



## The Centre for Drug Research and Development (CDRD)

Budget Consultation Submission to the House of Commons Standing Committee on Finance  
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### Enabling a Robust Health Sciences Ecosystem for Canada

The development of novel ideas and products is key to Canada's future prosperity. In this highly-competitive global economy, it is crucial that substantial resources are devoted to Canada's science, technology and innovation systems.

Canada has a long and proud history of scientific discovery. In recent years however, our global standing has slipped significantly, particularly when it comes to translating our world-class research into new innovations and commercial products. As the Federal Government develops its first budget, and subsequently moves toward building a renewed Innovation Strategy for Canada, it is imperative that research and innovation leaders extend their expertise and support, and work alongside government to take collective action to reverse these downward trends.

In this context, CDRD is pleased to offer the following perspectives and considerations regarding the fostering of a robust national health sciences ecosystem, with a focus on the specific role CDRD plays as Canada's national drug development and commercialization engine, the juncture at which the organization finds itself today, and the continued support it requires from its public and private sector partners.....



We have in Canada, the foundation for a vibrant health sciences industry. This enviable position has come as a direct result of Canada's historic public sector support of basic health research through such leading organizations as the Canadian Institutes of Health Research (CIHR), the Canada Foundation for Innovation (CFI), Genome Canada and others. There has remained however, a collective national (and international) challenge in translating this world-class research into its full commercial potential; into new medicines for patients; and into the full extent of resulting economic and societal benefits.

There are daily stories on the news: *Exciting new breakthrough brings hope to patients*. But most often, these therapeutically and commercially promising breakthroughs are never actually developed into innovative life-changing/saving medicines because the universities and/or small companies that have made these discoveries do not have the specialized expertise, infrastructure and/or dedicated funding to develop them further (and thus realize their full potential value).

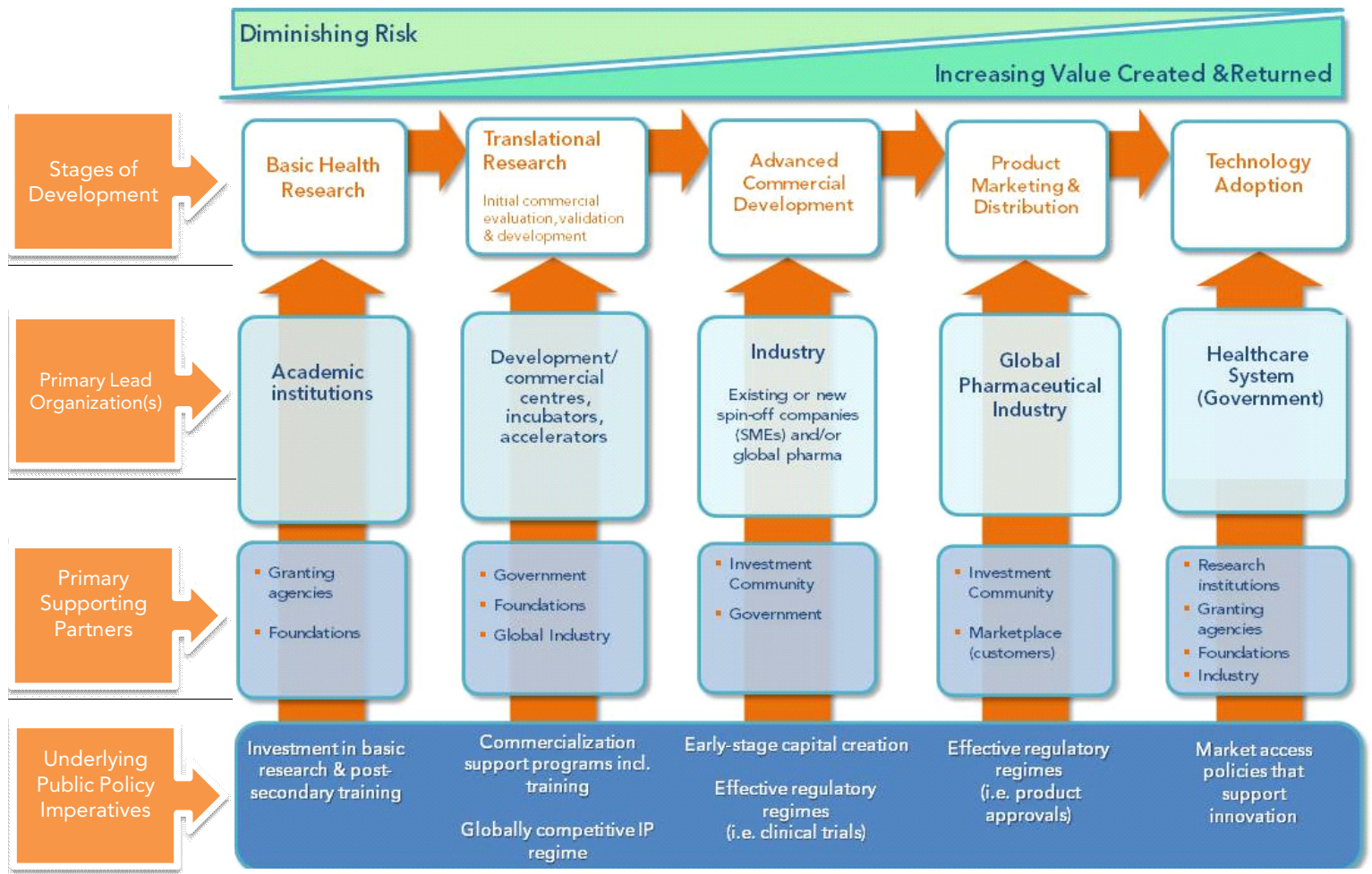
The backdrop for this challenge (i.e. today's health research and commercialization landscape) sees research and development, clinical evaluation, and healthcare delivery costs continually rising; regulatory and reimbursement hurdles getting higher and higher; and venture capital investments continuing to look to less risky later-stage, validated opportunities, leaving little financing available to develop new therapeutics in the early stages. As getting new drugs and other therapeutic products to market therefore becomes more and more difficult, and the associated



costs and risks become increasingly greater, the various players (from academic institutions and granting agencies to translational research organizations, incubators, and accelerators to foundations, government and industry) must support one another in effectively de-risking new technologies, leveraging resources, and filling the gaps in the development continuum. We must employ new innovative models of collaboration to ensure that the societal and economic benefits resulting from Canada's investments in research are realized here in Canada and are not lost to other countries.

This means creating and nurturing a comprehensive health sciences ecosystem that is well-supported and aligned through strategic public sector investments and public policy. Only by realizing a complete, dynamic and fully-optimized matrix such as that depicted at a high level below, will Canada be not only the generator of world-class health research it is today, but also the generator of world-class *innovation* from the translation of that research.

## Matrix of Canada's Health Innovation Ecosystem





## CDRD: A Critical Piece of the Health Sciences Ecosystem

### Commercialization of health research is our single focus....

Headquartered in British Columbia, The Centre for Drug Research and Development (CDRD) is the only national drug development and commercialization engine providing the expertise and infrastructure to transform basic health research in our academic institutions, as well as early-stage therapeutic technologies in Canadian small- and medium-sized enterprises (SMEs), into commercialized products improving human health. In doing so, CDRD is actively growing our national health sciences industry into a wholly-optimized generator of economic prosperity for the country.

Since CDRD's founding in 2007, enabled by the support of the federal government primarily through the Centres of Excellence for Commercialization and Research (CECR) program, alongside that of the BC provincial government and the private sector, CDRD has developed and successfully implemented a shared risk/reward partnership model that has proven itself an effective means to advance innovative technologies forward along the innovation continuum, adding value throughout that process.

We work in partnership with universities, small health sciences companies, top multi-nationals, and patient-focused foundations from across Canada, and even around the world, to proactively find, evaluate, develop, and then commercialize the most promising discoveries.

The resulting value-added technologies are forming the foundation of a critical mass of new health sciences companies, *creating long-lasting, high-paying jobs*, and supporting continued Canadian "brain gain" by providing biomedical researchers with attractive opportunities in Canada.

Training opportunities that generate new *industry-ready Highly-Qualified Personnel* to lead the industry into the future is also a key cornerstone for CDRD's success (specialized, industry-focused training provided to over 162 young drug developers and commercialization experts to date). CDRD-developed technologies also represent an opportunity to improve patient care while reducing healthcare costs through more effective treatments and front-line care (i.e. better management of chronic diseases) and subsequent reduced hospitalization. As an independent, internationally-networked organization, CDRD can also respond quickly to issues of national and global strategic importance to bring the right groups of researchers, funders, and stakeholders to address such critical healthcare challenges.

### Vision

Enablement of a vibrant and fully optimized global health sciences ecosystem integrating and supporting innovative research, commercialization and care.

### Mission

- To be a global leader in bridging commercialization gaps to translate early-stage discoveries into new medicines
- To uniquely train the next generation of highly-qualified personnel to drive the development of the medicines of tomorrow

### Mandate

To work in partnership with academia, industry, government and foundations, to identify and de-risk promising discoveries, and transform them into commercially viable investment opportunities for the private sector.



## CDRD: Impacts and Outcomes 2007-2015

- Established over **40,000 sq. ft.** of specialized cutting-edge translational research infrastructure
- Recruited top talent in the form of **100+** drug development and commercialization experts
- Secured **75** national and international partnerships (includes 52 academic affiliations, 10 provincial and federal govt. agencies, 5 foundations, and 8 international translational centres)
- Identified and evaluated **1,052** health technologies for their commercial/therapeutic potential
- Selected **209** technologies to be incubated within CDRD
- Successfully advanced **56** technologies toward commercialization (resulting in over **50** new patents)
- Completed commercial transactions on **14** technologies

This includes **3** co-development deals, plus the development and out-licensing of the **3** technologies:

...and the creation of **7** spin-off companies which are already collectively valued at close to **\$100M**.

- Helped attract over **\$100M** in grant funding for the Principal Investigators with whom CDRD collaborates (PIs have more than double the grant success rate when they are collaborating with CDRD)
- Attracted approximately **\$51M** in private sector investment directly into CDRD
- Attracted an additional **\$25M** in seed investment into CDRD spin-off companies
- Supported **26** Canadian health sciences companies (SMEs) by providing over **9,000** hours in access to CDRD's expertise and infrastructure (enabling their technology development, adding value to these companies, and positioning them to raise additional investment and/or secure strategic partnerships)
- Established a highly-successful and unique Training Program that has produced **162** Highly-Qualified Personnel (HQP) – with **94%** of our Post-Doc alumni now being employed in their field of choice (approximately **85%** of whom have remained in Canada).

Recent significant news from CDRD spin-off companies such as Precision Nanosystems and Kairos Therapeutics are the direct result of the world-class innovation and translation being conducted, and highlight the value of a national centre where multiple levels of government and industry come together, and the tangible commercial outcomes that can result:

- **Precision Nanosystems** which creates innovative solutions for the discovery, development and manufacture of novel nanoparticles for use as medicines and in medical research recently attracted a **\$13.4M** Series A investment led by US-based venture capital firms. This will allow them to expand product development, increase manufacturing capacity and accelerate commercialization of its novel instruments and reagents platform;
- **Kairos Therapeutics** was spun-out of CDRD in 2013 to commercialize its antibody-drug conjugate (ADC) platform, and develop related therapeutics for the treatment of various forms of cancer. Two years later, Kairos has multiple partnerships established with leading global companies, and in January 2016, announced an equity investment and optional merger with another BC-based health sciences company. This transaction will see significant returns for CDRD and its partners, and the creation of Canada's largest biologics company (headquartered BC), creating jobs and contributing to economic diversification.



## CDRD Phase II: Reaching Critical Mass for Commercialization

CDRD has established an international reputation and competitive advantage for British Columbia and Canada. However, in order to sustain this advantage and realize the full potential of Canada's health sciences industry, CDRD requires the continued support of its many public and private sector funding partners until it can reach a point of self-sustainability.

For drug development, the time required to reach commercialization outcomes is significant, ranging from three to five years for early-stage pre-clinical commercialization (i.e. out-licensing to the private sector or establishing a new spin-out company), to as much as 10-12+ years for products to reach the marketplace.

CDRD has already achieved significant commercialization milestones through its first seven years, but will require several more years to advance technologies to the point where significant profits can flow back to fully sustain operations (targeted for 2023). At the same time, as a large-scale national endeavour, CDRD is now operating far beyond the scope of existing federal programs.

**As such, CDRD has submitted a related detailed proposal to Innovation, Science and Economic Development Canada requesting bridge funding from the Federal Government. This support is critical in enabling CDRD to maintain its baseline level activities, and to continue its highly important and impactful work going forward.**

## Conclusion

As an enterprise committed to bridging the commercialization gaps, CDRD is optimally positioned to bring the following benefits to Canada:

- Maximizing the return from publicly-funded research; ensuring that the societal and economic benefits resulting from Canada's investments in S&T are realized here in Canada and are not lost to other countries;
- Advancing technologies to create and support a critical mass of new companies and long-lasting, high-paying jobs (i.e. economic spin-off benefits and a diversified bio-economy);
- Attracting Foreign Direct Investment to give our companies the chance to grow their businesses here;
- Supporting continued "Brain Gain" by encouraging biomedical researchers to stay here, and training new Highly-Qualified Personnel to lead the industry into the future;
- Mitigating healthcare costs through more effective treatments and front-line care (e.g. chronic diseases).

CDRD's partnership with and support from the Federal Government has been essential in enabling the significant milestones and outcomes we have realized to date. Through renewed partnership with and support for CDRD, the federal government has a tremendous opportunity to build on the organization's success and impact to date -- and further optimize and leverage what it has helped seed to realize the full potential of Canada's health sciences industry to compete globally.

By continuing support for CDRD, and ensuring all the elements of Canada's health sciences innovation matrix are well aligned and supported in a strategic manner, government will ensure Canada realizes the full economic and health outcome potential from Canada's health sciences sector, and re-takes its rightful place amongst global innovation leaders.



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