

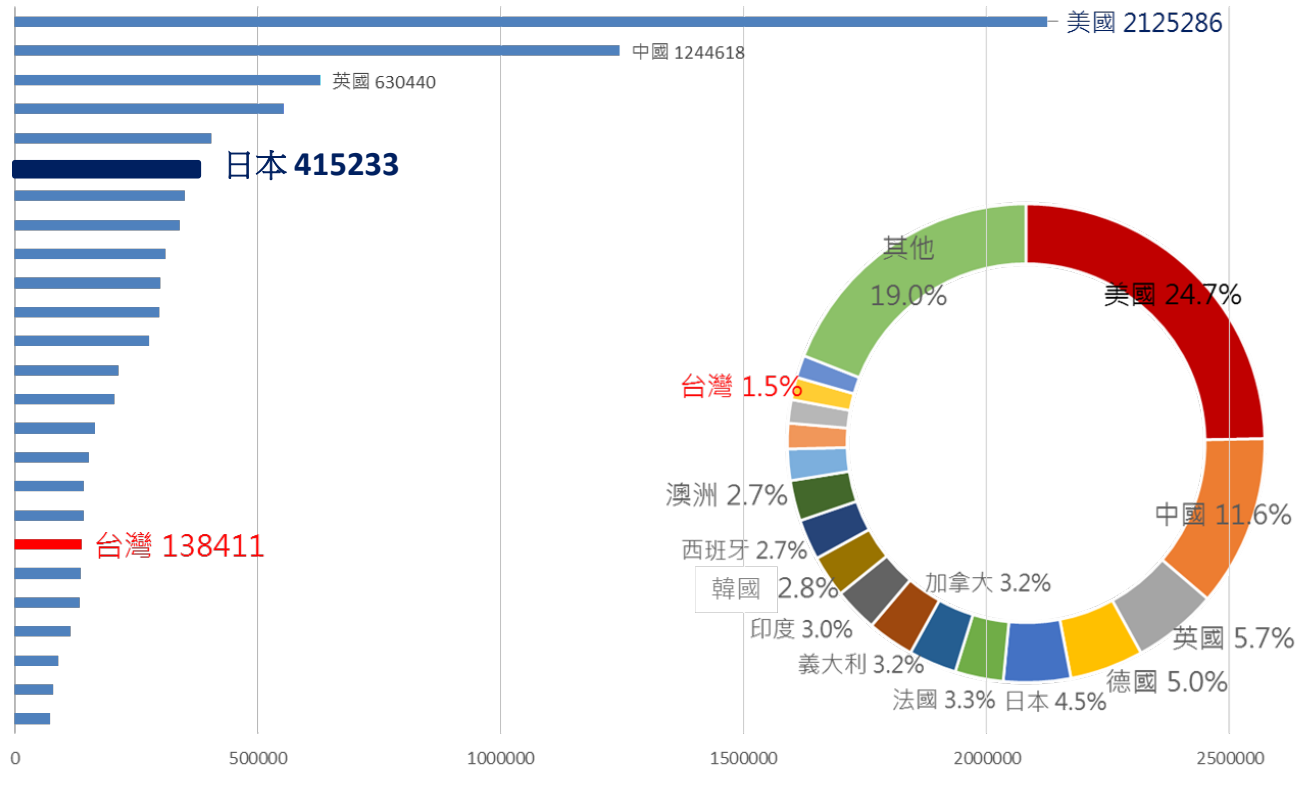
Enhancement of Young Researcher Exchanges between Universities in Japan and Taiwan

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Outline

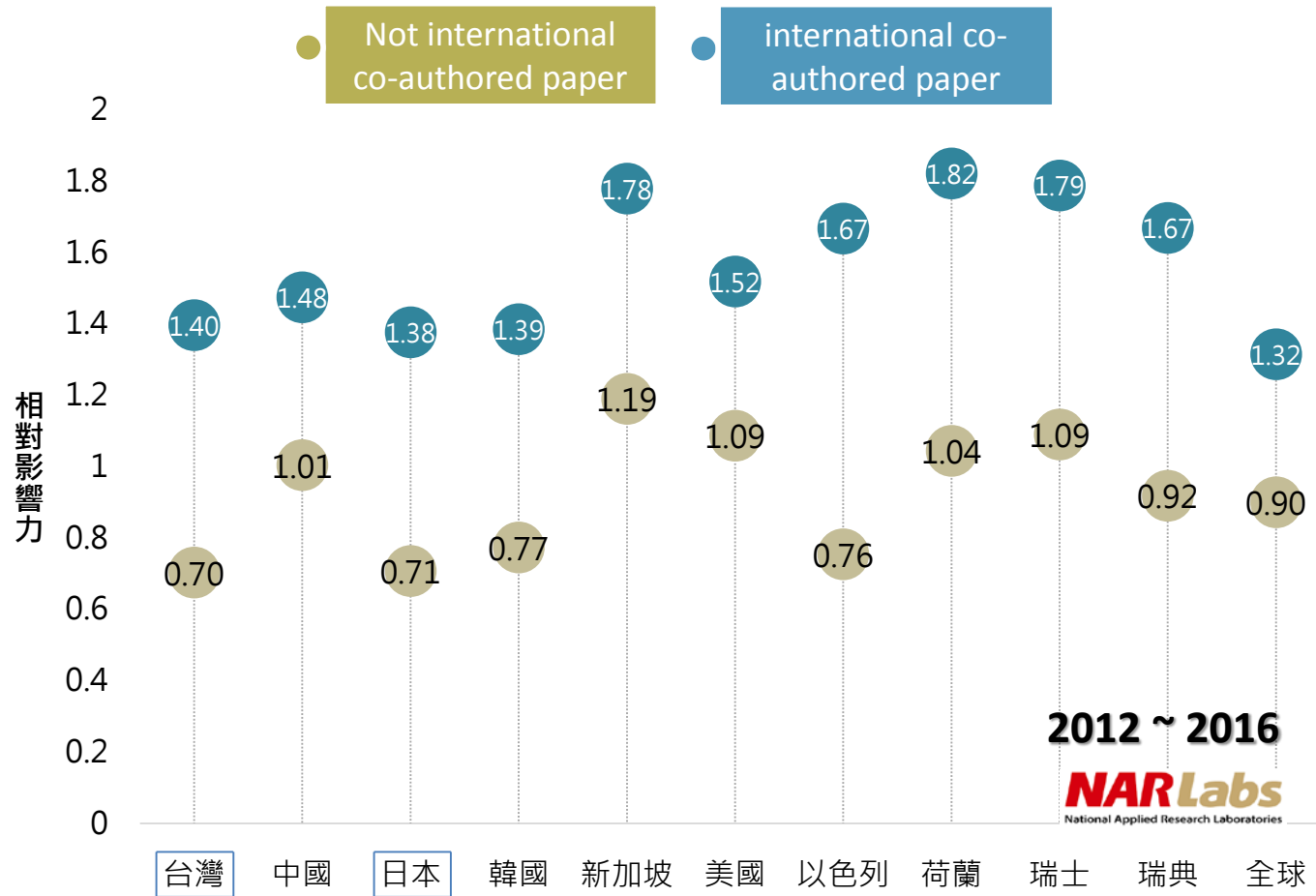
- Background and status of researcher exchanges between Taiwan and Japan-from the aspect of paper collaboration
- The role of funding program
- Future prospects

Status of paper publication during 2012 to 2016



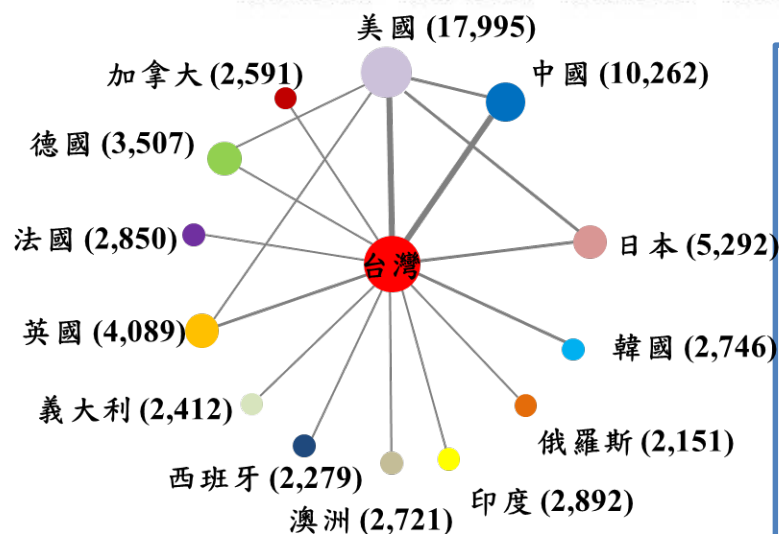
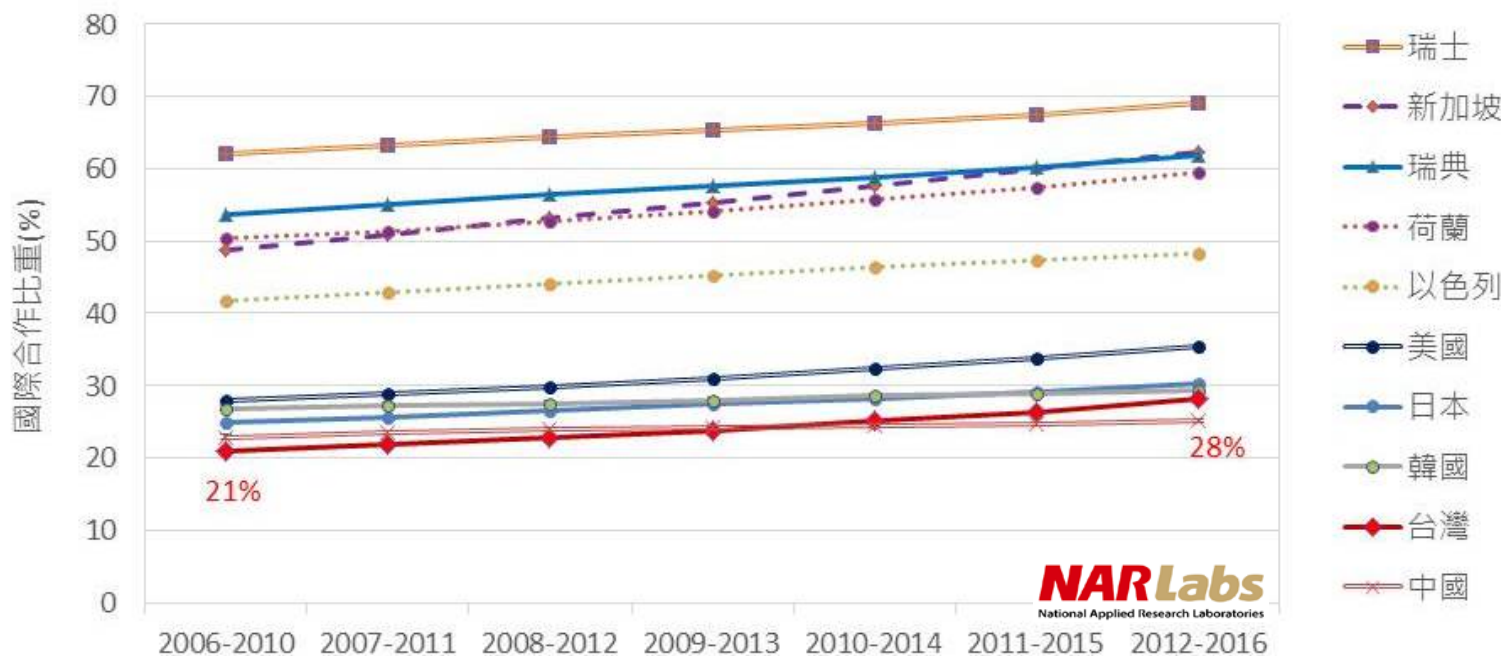
- According to Web of Science (SCI & SSCI), the accumulation amount of Taiwan's paper publication from 2012 to 2016 was 138411, accounting for about 1.5 % of the world's total, ranked 19.
- Japan ~415000 paper publication, accounting for 4.5%, ranked 5th over the world.
- Co-publications between countries are frequently used as an indication of research cooperation between them.
- What is the degree and content of research collaboration between Taiwan and Japan?

Relative impact with and without international co-authorship



- Relative impact with international co-authorship increased evidently for both countries

Ratio of internationally coauthored papers



- High ratio of internationally coauthored paper publication typically means high level of researcher international mobility in which young researchers play the fundamental role.
- Ratio of internationally coauthored papers of Taiwan occupied 28% during 2012 – 2016, while ~30% for Japan.
- Japan is the third partner that Taiwan most cooperated with, i.e., 14% of internationally coauthored paper with Japan.

Top 10 institutes of collaboration between Taiwan and Japan (2011-2015)

Top 10 Taiwanese institutes that collaborate with Japan

Rank	Institute	No. of publications
1	Academia Sinica	1,417
2	National Taiwan University	1,088
3	National Central University	406
4	National Cheng Kung University	361
5	National Tsing Hua University	339
6	National Chiao Tung University	325
7	China Medical University Taiwan	189
8	Chang Gung Memorial Hospital	169
9	Chang Gung University	166
10	Kaohsiung Medical University	164

Top 10 Japan institutes that collaborate with Taiwan

Rank	Institute	No. of publications
1	University of Tokyo	1,169
2	Kyoto University	858
3	Tokyo Institute of Technology	796
4	Nagoya University	781
5	Waseda University	745
6	Osaka University	723
7	University of Tsukuba	719
8	Okayama University	643
9	High Energy Accelerator Research Organization (KEK)	624
10	Tokyo Metropolitan University	591

Source: InCites, Clarivate Analytics (2016/12), STPI prepared

- University researchers between Taiwan and Japan contributed most of the research collaboration activity.

Main research areas of collaboration between Taiwan and top 3 Japan institutes (2011-2015)

University of Tokyo

N O.	Research Area	No. of publications
1	Physics	655
2	Space science	171
3	Clinical medicine	62
4	Geosciences	49
5	Chemistry	48

Kyoto University

N O.	Research Area	No. of publications
1	Physics	524
2	Space science	72
3	Chemistry	39
3	Clinical medicine	39
5	Geosciences	34

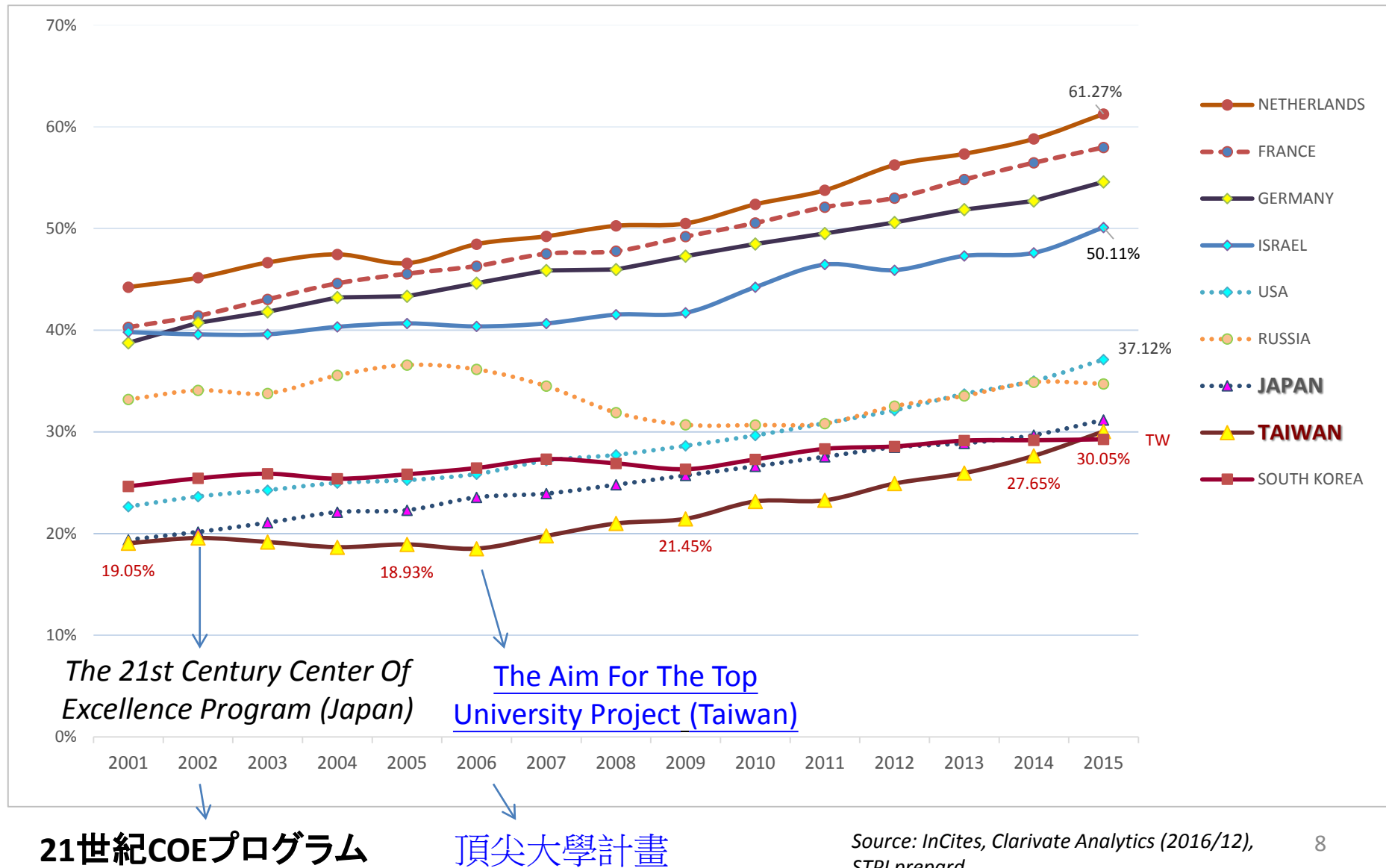
Tokyo Institute of Technology

N O.	Research Area	No. of publications
1	Physics	591
2	Chemistry	59
3	Mathematics	45
4	Space science	37
5	Materials Science	17

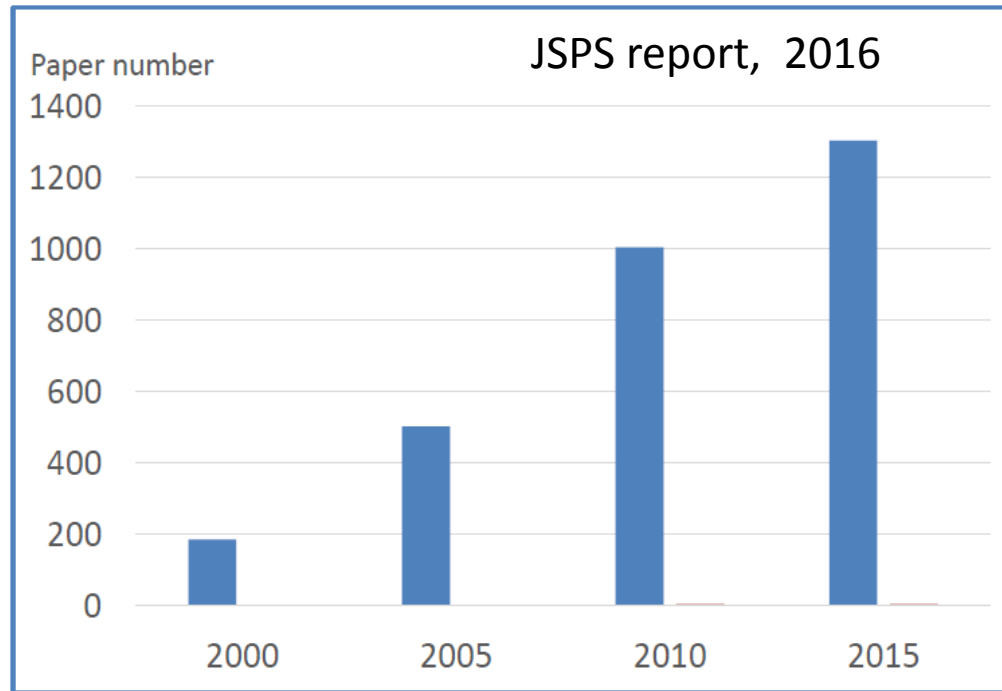
Source: InCites, Clarivate Analytics (2016/12), STPI prepared

- Fundamental research, i.e., physics, space science, chemistry, and clinical medicine dominated the research collaboration between Taiwan and Japan.

Percentage of publications with international collaboration (2001-2015)



Funding programs for young researcher exchange between Taiwan and Japan



1. Summer Program, Summer Visiting Program, and Taiwan-Japan bilateral seminar program initiated between National Science Council (NSC) and Japan-Taiwan Exchange Association (財団法人交流協会若手研究者交流事業) laid a good foundation during 2003~2010.

2. Co-authored papers ~500 in 2005, doubled to ~1000 in 2010

NSC, Taiwan MOST

1. 台日博士生暑期研究及台日青年研究人員暑期短期參訪考察計畫
2. 台日雙邊研討會補助計畫
3. 台日青年科技人才交流—選送人員赴日本研究計畫

Japan-Taiwan Exchange Association

1. 財団法人交流協会若手研究者交流事業 (Summer Program, Summer Visiting)
2. 日台科学技術のための合同セミナー・シンポジウム助成事業
3. 日台青年科学技術人材交流計画—日本人学生対象

Talents Cultivation Programs

Outbound

- Bilateral Personnel Exchange Programs
- Project-based Personnel Exchange Programs (PPP) with European countries
- Sandwich program- students registered at their home university, while studying for 6-18 months in Germany
- Funding for overseas International S&T Conferences
- **Research study program – researchers, Ph.D. students, postdocs**
- **Dragon Gate Program**
- LEAP Program

Taiwan MOST

台日青年科技人才交流—
選送人員赴日本研究計畫

Inbound

- Recruitment of Research Scholars
 - Einstein Program
 - **Columbus Program**
- Recruitment of Visiting S&T Personnel
- **Distinguished International Research Scholars and S&T Leaders Short-term Visit**
- Leaders in Future Trends (LIFT)
- **Bilateral Personnel Exchange Programs**
- Project-based Personnel Exchange Programs (PPP) with European countries
- Summer Program (Canada, France, Italy, Spain, Germany)

Japan-Taiwan Exchange Association

日台青年科學技術人材交流計畫—
日本人學生對象



Dragon Gate Program

New Partnership Program for the Connection to the Top Labs in the World

a mission oriented young researcher exchange program

- To establish international partnerships by connecting Taiwan teams with top research institutes/labs in the world
- To develop cooperative relations and network with the mutual benefits for both sides

The PI/co-PI must stay at the cooperative research institute/lab at least two months per year (up to two visits per year).

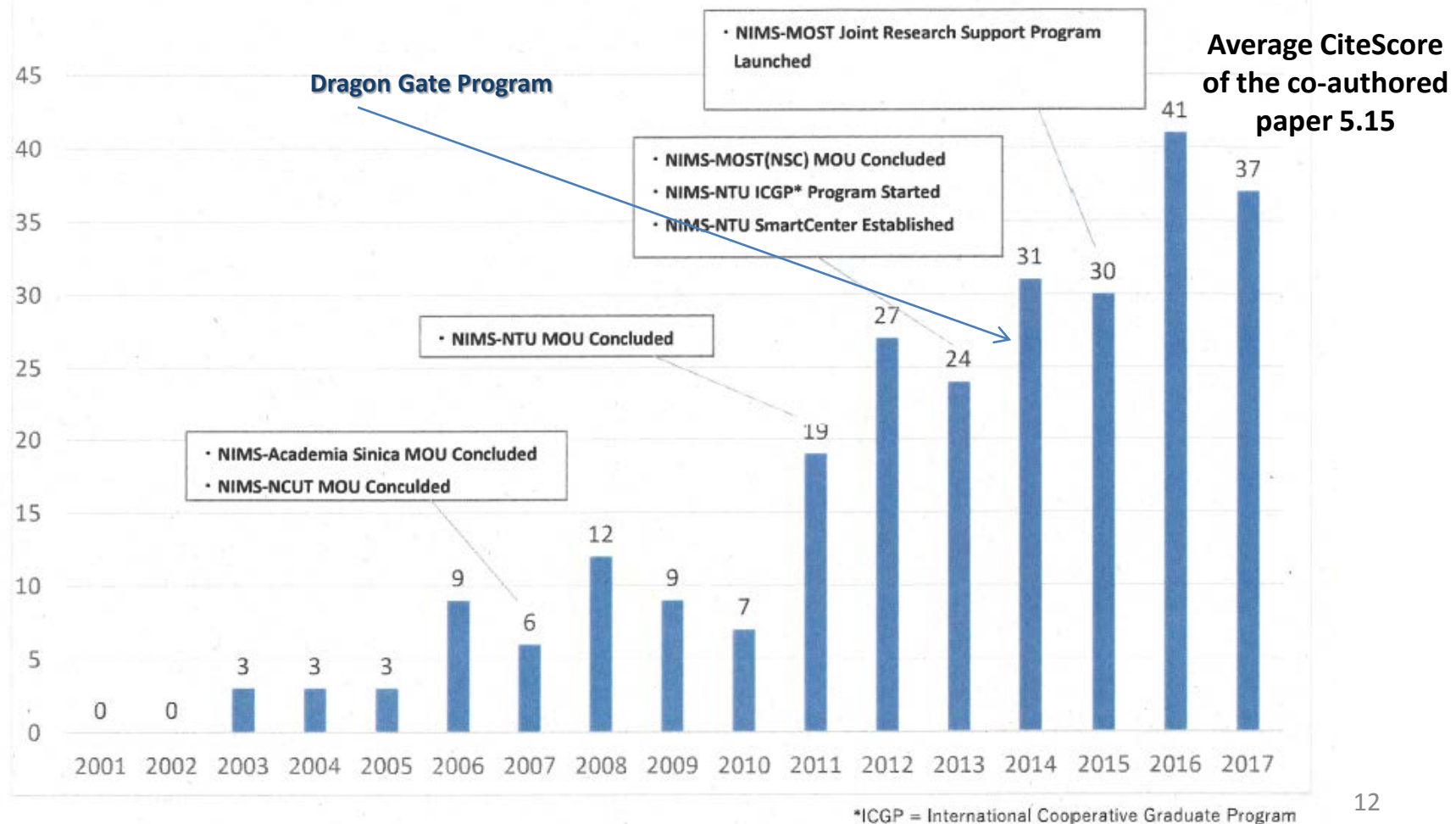
Each **PhD student/Post-doc researcher** must stay for research work at the host research institute/lab for at least 10 months per year.

Taiwan-NIMS co-authored papers

Number Transition of Taiwan-NIMS Co-authored Papers from 2001 to 2017

Compiled from Scopus,
Elsevier B.V., as of December
2017

Dragon-Gate Program, Research study program + NIMS Internship Program



Future prospects

IMD Ranking				WEF Ranking	
Technological Infrastructure		Scientific Infrastructure		Innovation and Sophistication Factors	
1 st	Singapore	1 st	USA	1 st	Switzerland
2 nd	Netherlands	2 nd	Japan	2 nd	USA
3 rd	Finland	3 rd	China	3 rd	Germany
4 th	China	4 th	Israel	4 th	Japan
5 th	Switzerland	5 th	Switzerland	5 th	Sweden
6 th	USA	6 th	Germany	12 th	Singapore
15 th	Taiwan	8 th	South Korea	17 th	Taiwan
17 th	South Korea	10 th	Taiwan	22 nd	South Korea
18 th	Hong Kong	12 th	Singapore	23 rd	Hong Kong
19 th	Japan	24 th	Hong Kong	29 th	China

Source: IMD World Competitiveness Yearbook, May 2017;

World Economic Forum Global Competitiveness Report, September 2016.

1. Taiwan remained highly competitive in technological infra, while Japan was leading in the Scientific infra, Innovation and Sophistication Factors (ie., business value chain breadth, local supplier quality and quantity, ..)
2. Taiwan was leading in University-industry collaboration in R&D (16/137) vs. Japan (23/137) during 2017-2018.

Win & win synergy for young researchers exchange between Taiwan and Japan in the future

- Mission oriented or policy based exchange programs:
project based exchange program
- International university-industry collaboration in
open innovation
- **Technology Licensing Organization (TLO) or University
Startups of Japan's universities + Innovation &
Incubation Center of Taiwan's university**

日台大学国際産学共同研究プロジェクトの構成

日台国際産学連携プラットフォーム

Japan-Taiwan Exchange Association

- プロモーション
- 申請を受け入れ
- プロジェクトの選考

台湾科学技術省 (MOST, Taiwan)

科学技術発展を促進するための政府機関、台湾各大学及び研究機関に研究費用を補助する。eg. [Global Research & Industry Alliance \(GLORIA\)](#)

②

国際産学共同研究
プロジェクトに応募

③

採択・助成

②

国際産学共同研究
プロジェクトに応募

③

採択・助成

日本国内産学連携

日本の科研機構
国・公・私立大学

産学
連携

日本企業(including
university startups) or
台湾系企業の日本現地法人

①

国際協力関係提携

台湾国内産学連携

台湾の科研機構
国・私立大学

産学
連携

台湾企業 or
日系企業の台湾現地法人

Global Research & Industry Alliance

GLORIA
Global Research & Industry Alliance

An alliance centered on universities

ILC should serve as a single unit service center, by ways of integrating industrial and academic institutes, establishing the linkage between scattered universities units based on the demands of industrial side, the resulting benefits could be maximized.



Taiwan Steps Out

Research Group
(cross-universities
collaboration is
allowed)

Match-
making

Industrial
Liaison
Center

Member
Service

Register

Domestic
Enterprises

Global
Enterprises



World Steps In



International Collaborations

To invite ILP officers from MIT and UCB to share their experiences with us, and meet up with representatives of each universities.

Held technology interchange and international conferences in Taiwan

To invite leading experts from revolutionary domains and industries to come to Taiwan.

International Conferences & Exhibitions Participation

MOST will take the lead and direct each universities to attend significant international exhibitions and hold international conferences, so that more cooperation opportunities could be secured.

International Visitations/ Strategic alliance

MOST will coordinate between each universities, and visit international industrial and academic institutes abroad as a group, so that we could further negotiate possible strategic alliances, make joint efforts on technology manifestation, match-make international members, enhance international cooperation, and make Taiwan visible to the world.



Thanks for your attention.