Seeding New Business Opportunities: NSBRI Industry Forum Programs

National Space Biomedical Research Institute

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NHHPC Accelerating Innovation Workshop
November 6-7, 2013
Industry Forum Mission

1) Commercialize biomedical discoveries made for space

2) Engage the private sector in developing space-compatible healthcare solutions
SMARTCAP: Space Medical And Related Technologies Commercialization Assistance Program

- Seed funding to small U.S.-based companies
- Transformative health or medical product
- Fulfills a need in space
- Impact on Earth
- Short-duration well-defined projects
- Requires 100% match in funding
- Sound business model
- Indication of financial backing
- Award is non-dilutive funding
2011 SMARTCAP Award

• Fitness-for-duty test Android App
• NSBRI funded development for astronauts on ISS
• Industry partner Schneider National gave 100% match
• App was critical component in a recently completed Federal Motor Carrier Safety Administration-sponsored study that assessed efficacy of a fatigue risk-management platform in commercial truck drivers
2012 SMARTCAP Award

- ACell, Inc. makes bioactive wound healing products from porcine urinary bladder – diabetes and surgical wounds markets
- Existing sheet and powder products inappropriate for space
- SMARTCAP: developed and tested the efficacy of a gel formulation
- Gel + powder + sheet = Improved efficacy on Earth
- New Earth-market opportunities for gel in ocular and tortuous wounds
2012 SMARTCAP Award

- Enterade, LLC - start-up from Univ. of Florida
- Medical food Enterade-r
- Mitigates gastrointestinal symptoms in irradiated animals
- Earth market is patients receiving radiotherapy and chemotherapy
- Efficacy in mitigating GI effects of proton-irradiation demonstrated
2013 SMARTCAP Award

• Start-up Cerebrotech Medical Systems, Inc.
• Non-invasive continuous monitoring of cerebral fluid volume
• Magnetic induction phase-shift spectroscopy
• Earth market is neuro-intensive care
• Space need is increased intracranial pressure

Cerebrotech’s CEO Mitch Levinson Demonstrates the Technology to the Industry Forum Steering Council
2013 SMARTCAP-Accelerate Pilot

U.S. - based accelerators nominate up to 2 companies each
100% Match in new funding required

Hypothesis: Companies nominated by accelerators will be able to prepare strong SMARTCAP applications

~100-120 Accelerators in the U.S.
~30 focused on biomedical and health products

SMARTCAP-Accelerate
15 accelerators participated (informational webinar)
10 Accelerators nominated 16 companies (17 proposals)
  11 Diagnostic devices
  5 Software products
  1 Therapeutic product
Participating Accelerators by the Numbers

• 15 from 8 states
• 1/3 in operation 5-14 years; 2/3 in operation 0-3 years
• Graduated companies = 0-361 (most <10 per class; or rolling)
• Half were non-profit
• 60% affiliated with government (city, region, state) or a university
• Life-sciences focus: 80% digital health; 40-50% also in diagnostics/therapeutics; 50% also “other” (e.g., engineering)
• Majority invested cash in their companies ($20K-$100K)
• Equity stake ranges of 2-10%
Maturity of Proposed Products In Each SMARTCAP (SC) Solicitation Cycle

**Winner: Cerebrotech**

### Product Readiness Level

<table>
<thead>
<tr>
<th>Product Readiness Level</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>PRL1</td>
<td>Market need and technology requirements identified</td>
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<tr>
<td>PRL2</td>
<td>Concept formulated and prototype designed</td>
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<tr>
<td>PRL3</td>
<td>Critical function and/or proof-of-concept achieved</td>
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<tr>
<td>PRL4</td>
<td>Validation/demonstration through user testing</td>
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<tr>
<td>PRL5</td>
<td>Validation/demonstration in target population</td>
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<tr>
<td>PRL6</td>
<td>Regulatory studies in progress, if required</td>
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<tr>
<td>PRL7</td>
<td>Fabricated/integrated in a production environment</td>
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<tr>
<td>PRL8</td>
<td>Regulatory approval (if required)</td>
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<tr>
<td>PRL9</td>
<td>Market ready</td>
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Space Programmatic Priority Assessment In Each SMARTCAP (SC) Solicitation Cycle

Total Proposals = 71
SMARTCAP-Accel Lessons Learned

1) “Accel” excluded many experienced entrepreneurs
2) “Accel” excluded many established small companies
3) Success requires a large volume of proposals

- Make initial engagement very easy
  (i.e., ask for one-two page summary)
- Don’t require them to identify space need
- Accept “applications” year-round
- Make awards available on a quarterly basis