Raising the Odds of Success for Tech Transfer

Jay Schrankler
September 17, 2010
How to define success-return based, cash based or fundraising based?

-Going public or “filing” to go public positive ROI for investors*
-Sale of the company for a positive ROI for investors
-Raising a large amount of capital (pre-returns)
-Licensed technology for payments and royalties (cash)

*Skill vs. Luck in Entrepreneurship and venture Capital: Evidence from Serial Entrepreneurs
Gompers, Kovner, Lerner, Scharfstein Harvard University 2006
Metrics are meaningless unless tied to Successful Outcomes

• The trap of “activity” metrics:
  • Measure a salesperson success on “miles travelled” versus “sales made”?  
  • Houses built versus houses sold?  
  • Patents filed versus patents awarded?  
  • Number of licenses versus number that generate income or successful products on the market?  
  • Many more examples…

• Does the activity of starting a company or licensing a technology position it for commercial success-necessary but certainly not sufficient.

• What if we had the “cure” for a terrible disease and licensed it to the wrong company or the wrong people and it never got developed?
A Focus on Start Up Companies and What Defines a University Based Start Up*

A technology spin-out is defined as:
A company engaged in business that is dependent upon licensing or assignment of technology for initiation from a public research institute (e.g. University, Government Laboratory, etc.).

Technology spin-outs are a sub-set of:
New technology-based firms which commonly have the following characteristics:
- Their value is linked primarily to the longer-term growth potential, derived from scientific knowledge and IP.
- In early stages the companies lack tangible assets.
- Their products initially have little or no track record and are largely untested in markets.

*BVCA Investing in Enterprise 2005
Entrepreneurial Success—Experience Matters:

<table>
<thead>
<tr>
<th>Success Indicator</th>
<th>First Time Entrepreneur Success Rate*</th>
<th>Serial Entrepreneur Success Rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public filing, went public, acquired or merged</td>
<td>25.3%</td>
<td>36.9%</td>
</tr>
<tr>
<td>Early Stage First Round Funding</td>
<td>45%</td>
<td>60%</td>
</tr>
</tbody>
</table>

**Other Key Findings***:

- Entrepreneurs with prior success are able to raise money at an earlier stage in their second venture-critical for early stage University Technology
- Specific industry experience increases the likelihood of success
- Effect of Predicting Prior Success on Future Success is very large

*Skill vs. Luck in Entrepreneurship and venture Capital: Evidence from Serial Entrepreneurs Gompers, Kovner, Lerner, Scharfstein Harvard University 2006
A Good University TTO Utilizes Experienced Entrepreneurs

We also find that universities that generate the most start-ups have more favorable attitudes towards surrogate (experienced) entrepreneurs. It appears that a combination of academic and surrogate entrepreneurship might be the best approach for universities that wish to develop successful technology-transfer based start-up companies.

*surrogate (external) entrepreneurs assuming a leadership role

Academic and Surrogate Entrepreneurs in University Spin-out Companies

Stephen J. Franklin, Mike Wright and Andy Lockett
A good checklist-can help raise the odds

- Ecosystem of support and money. Angel, Venture, Government Grants, Incubators, etc.
- Good IP
- Market need—does it solve an unmet need
- Market size—is opportunity big enough to attract investment
- Management team—experience, etc.
- Entrepreneurial and partnering researcher or faculty member
- Conflict of interest
Top reasons why for every 100 deals a venture firm evaluates, only 1 receives funding

Without these things, a start-up will fail

• Management
• Money
• Technology
• Entrepreneurial Faculty (for University based start-ups)

Costs/Expenses the U of M has incurred for start-ups

• $3.9M in bad patent debt
• $5M worth of innovation/ignition grants
• Delayed patent cost payment for start-ups with U of M equity stake
Office for Technology Commercialization Mission

To translate University of Minnesota research into new products and services that provide growth opportunities for our licensees, benefit the public good, improve the quality of life, and generate revenue to support the University's research and education goals.
Life Cycle of Research-The dilemma: scientific/academic freedom vs. commercial intent

Feeding economy can only happen if technology meets a compelling market need and risk hurdle is low enough to warrant investments.

Advances Knowledge/Develops Technology

Feeds into Growing the Economy

Hire/Recruit Talented Faculty

Engage/Operate in a Very Competitive Granting Environment

Generate IP That Benefits Public Good

Conduct Research

Potential commercial value of research and resulting IP dependent upon nature of grants.

Need entrepreneurial/inventive faculty
The Significant Problem: Continuing to Fill the Funding Gap

- The gap between federal/state funding and private investments presents a funding need for University technologies.
- The University has partially filled this gap through OTC grants funded by an annual allocation of drug license royalties.

![Diagram showing the valley of death between basic research and feasibility, product development, & business formation phases. The diagram illustrates the progression of intellectual property and the availability of funds with and without gap funding.]
## Minnesota’s Formula for Raising the Odds for Success

<table>
<thead>
<tr>
<th>Innovative Approaches</th>
<th>Innovations to Aid Start-up Formation/Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry experience of team</td>
<td>CEO-in-Residence Program</td>
</tr>
<tr>
<td>Functional specialization</td>
<td>Internal Business Units</td>
</tr>
<tr>
<td>Proven industry based decision making/investment process</td>
<td>Industry Advisors</td>
</tr>
<tr>
<td>Searchable technology system Commerce &amp; Search for Technology Transfer System™</td>
<td>Innovation Grants Ignition Loans</td>
</tr>
<tr>
<td>Flexible licensing options</td>
<td>Flexible &amp; beneficial licensing terms Delay payment of patent costs for start-ups with U of M equity stake</td>
</tr>
<tr>
<td>• Standard License</td>
<td></td>
</tr>
<tr>
<td>• Custom License</td>
<td></td>
</tr>
<tr>
<td>• Fast Track Opportunity License</td>
<td></td>
</tr>
<tr>
<td>• Express License</td>
<td></td>
</tr>
<tr>
<td>• Option</td>
<td></td>
</tr>
</tbody>
</table>
Current Technology Commercialization Process

Office for Technology Commercialization

Intellectual Property Commitment Committee
- Evaluate commercial path and
- Licensing Candidates

Licensing Center
- Determine market value
- Develop marketing plan
- Proactive marketing
- Monitor milestones

Venture Center
- Develop business plans
- Recruit management teams
- Provide professional advice
- Negotiate terms
- Monitor milestones

University Researchers
- Technology Strategy Managers
  - Seek
  - Support
  - Respond
  - Licensing Candidates

Innovation Investments
- Innovation Grants
- Ignition Loans

Pre-Seed, Seed, VC Investments

Start-up Companies

High Value Licenses
OTC uses a systematic process to invest in IP with strong commercialization potential

Stage 1
- New Idea/ Possible Invention Received

Stage 2
- Develop Business Case

Stage 3
- Perform Financial Analysis, Create Marketing Strategy
- Provide innovation grants if necessary

Stage 4
- Contact Prospective Licensees
- Or initiate start-up formation

Stage 5
- Negotiate business & legal terms

Stage 6
- Close Deal

Close/Return to inventor

Strategy Managers

Both Strategy & Marketing Managers

Marketing Managers and/or Venture Center

Functional Excellence Model
### Four Components for University Start-ups

- Technology
- People
- Financial Capital
- Entrepreneurial/Engaged Faculty
Key Elements Needed for a Venture Backed Start Up

**Must-Haves**

- Big market opportunity (> $500 MM/yr)
- Disruptive technology
- Large IP barrier to entry
- Comparables that point to success
- Unmet Market Need
## Venture Center Strategy

<table>
<thead>
<tr>
<th>CEO-in-Residence Program Participant Qualifications</th>
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</thead>
<tbody>
<tr>
<td>• Started a technology company</td>
</tr>
<tr>
<td>• Raised capital</td>
</tr>
<tr>
<td>• Successfully established the business</td>
</tr>
<tr>
<td>• Sold the business</td>
</tr>
<tr>
<td>• Secured investor profit</td>
</tr>
<tr>
<td>• Seeking new opportunities</td>
</tr>
</tbody>
</table>
Success of the Office for Technology Commercialization

- The OTC continues to support the University’s mission by making research innovations available for the public good through licenses and producing financial returns to be reinvested.
- With reorganization and new leadership, has generated over $200 million in revenue since 2006.

<table>
<thead>
<tr>
<th>Stock Market Indices</th>
<th>July 3, 2008</th>
<th>June 30, 2009</th>
<th>Δ V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dow</td>
<td>11,288</td>
<td>8447</td>
<td>(25%)</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>1263</td>
<td>919</td>
<td>(27%)</td>
</tr>
<tr>
<td>NASDAQ</td>
<td>2245</td>
<td>1835</td>
<td>(18%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OTC</th>
<th>FY 2008</th>
<th>FY 2009</th>
<th>Δ V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (total)</td>
<td>$85M</td>
<td>$92M</td>
<td>+8%</td>
</tr>
<tr>
<td>Revenue (without Ziagen)</td>
<td>$7.8M</td>
<td>$8.7M</td>
<td>+11%</td>
</tr>
<tr>
<td>Disclosures</td>
<td>217</td>
<td>244</td>
<td>+12%</td>
</tr>
<tr>
<td>New Patents Filed</td>
<td>58</td>
<td>65</td>
<td>+12%</td>
</tr>
<tr>
<td># of Licenses</td>
<td>63</td>
<td>59</td>
<td>(6%)</td>
</tr>
</tbody>
</table>

“The U of M’s Office for Technology Commercialization has recruited experienced industry executives, wooed corporations and venture capitalists, and developed ways to better market the school’s intellectual property assets.” - StarTribune, April 6, 2008
Momentum is building: 11 Start-ups launched in past 18 months despite one of the worst investment environments in history

<table>
<thead>
<tr>
<th>Month/Year</th>
<th>Company</th>
<th>Description</th>
<th>Heavy incubation within OTC prior to launch</th>
<th>Heavy incubation not needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>02/2009</td>
<td>Ascir</td>
<td>Ascir: Low Cost &amp; Real-Time Gas Detection From Remote Distances</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>05/2009</td>
<td>BIOCEE</td>
<td>BIOCEE: Industrial Biotech</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>05/2009</td>
<td>Celladon</td>
<td>Celladon: Molecular Therapeutics for Cardiovascular Disease</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>08/2009</td>
<td>R8Scan Corp</td>
<td>R8Scan Corp: Biotech &amp; Pharma Research Tooms</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>10/2009</td>
<td>Hennepin Life Sciences</td>
<td>Hennepin Life Sciences: Anti-infectives for Women’s Health</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>02/2010</td>
<td>Miromatrix Medical</td>
<td>Miromatrix Medical: Cardiovascular Regenerative Medicine</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>02/2010</td>
<td>CaSTT</td>
<td>CaSTT: Web Commerce &amp; Search Optimization *</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>03/2010</td>
<td>NeurEndo Pharm</td>
<td>NeurEndo Pharm: Early Stage Drug Development</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>05/2010</td>
<td>Early Learning Labs</td>
<td>Early Learning Labs: Preschool Learning Test *</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>06/2010</td>
<td>XO-Thermix</td>
<td>XO-Thermix: Novel Thermo-Chemical Tissue Ablation</td>
<td>![Checkmark]</td>
<td></td>
</tr>
<tr>
<td>06/2010</td>
<td>NewWater</td>
<td>NewWater: Biocatalyst-Based Potable Water Filtration</td>
<td>![Checkmark]</td>
<td></td>
</tr>
</tbody>
</table>

*Running within University currently
Licensing to established MN companies is also important

• Technologies can enable new products and line extensions
• These products help support and sustain their business
• U of M technologies that were licensed to, developed by, and are now being sold by MN companies:
  • Royal Concrete Pipe (Stacy, MN): SAFL Baffle
    • Orders received from MN municipalities
  • St. Jude (St. Paul, MN): CSL catheter
    • Electrophysiology mapping
  • MJ Biologics (Mankato, MN): PRRS vaccine
    • Prevents swine disease
  • Nutricepts Inc. (Burnsville, MN): CrystalBan™
    • Improves cheese quality, body, and yield
  • R&D Systems Inc. (Minneapolis, MN): Monoclonal antibodies
  • CA3 Biosciences Inc. (Edina, MN): Monoclonal antibodies
  • Diasorin (Stillwater, MN): Monoclonal antibodies
  • Medtronic (Mounds View, MN): Visible Heart
Summary-Increasing the Odds

• Have an industry experienced TTO team from both the large company and start up company sides

• Getting surrogate or serial entrepreneurs to help with start ups greatly improves chances for success

• A robust selection and stage gate process “ferrets out” the potential winners