



Canadian Program
on Genomics and
Global Health

*Harnessing genomics to improve
global health equity*

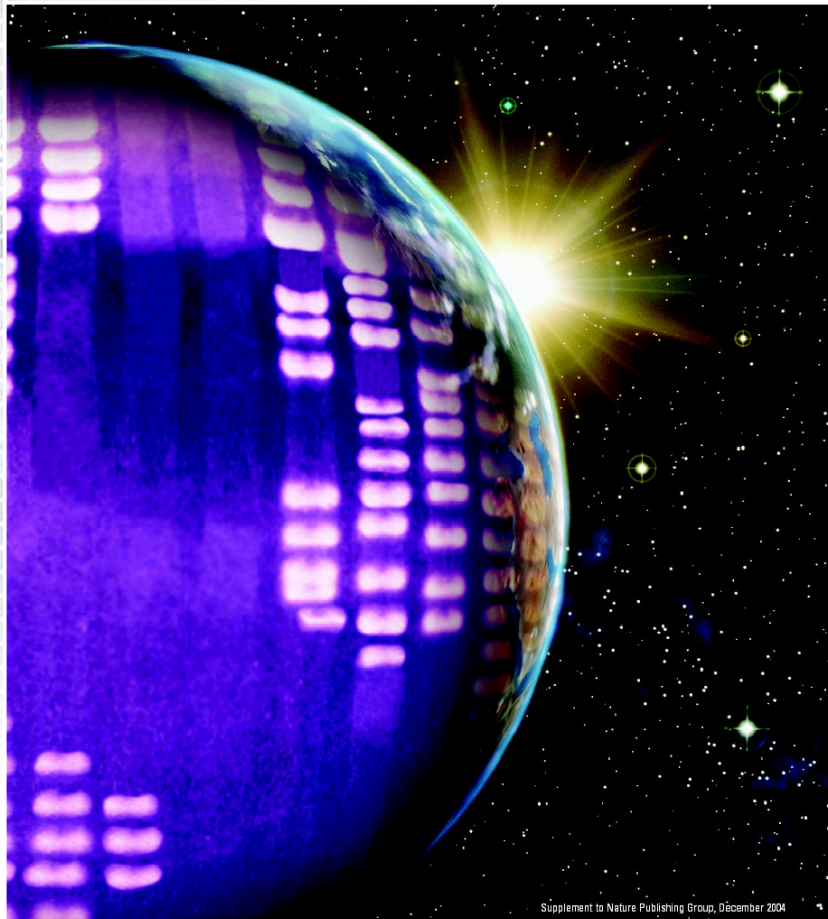
Strategies for Developing Health Biotechnology Innovation in Developing Countries

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Health Biotechnology Innovation in Developing Countries



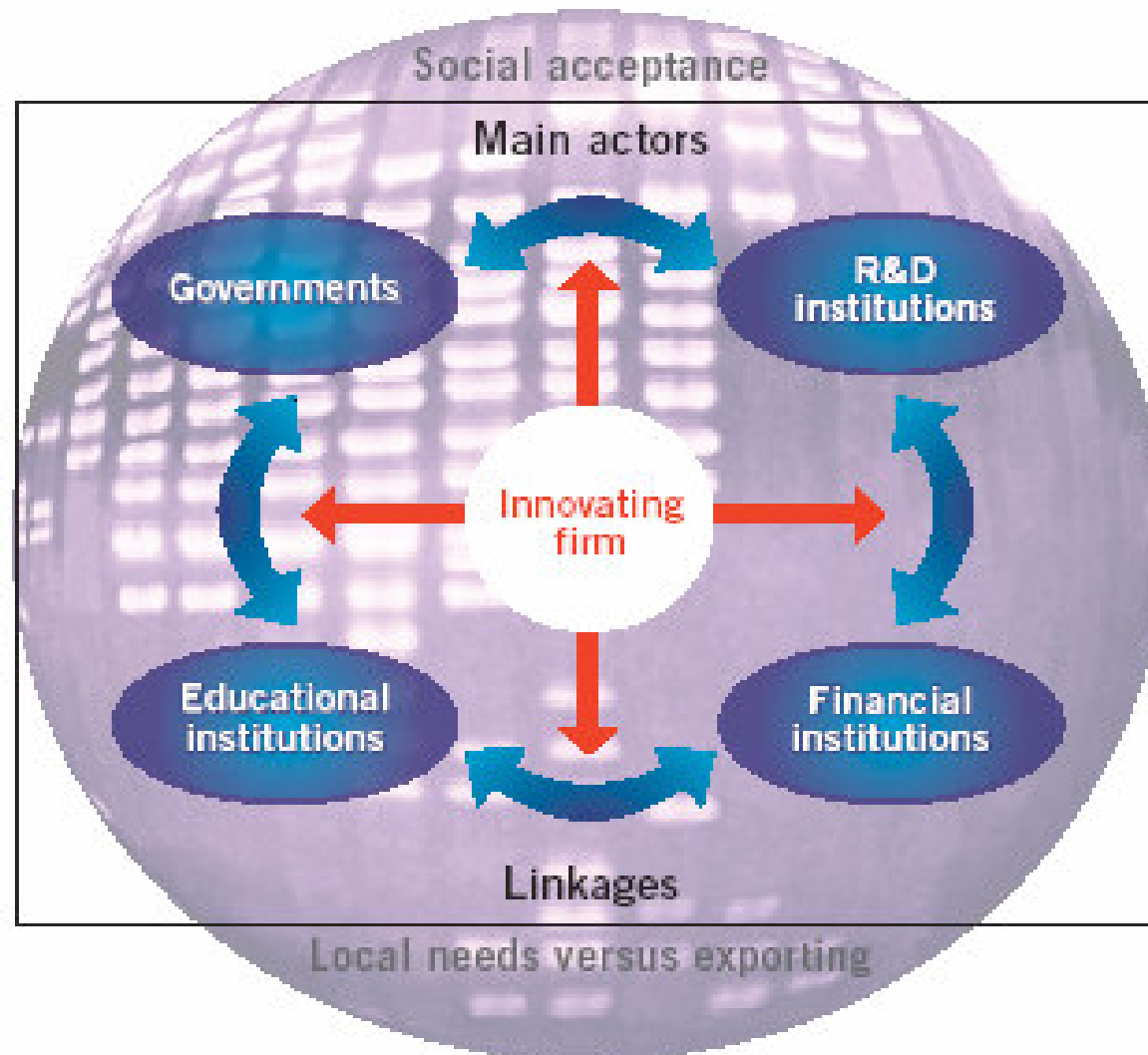
How have developing countries that have developed successes in health biotechnology been able to do it?

Countries: Brazil, China, Cuba, Egypt, India, South Africa, and South Korea



PROJECT TEAM





Focus of study on Health Biotechnology
Innovation in Developing Countries



Table 2 Lessons learned from case studies in this supplement

Brazil	Egypt
<ul style="list-style-type: none">• Focus on developing a strong science capacity• Promote linkages and exploit existing strengths in disparate fields• Exploit local biodiversity for health• Gain access to key actors	<ul style="list-style-type: none">• Focus on health needs• Gain access to key actors• Take advantage of international linkages
China	India
<ul style="list-style-type: none">• Provide long-term government support• Attract expatriate professionals• Ensure that biotechnology development goes hand-in-hand with regulation• Leverage large population base	<ul style="list-style-type: none">• Leverage strengths when cultivating linkages• Meet international standards• Use competitive advantage• Pay attention to the regulatory environment
Cuba	South Africa
<ul style="list-style-type: none">• Ensure long-term governmental vision and policy coherence• Promote domestic integration to spur innovation• Capitalize on international linkages• Tap into national pride	<ul style="list-style-type: none">• Focus government policy on public health needs• Exploit both indigenous knowledge and science-based innovations• Develop local R&D infrastructure for self-reliance
	South Korea
	<ul style="list-style-type: none">• Create a mix of small and large firms• Exploit existing competitive advantages• Go global



What set of policies have proved effective in building innovative capacity in health biotechnology in developing countries?

- A wide set of policies are needed to promote capacity in health biotechnology, e.g. R&D policies, education policies, industrial policies, policies that promote linkages, bioethical policies, policies that reverse brain drain, procurement policies, foreign investment policies etc.
- Cannot build health biotechnology innovation capability by focusing only on specific policies, for example, only on R&D policies, or only on IP policies.
- Health biotechnology has to be integrated into the wider policy environment



Why do countries differ in their capacity in health biotechnology?

- Strong and sustained political will
- Focused efforts on particular niche areas
- Close linkages and active knowledge flow are essential
- Private sector development varies
- Lenient patenting environment has allowed for capacity building
- Few individuals have been instrumental in development



What are the implications of health biotechnology development?

- Countries are able to respond to their health problems by developing health products for their own populations
- With potential development in pharmacogenomics the importance of this capacity will increase as industrialized countries are focusing on developing health products for populations with their genomics characteristics
- Will provide economic benefits



How could health biotechnology innovative capacity in developing countries be better utilized?

- Encourage more linkages and knowledge flow between the public research system and industry
- Encourage more linkages between the health system and health biotechnology sector
- Increase funding for health biotechnology both from public sources and private sources
- Promote private sector development by, for example, facilitating formation of spin-off companies



What could developed countries do better to build capacity in health biotechnology in developing countries?

- Devote increased resources to support capacity building in developing countries, e.g. Canada's 5% of R&D investment commitment
- Strengthen targeted human resource education and training both in technical aspects of biotechnology and in issues relating to planning and managing the technology
- Supporting biotechnology facilities in developing countries, such as shared centres of excellence facilities
- Encourage collaboration with developing countries both between public and private sector institutions
- Supporting regulatory and legal capacity building activities

Essential that developing countries themselves play a leading role in planning these activities.



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