

# Open Development: Is the “Open Source” Analogy Relevant to Biotechnology?

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## Issues:

1. Open-Biotech: Background/Examples
2. Implications for Innovation
3. Implications for Developing Countries



# 1. Varieties of Openness

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- Open Standards
  - Technological standards (data exchange format, annotation systems, repository standards, etc.)
- Open Innovation
  - Share findings, participatory research
- Open Licensing
  - Non-exclusive, royalty-free
  - Share improvements/modifications under same terms
  - Does not preclude commercialization & patenting



# Examples

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- CAMBIA – BIOS – BioForge
- SNP Consortium
- International Hap Map Project
- Tropical Disease Initiative



## 2. Implications for Innovation

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### A. Underlying Principles:

- Free-Revealing
  - i.e. it may pay to reveal secrets
- Collective Invention
  - Sharing & experimentation, under technological uncertainty
  - Profiting from complementary assets
- User Innovation Theory
  - End-users with specific needs play active role
  - E.g. Patient involvement in R&D



## **B. Concerns:**

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- Incentives to Commercialize
- Crowding out of Proprietary Innovation
- Capital Intensity of Biotechnology
- Regulatory Approval
- Comparative Disadvantages



### 3. Implications for Developing countries

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#### **A. Adaptation & Learning:**

- Is Open Development a suitable mode of innovation?
- Can Open Development contribute to human capital accumulation?

#### **B. Concerns:**

- Is Open-Biotech a viable business model?
- Role in developing country diseases?