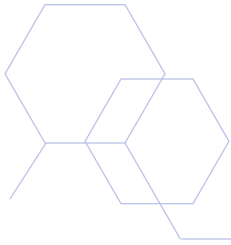




# InfiniteBio

People + Science = ∞ Future



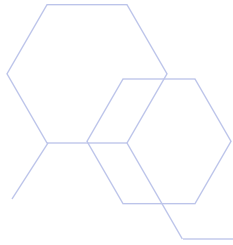
# Prospects for the Global Biotechnology Industry

for Keizai Society

October 28, 2010

Akiko Futamura, Ph.D.

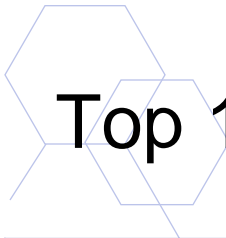
President and CEO, InfiniteBio



# Outline

---

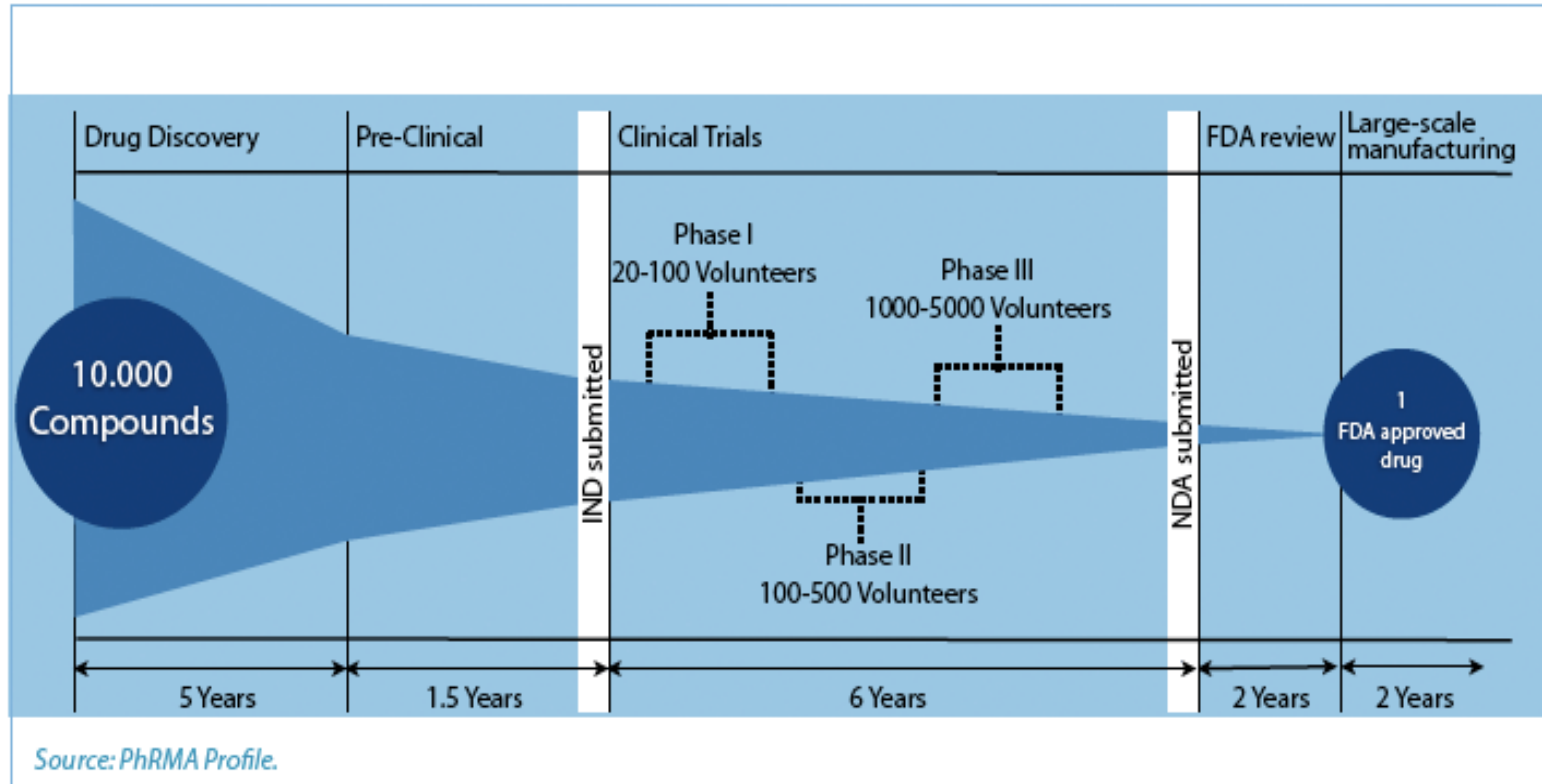
- Overview of the industry
  - Trends
  - Market driver
  - Challenges
- How Japanese companies are dealing with the global biotechnology industry



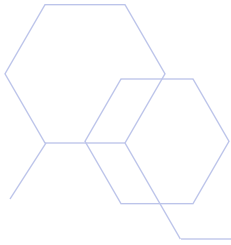
# Top 15 pharmaceutical companies by 2008 sales

Rank	Company	Sales (\$M)	Based/Headquartered in
1	<a href="#">Pfizer</a>	43,363	<a href="#">US</a>
2	<a href="#">GlaxoSmithKline</a>	36,506	<a href="#">UK</a>
3	<a href="#">Novartis</a>	36,506	<a href="#">Switzerland</a>
4	<a href="#">Sanofi-Aventis</a>	35,642	<a href="#">France</a>
5	<a href="#">AstraZeneca</a>	32,516	<a href="#">UK/Sweden</a>
6	<a href="#">Hoffmann–La Roche</a>	30,336	<a href="#">Switzerland</a>
7	<a href="#">Johnson &amp; Johnson</a>	29,425	<a href="#">US</a>
8	<a href="#">Merck &amp; Co.</a>	26,191	<a href="#">US</a>
9	<a href="#">Abbott</a>	19,466	<a href="#">US</a>
10	<a href="#">Eli Lilly and Company</a>	19,140	<a href="#">US</a>
11	<a href="#">Amgen</a>	15,794	<a href="#">US</a>
12	<a href="#">Wyeth</a>	15,682	<a href="#">US</a>
13	<a href="#">Teva</a>	15,274	<a href="#">Israel</a>
14	<a href="#">Bayer</a>	15,660	<a href="#">Germany</a>
15	<a href="#">Takeda</a>	13,819	<a href="#">Japan</a>

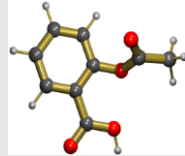



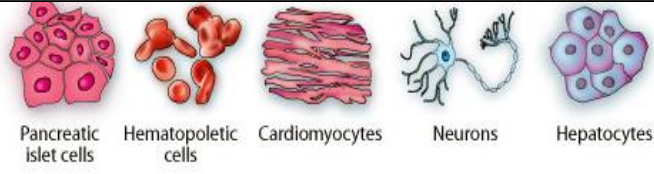
# Drug discovery and development

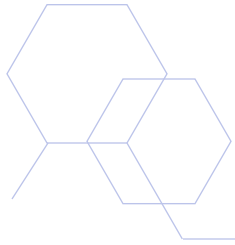


- Average time to market: 10-15 years
- Average Costs: \$1B
- Less than 30% of approved drugs recoup development costs



# Types of therapeutics

Types of drugs	How they look	Note/ companies
Small molecule		Most traditional drugs
Antibody		Genentech
Protein/ peptide		Peptide can inhibit protein-protein interaction
RNA		Amylam
Cell	 <p>Pancreatic islet cells   Hematopoietic cells   Cardiomyocytes   Neurons   Hepatocytes</p>	Emerging therapeutics Geron, StemCell



# Trends

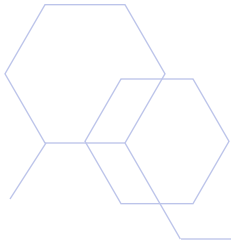
---

## R&D

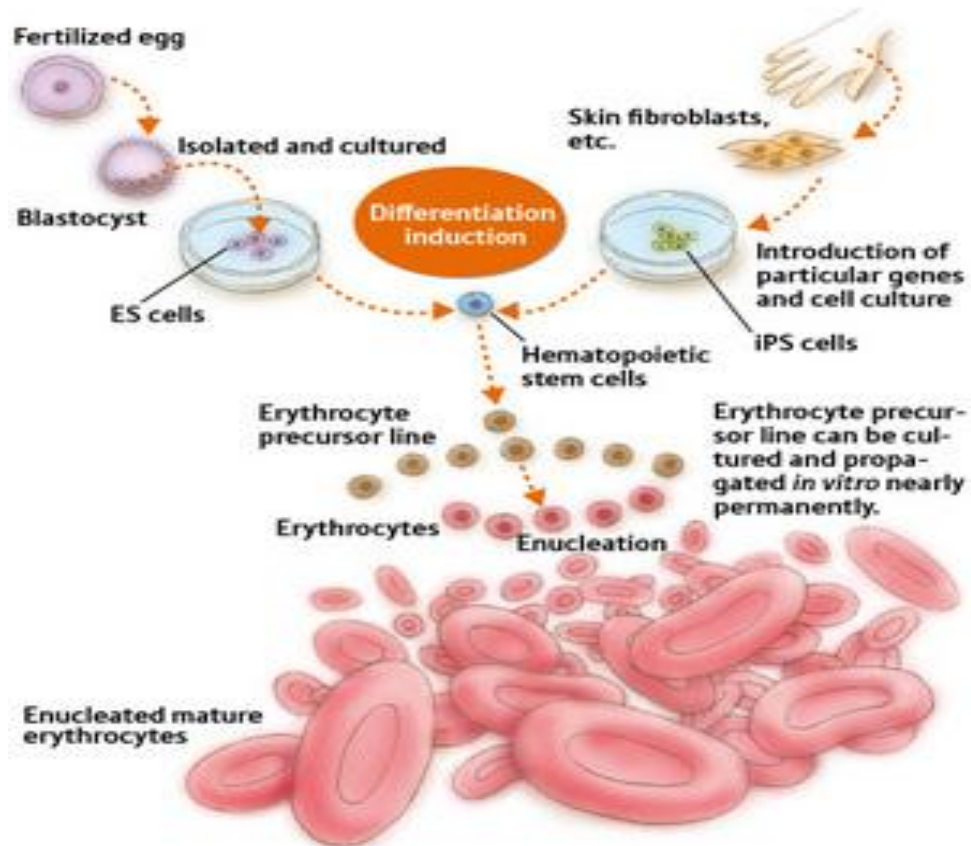
- Personalized treatment: Diagnostics to drug
- Expectations for cell therapy
- More predictive models

## Technology trends:

- Stem cell technology
- Next generation sequencing

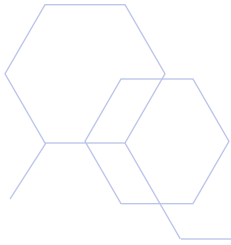


# Stem cell technology



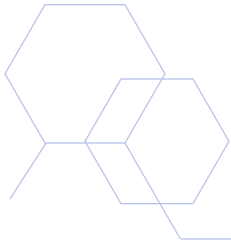
Source:

<http://www.rikenresearch.riken.jp/eng/frontline/5484>



# Stem cell technology

- **Cellular Dynamics Raises \$40.6M in Private Funding Round**  
April 27, 2010  
The University of Wisconsin spin-off will use proceeds from the Series B financing to produce its pluripotent stem cells for use in human heart research and to develop new human tissue products.
- **iPierian Closes \$22 Million Series B Financing Led By Google Ventures** July 8, 2010
- **GE Healthcare and Geron Announce Exclusive Global Agreement to Commercialize Stem Cell Drug Discovery Technologies** June 30, 2009
- **Fate Therapeutics---**\$30M series B financing Nov. 19, 2009



# Next-gen sequencing

- **Pacific Biosciences** today said that it has raised \$109 million in a Series F round of financing. 7/14/2010
- **Pacific Biosciences Files for IPO** August 16, 2010

The firm has raised around \$370 million since its inception, and is now seeking to go public in an offering that could potentially bring in \$200 million

- **Complete Genomics Completes \$39M Financing amid IPO Plans**  
August 19, 2010

The firm recently filed for an IPO, hoping to raise as much as \$86.3 million. It also said that it is evaluating a recent lawsuit filed against the firm by Illumina.

- **Life Technologies to Acquire Ion Torrent for up to \$725M**  
August 18, 2010

Life Technologies gains access to Ion Torrent's sequencing platform, which is currently in the hands of early-access customers and will be launched later this year at an entry cost of less than \$100,000. It noted that the total acquisition price could rise to \$725 million if milestones are met.



# Reality for the Japanese biotech companies

- Insufficient funding
- Japanese big pharmas are not actively engaged in deals which would help Japanese companies validate the products
- Shrinking GDP
- Limited talent pool with global business development experience
- Communication
- Cultural difference

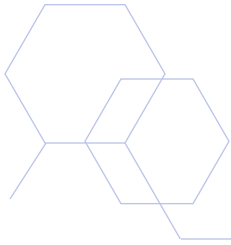
One way to improve is to establish the presence in the US first and then go global



# Importance of global biotechnology industry

---

- Market size
- Effective drug discovery and development
- Fund raising
- Regulation, standardization



# Contact Information

---

Akiko Futamura, PhD  
President & CEO  
InfiniteBio

560 South Winchester Blvd., Suite 500

San Jose, CA 95128

Phone: 408-572-5664

Cell: 650.776.1447

[akiko@infinitebio.com](mailto:akiko@infinitebio.com)

[www.infinitebio.com](http://www.infinitebio.com)