

# **Intersection of Science & Business: Start-up companies**

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MIT - Technology Licensing Office

# Build your startup in 4 easy steps

1. Helen, Bob, and Jones want to do a startup
2. Is it for me?
3. Establish intellectual property (patents)
4. Organize Startup
  - What? What for? Why? Who cares? Why me?
  - Team
  - Funding
  - License technology from MIT
5. Start up!

# Helen, Bob, and Jones - 1

- Helen and Bob, postdocs in Jones' lab
- Regulation of a receptor involved in condition X
- Small proteins A, B, C are over-expressed in X
- A, B, C can be found in blood of patients with X

## Hypothesis

- Levels of A, B, C can be used to diagnose X

Enough substance for a startup?

# Helen, Bob, and Jones - 2

- Regulatory pathway of receptor is characterized
- A, B, C are characterized
- Blood levels of A, B, C correlate with early stages of X

## Hypothesis

- Diagnosis of X before clinical symptoms of X appear

Enough substance for a startup?

# Helen, Bob, and Jones - 3

- Have some antagonists and modulators
- Can measure levels of A, B, C in blood

Hypothesis:

- Antagonists/modulators can suppress symptoms of X
- Preliminary data suggest hypothesis is correct

Enough substance for a startup?

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# 1. My own startup – is it for me?

- What's my motivation? -> 'hunger'
  - "Relentless fighter": beat the Curmudgeon
  - Sacrifices in personal life?
  - Career choices?!
  - What's your goal: Star, Cashcow, Lifestyle?
- > Rollercoaster of your life, tired, no vacation,  
but feel great, and ... \$\$\$ ?
- > 50% - failure / 40% - moderate / 10% - \$\$\$

What if you fail?

# Helen, Bob, and Jones - 4

- Bob, Helen, and Jones: What now?
  - > Labmeeting, joint meeting, publish, work

Do's and Don't's... From here to the company

-> Patent 101



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## 2. Patents 101

- Man-made – NOT: laws of nature, formula
- Concrete - data, descriptions, NOT: ideas
- Machine, process, composition of matter
- Non-obvious, useful, and novel
- In exchange for detailed public disclosure, Gov't grants you right to exclude others from making, using, selling your stuff for 20 yrs
- Patent is equivalent to a monopoly
- Is a patent a good thing? Is it ethical?

## 2. Patents 201

- Helen et al: Labmeeting, joint meeting, publish?
- Only unpublished material is patentable
- What is a public disclosure? (Labmeeting, ...)
- Action: Disclose invention to TLO
- TLO: File patent application... then publish (Does TLO stop publication?)
- Why file immediately if US 1 yr grace period?
- Inventorship, ownership?
- Timeline, cost?

# Helen, Bob, and Jones - 5

Status:

- Have much strong patent application:
  - Composition of matter: antagonists, modulators
  - Composition of matter: A, B, C
  - Machine: assay for blood levels of A, B, C
  - Method: how to treat X

Startup: Go or No Go?

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# Organize Startup - Curmudgeon

- Concept of startup: Business plan (never ending)
- What? – Technology, Applications/Diseases
- What for? – Customer, End user, Needs, Market
- Why? – Benefits: faster, better, cheaper.
- Who cares? – Regulatory, Insurances, Orgs, ...
- \$: Why me? – Funding: grants, loans, investors,...
  
- Lots of literature and resources

# Organize Startup – Team 1

- Who is on the team? Helen, Bob, and Jones?
  - MIT employment and Conflicts of interest:
    - MIT employment vs. Employee of company
    - Rule of thumb for faculty: 20% consulting, but MIT 1st
    - MIT supervisory role and equity in student's startups
    - Sponsored research from own company to own lab
    - Consulting vs. academic research and teaching
    - Final say: Dept head, VP Research/Associate Provost
- Keep a firewall between MIT and startup
- Career decisions

# Organize Startup – Team 2

- The team: Officers, SAB, Board, consultants, employees
- Helen – CEO
- Jones – MIT, Chairman of SAB, will consult
- Bob – CSO then MIT faculty, SAB, will consult
- Others from lab - consultants?
  
- What's your goal: Star, Cashcow, Lifestyle?



# Organize Startup – Team 3

- People are more important than technology!  
"I'd rather invest in a Grade A person with a Grade B idea, than in a Grade B person with a Grade A idea"  

General Georges Doriot, Founder of American Research and Development Corporation (1946) located in Cambridge, MA. ARDC was the first publicly owned venture capital firm.
- Where to find Grade A people? -> Networking, entrepreneurial events, Startups, Competitors, Companies when acquired, MIT resources, TLOs, State Agencies e.g. MTTC, ...

# Organize Startup - License

- MIT owns patents: Startup needs to license
- What is a license? -> 'Rent' of patent rights
- Who can negotiate the license with TLO?
- Terms: equity, upfront, maintenance fee, royalty, milestone payments, patent cost, etc.
- Obligations for startup: funded project, achieving milestones, reporting, etc.
- Other: IP prosecution, termination

# Organize Startup - Funding

- How much? -> More, in stages, even more
- When? -> Earlier: License is \$\$, then IP cost
- From where? -> Own money, FFF, Angel, VC, Venture Banks, SBIR grants, State grants, SBA loans, Commercial banks, ...
- How to find it? -> Networking, MITEF, \$100K, Deshpande, Fed and State Gov't, ...
- How expensive is the money? VC > Angel > Banks > SBA Loans > Grants; (FFF, own...)

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# Start up - How hard?

- Matter of personality, skills, motivation, dealings with personal comfort zone, responsibilities, family, people who you know, opportunity, luck, ....
  - ... if those match the task: Great!
  - ... if they don't but a startup bugs you anyway: Join someone else's startup to try it out
  - ... and if they don't at all: that's OK too.
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# Resources at MIT

- Policies & Procedures: <http://web.mit.edu/policies/index.html>
- VMS - <http://web.mit.edu/vms/>
- MITEF - <http://www.mitforumcambridge.org/>
- Deshpande - <http://web.mit.edu/deshpandecenter/>
- iTeam – <http://web.mit.edu/deshpandecenter/iteams/index.html>
- Faculty & serial entrepreneurs – in your own Department
- MIT Libraries – Market reports, etc.
- Sloan School – library, people, faculty
- ...

# Resources – Orgs & Literature

- SBIR – All Federal Agencies; 2 phases
- State:
  - MTTC - <http://www.mattcenter.org/>
  - MLSC - <http://www.masslifesciences.com/>
- SBA – Loans, people,
- P. Kolchinsky: The Entrepreneur's Guide to a Biotech Startup ([www.evelexa.com](http://www.evelexa.com))
- Rich & Gumpert: Business Plans That Win \$\$\$
- Sahlman et al.: The Entrepreneurial Venture
- MIT Sloan, HBS, Babson: libraries