Commercialization of MIT Technology
Innovation, Technology Transfer, and Licensing
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• Overview of university technology transfer
• Intellectual Property (IP) policy and management
• Commercialization through licensing
MIT Technology Licensing Office (TLO) Mission

We cultivate an inclusive environment of scientific and entrepreneurial excellence and bridge connections from MIT's research community to industry and startups by strategically **evaluating**, **protecting**, and **licensing** technology.
Tech Transfer Lifecycle FY2021
Benefiting Society and the Economy

Every year university research yields discoveries with commercial potential. Technology transfer professionals manage the complex process of shepherding ideas from the lab to the marketplace—from evaluating and protecting discoveries to commercializing the inventions through new and existing companies.

For more information visit tlo.mit.edu

Data current as of June 2021
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• Overview of university technology transfer
• **Intellectual Property (IP) policy and management**
• Commercialization through licensing
MIT IP Policy- Basics

- Ownership stems from use of MIT funds and facilities
- MIT owns the patent or copyright except when:
  - Not invented under sponsored research, and
  - Made no significant use of MIT administered funds or MIT facilities

- Inventors receive one-third of net revenue *(after recovery of patent and licensing costs and a 15% administrative fee)*
- The remainder is shared between DLCs and the MIT General Fund
Sponsorship - Basics

• If government sponsored, MIT notifies sponsor of invention disclosure and MIT must decide if it will file a patent application within two years
  • If “yes”, government has a royalty-free, government-purposes right to use
  • If “no”, MIT waives its ownership right to the government agency that sponsored research; the agency may decide to file a patent application on behalf of the US government
Sponsorship – Basics (continued)

• If industrially sponsored, sponsor(s) has the right to request a license
  • Non-exclusive license is essentially free
  • Exclusive license, if available, is royalty-bearing

• Other types of sponsorship, e.g., foundations, may also have IP terms
MIT TLO Evaluation of Invention Disclosures

• Technology and market considerations:
  • What problem does the technology solve?
  • Is it disruptive technology or an incremental improvement?
  • Has proof of principle been demonstrated?
  • How does it distinguish itself from current ways of addressing the problem/need?
  • Are companies in the field investing in new and/or externally developed technologies?
  • Will the market support the cost of the solution?
MIT TLO Evaluation of Invention Disclosures

• Intellectual property considerations:
  • Patentability (utility, novelty, non-obviousness)
    • If we pursue a patent application, are we likely to get broad claims?
  • Is it possible to detect use of the technology in the final product?
  • Is patenting the right route for maximizing access to the technology?

• Licensing considerations:
  • Is the technology jointly owned?
  • Do we have obligations to third parties, e.g., sponsors of the research?
Patenting Process at MIT

- Invention report (Technology Disclosure Form)
  - Documents date of invention, inventors, sponsors, anticipated public disclosure
  - Provides no protection
- Literature and patent (prior art) search to assess patentability
- Patent application prepared and filed by external law firms
  - Patent Office examines the claims and issues an "Office Action"
  - Patent attorneys reply to Patent Office
    - Inventors may be asked to assist on technical issues
    - ≥ 3 years from filing to patent issuance
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MIT’s Technology Licensing Philosophy

• **Primary objective is to transfer technology**
  - Achieve commercial reality for invention
  - If licensee, successful, MIT will share in the success

• **Seek patent protection when applicable**
  - Necessary for successful licensing
  - No one wants to be first with un-protected, innovative product

• **Fair and flexible licensing structures**
  - Immature technology is high-risk
  - Exclusivity makes it easier to attract investment
Test your knowledge on University Licensing

Are companies eager to accept new technology from universities?
Transitions from MIT to Commercialization May Have Challenges

Discovery → Basic Research → Applied Research → Product Development → Production

MIT Invention
- Tech Fits Market Demand
- Technology Development / Integration with other solutions
- Volume Manufacturing
  - Supply Chain
- Approval Processes / Compliance
- Channel to Market
- Access to Capital / Resources / Talent

Sustainable, Profitable, Commercial Sales
Test your knowledge on MIT Licensing

Are the majority of MIT licenses to startup companies?

YES  NO
Exclusive and Non-Exclusive Licenses (2011- 2021)

Exclusive Licenses (256)
- Startups: 10%
- Sponsors of R&D: 62%
- Non-sponsors, small cos.: 20%
- Non-sponsors, large cos.: 8%

Non-Exclusive Licenses (545)
- Startups: 6%
- Sponsors of R&D: 8%
- Non-sponsors, small cos.: 36%
- Non-sponsors, large cos.: 50%
Licensing to Startups

Startups are often good fit for a technology when:
• Not yet “ready for prime time”
• Technology platform v. a single product
• Inventor(s) are able to provide support to startup

To consider with a startup:
• Advantages:
  • Focus/commitment
  • Flexibility of small organization
  • Bridge between “university stage” and industrial adoption
• Balanced with...
  • High risk: financial, technical, people
  • Conflicts of interest (real/perceived)
What TLO Looks for in a Licensee

- Talent
  - Business
  - Technical
  - Experience
  - Realism

- Resources / Assets
  - Capital
  - Production Capability
  - Supply Chain
  - Intellectual Property
  - Certifications

- Marketing
  - Proposed Solution addresses Market Need
  - Business model
  - Potential for sustainable profitability
  - Channel/Access to Market
License Often Preceded by an Option Agreement

- Provides rights solely in connection to evaluation of MIT IP; no rights to support commercial activity
- Provides right to negotiate a commercial license contingent upon diligence
- Provides optionee time to:
  - Hire management and technical teams
  - Raise capital
  - Fortify business plan including:
    - Specifying capital required to support development & commercialization milestones
    - Timeline for fundraising, product development, team development, strategic milestones including first commercial sales
### Key Elements of a License Agreement

**Grant of rights**
- To make, have made, use, sell, lease and import products and/or services
- To sublicense (if exclusive license)

**Exclusivity**
- Specific to a field of use
  - Examples:
    - Sensors to detect alcohol
    - Coaxial cables operating at ≥ 3GHz
    - Delivery of mRNA therapeutics
- Limited term
- Geographic

**Retained rights**
- Research, teaching and educational purposes for non-profits
- US Government use
- Sponsor rights/terms, as applicable

**Diligence**
- Execution on business plan
- Capitalization ($M)
- Direct capital to R&D
- Development milestones by a certain date
- First commercial sale by a certain date
- Cumulative sales by a certain date (annually)

**Consideration**
- License issue fee
- Equity
- License maintenance fees
- Sharing of sublicensing income
- Development/commercial milestone events
- Running royalties on sales
- Patent cost reimbursement
License Factors

• Tailor terms to fit technology and licensee business plan
  • Shared risk
  • Low initial fees; back end loaded
  • Equity in partial-lieu of up-front fees
  • Reasonable royalty rates
  • Diligence provisions
    • Investment, personnel, milestones (development and sales), sublicensing requirements

• Flexibility
  • Potential to renegotiate as nature of the business evolves
Test your knowledge of University Licensing

Are revenues from license agreements a significant source of revenue for a university?
Total Research Expenditures v. Licensing Revenue of ~ 200 US universities

- Total Research Expenditures ($B)
- Total Licensing Revenue ($B)
- Percentage Licensing Revenue v. Research Expenditure
Impacts of MIT Technology Licensing

• Convert inventions to solutions that benefit society
• Supply of commercially available solutions to US Government
• Support local economy (and beyond); job creation
• Support entrepreneurship/training future business leaders
• Encourage industry collaborations
• Enhance MIT educational experience/attract faculty and student talent
• Revenue from options/licenses shared among MIT DLCs, inventors
Test your knowledge on University Licensing

Is there a quick return on investment from technology transfer?
Licensing Revenue for HDTV Patent Portfolio

$0
$10,000,000
$20,000,000
$30,000,000
$40,000,000
$50,000,000
$60,000,000
$70,000,000
$80,000,000
$90,000,000
$100,000,000


1st invention disclosure to TLO
1st patent filed
1st patent issued
HDTV standards established
Last patent issued
Last patent to expire
1st patent to expire
Thank you!

Learn More about TLO:
https://tlo.mit.edu/