Industry-university collaboration in Japan
- From the side of a university -

2015.1.28

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Graduate school of Science and Technology, Keio University
1. History of organizing IP Office / industry-university collaboration office / URA system in a university

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>Law of TLO (METI,MEXT); To assign TT advisors to TLO (JPO, METI)</td>
</tr>
<tr>
<td>1999</td>
<td>Bay-Dole Act in Japan (METI)</td>
</tr>
<tr>
<td>2002</td>
<td>IP Basic Act</td>
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<tr>
<td>2003</td>
<td>MEXT began to support universities to establish intellectual managing office inside.</td>
</tr>
<tr>
<td>2006</td>
<td>Amendment of Fundamental Law of Education to include university’s third mission of contribution to society.</td>
</tr>
<tr>
<td>2008</td>
<td>MEXT began to support universities to develop and realize strategy for collaboration with industries</td>
</tr>
<tr>
<td>2011</td>
<td>MEXT began to assign Research Administrator to universities</td>
</tr>
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2. The present situation
2-1) Channels for industry–university collaboration

Three typical exits to provide research results for the benefit of society:

Exit 1: Joint/contract research

Exit 2: Licensing

Exit 3: M&A

Researcher → Disclosure → IP → Royalty → Exit 2 → Products

Researcher → Stimulation → Reaction → Start-ups

Researcher → Research Funds → Government → JSPS, JST, NEDO...

Entrepreneur → Start-ups

Products → Exit 1, Exit 2, Exit 3 → Society
2-2) Facts of industry–university collaboration in universities in Japan

Joint research with private company

- Number of J.R.: Growing
- Fund of J.R.

Contract research with private company

- Number of C.R.: Growing
- Fund of J.R.

Source: MEXT’s web site “Performance of industry-university collaboration”
http://www.mext.go.jp/a_menu/shinkou/sangaku/main7_a5.htm
2-2) Facts: Research fund sponsored from private company per agreement in fy2015

- Average ≒ 2 million yen

Source: MEXT’s web site “Performance of industry-university collaboration”
http://www.mext.go.jp/a_menu/shinkou/sangaku/main7_a5.htm
2-2) Facts: Collaboration with SMEs and overseas private companies

Number of joint research with private company

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<tr>
<th>Year</th>
<th>SMEs</th>
<th>Overseas company</th>
<th>Total</th>
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Number of contract research with private company

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Source: MEXT’s web site “Performance of industry-university collaboration”
http://www.mext.go.jp/a_menu/shinkou/sangaku/main7_a5.htm
2-2) Facts: License revenue of patent / IP other than patent / research material

Source: MEXT’s web site “Performance of industry-university collaboration”
http://www.mext.go.jp/a_menu/shinkou/sangaku/main7_a5.htm
3. Characteristic examples of industry-university collaboration

- some encouraging signs for the coming years -
Kyoto University
Medical Innovation Center

MIC is a open innovation lab. for one-to-one institutional collaboration of drug discovery in specific disease area(s).

<table>
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<tr>
<th>Start</th>
<th>Company</th>
<th>Field</th>
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<tbody>
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<td>2011</td>
<td>Takeda</td>
<td>CNS Control (Obesity &amp; Schizophrenia)</td>
</tr>
<tr>
<td>2011</td>
<td>Sumitomo Dainippon</td>
<td>Cancer</td>
</tr>
<tr>
<td>2011</td>
<td>Mitsubishi Tanabe</td>
<td>Chronic kidney disease</td>
</tr>
<tr>
<td>2013</td>
<td>Shionogi</td>
<td>Alzheimer’s disease &amp; Psychiatric diseases</td>
</tr>
<tr>
<td>2007</td>
<td>Astellas</td>
<td>Immunology (model of MIC projects)</td>
</tr>
</tbody>
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産業と大学の共同研究をオン・キャンパスで実現

レベルの高い「人・資金・研究課題」を誘致し

“本気”の共同研究をオン・キャンパスで実現

独立した研究環境を整備

企業

研究者を常駐派遣

大学

面接・講座運営者

企業

ハイレベルの共同

複数年契約

Research agreement covering several years

Independent laboratory with members composed of university and company

Interuniversity Joint Research

若手研究員・教員・学生と

Internship on Campus

教育と実経験に基づく人材育成

To be lead to a good career-path

Face to Faceの

Face to face

コミュニケーション

Face to Faceの

面接

議論・課題設定・研究

面接

Face to face

コミュニケーション

To develop human resource which responds to social needs
Example of SHIONOGI & Co., LTD Joint Research

2014
SHIONOGI Science Program

We need seeds of Hope to the Future.

Isao Teshirogi, Ph.D.
President and CEO

SHIONOGI Science Program 2014

ご応募お待ちしております！
iPS cell-related technologies contribute to high growth of IP revenue.

Special organization for iPS-IP
  • IP office in CiRA
  • iPS-specific TLO

Kyoto University

SACI
IP & Licensing

CiRA
IP Office

TT outsourcing

TT revenue

iPS Academia Japan
(Established in 2008)
License in RAND conditions
PeptiDream Inc. Innovative Peptide Therapeutics

PeptiDream Inc is a privately-held biopharmaceutical company employing our proprietary Random Peptide Integrated Discovery (RAPID) Platform, a state-of-the-art highly versatile peptide generation and selection platform which enables the production of highly diverse non-standard peptide libraries with high efficiency, for the discovery and development of best-in-class and first-in-class peptide-based therapeutics.

Established in 2006
Example of Keio Univ. Start-ups

- Founded in 1998
- Business: Web Meeting system
- Company Listed in 2013

Web Meeting system

V-Cube
Inventor: Mr. Mashita (student of those days) et al.

Presented by V-CUBE INC.; http://jp.vcube.com/

V-CUBE is the market leader in TV conferences and web conferences.

7-year consecutive share No.1

No.1 share for 7 years in Japan

http://jp.vcube.com/
**Example of Keio Univ. Start-ups**

**Business:** Metabolome profiling, Biomarker Discovery, CE-MS consulting

**Technology:** Identify more than 1,000 species of metabolites by the metabolome analysis technology using capillary electrophoresis mass spectrometry (CE-MS)

**Founder:** Dr. Masaru Tomita, Dr. Tomoyoshi Soga

**President:** Ryuji Kanno

**Headquater:** Tsuruoka, Yamagata

**Founded in:** 2003

**Listed Company in:** 2013

**Collaboration:** with the Institute for Advanced Biosciences (IAB), Keio University

http://humanmetabolome.com/
Spiber
Inventor: Mr. Kazuhide Sekiyama (student of those days)

- Technology: producing an artificial spider thread by letting bacteria produce the miniature spider silk protein
- Headquarter: Tsuruoka, Yamagata

Stronger than steel in tensile strength.
Flexible as nylon.

Dress made from its artificial spider thread

The Wall Street Journal
July 8, 2013

http://online.wsj.com/article/SB10001424127887324399404578583562603579062.html

http://www.spiber.jp/company/
As you know, important thing is

4. Development of human resource by
   UNITT
   JST
   URA (MEXT)
   Leading Program (MEXT)
4-1) Development of human resource by UNITT

1) What is UNITT?
   “University Network for Innovation and Technology Transfer” ; “AUTM Japan”

2) Membership
   43 universities, 22 TLOs and 4 public research institutes

3) Program for development of TT experts and coordinators
   ✓ Annual conference: ① Two days training program ② More than 500 people are all together ③ Continued for 11 years
   ✓ Training Program for TT experts:
     ① twice/year ② fundamental / advanced course
4-2) Development of human resource by JST

1. Who is trained?
   ・Coordinators for academia-industry collaboration
   ・Clerical staffs

2. How many years have they trained?
   More than 10 years
   More than 7,000 people have been trained

3. Training programs
   ①Fundamental course for developing coordinator
      4 courses; Each course has 1 day program; 40 trainees
   ②Practical course for developing coordinator
      4 courses; Each course has 2 days program; 15 trainees
   ③Research management course for clerical staffs
      4 courses; Each course has 1 day program; 40 trainees
   ④Agreement/ Legal course
      2 courses; Each course has 1 day program; 20 trainees
4-3) University Research Administrator in Japan

**Research Administrator**
Persons who support researchers with research planning, management, commercialization. (similar role to editor against novelist)

**Purpose**
- Improvement R&D environment
- Strengthen R&D management function
- Diversification of researcher’s career path

- FY2011
  - Establish RA skill standard
    - Establish a draft of RA skill standard by committee
    - Make universities complete skill standard based on the draft.

- FY2012
  - Prepare the training programs

- FY2013
  - Assign RAs in universities
    - Support for RA application and education in universities
  - Develop human resources by utilizing RA Skill Standard and the training program

- FY2014
  - Support for Senior RA

- FY2015

*Source: University-industry collaboration and regional R/D div., MEXT*
4-4) Development of Next Generation URA as one of the output from Keio’s Leading Program

1. **Trainee**: Less than 20 students selected from 13 graduate schools (1,500 students per grade) in Keio

2. **Leading Graduate School Program**

   - **Master c.**
     - First major (2 years)
     - e.g. Engineering
   - **Master c.**
     - Second major (1 year)
     - e.g. Business and commerce
   - **Doctoral c.**
     - First major (2 years)
     - e.g. Engineering

   Joint Degree system

- 専用の共通科目履修; 海外インターンシップ・留学
- 夏/冬キャンプ、シンポジウム等参加
- グループプロジェクト演習・政策提言

Next Generation Ph.D With 2 master’s degrees
Thank you for your kind attention!