New Business Models & Innovation
The Roadmap of Innovation Impact?

Can we apply Innovation to the Way we Innovate?

Basic Research

Applied Research

Experimental Development

Tech Transfer & Monetization

Social Good & Growth

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The Roadmap of Innovation Impact?

Basic Research

Applied Research

Experimental Development

Is there a Market - Science Continuum?

Tech Transfer & Monetization

Social Good & Growth

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Risk Design
in the
Pharmaceutical Industry
Pharmaceuticals Patents Expire

Big Pharma
Price = 100

Cost
R&D
Selling
G&A
Profit

Generics
Price = 20

Cost
Selling
G&A
Profit

Patent Rights Expiration

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The Road to Survival = Innovation

Tufts University Study: Successful New Drug Discovery Requires circa $1 Billion and 10 to 15 years in R&D


Bigger R&D Budgets

$500 million 1996

$2 Billion 2001

Fewer FDA Approvals

Result was...

53 → 24

1996 2001

Sources: Company Annual reports and ParexelPharma
Can Money Buy Success?

New Drug and Biologics Approvals and R&D Spending

R&D expenditures are adjusted for inflation; curve is a 3-year moving average for NME/NBEs

Sources: Tufts CSDD; PhRMA, 2014 Industry Profile

Source: Tufts University Center for the Study of Drug Development

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Why Didn’t More R&D Resources Produce More R&D Results?

Innovation Is a Game of Chance (Risk)

To Win, you need both Skill and Probabilities

Risk Design is more important to Success than More Money or Size

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Big Pharma Reduces R&D Budget, Uses New R&D Design for Innovation
Big Pharma Reduces R&D Budget, Uses New R&D Design for Innovation
A Lesson in Risk Design

More money on own cards does not increase chance of winning

Shared Risk, Shared Reward. Same Money, More Chances to Win

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High Value even without Proprietary Copyright?

**Big Pharma:**
- Shared Risk – more opportunities with less investment
- Privileged & Priority Access to many Innovators & their technology
- « Absorb » Potential Competitors – becomes cooperative relationship

**Biotechs, Universities, Gov’t, Etc:**
- Access more resources: Money, Methods, Talent, other Patents, etc
- Fast Monetization of Discovery – using Big Pharma Test & Marketing
Economic Evolution & Risk

Risk Management
Knowledge / Creativity / Information

Value Propositions
Value Chain

Production Technique

Time

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Sustainable Innovation
Means Risk Design
Where is Knowledge?
Exploring Ignorance

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Organization for Risk

Military
Clear goals & roles
Mass Deployment

Feudal
Protect established territory

Viking
Unknown Destination
Unknown Dangers

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Sun Jifa, farmer in Jilin province, lost his forearms 32 years ago – instructed his nephews to build these prosthetic forearms from scrap metal, plastic and rubber. Sun & nephews have sold 300 prosthetic limbs for people in need for 3000 RMB each. September, 2012 (Reuters/Sheng Li)

Dropouts:
Bill Gates, Microsoft
Steve Jobs, Apple
Micheal Dell, Dell
Etc…

Noah’s Ark of China, six-ton “survival” ball by Chinese inventor Yang Zongfu, in Yiwu, Zhejiang province. Yang spent 2 years & 1.5 million RMB to build 4m diameter vessel, capable of housing 3 people with enough food to live 10 months, protected from external heat, water & impact. August, 2012. (Reuters/China Daily)
Sustainable Innovation Means Small, Agile, Multi-Disciplinary Teams
Innovation in Business
and
Science & Technology
Reaching your Market, Risk & Value

Unique, New, but Risky Product
Reaching your Market, Risk & Value

Unique, New, but Risky Product

x 1

x 50

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Reaching your Market, Risk & Value

- Unique, New, but Risky Product
- x 1
- 50 "Enemies"
- Already w/Customer
- Strongly motivated to fight back
- More Risk for Customer!

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Reaching your Market, Risk & Value

Create VALUE: OTA update, interactive, etc

Unique, New, but Risky Product

x 1

x 50

Reduce Customer Risk

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Roadmap of Sustainable Innovation

Social Good & Economic Growth

Market – Science Continuum

Basic Research

Applied Research

Business Model & Monetization

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Sustainable Innovation Means Business Innovation for Sustainable Financing

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Sustainable Innovation
Means
Business Model Innovation
Sustainable Innovation

- Risk Design is a Primary Skill
- Knowledge is ahead of us
  - Viking approach to discovery
  - Knowledge is plentiful: Value is in monetization
- Roadmap starts with “quick fix” monetization for sustainable financing
- Business Model innovation is as important as STEM innovation

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