



ADVANCING SCIENCE, SERVING SOCIETY

Mountains of Knowledge and Dearth of Innovation

What to Do?

Bernard Munos

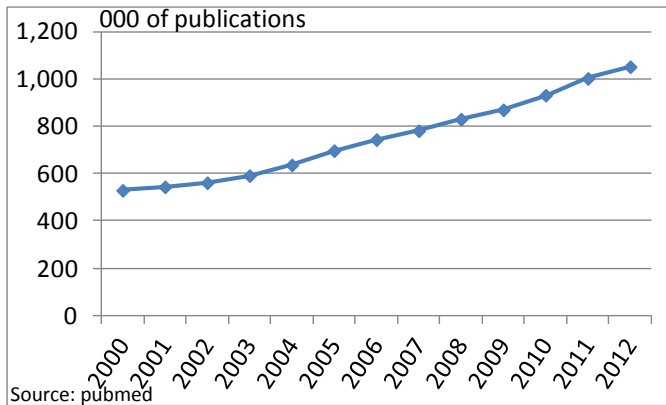
Founder

InnoThink Center For Research in Biomedical Innovation

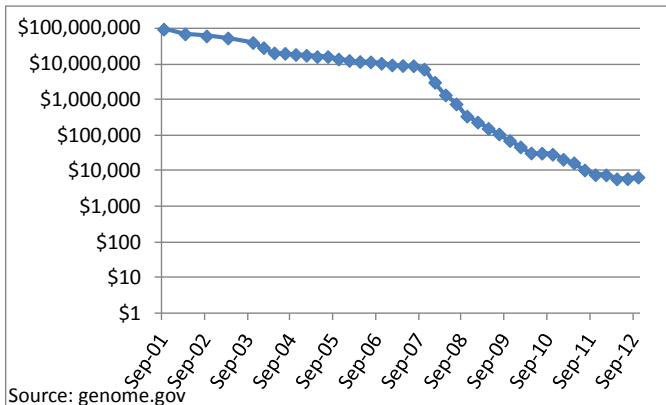
Indianapolis, April 12, 2013



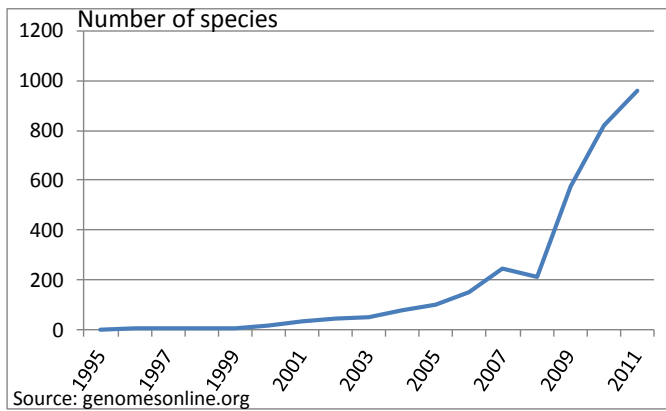
Mountains of knowledge



- ❑ PubMed publications: **+5.9% / year**
almost 3000 / day

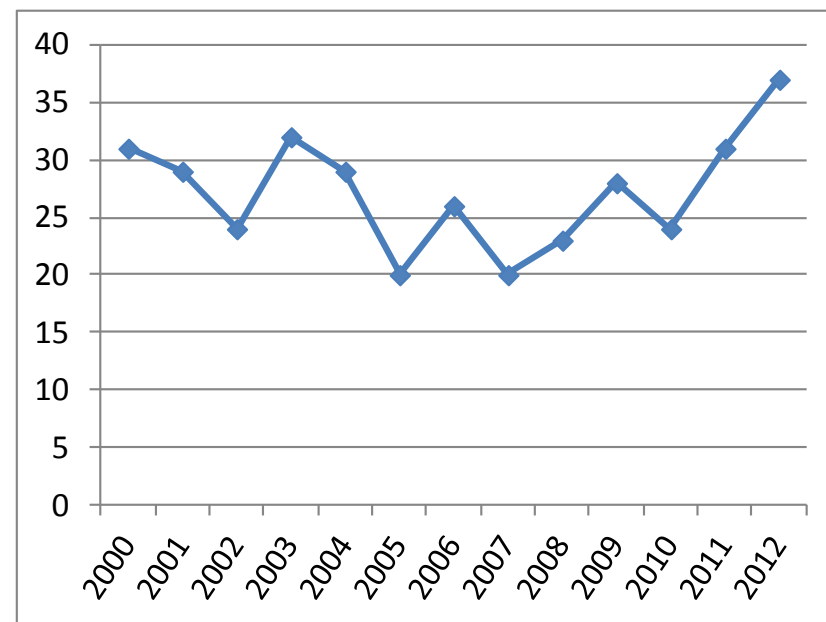
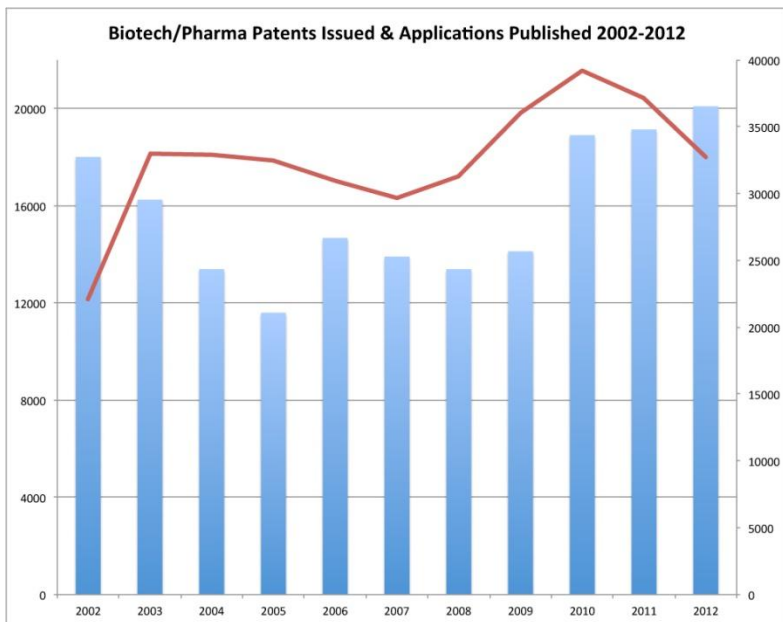


- ❑ Cost of sequencing genome: **-66% / year**
about \$6,500



- ❑ No of species sequenced: **+38% / year**
about 4,325

Dearth of innovation



Source: FDA

Flat trend for both patents and applications

Flat trend for new drugs approved



Conclusion

The engine that converts cutting-edge knowledge into commercial products (the pharma business model) **no longer works well**

Two main reasons:

- ❑ Pharma companies are **no longer focused** on cutting-edge science
- ❑ Pharma companies are **no longer efficient** at translating science into products



What to do?

The **drivers** of innovation

- **Breakthrough** science

- **Audacious** thinking

- **Cross-pollination**

- **NOT** discipline, alignment, money, organization, etc.



Innovation culture



Process culture



The Industry Response

Reinventing R&D

- Return to **unfettered breakthrough science** (Novartis, AstraZeneca?)
- **Personalized medicine** integrated with genomics and diagnostics (Roche)
- Biotech-like **Discovery Performance Units** (GSK)
- Repositioning of the company on **less IP-sensitive areas** (Sanofi)



Trial and error

- **Myriad R&D collaborative schemes (everyone)**
- **Restructuring (Abbvie)**
- **“String-of-pearls” (Bristol-Myers Squibb)**
- **Open-innovation initiatives (J&J)**



Doubling-down on process

- **Six sigma, portfolio management, market-driven R&D (Lilly, AstraZeneca-pre-Soriot, Merck-pre-Perlmutter)**



Will it work?

Pharma's **triple** challenge

- **More** innovation
- **Better** innovation
- **Affordable** innovation



Big pharma is tackling this

It is not addressing this

The industry will **fail** if it does not make its drugs affordable



Affordability requires more than clever R&D

Two main approaches:

- **Hyper**-innovation (GSK)
- **Radical** new models (virtual portfolios, micropharmas, repurposing, etc)



Prerequisites

- **Elimination of knowledge gaps (to make biology more predictive)**
- **Return to a true culture of innovation**



Conclusions

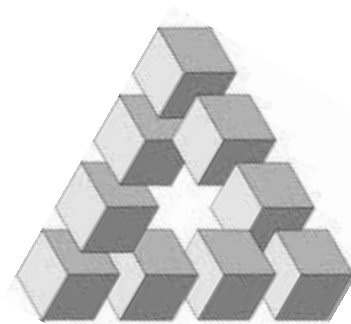
- The face of pharmaceutical innovation is **changing**
- Most companies are **reversing** the mistakes that have precipitated the innovation crisis
- Several **key challenges** remain:
 - Knowledge integration
 - Affordability
 - Fostering a true innovation culture



Thank you!

Questions?

(bhmunos@stanfordalumni.org)



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