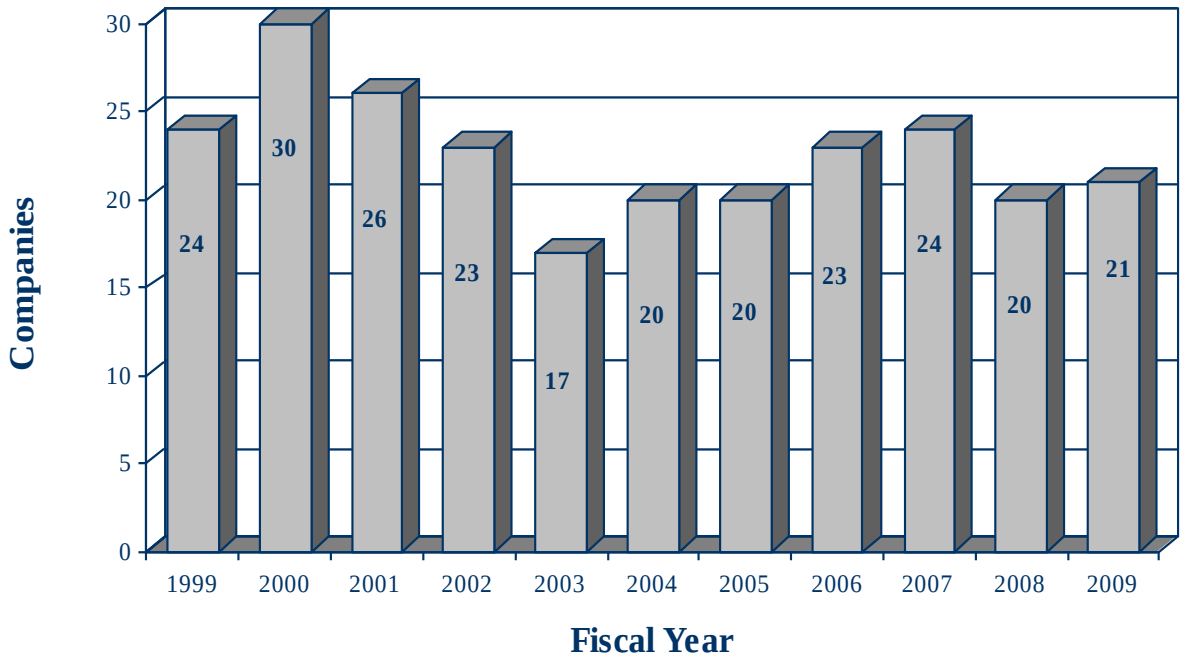
MIT's "Virtual Incubator"

- MIT TLO does not provide start-ups with:
  - Money, office space or laboratories
  - Management or business plan writing
  - Formal guidance (no Board seats)
- MIT TLO does provide start-ups with:
  - Advice, hand-holding & encouragement
  - Introductions to VCs & angel investors
  - IP options while company is forming
  - License agreement when needed

Start-ups

- MIT agreements in 2009
  - 67 license agreements
    - 21 start-ups
  - 18 option agreements
- MIT licensee start-ups since 1984
  - 300+ companies
  - Of those started 1997 & later, >80% still going
    - 167 of 205

MIT Licenses to Start-ups



MIT Licensing Office 2009

- Staff 32
  - Licensing Professionals 17
  - Finance & Support 15
- Invention Disclosures 501
- Patents (US utility) filed 131
- Patents (US all types) issued 153
- Licenses and Options 85
  - Licenses (start-ups) 67 (21)
  - Options 18
- Active agreements 850

MIT Licensing Office 2009

- Royalty income $66.0 million
  (Cash from equity sold = $0.7 million)
- Operating expense $ 4.1 million
- Patent expense $16.0 million
  (Reimbursement = $9 million)
- Inventors $15.5 million
- Other institutions $ 8.8 million
- MIT departments $32.7 million

Conclusions

- Innovation must be pervasive at the University
- Technology transfer is a service which facilitates innovation, entrepreneurship and economic development; it should not be viewed in itself as a source of revenue.
- Targeted marketing of inventions is essential
- Favorable license term induce investment
- University technology can be a powerful engine for economic development

Thank you…

Questions????

Jack Turner

jht@mit.edu

(617) 253-6966