• Session 4

Making possible the impossible
- special reference to Japan -

Kuniaki Yamashita
Director
JSPS Bangkok Office
S&T Policy System in Japan

Cabinet Office

Council for Science, Technology and Innovation (CSTI)

Provides frameworks for S&T policy
General coordination

Other Ministries

Provides S&T policies and budget

Prominent Ministries

MEXT
Ministry of Education, Culture, Sports, Science and Technology

JSPS
Japan Society for the Promotion of Science (Curiosity-driven Approach) Bottom-up Approach

METI
Ministry of Economy, Trade and Industry

MHLW
Ministry of Health, Labour and Welfare

Other Ministries

Research Fund

Universities and Research Institutes

Researchers

JST
Japan Science and Technology Agency (Mission-oriented Approach) Top-down Approach

NEDO

AMED
(2015-)

Funding

Prime Minister
What’s required in Academic Research Today?

**Challenging**
The importance to search for new knowledge as a pioneer with originality and creativity, based on fundamental academic knowledge.

**Comprehensive**
The importance to capture research from a broad general aspect, while respecting the expertise knowledge of subdivided disciplines based on academic tradition.

**Interdisciplinary**
The importance to create new academic disciplines by interaction of researchers from different fields and through international collaboration.

**Global**

## Introduction of major funding bodies in Japan

### As of October 2018

<table>
<thead>
<tr>
<th></th>
<th>JSPS: Japan Society for the Promotion of Science</th>
<th>JST: Japan Science and Technology Agency</th>
<th>NEDO: New Energy and Industrial Technology Development Organization</th>
<th>AMED: Japan Agency for Medical Research and Development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Presiding Ministry</strong></td>
<td>MEXT</td>
<td>MEXT</td>
<td>METI</td>
<td>MEXT, METI, MHLW</td>
</tr>
<tr>
<td><strong>Mission</strong></td>
<td>Promotion of academic research and STI human resource development</td>
<td>Promotion of STI and development of its environments and infrastructures</td>
<td>Development of new energy resources and energy conservation technologies</td>
<td>Promotion of medical R&amp;D and development of its environments and infrastructures</td>
</tr>
<tr>
<td><em><em>Budget of FY2017 (Million USD</em>)</em>*</td>
<td>2,390</td>
<td>1,064</td>
<td>1,265</td>
<td>1,626</td>
</tr>
<tr>
<td><strong>Employees (FY2015)</strong></td>
<td>148</td>
<td>1,247</td>
<td>≈ 800</td>
<td>≈ 300</td>
</tr>
</tbody>
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* 1 USD = 100 JPY
Framework for Funding Research

- **Mission-oriented research**
  - National projects
- **Curiosity-driven research**
  - Institutionally targeted research
- **Priority Research**
  - Competitively funded research
  - Openly recruited projects on ministry-endorsed topics
- **Grants-in-Aid (JSPS)**
  - Projects using university’s basic research funds

Research funded by operational expenses
Grants-in-Aid for Scientific Research (KAKENHI)

- created in 1918
- competitive funds
- all scientific research (research based on the free ideas of the researcher)
- curiosity-driven research
- rigorous screening process

The screening committee consists of approx. 6,000 reviewers
<table>
<thead>
<tr>
<th>Research Categories</th>
<th>Characteristic</th>
<th>Term</th>
<th>Support (per yr. per project/area)</th>
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</thead>
<tbody>
<tr>
<td>Scientific Research on Innovative Areas</td>
<td>Foster novel research areas proposed by diverse groups of researchers</td>
<td>5 years</td>
<td>10 to 300 mil JPY (0.09 to 2.67 mil USD)</td>
</tr>
<tr>
<td>Challenging Research (Pioneering)(Exploratory)</td>
<td>Research that aims at radically transforming the existing research framework and/or changing the research direction and has a potential of rapid development.</td>
<td>(Pioneering) 3-6 years</td>
<td>(Pioneering) 5 to 20 mil JPY (0.04 to 0.18 mil USD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Exploratory) 2-3 years</td>
<td>(Exploratory) 5 mil JPY or less (0.04 mil USD or less)</td>
</tr>
<tr>
<td>Specially Promoted Research</td>
<td>Outstanding and distinctive research expected to achieve remarkably excellent results that open up a new scientific field.</td>
<td>3-5 years</td>
<td>200 to 500 mil JPY (1.79 to 4.46 mill USD)</td>
</tr>
<tr>
<td>Scientific Research (S),(A), (B) or (C)</td>
<td>(S) Creative/pioneering research conducted by one or a relatively small number of researchers (A), (B) or (C) Creative/pioneering research conducted by one researcher or jointly by multiple researchers</td>
<td>(S) 5 years (A), (B) or (C) 3-5 years</td>
<td>(S) 50 to 200 mil JPY (1.79 to 4.46 mil USD) (A) 20 to 50 mil JPY (0.18 to 1.79 mil USD) (B) 5 to 20 mil JPY (0.04 to 0.18 mil USD) (C) 5 mil JPY or less (0.04 mil USD or less)</td>
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<td>-------------------------------------</td>
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<tr>
<td>Early-Career Scientists</td>
<td>Research conducted by an individual researcher who is less than 8 years after Ph.D. acquisition or who is age 39 or younger.</td>
<td>2-4 years</td>
<td>Up to 5 mil JPY (Up to 0.05 mil USD)</td>
</tr>
<tr>
<td>Research Activity Start-up</td>
<td>Support researcher who has been freshly appointed to a research position, or who has returned from his/her maternity, childcare or other kinds of leave.</td>
<td>Up to 2 years</td>
<td>Up to 1.5 mil JPY per fiscal year (Up to 0.01 mil USD)</td>
</tr>
<tr>
<td>JSPS Research Fellows</td>
<td>Funding for research conducted by JSPS Fellows</td>
<td>Up to 3 years</td>
<td>Up to 3 mil JPY (Up to 0.03 mil USD)</td>
</tr>
<tr>
<td>Fostering Joint International Research</td>
<td>Support of joint international research project conducted by a KAKENHI grantee in collaboration with researchers at foreign research institution</td>
<td>6 months - 1 year</td>
<td>Up to 12 mil JPY (Up to 0.11 mil USD)</td>
</tr>
<tr>
<td>International Activities Supporting Group</td>
<td>Support of international activities within Scientific Research on Innovative Areas</td>
<td>-</td>
<td>Up to 15 mil JPY per year (Up to 0.13 mil USD)</td>
</tr>
<tr>
<td>Home-Returning Researcher Development Research</td>
<td>Support of research to be conducted by a Japanese researcher with current affiliation abroad who is to be newly appointed at university or research institution in Japan</td>
<td>Up to 3 years</td>
<td>Up to 50 mil JPY (Up to 0.45 mil USD)</td>
</tr>
</tbody>
</table>
**Research Categories of “Scientific Research”**

Research that, building on past achievements, seeks to deepen or advance scientific fields, or create a firm foothold for scientific research.

**Scientific Research on Innovative Areas**

Based on new concepts, research that has the potential to innovate or transform scientific frameworks or pioneer new research domains.

**Research Categories of “Transformative Research”**

**Scientific Research (S/A/B/C)**

**Challenging Research (Pioneering/Exploratory)**

**Research Categories of “Early-Career Scientists”**

Opportunities provided for young researchers to mature and conduct research independently, and that facilitate their stepping up to conducting basic research.

**Early-Career Scientists**

**Research Activity Start-up**
Fostering Joint International Research (A)

- Japanese researchers selected for Fostering Joint International Research for set periods in collaboration with overseas universities and research organizations.
- International joint research is strengthened by rigorously selecting participants (e.g. professors, assistant professors) who can drive its advancement into the future.

- Period: about 6 months to one year
- Support: up to 12 million yen (about 100,000 US dollars)

Program Committee is established within JSPS.
World’s top-level Japanese researchers laboring overseas are members of the committee to carry out the application review (7 members). The working group for the review is established under the committee.
Number of Applications versus Grants Awarded (KAKENHI)

About 100,000 new applications each year

- Applications (new proposals)
- Granted Projects (new+on-going)

Adoption Rate in 2017: 27%

Actual number
120,000

0 20,000 40,000 60,000 80,000 100,000


- Granted Projects (new)
New proposal and continued adoptions, and disbursed amounts, by category and area (KAKENHI)

Total: 158 billion JPY (1.419 billion USD) for 73,883 Projects (FY2017)

- **Science and Engineering**: 30.9%
  - 49 billion JPY (440 Mill USD)
- **Biological Sciences**: 39.1%
  - 62 billion JPY (557 Mill USD)
- **Humanities and Social Sciences**: 13.2%
  - 21 billion JPY (189 Mill USD)
- **Integrated disciplines**: 16.7%
  - 26.4 billion JPY (237 Mill USD)

5月8日は使用せず。
– Kyoto University Professor Tasuku Honjo Awarded the Nobel Prize in Physiology or Medicine 2018

Message from JSPS President Susumu Satomi (extract)

Professor Honjo has made significant contributions to elucidating the mechanism of immunity in the human body. His discovery of PD-1 immune checkpoint inhibitor has opened up new possibilities for cancer immunotherapy, and we are truly pleased to see his pioneering research receive such esteemed recognition.

Professor Honjo was the Director of Research Center for Science Systems at JSPS for two years from April of 2004, and he devoted much time to promoting academic research with programs such as “KAKENHI (Grant-in-Aid for Scientific Research).”

Professor Honjo’s Nobel Prize epitomizes the fruit of Japan’s academic research and will be a symbol of pride and courage for all who are involved in fundamental research and for young researchers of the future.
World Premier International Research Center Initiative (WPI)

Build globally visible international research centers in Japan

Long-run financial support from the government

WPI Outline

- 10 years (5-year extension is applicable for centers launched in or before 2012)
- $7 mil (centers launched in or before 2010, up to $13 mil) annually per center
- Each center has at least 7-10 world-class principal investigators and about 100 staff members (centers launched in or before 2010, 10-20 PIs & 100-200 staffs), of whom at least 30% are researchers from overseas

WPI Academy was established in FY2017 to take the vanguard in internationalizing and further renovating Japan’s research environment.

WPI centers that have achieved “World-Premier Status” will be the initial members of the WPI Academy.
Kyoto University
iCeMS: Cell-Material Sciences
Director: Susumu Kitagawa

Osaka University
IFReC: Frontier Research for Immunology
Director: Shizuo Akira

Kyushu University
ICNER: Carbon-Neutral Energy Research
Director: Petros Sofronis

Nagoya University
ITbM: Transformative Bio-Molecules
Director: Kenichiro Itami

The University of Tokyo
Kavli IPMU: Physics and Mathematics of the Universe
Director: Hitoshi Murayama

Tohoku University
AIMR: Materials Research
Director: Motoko Kotani

National Institute for Materials Science (NIMS)
MANA: Materials Nanoarchitectonics
Director: Takayoshi Sasaki

University of Tsukuba
IIS: Integrative Sleep Medicine
Director: Masashi Yanagisawa

The University of Tokyo
IRCN: Neurointelligence
Director: Takao Kurt Hensch

Kanazawa University
Nano-LSI: Nano Life Science
Director: Takeshi Fukuma

Tokyo Institute of Technology
ELSI: Earth-Life Science
Director: Kei Hirose

World Premier International Research Center Initiative (WPI)

NEW

WPI Program

The University of Tokyo

Kyushu University

Osaka University

Nagoya University

Kyoto University

NEW

NEW

NEW
Global Research Council (GRC)

- **Forum of Heads of Research Councils (HORCs) from around the world**

- **Provides a forum for HORCs to:**
  - Address common issues
  - Build trust between research funding organizations
  - Endorse common Principles for fostering research cooperation

- **7th Annual Meeting**
  May 2018 in Moscow  [RFBR & NRF of Korea]

  **Participants**
  About 100 delegates attended with over 60 Heads of Research Councils from some 50 countries.

  **Achievements**
  Endorsement of “Statement of Principles: PEER/ MERIT REVIEW 2018”
  Discussion on “Science Diplomacy: the Role of Research Councils and the GRC” to be further advanced

- **8th Annual Meeting**
  In May 2019 in São Paulo  [FAPESP, DFG and CONICET]
Thank you for your kind attention and look forward to your comments and questions to:

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