

2016年8月4日(土)

知的財産教育研究・専門職大学院協議会

【主催】知的財産教育研究・専門職大学院協議会(JAUIP)

【協力】WIPO(世界知的所有権機関)、IPAJ(日本知財学会)、JIPA(日本知的財産協会)

夏期知的財産連合英語セミナー2016

@東京理科大学 森戸記念館1階

「産学連携と技術移転」

-アカデミアの科学研究をイノベーション創出につなげる知財マネジメント-

Univ.- Industry collaboration & Technology Transfer

Academic Research to Innovation through IP manegement

金沢工業大学大学院 知的創造システム専攻

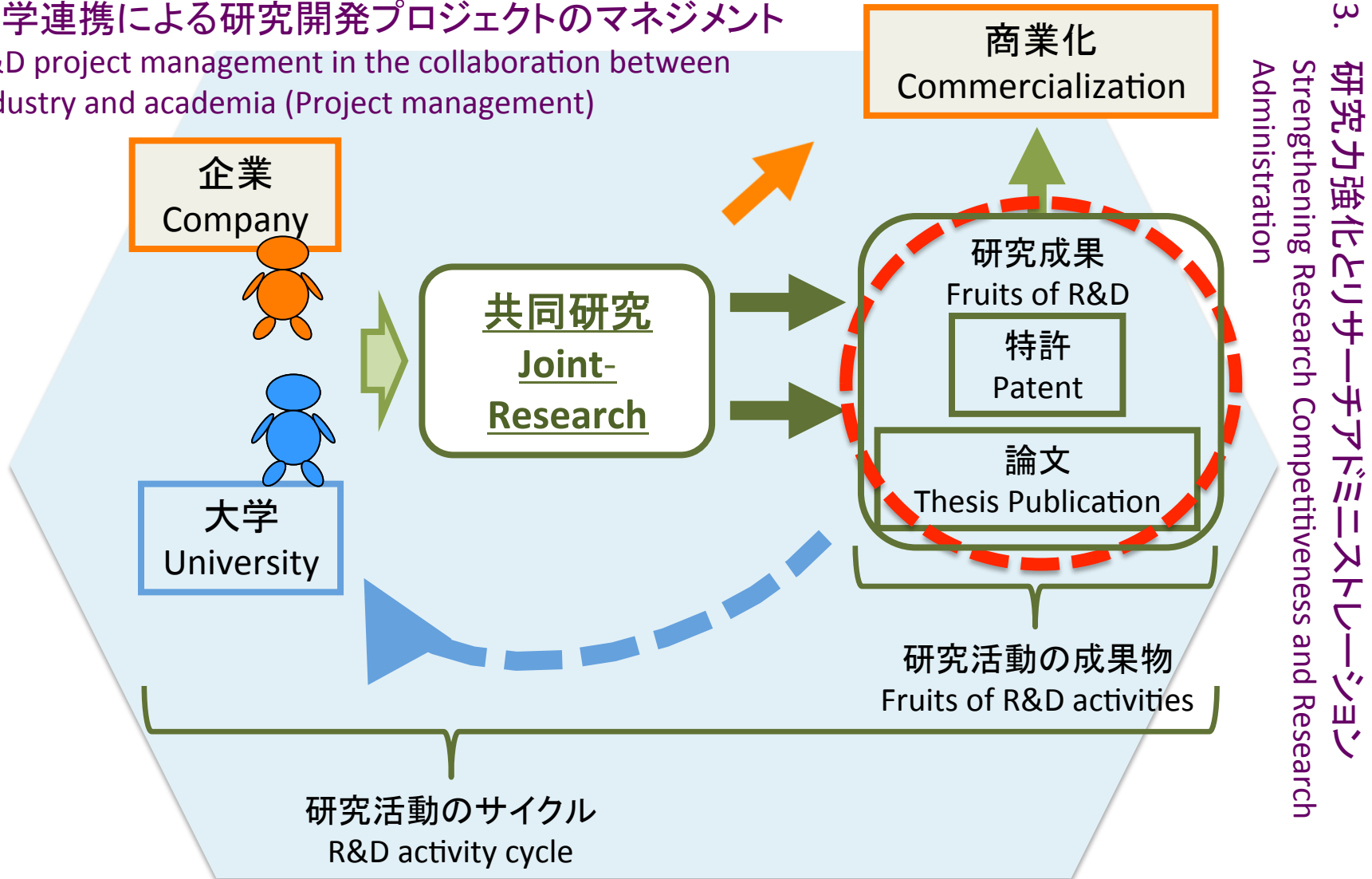
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3 points to understand in regard to the U-I collaborative R&D

1. 産学連携による研究開発プロジェクトのマネジメント

R&D project management in the collaboration between industry and academia (Project management)



2. 技術・知識の移転と創造

Transfer and creation of technology/knowledge

Aim of this Lecture

- In order for company business/IP strategy to bear fruit in terms of innovation, we need
 - 1) Knowledge of science and technology, and an understanding of the nature of R&D activities that will bring this about (Knowledge management)、
 - 2) Knowledge of what kind of processes and what kind of organizations give birth to science and technology (R&D Management)、
 - 3) Strategically utilize the results of these, through the use of a variety of IP systems (IP management)
- These 3 layers of activities actually occur in simultaneously and in an emergent way, and are subject to change at any time.

- Q1
 - What is the difference(s) between academic research and Industrial Res & Development?
- Q2
 - Do you take part in Univ.- Industry collaboration?
 - Your role?
 - Which side?
 - Is it success?

Today's TOPICS

- Case read : 10 Min

1. Simple comments about this case

2. Key issues to understand

– University-Industry collaboration:

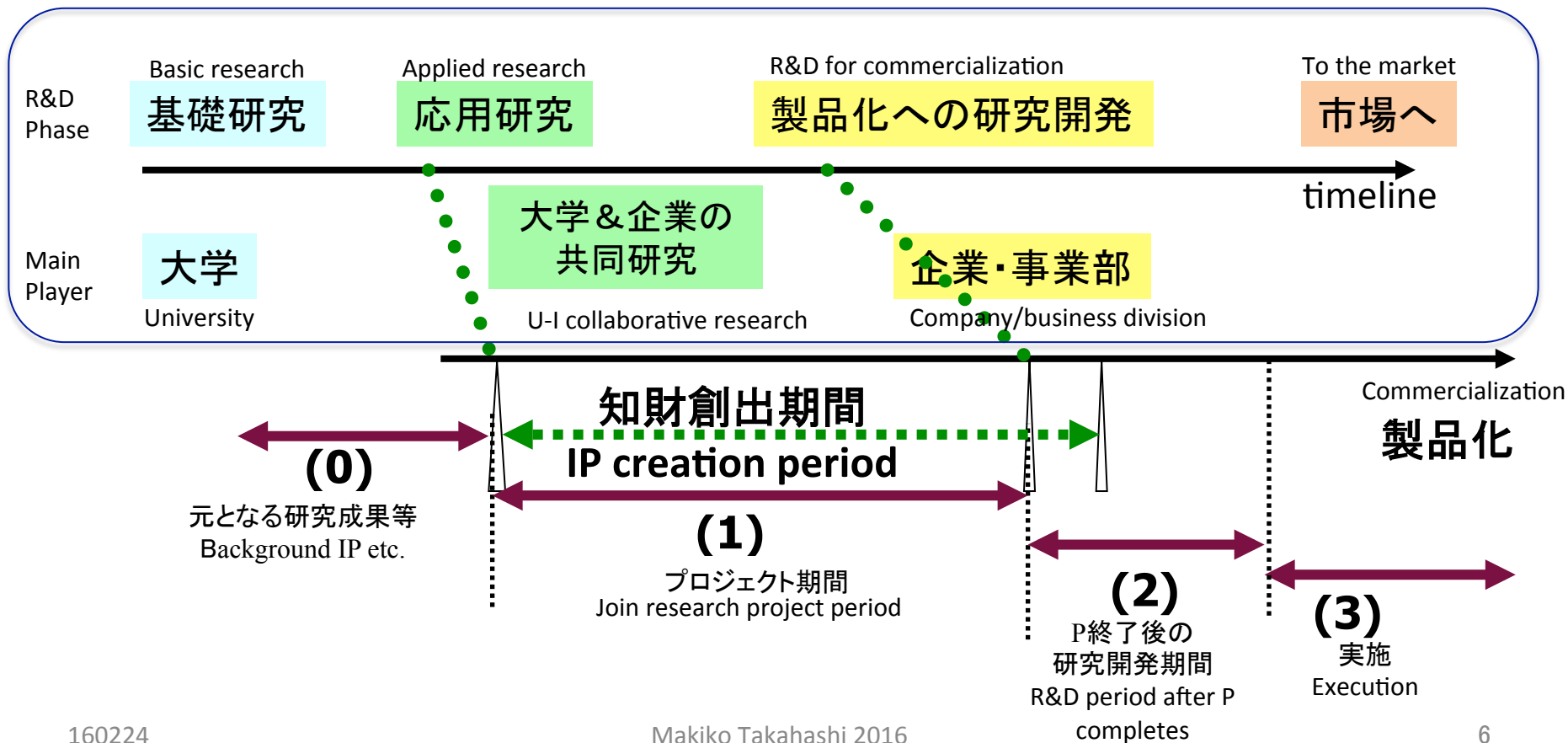
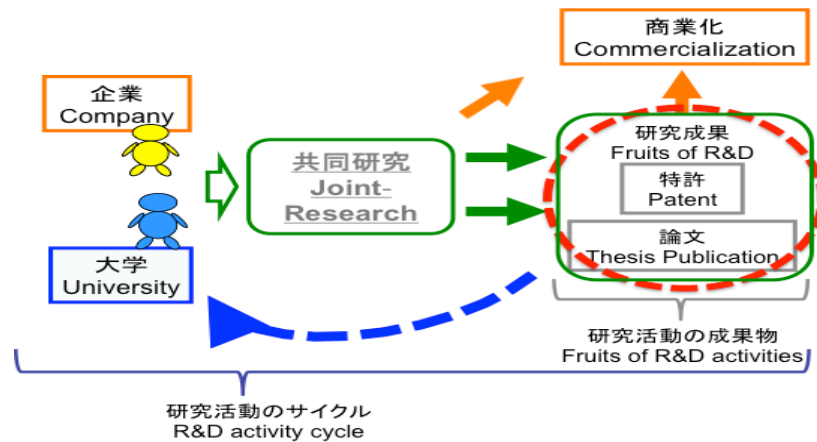
- Joint research: important point for effective collaboration
- Patent policy in several research intensive university in US

– Science & Technology policy:

- Bayh-Dole Act
- TLO
- Overview of licensing activities, JP-US comparison

– Science Linkage:

- In the context of international competitiveness, University play important roles in 21st. Knowledge-based society
- Start-ups



Company A

Situation

Objective

Expectations for the other party

Professor Miya

Situation

Objective

Expectations for the other party

Dr.student Shima

Situation

Objective

Expectations for the other party

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Conditions(Contents) of General joint research agreement

- research theme and responsibility
- participants
- research period
- costs
- research location, facilities
- How to share of the responsibility

Special issues of U-I joint research agreement



Student participation: engage an employment agreement for part-time work etc.

- Confidential information: Management of data, samples related to the trial,
 - Make clear what is the confidential matter, strictly restricted



Academic presentations: report in advance, clear the process, period, especially take into consideration relationship with patent applications

- Treatment of inventions:
 - Consistency with bilateral rules.
 - Certification of inventor, procedure of judging validity of application, period, cost burden, which side is the main charge to patent rights, procedure of decision-making.

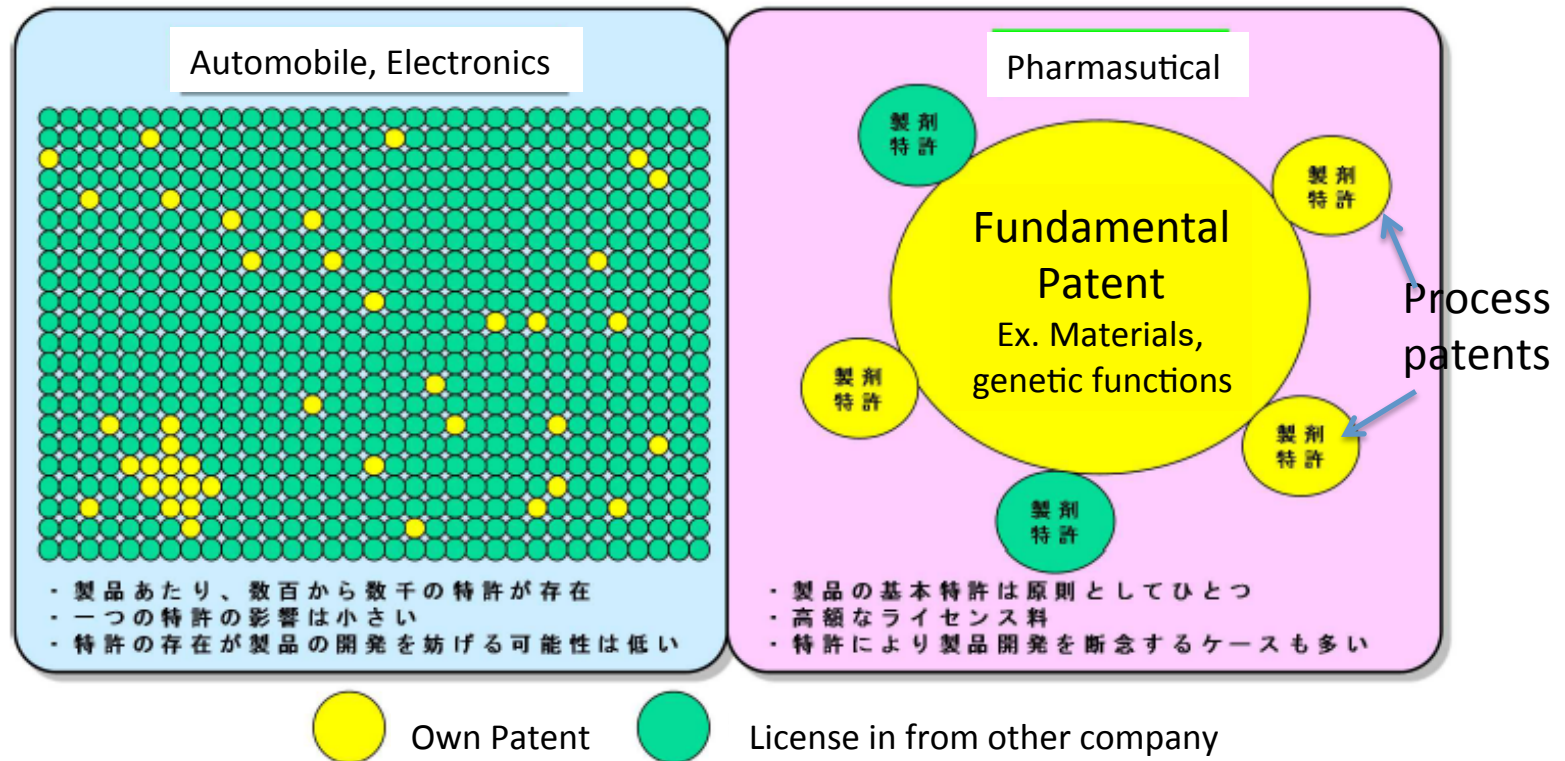


Condition of exploit the patent (rights): in the case of exploit by

- 1) the joint research company themselves, or
- 2) third party (more precisely, domestic companies and/or foreign companies).

- Policy about utilizing the research results derived from joint research

Typical industrial characteristics of the relationships between the product and it's related patents



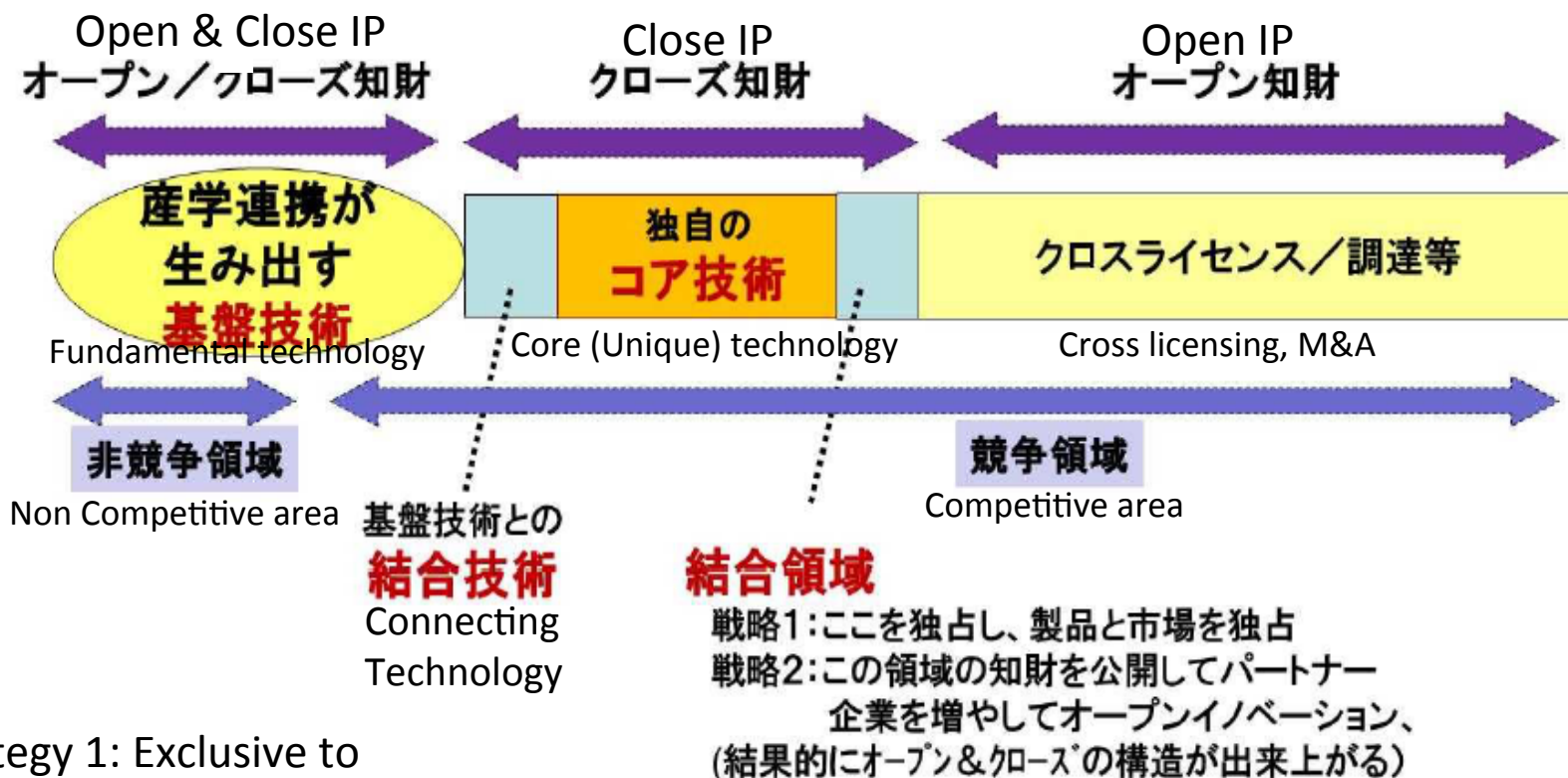
Huge number of pats.per product	In general, Only 1 pat. is essentially important
The effect of one pat. Is relatively small	Expensive licensing fee. The existance of killer Pat. will be the huge damage for commercialization

Other important matters

- Time and administrative cost to engage contract
- the possibility to occur in real

IP management of UI collaborative joint research

【産学官連携からみた企業側の知的財産マネジメント⁷⁾】



Strategy 1: Exclusive to

結合領域

戦略1:ここを独占し、製品と市場を独占
 戦略2:この領域の知財を公開してパートナー企業を増やしてオープンイノベーション、
 (結果的にオープン&クローズの構造が出来上がる)

大学の成長とイノベーション創出に資する大学の知的財産マネジメントのあり方について
 文部科学省科学技術・学術審議会 産学連携・地域支援部会
 「大学等における産学官連携リスクマネジメント検討委員会」 報告書 (H27年度)

例1 : UC Office of President Memorandum

UC: University of California

- UC wants to review all inventions disclosures by faculty, staff and graduate students(GSRs) to see if the university wants to assert ownership or co-ownership of the invention.
- What must be disclosed?
 - All inventions made by a university employee must be disclosed to the University , including inventions made during vacation, on weekends, while on leave, in the evening, or at home(“in the garage”) when engaged in paid or unpaid consulting work. As noted above, disclosures is a legal obligation of employment at the University. It is not permissible to sign atn agreement with an external party that precludes or limits disclosure of inventions to the University.
 - Page 10 of March 3, 2003 memo

例2 : Stanford University

- All potentially patentable inventions conceived or first reduced to practice in whole or in part by members of the faculty or staff (including student employees) of the University **in the course of their University responsibilities or with more than incidental use of University resources**, shall be disclosed on a timely basis to the University. Title to such inventions shall be assigned to the University, regardless of the source of funding, if any.
- The University shall share royalties from inventions assigned to the University with the inventor.
- **The inventors** , acting collectively where there is more than one, **are free to place their inventions in the public domain** if they believe that would be in the best interest of technology transfer and if doing so is not in violation of the terms of any agreements that supported or related to the work.

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The Bayh–Dole Act

- The Bayh–Dole Act or Patent and Trademark Law Amendments Act (Pub. L. 96-517, December 12, 1980)
 - United States legislation dealing with intellectual property arising from federal government-funded research.
- The key change made by Bayh–Dole
 - ownership of inventions made with federal funding.
 - Before the Bayh–Dole Act
 - federal research funding contracts and grants obligated inventors (where ever they worked) to assign inventions they made using federal funding to the federal government.
 - After the Bayh–Dole Act
 - permits a university, small business, or non-profit institution to elect to pursue ownership of an invention in preference to the government.
- Japanese Bayh-Dole Act: 1999

What is TLO

Technology Licensing Organization(Office)

- **Marketing & licensing the academic research results to Industry based on IP.**
From 1980s in USA , activated in 1990s
- In Japanese context, first 4 TLOs launced in **1999** (supported by METI), aims to activate knowledge and resource transfer between U&I.
- **36 TLOs**(2014) existed as several styles such as **private company, foundation, an office as a part of university**(inside university), regional government leading organization as NPO, etc.
- Invention disclosure, evaluation, patent application, office action, marketing, licensing
- **“Licensing associate”** are the proffesionals of these activity. AUTM in USA, UNITT in JP are the proffesional community.
- **特許**を中心に研究成果である知的財産の**マーケティング**をする機関。米国の大学で80年代に盛んに設立され、90年代に花開いた。
- 日本では、産業界の研究成果活用を促し、大学へ資金を環流させる新しいシステムとして、平成10年に文部科学、経済産業両省による承認制度が開始された(承認TLO)。
- **承認TLOは36**(平成26年9月時点)。**株式会社、学内組織、財団法人**など形態は多様である。**地域主導型**もある。
- 主たる活動として、発明開示から評価、出願、権利化、マーケティング、実施許諾契約、事後業務まで(一貫して担う場合が多い)
- こうした専門業務を実行する人材を「**ライセンスアソシエイト**」と呼ぶ。米国にはAUTM、日本にはUNITTという職能団体がある。

産学連携の各ステージで関与する専門人材

Research Administrator (NCURA)@US
リサーチ・アドミニストレーター協議会@JP

＜職名と主たる所属＞

＜代表的な業務＞

URA
(リサーチ
アドミニスト
レーター)
@大学

産学連携
コーディネー
ター@TLO、
公的機関

ライセンシ
ングアソシエ
イト@TLO、
知財本部

Contract Research
(共同、受託研究)

**Col (利益相反マネジメ
ント)**

**Start-ups
Consulting**
(ベンチャー支援)

(発明評価、特許化)

**Invention
Disclosure**

Patent Application

**Patent Right
Maintenance**









(技術移転)
Licensing

		公的競争 研究資金	民間との 共同研究
Pre-Award 採択までの企画 etc.)	情報収集	○	○ → ◎
	企画		
	申請書作成		
	応募		
Post-Award 採択後の実施)	採択	○	◎
	実施		
	終了		
	報告		

Licensing Associate (AUTM)@US
大学技術移転協議会 (UNITT)@JP

- Evaluation & Patent maintenance
- Marketing & Licensing
- Business Development

Skills Required for URA

	Pre-Award	Post-Award	
Experience of Research			Recognized to be significant
Accounting			
Contract/Judicial			
Intellectual Properties			
Compliance			
Negotiation			

- Various skills are required for pre-award business.
- Experience of research is desirable for both pre- and post-award business, because of growing importance of industrial collaboration.

Skill set of of URA business in Japan (2013) 1/2

Research Development: 3

1. Survey of Science and Technology Policy
2. Research Ability Analysis (Institutional Research)
3. Planning Research Strategy

Pre-Award : 5

1. Support Res project Planning
2. Collection of Funding Information
3. Internal negotiation for Project Formulation
4. External negotiation
5. Support for Application

Post-Award : 5

1. External adjustment
2. Progress Management
3. Accounting
4. Support for project evaluation
5. Reporting

研究戦略推進支援(3業務)

1. 政策情報等の調査分析
2. 研究力の調査分析
3. 研究戦略策定

プレ・アワード業務(5業務)

- ① 研究プロジェクト企画立案支援
- ② 外部資金情報収集
- ③ 研究プロジェクト企画のための内部折衝活動
- ④ 研究プロジェクト実施のための対外折衝・調整
- ⑤ 申請資料作成支援

(3)ポスト・アワード業務 (5業務)

- ① 研究プロジェクト実施のための対外折衝・調整
- ② プロジェクトの進捗管理
- ③ プロジェクトの予算管理
- ④ プロジェクト評価対応関連業務
- ⑤ 報告書作成業務

In total, **13 business fields**, every field have **3 levels**(beginner, middle, senior)
Beginner:1-5years experience, middle:5-10, senior: more than 10years.
And **9 other related** are categorized to "the Others"

Overview of Tech transfer & licensing activities, JP-US comparison

	Total Research Expenditures	number of Invention Disclosures	Patent Applications Filed/Invention Disclosures	Number of Patent Applications Filed	Number of new Licenses	Number of Current and Active Licenses	Ajusted License Income
Japan TY2012	¥2,310billion	8,494	76.7%	6,517 (Domestic)	2,298 (100 TLOs & IPMOs)	6,883 (100 TLOs & IPMOs)	¥2.28 billion (100 TLOs & IPMOs)
	*Japan Total	*JapanTotal		*Japan Total			
US FY2011 (186 TLOs)	\$61.4billion	21,856	60.7%	13,271 (New)	6,051	38,600	\$2.25 billion

	Number of Startup Companies Formed	Staffing
Japan FY2012 (100 TLOs & IPMOs)	21 (100TLOs & IPMOs)	1,792
US FY2011(186 TLOs)	670	2,175

●米国との対比 (2007年時▶2014年時)

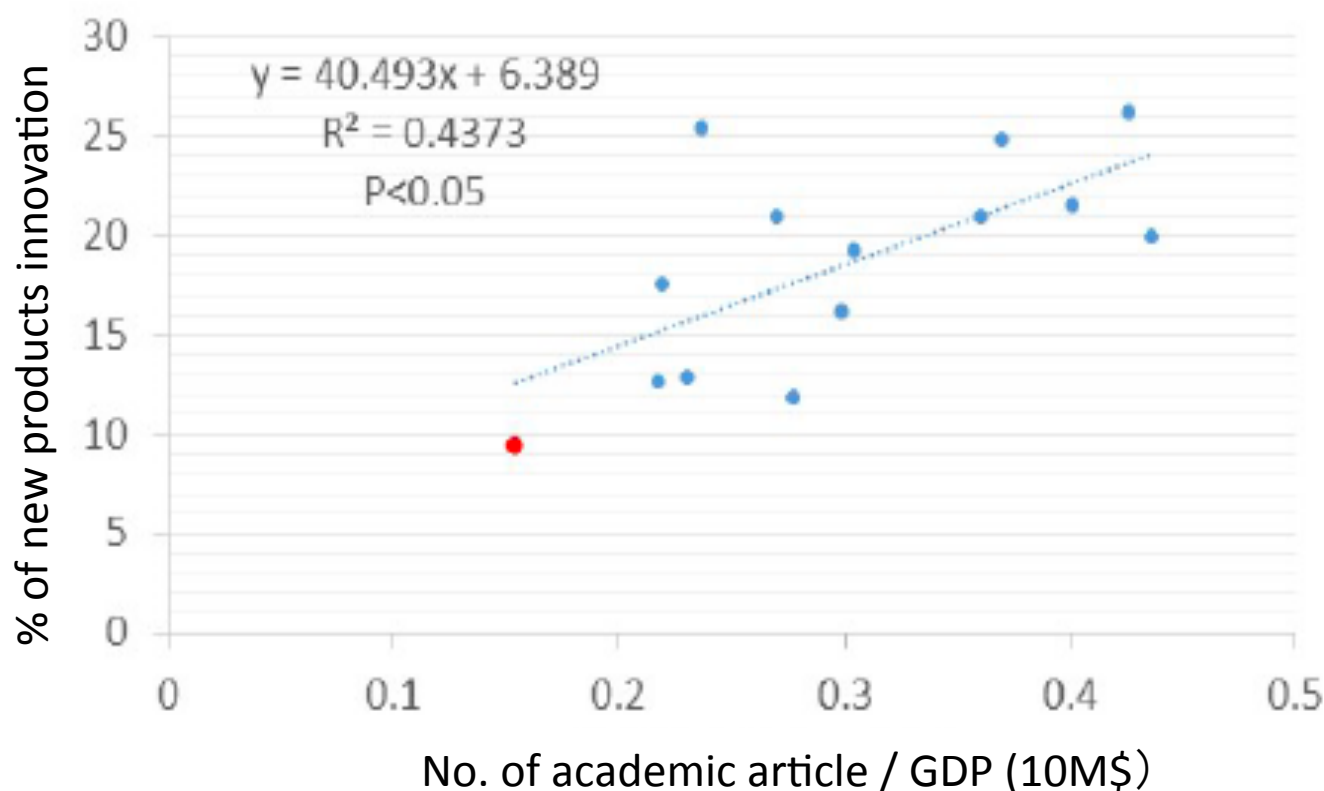
特許登録件数 ✕10▶✕2↓
 新規ライセンス件数 ✕4▶✕3↓
 ライセンス収入 ✕100▶✕100→
 ベンチャー起業数 ✕10▶✕30↑
 (施策の後押しが減って...)

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Positive correlation between academic activity and product innovation performance

Top 3 counties are Sweaden, Austria , Denmark.
Red mark is JP unfortunately ▯ ▯

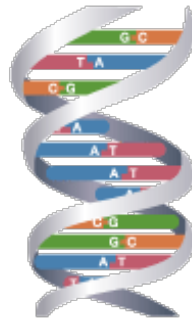


新規プロダクトイ
ノベーション実現
の大きい順
スウェーデン
オーストリア
デンマーク
フィンランド
ニュージーランド
ベルギー
スイス
イギリス
ドイツ
オランダ
ノルウェー
フランス
オーストラリア
日本

Why U-I collaboration is important for innovation

- Science and technology
the key of economic competitiveness
- New knowledge and ideas
the origin of Innovative activity
- Diversity
positively related to innovative productivity

Univ. licensed technology make big economic impact



Start – Ups from Univ. technology and/or univ. faculty



TEIJIN



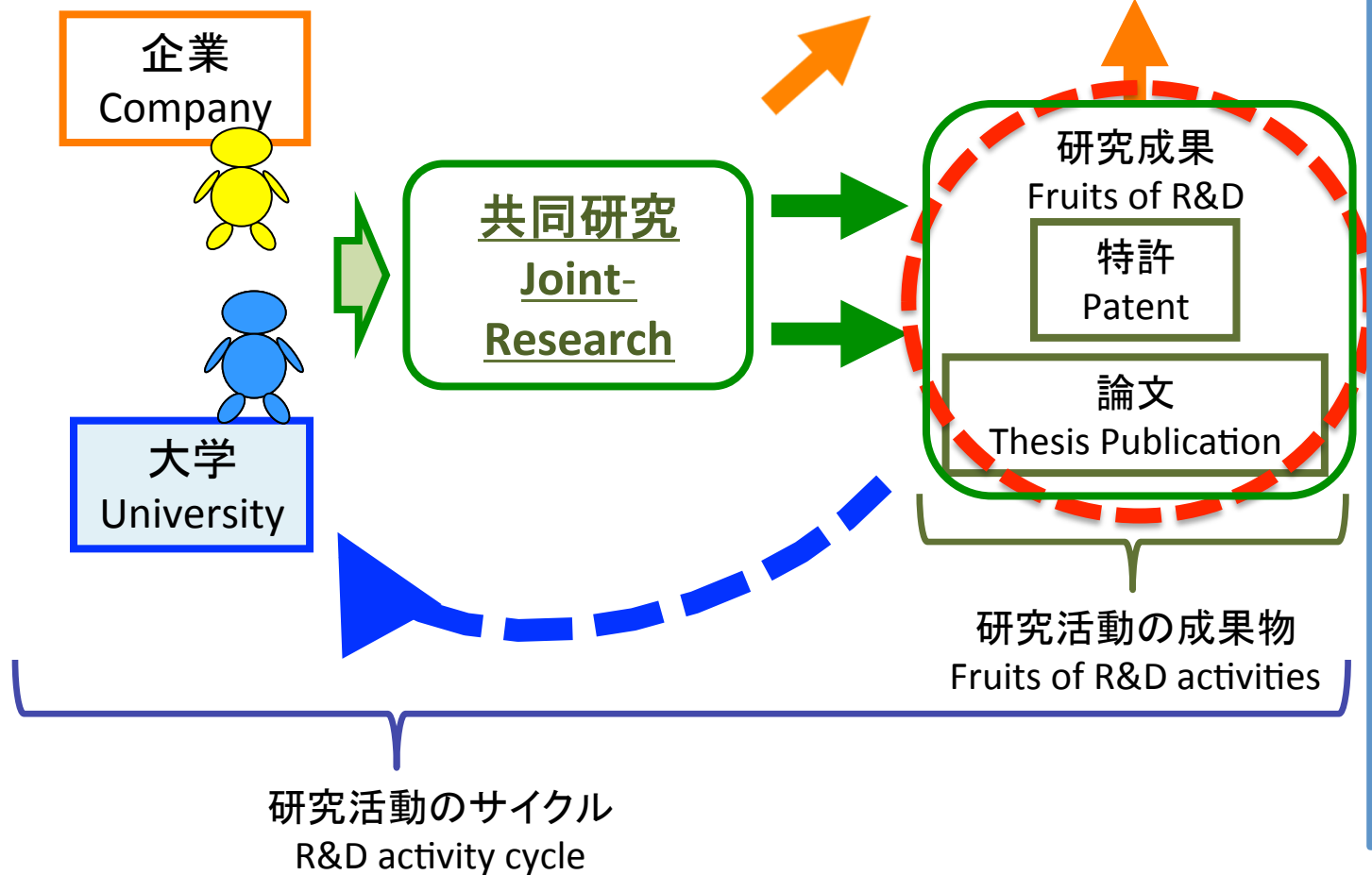
Eat Well, Live Well.
AJINOMOTO®

Start – Ups from Univ. student



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3. 研究力強化とリサーチアドミニストレーション
Strengthening Research Competitiveness and Research Administration

Company A

Situation

- Provide materials over a wide range of industrial fields, such as the automobile, steel, rubber, electric and food processing industries.
- The leading chemical industry in Japan, and have strength in R&D.

Objective

- To achieve complete dispersion to solvent E widely used in the manufacturing processes of Company A and make it into a product.

Expectations for the other party

- Want to improve internal R&D ability to promote their business competitiveness.
- Want to acquire knowhow of trial protocols etc. (prepared a supercritical field reactor in the Kawasaki plant of Company A)

Professor Miya

Situation

- The laboratory started in 2001.
- There were no staff, small-scale laboratory with only 4 students.
- Grand vision of wanting to develop supercritical science.

Objective

- To achieve complete dispersion to solvent E widely used in the manufacturing processes of Company A and make al into a product.
- In the long term, for al to be used in a diverse range of products and for the field of supercritical science to be developed.

Expectations for the other party

- Provide al for a diverse range of industrial materials.
 - Business development of the general chemical manufacturer Company A
 - Excellent R&D resources
 - Next joint research

Dr.student Shima

Situation

- First Dr. student of Prof. Miya
- Pioneer of Miya's laboratory from 2001, one of the key person for Prof.Miya and Company A

Objective

- First, get Ph.D., degree! Then, promote to academic career path.
- In the long term, have nearly the same dream to Prof Miya about the development of supercritical science .

Expectations for the other party

- Stakeholders ;
 - Prof. Miya, Company A, Other industrial user companies in the 2nd research periods, Lab members,
- Dilemma ;
 - New scientific knowledge, vs Industrial application