



**Biotech Industry in Japan:
converting a boom to sustained growth**

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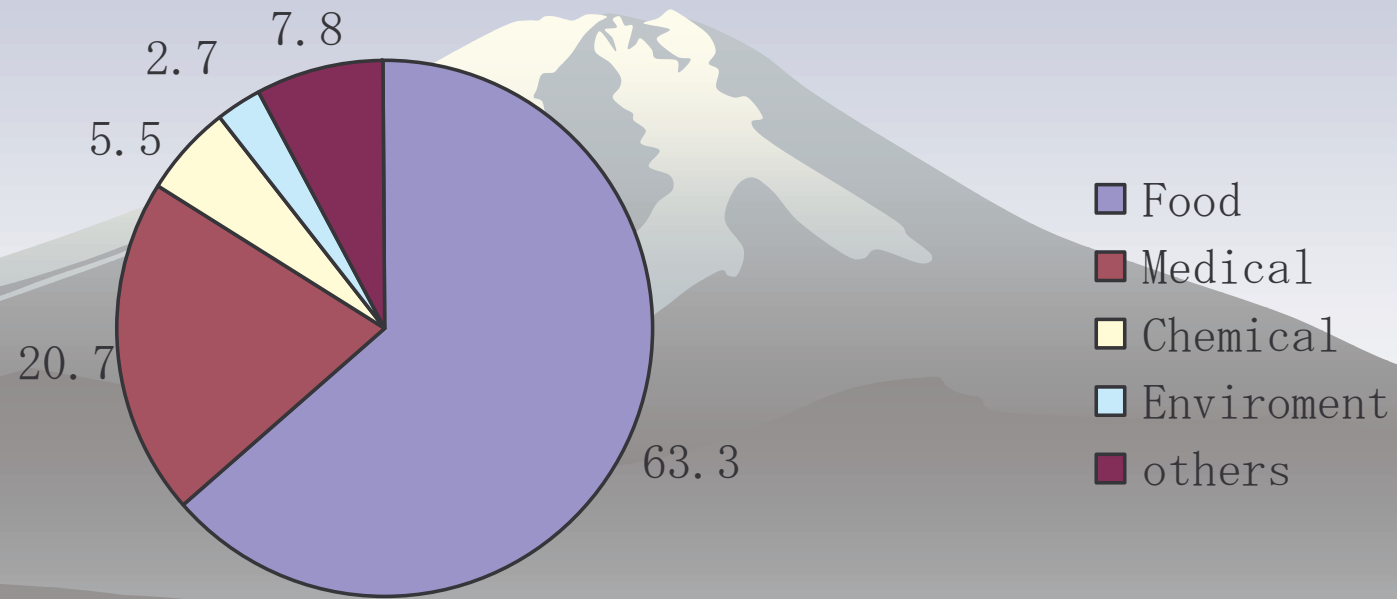
Biotech boom in Japan

- ◆ **Conventional fermentation technology**
 - traditional foods; Soy source and Miso
- ◆ **1st boom: 1980s**
 - advent of recombinant technology
 - large companies entering biotech
 - very few start-ups
- ◆ **2nd boom: End of 1990s**
 - Many start-ups, Some of them did IPOs
 - “Silicon Valley” style

Food and medical industries dominate

Biotechnology-related products market by sector

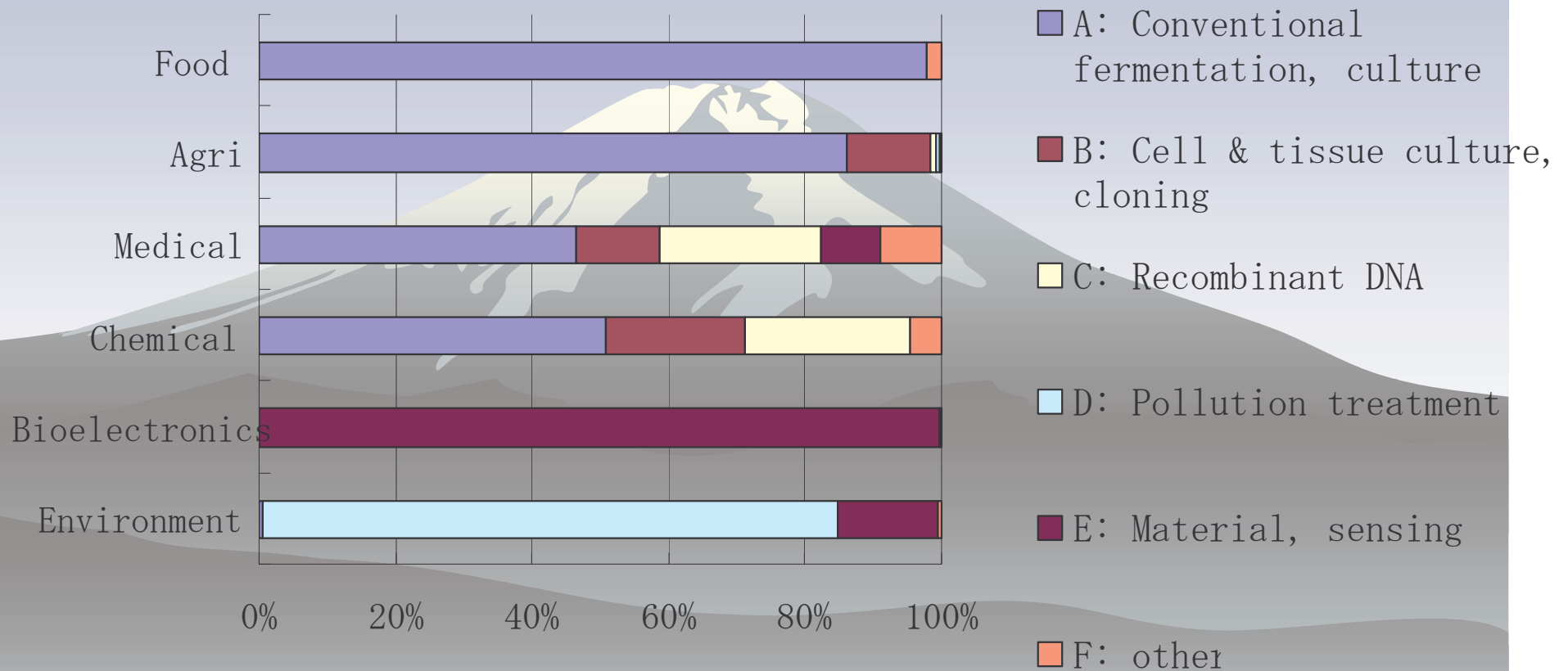
Total market: \ 7.4 trillion (55 billion euros) in 2002



Source: Ministry of Economy, Trade and Industry, Japan

Diversity in technology used

Used technologies in terms of sales revenue in different sectors



Source: Ministry of Economy, Trade and Industry, Japan

Some recent topics

◆ “Functional food”

- amino acid enhanced food: \ 160 billion market

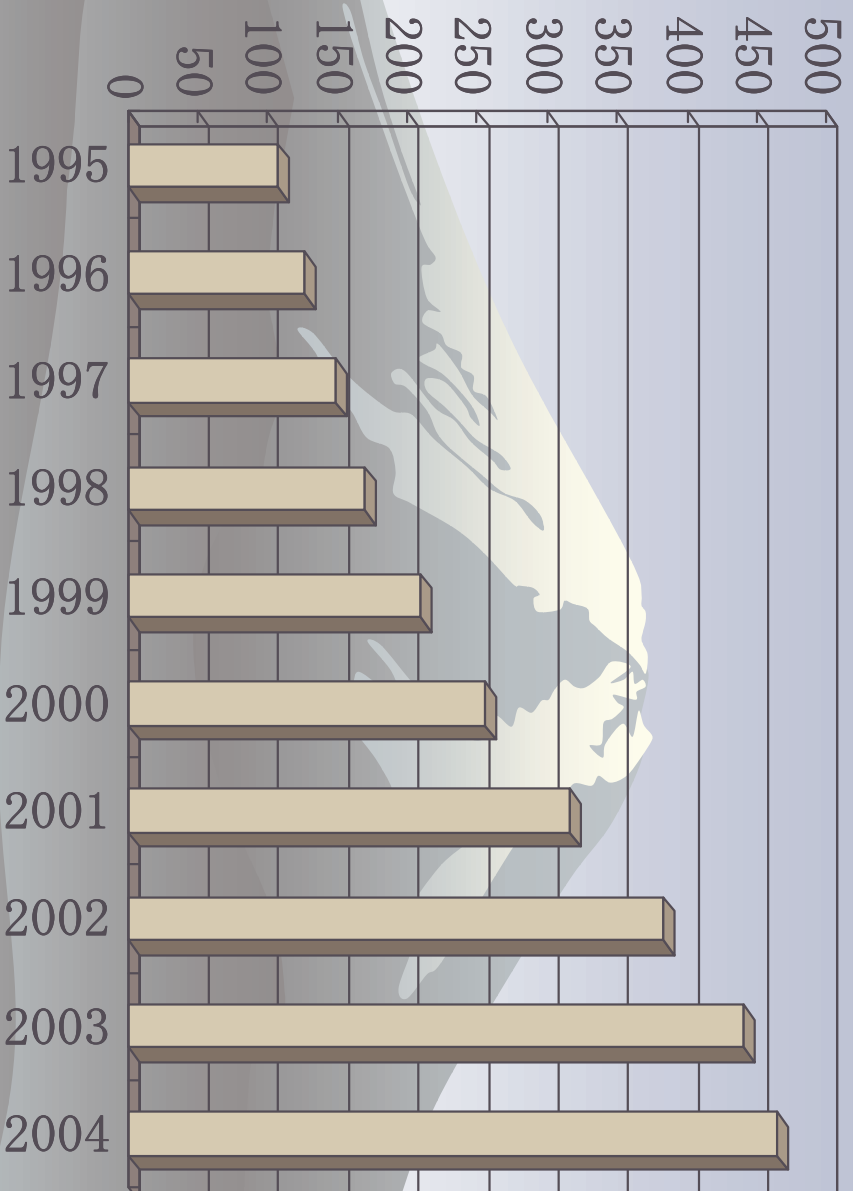
 - e.g. sports drink

- catechin (polyphenol from green tea) enhanced drink

◆ Bio-remediation to soil pollution

- organic chlorine compounds such as trichloroethylene, PCB and dioxin

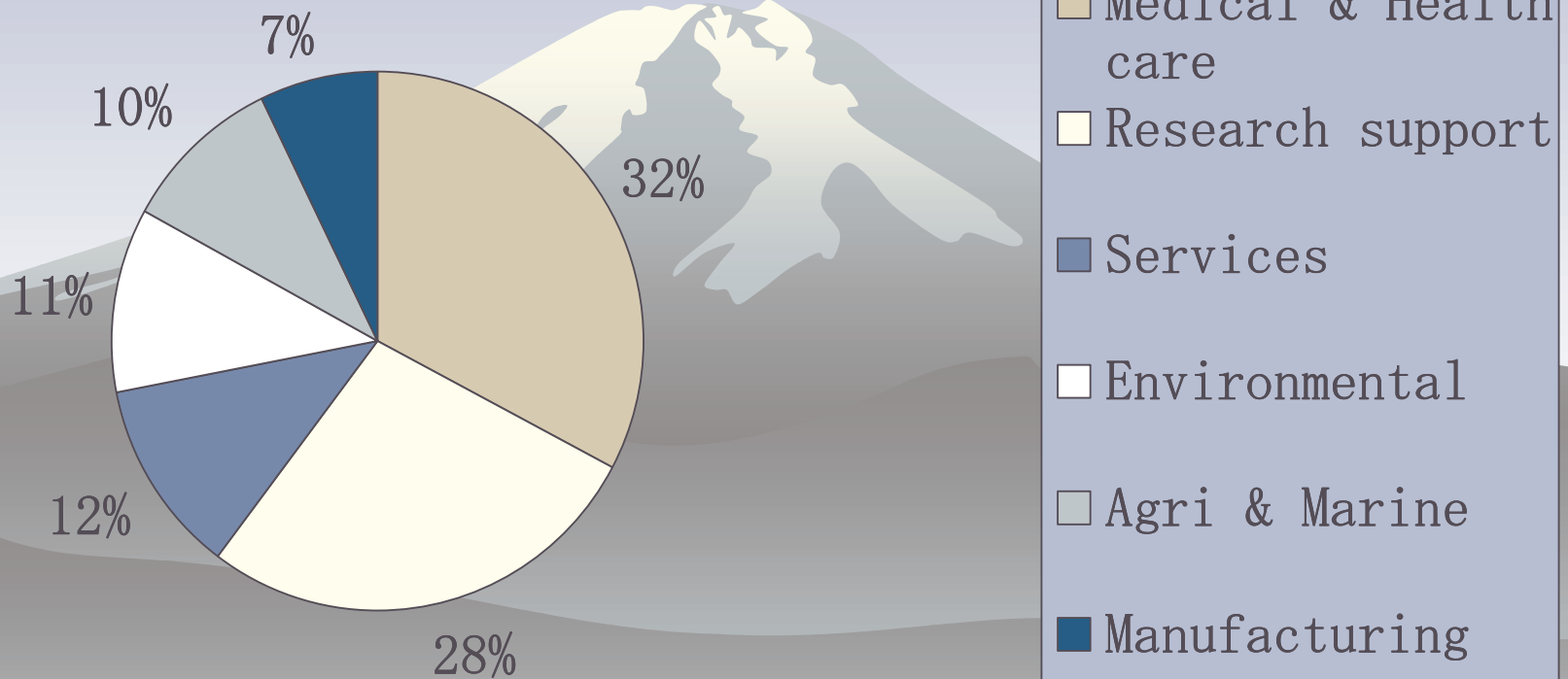
Increased number of biotech start-ups



Source: Japan Bioindustry Association

Medical & Health Care dominate

Company number by sector



Source: Japan Bioindustry Association

IPO companies

Company	Field	IPO (period to IPO, years)	Market Cap (\$M, 4/3/05)
TAKARA BIO	Medical/Support	Dec 2004 (2.7)	1,447
LTT Bio-Pharma	DDS	Nov 2004 (1.8)	143
Sosei	Biopharmaceutical	July 2004 (14.1)	381
DNA Chip Research	Microarray	Mar 2004 (4.9)	80
Soiken	Biomarker	Dec 2003 (2.0)	665
OncoTherapy Science	Biopharmaceutical	Dec 2003 (2.7)	623
MEDINET	Cell therapy	Oct 2003 (8.0)	267
MediBIC	Drug Discovery	Sep 2003 (3.6)	98
TransGenic	Research support	Dec 2002 (4.7)	92
AnGes MG	Biopharmaceutical	Sep 2002 (2.8)	581

Change in infrastructure supports biotech start-ups

◆ Policy measures

- Promote tech transfer from academia to industry such as subsidies to TLOs (1998)
- Allow researchers from national universities to work for a private company as a director (2000)

◆ Finance

- Setting up of venture capital funds
- New stock markets for emerging companies: Mothers (1999) and Hercules (2000)

◆ National university reform (2004)

- became “agencies” with more discretion and responsibility

Issues for continued growth

- ◆ Need more small companies generating profit
 - More focus on spin-out from existing large companies
- ◆ More partnership with foreign companies
- ◆ Pool and fluidity of human resources, particularly management
- ◆ Unlocking large companies
 - Can increasing M&As be a trigger?