Current Status of Bioindustry in KOREA

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Korea Bio Venture Association
President
Jongsei Park, PhD
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I. General Information of Korea
GDP in 2004: US$ 667 bn

GDP Ranking in 2003: 11th (US$ 605 bn)

Korea’s trade amount for 2004: US$ 479 bn (28% ↑)

Korea’s trade ranking: 12th (US$ 373 bn) in 2003
I. General Information of Korea

Within 3.5 hours’ flight time

20% of Global GDP
(US$ 1.7 trillion)

32% of World Population
(197 million)

Population
GDP

1,299 M
US$ 1,569 Bn

128 M
US$ 4,302 Bn

542 M
US$ 660 Bn

* Hong Kong included
I. General Information of Korea

- Talented Human Resources
- Stimulating Lifestyle
- Substantial Domestic Economy
- Strong Government Support
- Excellent Profitability
- World-Class Multinational Companies
- Advanced IT Environment
- State-of-the-art Infrastructure
- Strategic Regional Location
- Creativity & Innovation
II. Current Status of Bio-industry
II. Current Status of Bio-industry

Government Investment on BT

- Total R&D spending out of GDP: 0.3% (early 1970s) -> 2.85% (2005)
- Biotechnology budget out of total national R&D budget: 9.7% (2005)

(Unit: US$ million)
II. Current Status of Bio-industry

Human Resources in BT

Approximately 13,300 workforce involved in BT area (2004)
Degrees in BT major : Ph.D (6,120), Master (4,925), Bachelor (2,215) (2004)
II. Current Status of Bio-industry

USPTO Patents in BT(’04)

Technological strength: 14th in the world
Patent Impact Index: 7th in the world

<table>
<thead>
<tr>
<th>Country</th>
<th>Technological Strength</th>
<th>Number of Patents</th>
<th>CPP Citation Per Patent</th>
<th>PII Pat Impact Index</th>
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<tbody>
<tr>
<td>USA</td>
<td>28,372.6</td>
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<td>Korea</td>
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<td>410</td>
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</tbody>
</table>
II. Current Status of Bio-industry

Number of companies in BT: about 700 (2005)
Number of bioventures: about 600 (2005)
Continual growth: US$ 900 mil. (2005) with 11% of annual growth rate

The Korean biotechnology market was valued at US$ 1.5 billion in 2003. The market has been growing at an average annual rate of 11 percent since 2000.

Bio-pharmaceuticals market took the lion's share, followed by bio-chemistry and bio-food.
### II. Current Status of Bio-industry

#### Challenges and Opportunities

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
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</table>
| - Strong drive policy by the government  
- Good R&D infrastructure in industry, academia and research institutes  
- Booming bioventure business  
- Skilled workforce  
- Strong knowledge and industry bases | - Shortage of innovative R&Ds for platform technology  
- Comparatively insufficient R&D expenditure  
- Weak link between industry and academia  
- Small domestic market and limited marketing power for global sales  
- Poor biodiversity and bioresources |

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
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</table>
| - Paradigm shift in biotechnology for post genomic era  
- Top priority in national R&D programs  
- Increase of public awareness in health and welfare  
- Emerging new technology innovation | - Growing competition worldwide  
- Depression of local investment atmosphere  
- Regulatory issues: biosafety and bioethics |
Bio Cluster Formation of Korea government

Bio-Cluster: 3 zones, total 16 clusters

<Daejeon/Choongchung>
- BIO MEDICINE
- HEALTH CARE
- ORIENTAL MEDICINE
- ANIMAL RESOURCES
- FUNCTIONAL FOOD

<Kangwon/Kyungsang>
- BIO ENVIRONMENT
- SEA MATERIAL
- BIO ENERGY
- BIO HEALTH INDUSTRY
- FUNCTIONAL MATERIAL
- BIO CHEMISTRY
- OCEAN BIO METRIAL

<Jeonla/Cheju>
- NATURAL MATERIAL
- BIO FOOD
- BIO AGRICULTURE
- PLANT MATERIAL

II. Current Status of Bio-industry
II. Current Status of Bio-industry

Vision 2010

Competitiveness
- 13th in the world
- G-7 level

R&D Spending
- 2003: 5% of total governmental R&D spending
  - Basic: 70%
  - NDD: 50%
  - Bioprocess: 70%
- 2010: 20% of total governmental R&D spending
  - Basic: 90%
  - NDD: 90%
  - Bioprocess: 90%

R&D Capability (% of top level)
- 2003: - Basic: 70%
  - NDD: 50%
  - Bioprocess: 70%
- 2010: - Basic: 90%
  - NDD: 90%
  - Bioprocess: 90%

Market
- 2003: Size: 
  - World: U$ 100 bil.
  - Korea: U$ 2.4 bil.
  Share: 2.4 % of world market
- 2010: Size: 
  - World: U$150 bil.
  - Korea: U$ 10 bil.
  Share: 6.6% of world market
III. Status of Korea Bioventure Industry
* Bio foods (30.5%) and bio medicine industries (29.5%) account for 60 % of bio industries in total, and since 2002, bio foods, bio chemistry, bio agriculture and maritime industries have been expanding.

* 92.8% of the technology retained by corporations is on the market, while currently developing technology nears about 70 %.
### III. Status of Korea Bioventure Industry

#### Export

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<tbody>
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<td></td>
<td>Export (55.4%)</td>
<td>Export (41.6%)</td>
<td>Export (29.9%)</td>
<td>Export (32.1%)</td>
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<tr>
<td></td>
<td>Non-exit (44.6%)</td>
<td>Non-exit (58.4%)</td>
<td>Non-exit (70.1%)</td>
<td>Non-exit (67.9%)</td>
<td>Non-exit (70.9%)</td>
<td>Non-exit (1.0%)</td>
<td>Non-exit (1.0%)</td>
<td>Non-exit (1.0%)</td>
<td>Non-exit (1.0%)</td>
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*Exporting Amount in 2004:
- Less than 0.1 billion
- Less than 0.5 billion
- 0.5 or more (KRW)*

- Japan (49.6%)
- Korea (4.7%)
- Malaysia (3.9%)
- Vietnam (5.5%)
- Germany (7.9%)
- Indonesia (13.4%)
- China (25.2%)
Korea Bio Venture Association

- Established: July 2000
- The Number of Members: 211 (2006.3)
- Homepage: [http://eng.kobioven.or.kr](http://eng.kobioven.or.kr)

### Scope of Business

- Enhances mutual cooperation between members in activating technological exchanges and joint researches
- Supports for recruitment and employment for biohuman resources:
  - Holds Bio-Job Fair and operates On-Line recruitment section
- Technology transfer supports
- Supports for attracting investment
- Provides bio news
- Supports for overseas marketing
- Education & training for professional human resources:
  - Plans the program and supports on-the-job training for the unemployed
Thank you!

Korea Bio Venture Association
TEL +82-2-552-4771
FAX +82-2-552-4840
Http://eng.kobioven.or.kr