A New Model for Commercialization of Academic Health Discoveries

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The Centre for Drug Research and Development (CDRD)

Created for: Drug Discovery in Academia

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Bridging the Gap Between Discovery and Commercialization

- Academic research doesn’t take discoveries to an ‘investable’ point
- Traditional granting sources and angel funds are not sufficient to fuel the growth of the life sciences industry given the lack of venture funds
- Commercialization gap exists between discovery and commercial opportunity

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<th>Discovery</th>
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<td>Infrastructure, expertise, funding</td>
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The Financing Environment

Canada’s Total Annual Venture Capital Investments

$billions

2.5
2
1.5
1
0.5
0

2004 2005 2006 2007 2008 2009 2010

Source: Canadian Venture Capital Association (CVCA)
The New Paradigm for Global Industry

Drug development costs are escalating but drug approvals are not

Source: EvaluatePharma. 2011
The Centre for Drug Research and Development

**Mandate**

**CDRD** was created to de-risk promising discoveries stemming from publicly-funded health research and transform them into commercially viable opportunities for the private sector.

The **Private Sector** is then responsible (and now much better positioned) to develop them into new treatments for patients.

And **Government** realizes the maximum economic and societal ROI on their research investment...and (hopefully) re-invests back into research.
This Type of Translational Research Vehicle is Critical Because....

**Academia lacks**
- Funding for proof of concept studies to the level required for validation
- Drug discovery “know-how” (medicinal chemistry, ADME/Tox expertise)
- State-of-the-art screening facilities and libraries (and often no professional, dedicated staff)
- An ability to speak “business”

**Industry lacks**
- Desire to invest in early-stage research (too high risk)
- Efficient access to innovation in universities
- Confidence of data generated
- An ability to speak “academic”
CDRD’s Role in Filling the Commercialization Gap

Basic Research and Discovery > Proof of Concept > GLP Preclinical Toxicology >

Clinical
Phase 1 > Phase 2 > Phase 3 >

GOVERNMENT PROGRAMS FOUNDATIONS > INFRASTRUCTURE EXPERTISE FUNDING > INVESTMENT CAPITAL >

CDRD The Centre for Drug Research and Development
CDRD’s Flexible Model = Powerful Commercialization Engine

- Public-private, not-for-profit
- Academic partners
- Expertise & infrastructure
- Access to non-dilutive capital
- No claims on original IP

- Commercial Arm
- Third-party transaction vehicle
- First rights to negotiate technology
- Manages IP
- Profits returned to CDRD
CDRD’s Expanding Network of Affiliated Research Centers

20+ affiliated institutions around the world
1500+ Principal Investigators
$2 billion+ in health research per year
These Affiliated Institutions Feed CDRD’s Project Pipeline

- Collaborate with principal investigators to identify projects
- Screened against rigorous scientific and business criteria for commercial potential
- Full drug development platform

*Outcomes-focused drug development under professional project management is then undertaken.*
CDRD’s Structure Mimics the Drug Development Process

Pharmacology/Toxicology

Target Validation

Biologics

CDRD’s infrastructure and expertise

Drug Delivery

Medicinal Chemistry

Drug Screening
Projects are Supported by Three Innovation Funds and one CVI Fund We have Successfully Raised with Partners....

- Pfizer-CDRD Innovation Fund
- Genome BC-CDRD Development Fund
- Western Canada Innovation Fund
- Roche Global CVI Fund

Approximately $18.5 million for projects
Funding: Proven Record of Leveraging Funding for Research

CDRD grant success rate of 47% is more than 2X the national average

CDRD has leveraged $1.6M of in-kind funding into $12M of project funding
Benefits of Working with CDRD (Industry Perspective)

- One-stop, structured access to world class scientists and innovation pipeline in Canada and world-wide with access to:
  - NCEs
  - novel targets
  - novel mechanisms
  - validated data
  - discovery programs

- Transparency in use of funding and in progress of research
- Focused science with clear critical path to a product
Benefits of Working with CDRD (Industry Perspective) cont’d

- De-risking of earlier-stage opportunities
  - Cost-effective use of resources, experience, and infrastructure
  - Value creation and risk sharing with minimal dilution to investors
  - Advantage of tax benefits/government incentives
  - Sophisticated management of projects that are milestone-driven and outcomes-focused
    - Timely interim reporting
    - Assembly of a final dossier/package to facilitate efficient technology transfer
CDRD Project Summary to Date

- 425: Number of investigators with whom we’ve discussed projects
- 95: Total projects supported
- 49: Incubation & Collaboration Projects
- 46: Full-scale PDC-approved projects
- 2: Technologies licensed by third parties
- 4: Technologies advancing to CDRD Ventures Inc.
- 4: Additional technologies identified with near-term commercialization potential
Training & Mentoring at CDRD

- CDRD has ~85 highly-skilled personnel
  - Over 60% with Masters or PhD

- Trainees form a key part of the CDRD workforce
  - Lab rotations
  - Workshops and seminars
  - Mentorship

- 78 Post-Docs, Co-ops, and Interns trained

- 30 workshops
  - 500+ participants

- 27 seminars
  - 800+ participants
Summary of CDRD’s Major Milestones After Now Being Fully Operational for Just Over Three Years....

✓ Raised over $85M to support operations
✓ Built 20,000 sq ft of research lab space and over $12 million in state-of-the-art equipment; $140M for new pharmaceutical building
✓ Established local, national, and international partnerships with 25+ affiliated institutions representing approx. $2 billion annual healthcare research
✓ Raised 4 funds (valued at $18.5 million) with industry (Roche, JNJ, & Pfizer) and public sector partners
✓ Helped raise another $30 million in project grants
✓ Contributed to at least 9 patent applications / invention disclosures
✓ Six novel technologies advanced through CDRD to either be successfully out-licensed to the private sector, or that are in the final stages of such commercialization
Summary of Major Milestones After Now Being Fully Operational for Just Over Three Years....(cont.)

✓ Established new biologics platform

✓ Successfully launched commercial arm (CDRD Ventures Inc.), which has already entered into collaborations with local biotech companies and is currently considering 4 projects for in-licensing

✓ Established a unique training program – combining the best elements of academic and industry settings

✓ Trained or is training almost 80 Post-Doctoral Fellows, co-ops, and interns

✓ Attracted ~85 highly skilled personnel from strong industry backgrounds

✓ Hosted 30 workshops attracting over 500 participants and 27 seminars for over 800 participants, providing specialized, innovative training in drug development
In Conclusion...Factors for Success

Success requires an effective well-resourced interface between industry and academia with critical infrastructure, expertise and project pipeline.
Partnerships are Core to CDRD’s Success
For more information about the work of the Centre for Drug Research and Development (CDRD), please visit: [www.cdrd.ca](http://www.cdrd.ca)