Accelerating the Development of Knowledge Based Economies: Accessing Innovation Without Boundaries

Roger Wyse, PhD
Managing Director
Burrill & Company
Particularly Relevant to Economic Growth Strategies for Emerging Economies

(*Malaysia, Indonesia, Chile, Turkey, etc*)

Market driven
Sustained competitive advantage
Open innovation
Adapt, integrate, commercialize
Open Innovation Principle

• No one has all the good ideas, the required human capital, the financial resources for sustained growth in a globally competitive marketplace.
  – TOO SLOW
  – TOO EXPENSIVE

• Therefore to sustain rapid economic growth requires global access to technology, products, capital, and markets in order to leverage the local sustained competitive advantages into rapid economic growth.
MNC Open innovation Model

• Strong internal R&D
• Global scouting for relevant innovation
• Incubation to nurture early stage technologies
• Venture capital funds
  – Innovation occurs in small companies
  – Small companies need capital
  – Venture capitalist provide risk capital
  – VC deal flow is a global window on innovation
Organic IP Development Alone is Too Slow

San Diego’s High Tech History

Series of Catalytic Events

1960 - UCSD Founded
1963 - Salk Institute
1968 - Linkabit
1970
1978 – Hybritech
1980
1985 – UCSD CONNECT and Qualcomm Founded
1990
1990-93 – 63,000 Jobs Lost
1995 – New Boom
2000
1955 - General Atomics
1956 - Scripps Clinic & Research Center

VC Funding
Countries who desire to establish a innovation driven knowledge based economies must adopt the same hybrid model

US does it by encouraging international entrepreneurs to start companies in US.

Majority of SV CEOs are foreign born
Malaysia as a case study

- Fifty year old country
- Population of 27 million with a GDP of USD190 billion
- Desires to transition from a manufacturing natural resource based economy to a knowledge based economy driven by innovation.
  - 2020 goal is to double personal income on a GDP of USD550 million
  - Become a green economy
  - Reduce carbon intensity by 40%
Malaysian Bio Sector

- Nascent
- Weak R&D
- Huge Market When Malaysia Has A Sustained Competitive Advantage
  - Established Oil Palm plantation industry
  - 80 million tons of biomass produced annually
  - Sustainability being challenged
  - Geographically located near large and growing markets
  - Climate conducive to rapid biomass production
- Goal become the hub of a biorenewables industry
Strategy

• Conducive environment

• Strengthen internal R&D with emphasis on translational research

• Global Window On Innovation via USD162 M Malaysian Life Sciences Capital Fund
  – Invests globally in Malaysia centric companies
  – Brings companies to Malaysia for FDI, and partnerships with Malaysian companies
  – Managers assist in building a bio sector
    ▪ Policy
    ▪ Human capital
Malaysian Life Sciences Capital Fund

Burrill Malaysia

MLSCFM

MLSCF
USD 162M

MTDC Labuan

MTDC (MOF)
Khazanah
EPF
PNB

Direct Investment
USD 117 million

Investment via BLSCF III
USD 45 million

12 Investments

22 investments
Innovation Requires Access to Risk Capital

• Need ample “cradle to commercialization” risk capital managed by individuals with domain expertise
  – Targeted grants
  – Seed funding for Malaysian start ups
  – Venture capital in targeted sectors
  – Project financing for capX
  – Debt financing
  – Private equity/Growth capital
  – Public markets
Risk Capital Vital To Acceleration Model

• Need ample “cradle to commercialization” risk capital managed by individuals with domain expertise
  
  – Targeted grants
  
  – Seed funding for start ups
  
  – Venture capital investing locally and globally
  
    ▪ Local – Invest in local entrepreneurs
    
    ▪ Global – to access global innovation
      
      (MLSCF model)
  
  – Project financing for CapX
  
  – Debt financing or loan guarantees
  
  – Private equity/Growth capital
  
  – Public markets

Important But Too Slow

Key To Acceleration Deals
## Current MLSCF Portfolio

<table>
<thead>
<tr>
<th>Company</th>
<th>Role:</th>
<th>Board Seat:</th>
<th>Own %</th>
<th>Investment Partners:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abunda</td>
<td>Founded</td>
<td>✓</td>
<td>40.6%</td>
<td>MTDC</td>
</tr>
<tr>
<td>Akermin</td>
<td>Lead</td>
<td>✓</td>
<td>20.1%</td>
<td>Chrysalix, prolog</td>
</tr>
<tr>
<td>Chakra Biotech</td>
<td>Lead</td>
<td>✓</td>
<td>21.6%</td>
<td>MTDC</td>
</tr>
<tr>
<td>Chromatin, Inc.</td>
<td>Co-Investor</td>
<td>✓</td>
<td>5.4%</td>
<td>Unilever, QFS</td>
</tr>
<tr>
<td>Cobalt Biofuels</td>
<td>Co-Lead</td>
<td>✓</td>
<td>19.5%</td>
<td>Pinnacle Ventures, CMEA, Shell, Chevron</td>
</tr>
<tr>
<td>Codexis</td>
<td>Co-Investor</td>
<td></td>
<td>1.2%</td>
<td>CMEA, Shell, Chevron</td>
</tr>
</tbody>
</table>

- **Sold for USD65 million**
- **IPO - USD 400 million**

**(Burrill & Company)**
# MLSCF Portfolio - Top Tier Investment Partners

<table>
<thead>
<tr>
<th>Company</th>
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<th>Board Seat:</th>
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<th>Investment Partners:</th>
</tr>
</thead>
<tbody>
<tr>
<td>gevo</td>
<td>Lead</td>
<td>✓</td>
<td>7.4%</td>
<td>khosla ventures venture assistance, strategic advice, venture capital</td>
</tr>
<tr>
<td>GloriOil</td>
<td>Co-Investor</td>
<td>✓</td>
<td>9.7%</td>
<td>OXFORD BIOSCIENCE PARTNERS</td>
</tr>
<tr>
<td>lightsciences</td>
<td>Co-Investor</td>
<td>Observer</td>
<td>2.9%</td>
<td>NOVO</td>
</tr>
<tr>
<td>MASCOMA</td>
<td>Co-Investor</td>
<td>Observer</td>
<td>0.8%</td>
<td>KSINVEST</td>
</tr>
<tr>
<td>Segetis</td>
<td>Lead</td>
<td>✓</td>
<td>10.5%</td>
<td>khosla ventures venture assistance, strategic advice, venture capital</td>
</tr>
<tr>
<td>SENTINEXT therapeutics</td>
<td>Lead</td>
<td>✓</td>
<td>36.1%</td>
<td>MTDC</td>
</tr>
</tbody>
</table>

**IPO – USD650 million**

**Founded by MLSCF, Vaccines for infectious diseases**
# Benchmarked Investment Performance

**March 2011**

<table>
<thead>
<tr>
<th>Fund</th>
<th>Rank</th>
<th>Year</th>
<th>Investment Cost</th>
<th>Total Value</th>
<th>Distributed Capital</th>
<th>Booked Returns¹</th>
<th>Cambridge Associates²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burrill Life Sciences Capital Fund III</td>
<td>2nd Quartile</td>
<td>2006</td>
<td>$136,309,708</td>
<td>$172,123,188</td>
<td>$8,227,231</td>
<td>11.9% 1.3x</td>
<td>0.1% 2.15% -4.1%</td>
</tr>
<tr>
<td>Malaysian Life Sciences Capital Fund</td>
<td>Top Quartile</td>
<td>2006</td>
<td>$53,383,788</td>
<td>$83,588,118</td>
<td>---</td>
<td>22.6% 1.6X</td>
<td>7.9% 2.15% -4.1%</td>
</tr>
</tbody>
</table>

(1) Booked Returns – Realized and unrealized gains as of 3/8/11  
(2) Cambridge Associate Benchmark Statistics – U.S. Venture Capital as of 9/30/10  
(3) Gross IRR as of 3/8/11  
(4) Net IRR as of 3/8/11

**Top 10% of all VC funds started in 2006!**

*Vintage year funds formed since 2006 are too young to have produced meaningful returns. Analysis and comparison of partnership returns to benchmarks may be irrelevant.*
Summary

• Market driven – clear technology and issue map
• Strengthen internal R&D
  – Focused on translational research
  – innovation support and train knowledge workers
• Global window on relevant innovation supported by a venture fund
• Adapt, Integrate and commercialize with local companies
Thank you

Roger@b-c.com