Intersection of Science & Business: Start-up companies

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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
   - 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?
• 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?
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?
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- Only unpublished material is patentable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?
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
- 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.
Resources at MIT

- VMS - http://web.mit.edu/vms/
- MITEF - http://www.mitforumcambridge.org/
- Deshpande - http://web.mit.edu/deshpandecenter/
- 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)
• Rich & Gumpert: Business Plans That Win $$$
• Sahlman et al.: The Entrepreneurial Venture
• MIT Sloan, HBS, Babson: libraries