



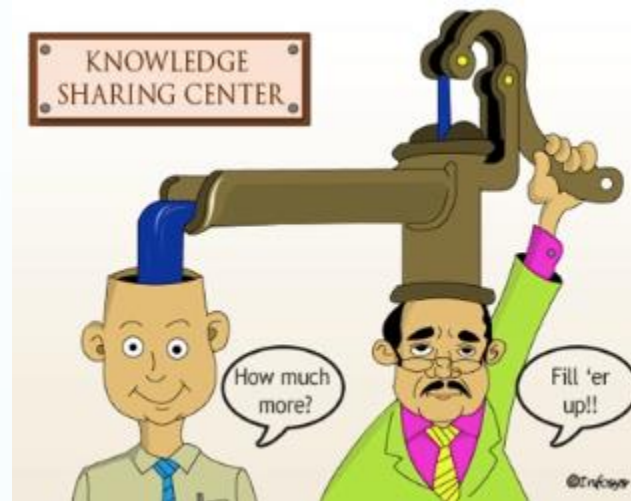
# Learning from peers: knowledge transfer and biotechnology trends

Prof. KWAN Hoi Shan  
Food Research Centre  
and School of Life Sciences

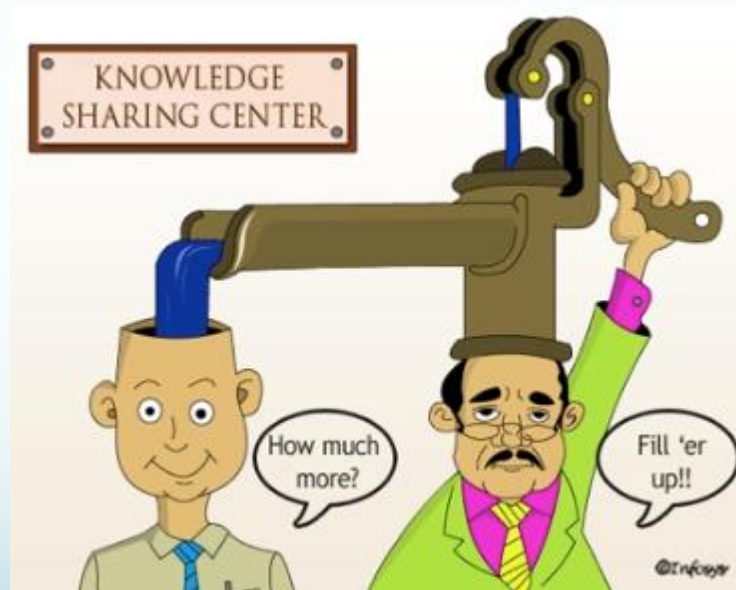


# What I have learned from the peers

- Knowledge transfer
- Biotechnology industry



# Knowledge transfer



# From Research Laboratory to the Society

Research

Knowledge  
Transfer

Community

Idea &  
Innovation

Knowledge  
Transfer

Benefit to  
people



# Professor' s Strengths & Weaknesses

- Strengths

- Great Ideas: knowledge, old and new
- Innovative: technology
- Confident

- Weaknesses

- Great Ideas: remain as ideas
- Innovative: not related to the market
- Confident → Arrogant



# Knowledge Transfer Process

- Facilitates professors to disclose their inventions and innovations with protection
- Inventions are potentially marketable
- Helps to move from inventions to market
- Contributes to society
- A complex and lengthy process involving many different kinds of supports, money and expertise



# Knowledge Transfer in universities

- In USA, only recognized for 34 years
- Starting from 1980
- 1980 Bayh-Dole Act:
- US universities

own the inventions

resulting from federal funding

- In Hong Kong, universities own the inventions resulting from public funding



# Enlightenments

- Inventions
  - Only some become patents or trademarks
  - Only a fraction of patents or trademarks are commercialized
  - Only a fraction of commercialized inventions are profitable
  - About 10% can be commercialized
  - How many generates sizable revenues?
  - But perhaps a few big ones would be enough
  - So, don' t expect too much





# Enlightenments

- Biomedical sciences and biotechnology are major areas of inventions
- Perhaps because San Diego is a major hub of biomedicine and biotechnology
- So we also attended two meetings:
  - **Catch the Next Big Wave with UC San Diego Technology Transfer Office**
  - **BIO-2014**





# Catch the Next Big Wave with UC San Diego Technology Transfer Office



Catch the  
**NEXT BIG WAVE**  
UC San Diego  
Technology Transfer Office

- "Translating Stem Cells to Therapies" by Larry Goldstein
- "The Future of Neuroscience and What it Means for San Diego" by Nicholas Spitzer
- "Engineering in Medicine" by Shu Chien
- "Will the Quantified-Self Movement Disrupt Healthcare?" by Larry Smarr

<http://www.youtube.com/watch?v=1pYBedNNE1Y>



# Catch the Next Big Wave with UC San Diego Technology Transfer Office



Catch the  
**NEXT BIG WAVE**

UC San Diego  
Technology Transfer Office

- Many of the areas considered to have important impacts matched my areas or interests

- Example:

1. Digital health
2. Big data
3. Genomic health



# Catch the Next Big Wave with UC San Diego Technology Transfer Office



Catch the  
**NEXT BIG WAVE**

UC San Diego  
Technology Transfer Office

- Examples:

1. NGS SEQ → 3rd gen seq
2. Regulon, non coding DNA
3. Genome editing
4. Stratified medicines
5. Microbiome
6. Stem cell



# Bio-2014: Biotechnology Industry Organization International Conference 2014



# BIO-2014

## World cup booth



# BIO-2014

- Talks and exhibitions





# HOUSTON THE CITY OF MEDICINE



## [ AT A GLANCE ]

THE FOCAL POINT OF HEALTH IN HOUSTON IS THE WORLD-FAMOUS TEXAS MEDICAL CENTER



AREA  
**1,345**  
ACRES



PERMANENT  
BUILDINGS  
**290**



TOTAL  
EMPLOYMENT  
**106,000**



PATIENT  
VISITS  
**7.2**  
MILLION/YEAR



INTERNATIONAL  
PATIENTS  
**16,000**  
/YEAR



PATIENT BEDS  
**7,000**



STUDENTS  
**49,000**



TOTAL  
OPERATING BUDGET  
**\$15**  
BILLION/YEAR

Source: Texas Medical Center 2003 Facts and Figures and Houston Facts 2005

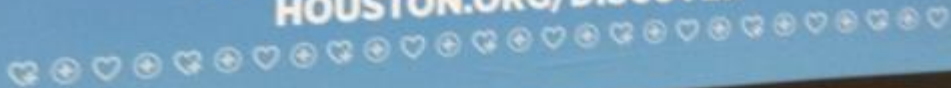


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**HOUSTON.ORG/DISCOVER**



Source: Texas Medical Center 2003 Facts and Figures and Houston Facts 2005

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# BIO-2014

- Digital Health



# Bio-2014

## NIH Director Francis Collins:

- New initiatives
- **AMP, Accelerating Medicines Partnership**
- Key issues: Drug targets based on cell models & animal models → disappointing results
- New insights into human disease risk
- New biomarkers
- Validate with GWAS
- AMP
- NIH-industry-academia
- All stakeholders together

### 3 disease areas

- Alzheimer's disease
- Type 2 diabetes
- Autoimmune disorders
  - lupus
  - rheumatoid arthritis





# Enlightenments

- Biotechnology is one of the focused area in Hong Kong
- Inventions are not extensively transferred to the society
- But more attentions and resources will be injected to realize inventions
- Professors will be encouraged to transfer their inventions
- More knowledge transfer activities are coming!



# Thank You

