Life science product development in a multinational environment

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Keys to success

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Develop the right product – understand it and who will use it; fit it to the market demands

Target the right locations to develop your product in accordance with the prevalence of the intended indication. The market in which you develop the product will also be easier to penetrate

Understand the regulatory process in the regions you develop your product.The higher the risk of your product, the higher the funds necessary to get approval

Understand the logistics of developing and selling in your targeted markets including shipping processes, insurance requirements, banking systems, trade regulations

Keys to success

Understand who the payer is in all markets

Develop supportive partnerships with key customers and distributors, supporting groups

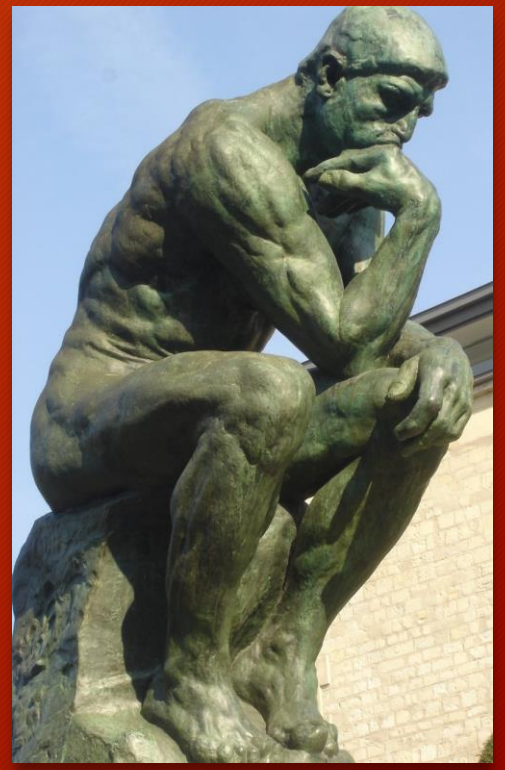
Be aware of local cultural expectations and obligations, including traditions.

Compare capabilities and opportunities in each location, including strengths and weaknesses. Try to compensate for weaknesses in one location by benefitting from the strengths in a different location

Points to consider in multinational product development

Professional/Infrastructure Considerations

- Environment supporting various stages of company/product development
- Supportive Infrastructure
  - Availability of manufacturing facilities, specifically experienced for diverse products
  - Availability of professional personnel
  - Efficient large airports that enable shipment of products for trials
- Quality of science/medicine
- Entrepreneurial spirit



Points to consider in multinational product development

Institutional/Governmental Considerations

- Regulatory framework
- Healthcare system that can enable better access to subjects in clinical trials
- Population diversity – improved access to various populations increases reliability of studies and acceptability by regulatory authorities
- Clinical trial start-up time

Points to consider in multinational product development

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Financial Considerations

- Cost of R&D
- Cost of advanced development (clinical trials)
- Cost of manufacturing
- Funding opportunities - early stage - grants/investments;
  - late stage – tax incentives/investments
- Market access and commercialization opportunities
- Reimbursement policies

Points to consider in multinational product development

Stability

- **Political-** Brexit and Trump election can directly influence regulatory framework in large jurisdictions
- **Financial**
- **Economic** - Solid banking system
- **Social**
- **Predictability and openness to globalization**

What are the challenges of multi-national development?

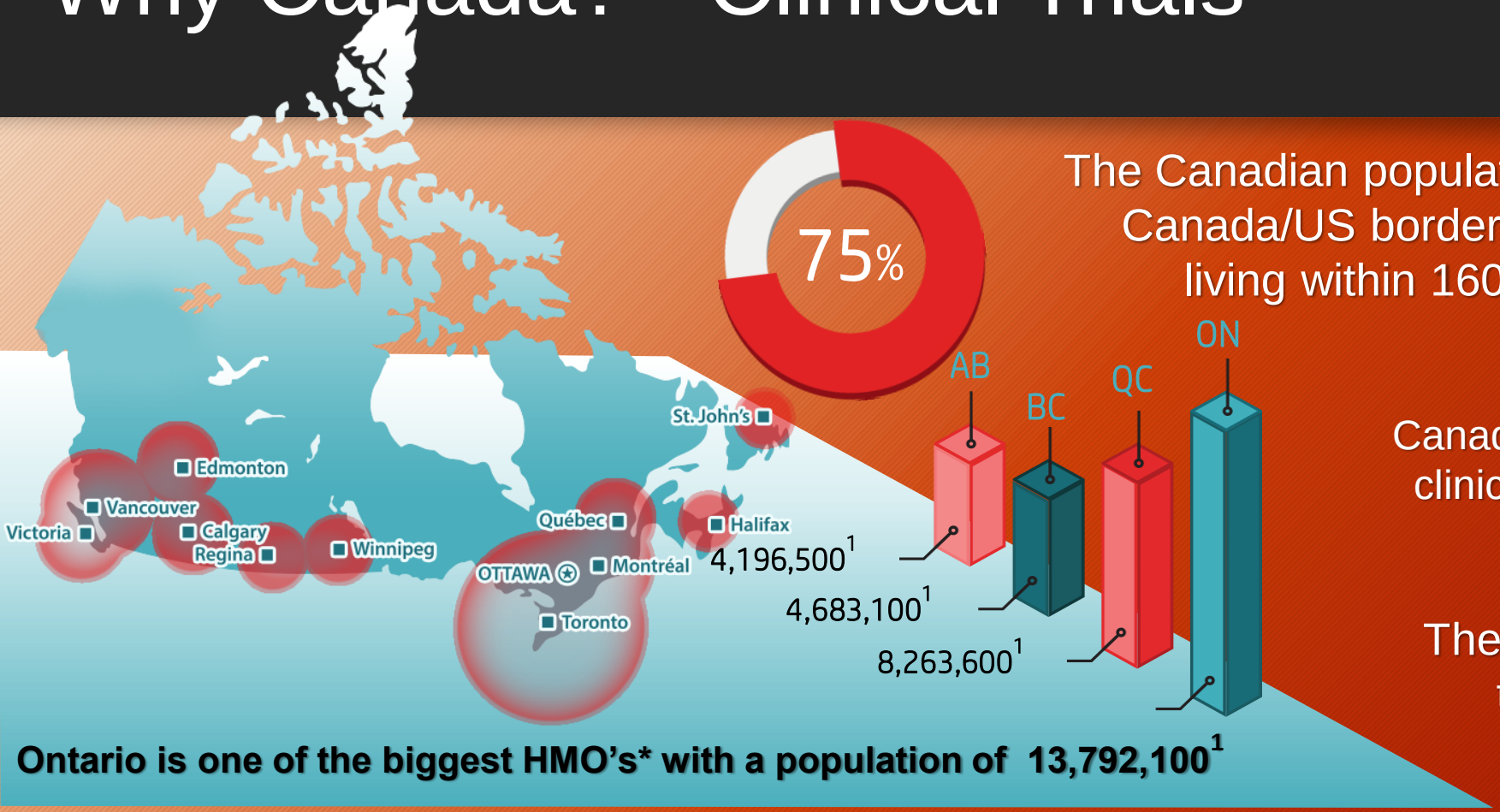
- Acceptance of foreign entities by local organizations
- Regulatory designation of the product – Is it as expected? Simpler?
  - Sometimes jurisdictions change their rules concerning medical products; keep up-to-date on these regulatory changes
- Understand the regulatory language in your communications with the authorities
  - Early engagement with the regulatory body will lead to a better dialogue and easier, cheaper outcomes




Why Canada? – science and medicine

- High quality science and medicine (world-recognized universities)
- Reputable, large medical centers with access to millions of patients (well concentrated in large urban areas)
- Streamlined, well-organized resources to support clinical trials
  - Canadian Clinical Trials Asset Map - showcases the outstanding researchers and the institutions in Canada, including their specific expertise
  - Model Clinical Trial Agreement reduces negotiation times across all Canadian provinces

Why Canada? - Clinical Trials



Ontario is one of the biggest HMO's* with a population of 13,792,100[1]

The Canadian population is clustered around the Canada/US border, with 75% of Canadians living within 160 km of the US border

Canada has the 2nd-lowest costs of clinical trials (30% less than US) [2]

There are more than 4,500 clinical trials underway in Canada[3]

[1]Statistics Canada, CANSIM, table 051-0001, Population as of July 1. 2015, last modified 2015-09-29
[2]*Competitive Alternatives 2016* - KPMG's guide to international business location costs
[3] Clinicaltrials.gov (February 2016)

Why Canada? - Universal Healthcare System

Canadian universal healthcare system

- Enables coordinated access to patients and better data accuracy and quality.
- Provides quality and cost advantages when conducting clinical trials
- Ensures an equitable access and high standard of care for patients before, during and after the clinical trial
- Canada's hospitals are often linked via provincial or national disease treatment networks that help to coordinate research across specific centres of expertise, connecting medical experts and patients to the appropriate clinical trials.

Why Canada? - regulations, costs, support

- Supportive regulatory framework (experience with regenerative medicine)
  - Fast and rigorous 30-day Health Canada target to review clinical trial applications
- Low costs
- Financial incentives
- Openness to cultural, economic and political diversity
- Non-profit organizations that support the industry

Why Canada? - Regulatory Framework*

- Canada has incorporated successful elements from other regulatory systems into our own regulations:

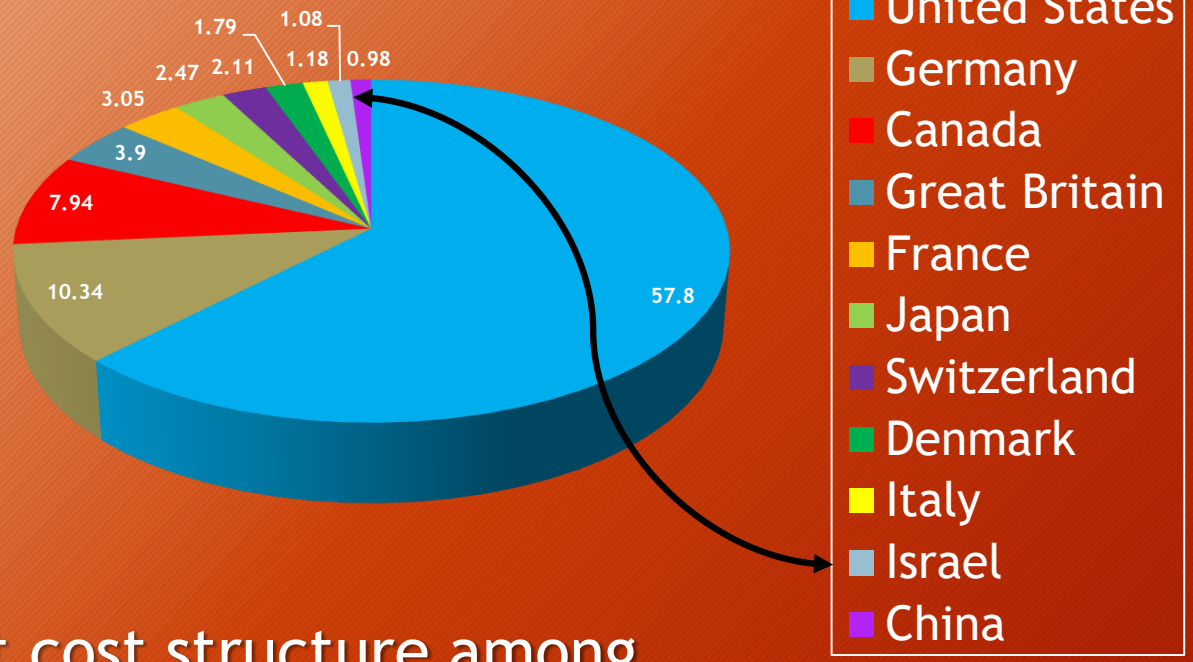
- Risk Based Classification System 
- Post-Market Regulation 
- Quality System Requirement 
- Pre-Market Licensing 

* Health Canada 2015

Why Canada? – Strong opportunity medical devices

Licences Held by Country*

Israel, a powerhouse of medical device companies can increase its presence in Canada



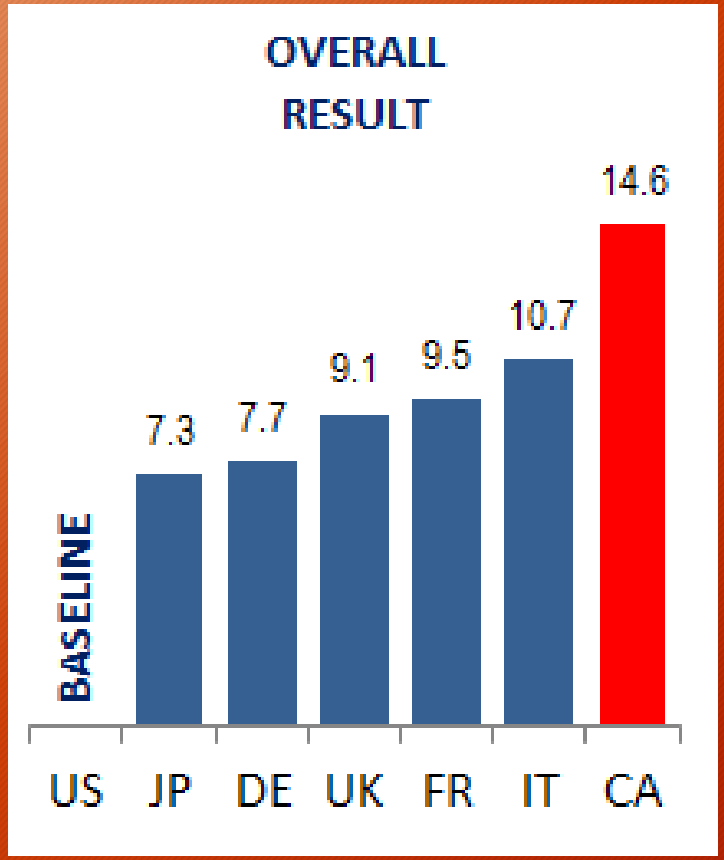
Medical devices in Canada:
Class 1 - low risk;
Class 4 - high risk.

Approval process ranges:
<one week for Class 1
90 days for Class 4

Canada has the lowest cost structure among G7 countries for **Manufacturing** (i.e., cost advantages over US 13.1% for Medical devices)

* Health Canada 2015

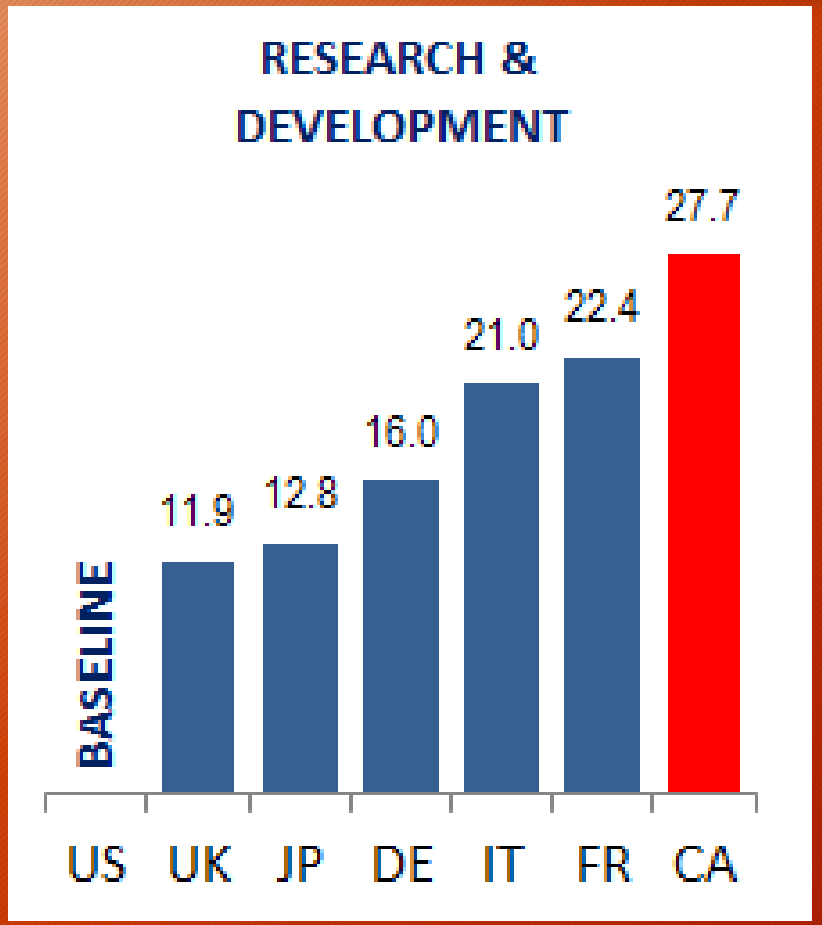
Why Canada? - The most cost-competitive country in the G7 for business*



Competitive Alternatives 2016 - KPMG's guide to international business location costs

Why Canada? - The most cost-competitive country in the G7 for R&D*

In knowledge-based areas such as **R&D Services**, Canada's cost advantage over the US is on an average of 27.7%



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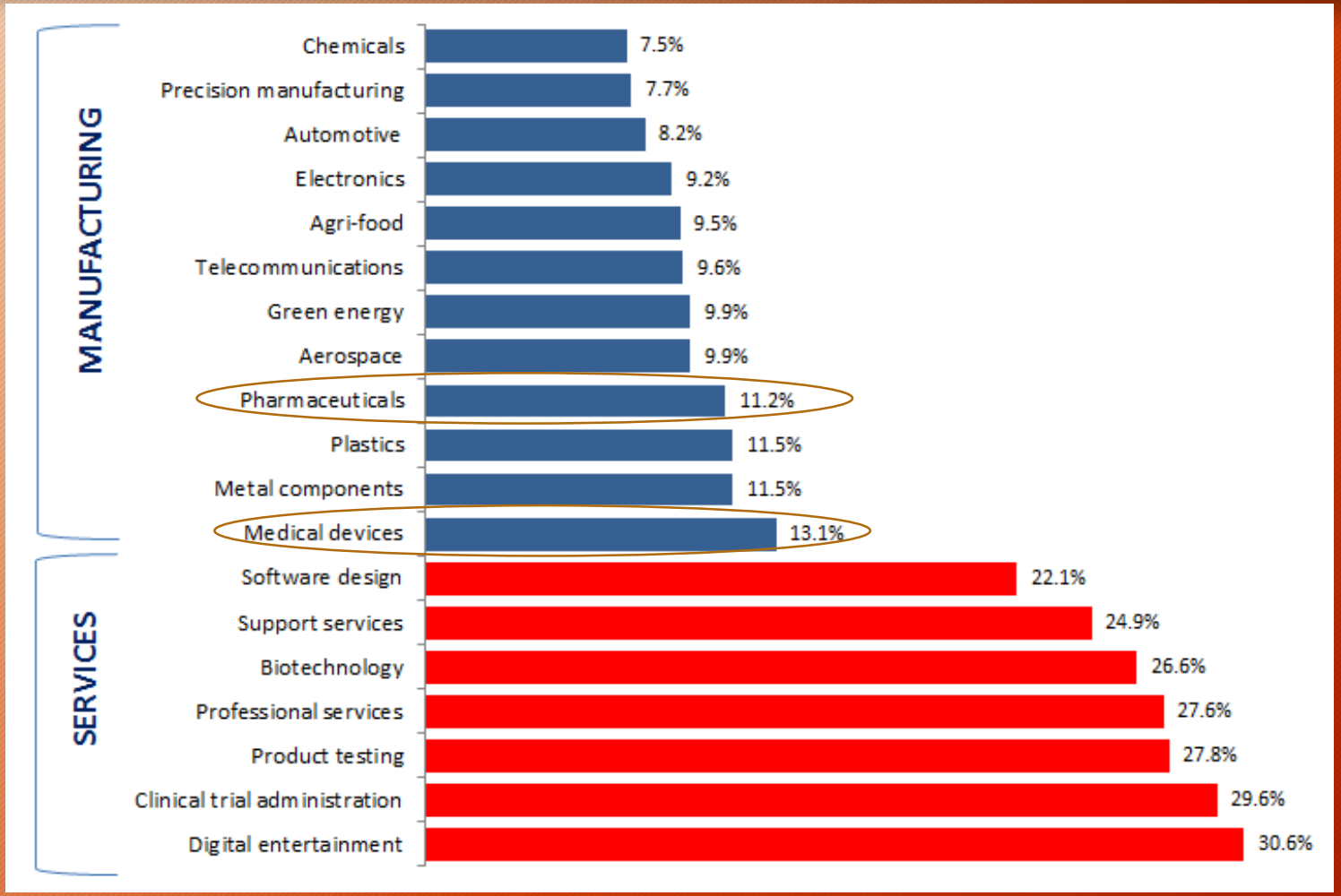
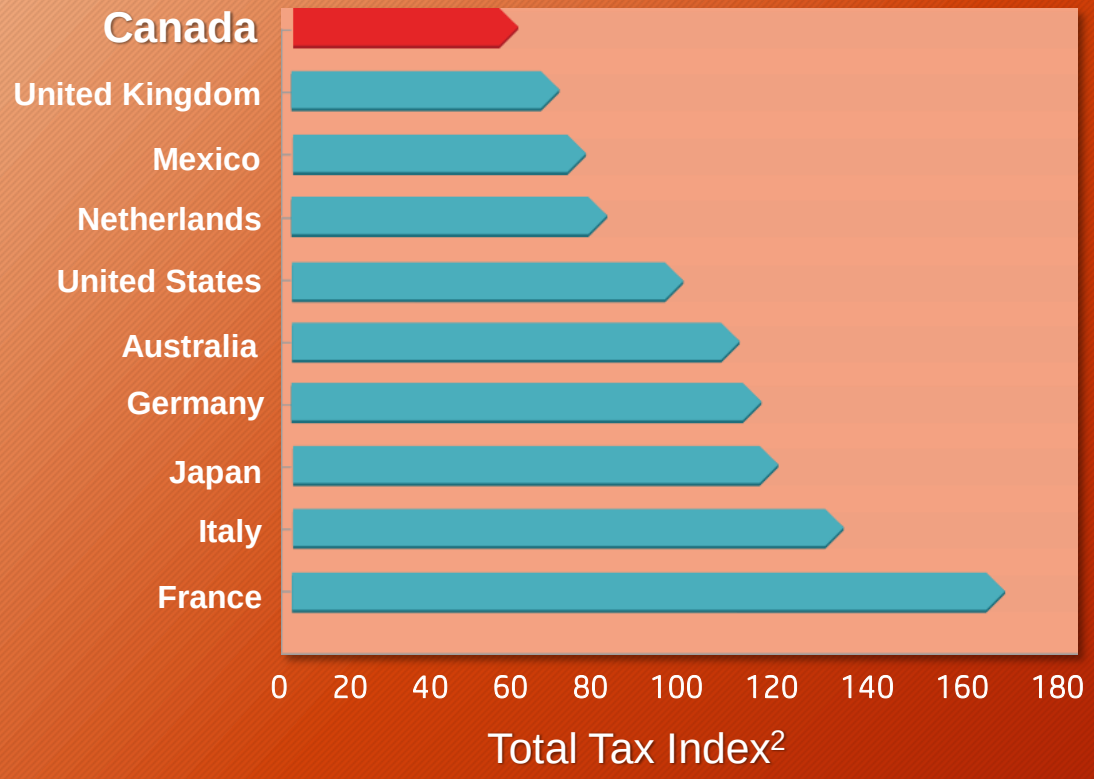
Why Canada? - Cost Advantage Relative To The U.S.

Baseline in % - manufacturing*



**Competitive Alternatives 2016* - KPMG's guide to international business location costs

Why Canada? - R&D Tax Burden in Selected Mature & High-Growth Markets[1]



Big tax incentives (federal and provincial) for R&D (including clinical trials)

[1]KPMG Competitive Alternatives 2014

[2] Total tax index is a measure of the total taxes paid by a company expressed as a % of the total taxes paid in the US.

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CIIRDF stimulates collaborative R&D between companies in both countries, with a focus on the commercialization of new technologies.

- Offers a matchmaking service that brings together Canadian and Israeli companies seeking R&D partners
- Invests in bilateral R&D initiatives with high commercial potential
- Promotes the benefits of Canada-Israel R&D collaboration
- 2 programs; Canada-Israel and Ontario-Israel
- Industries:
  - Life sciences and medical devices
  - Clean technologies
  - Cyber security and other information and communication technologies

http://www.ciirdf.ca/home/index.php

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CIIRDF Funding

- CIIRDF grants constitute up to 50 percent of the total bilateral R&D project costs
- CIIRDF does not retain equity or intellectual property rights as a result of its contribution.
- If the project result in commercialization and revenue generation, CIIRDF requires that the award be repaid by the project partners.
- **2 types of grants:**
  - **Feasibility Studies** or investigations to determine the technical feasibility or market viability of a new product or process concept: CIIRDF funds up to a maximum of CDN $20,000; and
  - **Full R&D Projects**: CIIRDF funds up to a maximum of CDN $800,000

http://www.ciirdf.ca/home/index.php

Centre for Commercialization of Regenerative Medicine (CCRM)

- Bridges the regenerative medicine (RegenMed) commercialization gap by leveraging funding and infrastructure, and mobilizing business and scientific expertise to translate technologies into commercial products and therapies (**BlueRock Therapeutics funded with $225MM**)
- Created several networks to support the translation of RegenMed technologies into viable companies
  - Academic Institutions and scientific leaders
  - Partnerships with other governmental organizations (OIRM, SCN, MaRS, etc)
  - Industry Consortium.

Centre for Commercialization of Regenerative Medicine (CCRM)

- Enables translational platforms that address the key bottlenecks in regenerative medicine commercialization
  - Cell reprogramming and engineering: patient- and disease-specific characterized and validated stem cell lines
  - Cell manufacturing: clinical and commercial quantities of stem cells and their functional progeny. BridGE @CCRM in collaboration with GE Healthcare ($40MM investment) – develop solutions for scalable manufacturing processes of cell therapies
  - Biomaterials and devices: tissue constructs for drug screening and transplantation

Summary

1. CCRM has established a collaborative and capital-efficient commercialization model
2. In 5 years, CCRM has demonstrated that a specialized and coordinated commercialization platform can attract partners, deliver new funding and generate impact
3. CCRM's relationship with academia and industry is evolving - initiatives are becoming larger and more strategic
4. To achieve sustainability, CCRM takes a share of promising opportunities, acting like a technology-focused investor (not a granting agency)
5. CCRM plans to address the complexity, resource limitations, time constraints and untested markets of RM by building a global network of like-minded commercialization hubs

THANK YOU!