

Recent Progress on Science, Technology and Innovation Cooperation between Japan and Canada



Takashi NISHIYAMA

The Embassy of Japan in Canada

January 28, 2013

Japan- Canada Joint Committee on Science and Technology Cooperation

Contents

- ***Japan-Canada Summit Meeting***
 - ***S&T Agreement between Japan and Canada***
 - S&T Agreement
 - 25th Anniversary of S&T Cooperation
 - ***Overview of the last Joint Committee meeting***
 - ***Recent Progress in PRCF cooperation on:***
 - Stem cells and regenerative medicine
 - Nanotechnology
 - Sustainable energy technologies
 - ***New S&T cooperation other than PRCF***
 - ***Issues to be discussed at the Joint Committee***
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1. Japan-Canada Summit Meeting (1/2)

Canada-Japan Joint Announcement of Outcomes at Tokyo on March 25, 2012

2. The two leaders welcomed increased investments and business from Japanese companies in Canada's energy and mineral sector, and highlighted the great potential to further expand trade and investment to ensure stable supply of such resources through market mechanisms. *Both leaders recognized the importance of accelerating their efforts to facilitate cooperation between the private sectors of the two countries including on the trade of natural gas and continuing collaboration on research and technology in these sectors.*

Energy and Mining

1. Japan-Canada Summit Meeting (2/2)

Canada-Japan Joint Announcement of Outcomes...contd.

9. *The two leaders recognized the significant achievements made under the Japan-Canada Science and Technology Cooperation Agreement, which marked its 25th anniversary last year, including the recent signings of a memorandum on the epigenetics of stem cells between the Canadian Institutes of Health Research and Japan Science and Technology Agency (JST), and a memorandum on renewable energy and energy efficiency between the Japanese Science and Technology Agency (JST) and the Canadian Council of Engineering Research Council of Canada, as well as the workshops in the field of stem cell and nanotechnology in 2011, to discuss possible research areas in both fields. The two leaders shared the aspiration to maintain momentum toward the coming 12th Japan-Canada Joint Science and Technology Committee.*

10. *Recognizing a Memorandum for Promotion of Space Cooperation is to be signed in the coming days, both leaders shared the intention to further their collaboration in peaceful uses of outer space.*

Stem Cell, sustainable energy
and Nanotechnology

Space Cooperation

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2. S&T Agreement

□ Agreement between the Government of Japan and the Government of Canada on Cooperation in Science and Technology;

- ✓ Established in 1986
- ✓ **Last year was 25th Anniversary of the Agreement**

□ The Agreement includes;

- ✓ Developing cooperative activities in science and technology in such fields as may be mutually agreed
(Article 1)
- ✓ Establishing a **Joint Committee on Science and Technology Cooperation**
(Article 4.1)
- ✓ The Joint Committee meets in principle 2 years
(Article 4.2.)

25th Anniversary of S&T Cooperation ***(1/2)***

- ❑ Commemorative events in both countries
- ❑ **First Japanese Astronaut Dr. Mamoru Mohri** visited Canada in September 2011
 - ✓ Montreal, Ottawa and Vancouver
 - ✓ Met with Hon. Gary Goodyear, Minister of State (Science and Technology) and Hon. Christian Paradis, Minister of Industry
 - ✓ Public lectures on space and science, technology and innovation



Met with Hon. Gary Goodyear,
Minister of State(Science and Technology)



Met with Hon. Christian Paradis,
Minister of Industry



Public lecture by Dr. Mohri at the Canadian Museum of Civilization, a special event of the Japanese Exhibition; "Japan: Tradition. Innovation."

25th Anniversary of S&T Cooperation (2/2)

- ❑ 25th Anniversary Celebration of the Japan-Canada S&T Agreement in Kyoto, Japan in October 2011
 - ✓ Attendance of Hon. Ed Fast, Minister of International Trade
 - ✓ Honoring of Dr. Shizuo Akira, Osaka University for his receipt of the 2011 Gairdner International Award
 - ✓ The signing of MOU between JST and NSERC in support of joint funding for Canada-Japan research partnerships in the area of Renewable Energy and Energy Use



Hon. Ed Fast, Minister of International Trade and
Dr. Shizuo Akira, Osaka University



Signing ceremony of MOU between JST and
NSERC

(Ref.)

2011 Canada Gairdner Awards

□ **Canada Gairdner Awards;**

Recognition of individuals whose work or contributions constitute tangible achievement in the field of medical science.

□ **Dr. Shizuo Akira** was one of the recipients of the 2011 Canada Gairdner International Awards;

For their ground breaking discoveries and definition of the family of Toll-like receptors and the array of microbial compounds that they recognize to provide innate resistance to infection (Immunology).



Dr. Shizuo Akira,
Osaka University



Hon. Leona Aglukkaq, Minister of Health and
H.E. Kaoru Ishikawa, Ambassador of Japan to Canada

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3. Overview of the last Joint Committee meeting (1/2)

□ The 11th JC at Ottawa on November 9, 2010

(JC: Japan-Canada Joint Committee on Science and Technology Cooperation)

□ Co-chaired by;

Mr. Ian Burney, Assistant Deputy Minister, DFAIT (then)-CANADA

Mr. Makoto Yamanaka, Ambassador for S&T Cooperation, MOFA (then)-JAPAN

□ Outcomes:



(1) It was determined that the funding document; **Funding Opportunities for Canadian-Japanese S&T Cooperation and Exchange** would be published on respective Canadian and Japanese websites

Funding Opportunities for Canadian-Japanese S&T Cooperation and Exchange

-This document is aimed to inform all relevant sectors (including administrative officials, researchers, students, and industries) of funding opportunities for Canadian-Japanese S&T Cooperation and Exchange.

-It will be open to the public with mutual understandings in the Joint Committee.

-It is expected to be revised for each Joint Committee, to give up-date information.



Canada-Japan Joint Committee on Science and Technology Cooperation
Nov. 9th, 2010 at Ottawa, Canada

1

1. Bi-/ Multilateral Research Project -based Cooperation		
Targeted Scientists	Japan's scheme	Canada's scheme
Research Groups	JSPS G8 Research Councils Initiative <ul style="list-style-type: none">- Overview: New multilateral research funding program for a remedy against well-known global problem which can be on a long run, achieved by global and other interdisciplinary scientific approach. It has been managed under the cooperation by funding agencies in G8 countries. (NSERC from Canada participates)- Funding amount: up to JPY 150 million/project/year- Support duration: 2 - 3 years- Eligibility: Research groups in G8 countries- Application to: Leading PI submits application to Call Secretariat (which is one of the participating organizations)- Deadline: Middle of May- Further information: http://www.iesp.go.jp/iesp/ndb/ie-b/ie-b/ie-b.html- Contact: iesp@iesp.go.jp	NSERC Collaborative Research and Development Grants (CRD) <ul style="list-style-type: none">- The CRD program supports R&D projects undertaken by university researchers and their private-sector partners. Awardees cover up to half of the direct project costs, with the industrial partner (s) providing the balance in cash and in-kind.- Collaborations are expected to result in industrial or economic benefits to Canada.- Partner companies operating from a Canadian base must participate in project, contribute at least half of the resources, and exploit the research results in Canada.- Other partners (foreign universities or companies) can join these partnerships.- CRD awards range from \$10,000 to \$500,000 per year for 1-5 years. The application success rate is approximately 85 percent.- Year-round applications.
Research Groups/ Individual Collaboration	JSPS-CIHR Bilateral Program <ul style="list-style-type: none">- Overview: Support for joint research projects carried out between researchers from Japan and Canada. Proposals are openly recruited and jointly selected by JSPS/CIHR.- Funding amount: Up to JPY 2.5 million/project/year- Support duration: 1-3 years- Eligibility: Applicants must hold a full-time or equivalent position as a researcher at a university or research institute in Japan.- Application to: Japanese project leader submits application to JSPS while Canadian project leader submits to CIHR.- Deadline: Middle of September- Further information: http://www.iesp.go.jp/iesp/ndb/ie-b/ie-b/ie-b.html- Contact: iesp@iesp.go.jp	JSPS-CIHR Bilateral Program (Japan-Canada Joint Health Research Program) <ul style="list-style-type: none">- Overview: Support for joint research projects carried out between researchers from Japan and Canada in identified research areas. Proposals are openly recruited and jointly selected by JSPS/CIHR.- Funding amount: Up to \$CAN 30,000/year- Support duration: Up to 3 years- Eligibility: Applicants must hold a permanent position with universities or affiliated research institutes in Canada.- Application to: Japanese project leader submits application to JSPS while Canadian project leader submits to CIHR.- Deadline: potential research in 2011-12- Further information: iesp@iesp.go.jp- Contact: iesp@iesp.go.jp

http://www.mofa.go.jp/mofaj/gaiko/technology/nikoku/ja_ca.html

and

<http://scienceportal.jp/trend/report/canada.html>

3. Overview of the last Joint Committee meeting (2/2)

□ Outcomes:

(2) Agreement on the Framework on Research Cooperation

- Prioritized Research Cooperation Fields(**PRCF**)
 - ✓ **Stem cells and regenerative medicine (Life Sciences)**
 - ✓ **Advanced materials (Nanotechnology)**
 - ✓ **Sustainable energy technologies (Clean Energy and Environment)**
 - ✓ **S&T support in developing countries**
- For **Advanced materials** and **Sustainable energy technologies**, further precision was requested and **both sides determined to define the subsectors more narrowly.**

(3) With the consensus of DFAIT and MEXT, **NSERC and JST** will work to establish **joint funding** for cooperative research projects in the area of **environmental science and technologies and energy.**

➡ **MOU** was signed in Kyoto October, 2011.



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4. Recent Progress in PRCF cooperation on stem cells and regenerative medicine

□ Major existing cooperation:

- ✓ MOU on research collaboration between CiRA, Kyoto University and the University of Toronto in October 2008
- ✓ JST-CREST iPS consortium and Ontario Stem Cell Initiative (OSCI)
- ✓ CiRA, Kyoto University and OSCI

□ Japan-Canada stem cell workshops

- ✓ First workshop in Toronto in June 2011
- ✓ Second workshop in Yokohama in June 2012

...at the occasion of the annual meeting of the International Society for Stem Cell Research (ISSCR)



(Note:)

CiRA: Center for iPS Cell Research and Application

4. Recent Progress in PRCF cooperation on stem cells and regenerative medicine

- The signing of an MOU between JST and CIHR in support of joint funding for cooperative research projects in the area of stem cell and epigenetics, in January 2012
- ✓ JST and CIHR reviewing applications of joint research projects



Signing ceremony of MOU between JST and CIHR

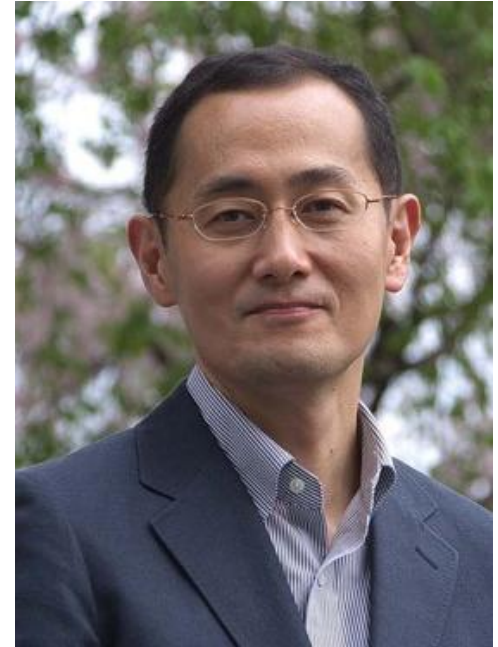
(Ref.) Distinguished Scientists in Stem Cell Research



Dr. Ernest A. McCulloch,
Canada
(1926-2011)



Dr. James E. Till,
Ontario Cancer Institute,
Canada



Dr. Shinya Yamanaka
CiRA, Kyoto University
Japan

For the discovery of stem cells and the development of iPS cells

4. Recent Progress in PRCF cooperation on nanotechnology

□ Major existing cooperation:

- ✓ MOU on research cooperation between Japan's *National Institute of Advanced Industrial Science and Technology (AIST)* and Canada's *National Institute of Nanotechnology (NINT)*, signed in September 2006
- ✓ MOU on a partnership agreement between *Nagano Techno Foundation* and *Nano-Quebec*, signed in February 2009
- ✓ Comprehensive MOU between Japan's *National Institute for Material Science (NIMS)* and *Waterloo Institute for Nanotechnology (WIN)*, University of Waterloo, signed in February 2010



NINT, Edmonton



Signing ceremony of MOU between NIMS and WIN

4. Recent Progress in PRCF cooperation on nanotechnology

□ Major existing cooperation:

- ✓ Partnership agreement between *Shinshu University* and *Canadian universities including the University of Montreal and Concordia University*, signed in June 2010
- ✓ MOU on research cooperation (nanotechnology and green chemistry) between *RIKEN* and *McGill University*, signed in July 2010
- ✓ MOU on research cooperation in nanotechnology between *International Center for Materials Nanoarchitectonics (MANA)*, *NIMS* and *University of Montreal*, signed in July 2011

□ Nanotechnology Mission

- ✓ February to April 2009: Missions to Japan and Canada

4. Recent Progress in PRCF cooperation on nanotechnology

□ First Canada-Japan Nanotechnology Workshop

- ✓ Held in November 2011 at Waterloo, hosted by WINS
- ✓ Attended by representatives from universities, institutes and governments
- ✓ Emphasized *the importance of creating a framework (funding opportunity) on joint training and education for young talented scientists in Japan and Canada*



Opening remarks by Hon. Gary Goodyear, Minister of State (Science and Technology) and H.E. Kaoru Ishikawa, Ambassador of Japan to Canada

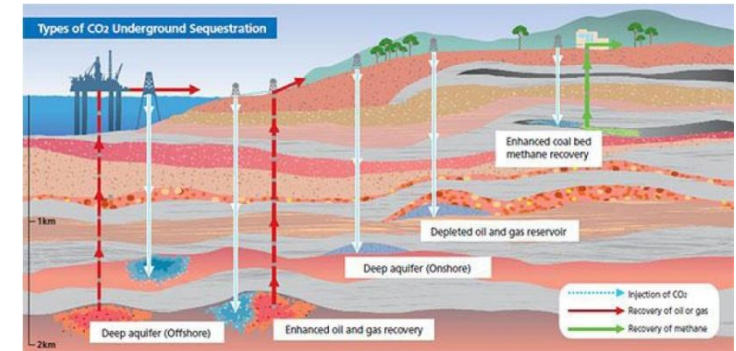
□ Second Japan-Canada Nanotechnology Workshop

- ✓ will be held in January 29 to 30 in Tokyo
- ✓ further collaborations will be explored

4. Recent Progress in PRCF cooperation on sustainable energy technologies

□ Major existing cooperation:

- ✓ Joint **CCS project** between **Sojitz** and **Saskatchewan Power Corporation (SaskPower)**, signed in February 2010
- ✓ Collaboration on Energy and Environmental Technology Development, including **CCS, renewable energy and smart grid technologies** between **Hitachi** and **the Government of Saskatchewan**, signed in May 2010
- ✓ MOU to encourage more cooperation on **clean coal and CCS** between **JCOAL** and **the Government of Saskatchewan**, signed in January, 2011
- ✓ MOU for cooperation to test **clean coal and CCS technologies** between **JCOAL** and **NRCan (Natural Resources Canada)**, signed in September 2012



Source: CO₂ Underground Sequestration, IPCC (Intergovernmental Panel on Climate Change)

□ CCS Mission

- ✓ September 2009: Japanese Mission to Canada
- ✓ February 2011: Canadian Mission to Japan

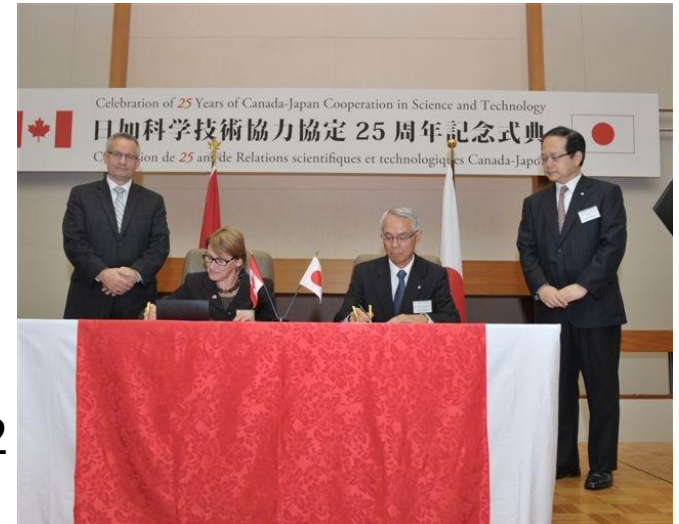
(Note)

CCS: Carbon Dioxide Capture and Storage

4. Recent Progress in PRCF cooperation on sustainable energy technologies

- The signing of an MOU between JST and NSERC in support of joint funding for Canada-Japan research partnerships in the area of Renewable Energy and Energy Use, in October 2011

- ✓ JST and NSERC announced 1 new project on Renewable Energy in October 2012
- ✓ JST and NSERC held a workshop on clean energy research in February, 2012 at Vancouver



Signing ceremony of MOU between JST and NSERC

- New initiative: Intellectual and human exchanges related to natural resources sector as a follow-up of the bilateral summit meeting

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5. New S&T cooperation other than PRCF

- Space cooperation

□ Major existing cooperation:

- ✓ **Strong tie between JAXA** (Japan Aerospace Exploration Agency) **and CSA** (Canadian Space Agency)
 - ISS cooperation, including capturing HTV (*Konotori*) with Canadarm 2 in 2009, 2011 and 2012
 - Disaster monitoring, and Satellite developments



□ **Space MOC** (Memorandum for Promotion of Space Cooperation)

- ✓ Signed in March 2012, by:
 - Japan - *Minister of Education, Culture, Sports, Science and Technology*
 - *Minister of State for Space Policy*
 - Canada - *Minister of International Trade*
- ✓ Cooperation framework established:
 - Implementing Arrangements
 - Joint Meeting and Working Group



Signing ceremony of Space MOC

 ***Further collaborations will be explored to enhance our space cooperation***

5. New S&T cooperation other than PRCF

- Cluster to Cluster cooperation

□ New initiative by Japan:

- ✓ Promoting *collaborations and joint R&D* between the member organizations of the two countries' *technology clusters* for enhanced regional innovation:
 - the *matching of the research needs* of clusters from both sides
 - *effective R&D for commercialization by opening up communication channels* between the two countries' cluster organizations

□ Japan-Canada Global Cluster Collaboration Forum

- ✓ Held in October 2012 at Tokyo
- ✓ Fields to be discussed:
Aerospace, Medical science, ICT
- ✓ Attended from universities, institutes, private sectors and governments
- ✓ Confirmed mutual high interest to initiate cluster to cluster cooperation



Opening remarks by Hon. Gary Goodyear, Minister of State (Science and Technology)

5. New S&T cooperation other than PRCF

- Other important cooperation

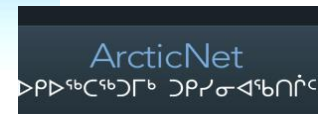
□ RIKEN-McGill collaboration:

- ✓ Nanotechnology and green chemistry
- ✓ Workshops held October 2010, and April 2012
- ✓ Exploring further collaborations...



□ Arctic research cooperation:

- ✓ Japan-Canada Arctic Research Workshop in January, 2013 at Tokyo
- ✓ National Institute of Polar Research (NiPR) and ArcticNet



□ Earth science cooperation:

- ✓ Geodynamics
- ✓ Declaration of Intent signed in September 2012
- ✓ NRCan (Natural Resources Canada) and JAMSTEC (Japan Agency for Marine-Earth Science and Technology)



□ Science Communication cooperation:

- ✓ Miraikan (National Museum of Emerging Science and Innovation) and Canada Science and Technology Museum Corporation



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6. Issues to be discussed at the Joint Committee

- ❑ **Joint Committee** to explore and decide Governments' initiatives on our S&T cooperation
- ❑ **Review on the recent progress** in PRCF cooperation as well as new initiatives (Agenda 4, 5)
- ❑ **Concrete future actions on each PRCF** ? (Agenda4)
- ❑ **Future directions on new initiatives** ? (Agenda 5)
- ❑ Discussion on **revision of setting PRCF** (Agenda 6)

(Ref.) Embassy's assistance to enhance Japan-Canada S&T Cooperation

- ❑ **Point of Contact** regarding S&T issues between Japan and Canada
- ❑ **S&T Cooperation Planning, Consultation and Meeting Arrangements** for scientists and researchers to explore possible S&T collaborations
- ❑ **S&T Promotion** to enhance the cooperation through providing information on collaborative S&T efforts between the two countries

S&T quarterly Newsletter

25TH ANNIVERSARY



Japan Science & Technology Newsletter

July, 2011

To celebrate the 25th Anniversary of Science and Technology co-operation between Canada and Japan, the Embassy of Japan presents the *Japan Science & Technology Newsletter*, a quarterly report on Japanese technology highlights and news. Canada and Japan have shared 25 years of cooperation in the fields of science and technology reaching new heights, including the docking of Japan's H-II Transfer Vehicle with the ISS, made possible by the Japanese rocket H2B and the Canadarm2.



In the spirit of this strong relationship the Embassy of Japan would like to keep you informed of Japanese S&T, in the hopes of strengthening our cooperation further, now and in the future.

1. Japan-Canada S&T cooperation

1.1 First joint Japan-Canada stem cell workshop

At the annual meeting of the International Society for Stem Cell Research in Toronto, the first Japan-Canada stem cell workshop was held on June 18. 40 well-known stem-cell researchers attended the workshop; 22 from Japan and 18 from Canada, where Japanese and Canadian researchers gave presentations regarding stem cell research and its related fields, engaging in discussion afterwards. Scientists and researchers both agreed to hold further discussions to seek areas of cooperation focused on future research. (June 18)



http://www.ca.emb-japan.go.jp/JapaneseSite/Taishikan/stem_cells_workshop_2011.htm

Embassy's S&T Webpage

**Embassy of Japan in Canada**



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Japan-Canada Cooperation for the future
未来志向の日加協力
Japan-Canada: Science, Technology and Innovation Cooperation
日本・カナダ: 科学技術イノベーション協力



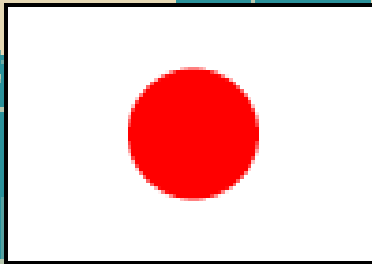
(Copyright JAXA)
Japan and Canada: Co-operating in Space.
The Canadarm2 holds Japan's H-II Transfer Vehicle (HTV), launched by the Japanese H-IIB Rocket, as it docks with the International Space Station. Kibo, the Japanese Experimental Module laboratory can clearly be seen.

【Embassy's S&T Webpage:】

Visit at

http://www.ca.emb-japan.go.jp/canada_e/Bilateral_Relations/Japan-Canada_science_technology_innovation_cooperation.html

Thank you for your attention!



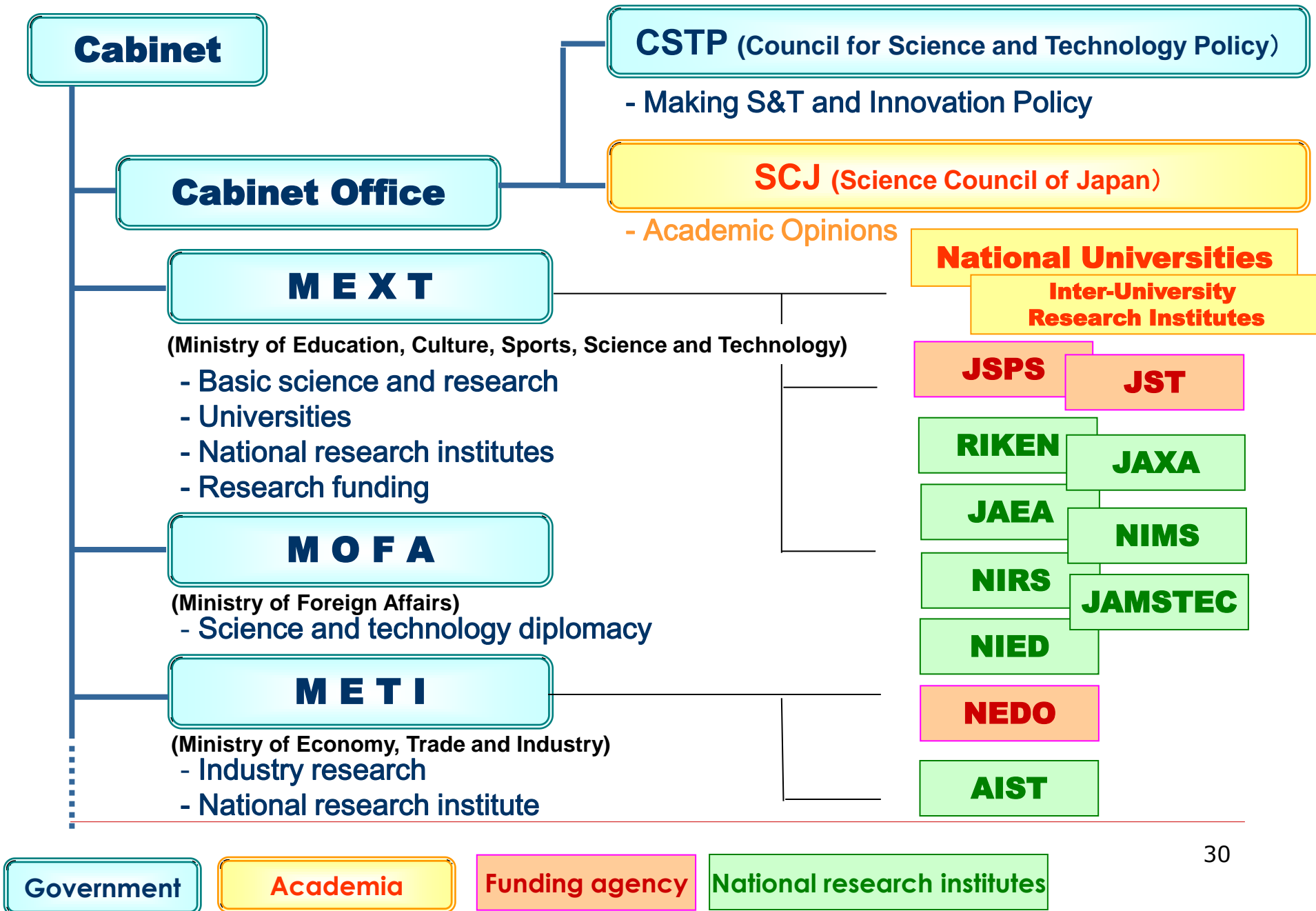
If any questions, please contact...

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(Ref.) Japanese Government structure of S&T policy

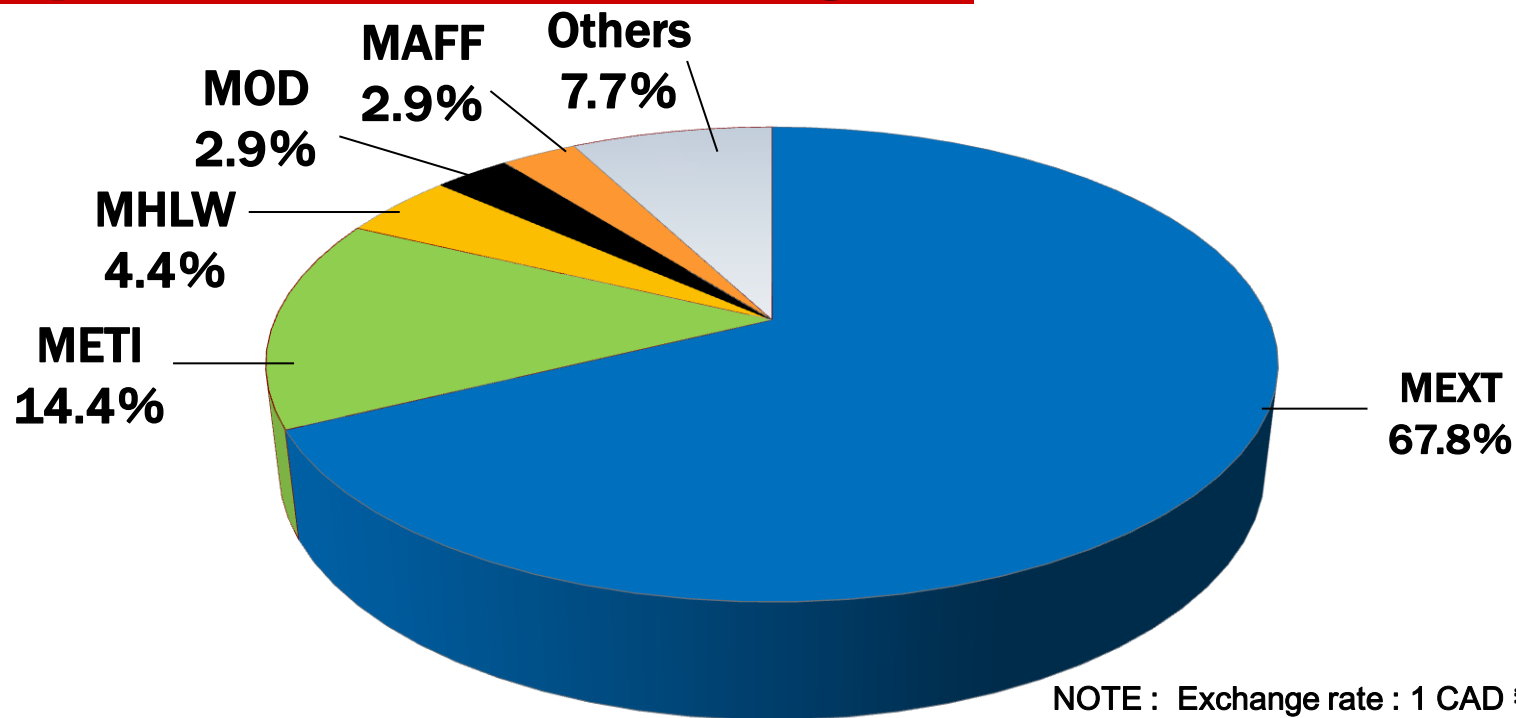


(Ref.) Some S&T Indicators Comparison Between Canada and Japan

	Canada (2010)	Japan (2010)
R&D amount (total)	¥ 2.6 trillion (CAD 30.0 billion)	¥ 17.1 trillion
Ratio of expenditure by the Government	27.2 %	19.3 %
Ratio of R&D expenditure against GDP	1.85 %	3.57 %
Number of researchers	149,060	840,293

(Ref.)

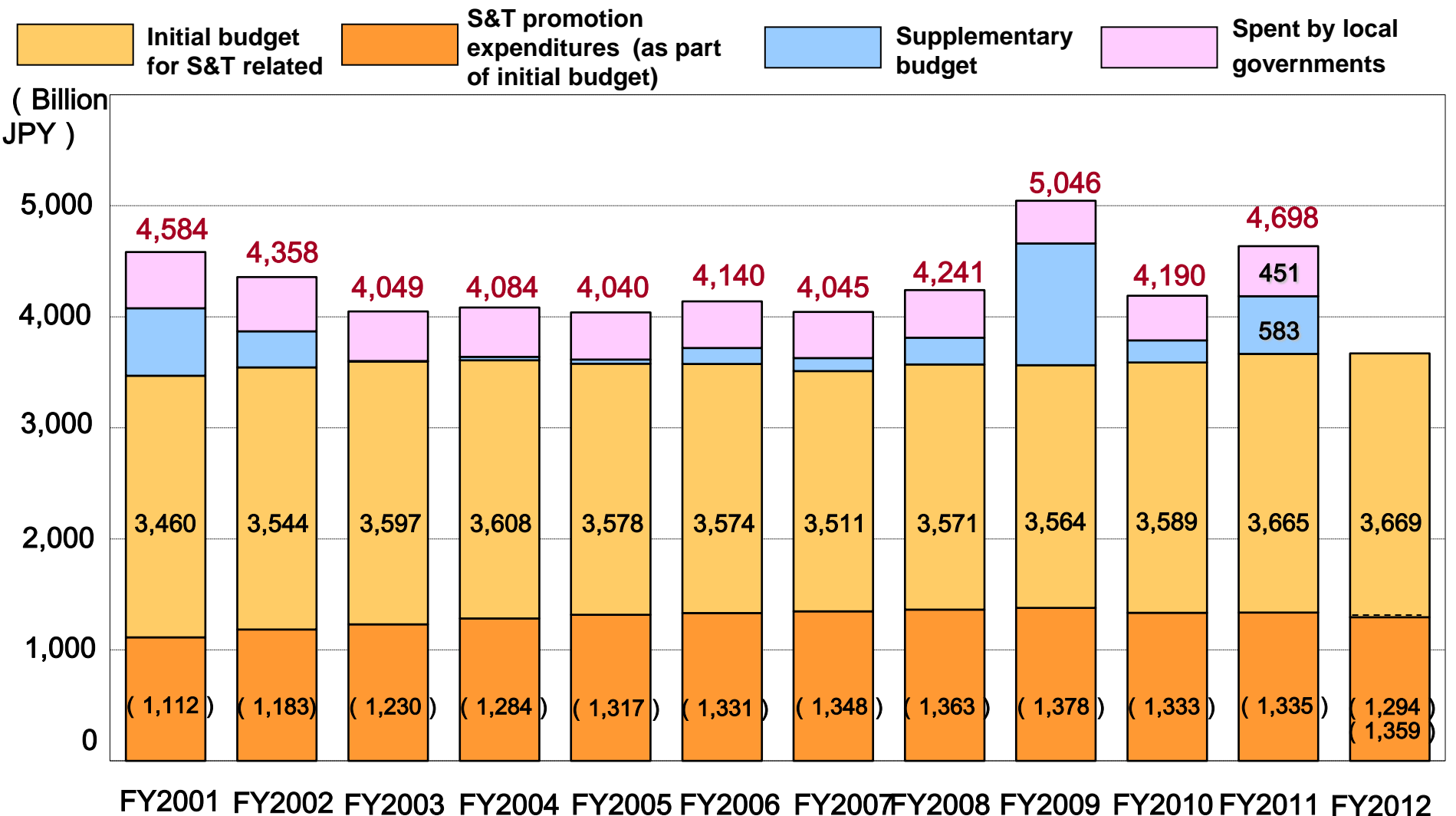
Japan S&T-Related Budget in FY2012



Ministries	FY2012 S&T related Budget (billion JPY)
MEXT	2,486
METI	529
MHLW (Ministry of Health, Labour and Welfare)	160
MOD (Ministry of Defence)	108
MAFF (Ministry of Agriculture, Forestry and Fisheries)	105
Others	281
Total	3,669

(Ref.)

Trends of S&T-Related Budget in Japan



2nd Basic Plan

3rd Basic Plan

4th Basic Plan

1st Plan (FY1996-2000)

Investment under the basic plan
Approx. 17 trillion yen
Actual budget: 17.6 trillion yen

2nd Plan (FY2001-2005)

Investment under the basic plan
Approx. 24 trillion yen
Actual budget: 21.1 trillion yen

3rd Plan (FY2006-2010)

Investment under the basic plan
Approx. 25 trillion yen
Actual budget: 21.6 trillion yen

4th Plan (FY2011-2015)

Investment under the basic plan
Approx. 25 trillion yen

(Ref.) Active Exchanges between the Government leaders and senior scientists in 2011

On February 18, 2011



Dr. Arthur Carty, Executive Director, Waterloo Institute for Nanotechnology and
Dr. Masuo Aizawa, Executive Member, CSTP

On September 22, 2011



Hon. Christian Paradis, Minister of Industry and
Dr. Mamoru Mohri, First Japanese Astronaut

On September 22, 2011



Hon. Gary Goodyear, Minister of State(Science and Technology) and
Dr. Mamoru Mohri, First Japanese Astronaut

On September 30, 2011



Hon. Koichiro Gemba, Minister for Foreign Affairs and
Hon. Ed Fast, Minister of International Trade

On October 1, 2011



Hon. Ed Fast, Minister of International Trade and
Dr. Shizuo Akira, Osaka University

On October 25, 2011



Hon. Masaharu Nakagawa, Minister of Education, Culture, Sports, Science and Technology and
Dr. Howard Alper, Chair, STIC

(Ref.) Active Exchanges between the Government leaders and senior scientists in 2012

On March 25, 2012



Bilateral Summit Meeting between Prime Ministers

On March 25, 2012



Hon. Koichiro Gamba, Minister for Foreign Affairs ,
Hon. John Baird, Minister of Foreign Affairs, and
Hon. Ed Fast, Minister of International Trade

On October 7, 2012



Hon. Seiji Maehara, Minister for National Policy
and Hon. Gary Goodyear, Minister of State (Science and Technology)

On October 10, 2012



Hon. Gary Goodyear, Minister of State (Science
and Technology) and
Dr. Mamoru Mohri, First Japanese Astronaut