

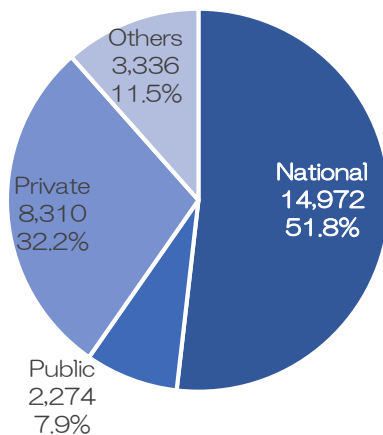
8. Research(1)

8-1. Status of allocation of Grants - in - aid for Scientific Research by research institution (for new selections) (2019)

				(Unit : 1,000 yen)			
	No. of applications	No. of selections	Selection rate	Application amount	Allocation amount (Direct expense)	Allocation amount (Indirect expense)	Allocation amount (Total)
Total	101,857	28,892	28.4%	380,673,549	66,141,270	19,842,381	85,983,651
National	47,632	14,972	31.4%	218,226,449	40,147,070	12,044,121	52,191,191
Public	8,322	2,274	27.3%	23,418,501	4,086,800	1,226,040	5,312,840
Private	33,588	8,310	24.7%	87,165,904	13,664,300	4,099,290	17,763,590
Others	12,315	3,336	27.1%	51,862,695	8,243,100	2,472,930	10,716,030

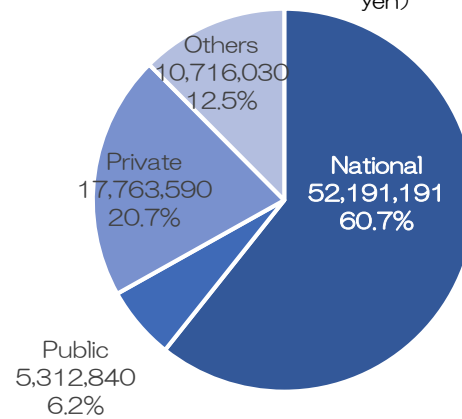
No. of selections

(Unit: Applications)



Allocation amount (Total)

(Unit : 1,000 yen)



(Note 1) Of the 2019 scientific research funds, classification is done for "Special promotion research", "New academic area research (research area proposal type)" (excluding academic research support foundation development), "Fundamental research" (except special field research), "Challenging research" (excluding special examination area), "Young research", "Support for starting research activity" and "International joint research acceleration fund (international research strengthening (B))".

(Note 2) Although it is organized by the research institutions to which the research representative belongs, it does not show the actual state of the allocation reflecting the contribution of the researcher contributor.

(Note 3) Because of rounding off, the total and the breakdown figures may not match.

(Source) Prepared by JANU from the Japan Society for the Promotion of Science "Status of allocation by research institution to which the researcher belongs (new selections for 2019)"

8-2. Research expenditures by organization and academic discipline (2019)

	Total	National	Public	Private	(Unit: Million yen)
Total	3,678,374	1,451,146	237,781	1,989,446	
Natural Science	2,425,295	1,191,104	180,258	1,053,934	
Science	331,384	249,676	16,146	65,562	
Engineering	711,570	434,362	37,042	240,166	
Agriculture	149,677	96,604	11,461	41,612	
Health and Medicine	1,232,664	410,462	115,608	706,594	
Humanities/Social Science	830,775	130,070	38,179	662,526	
Others	422,303	129,973	19,344	272,986	

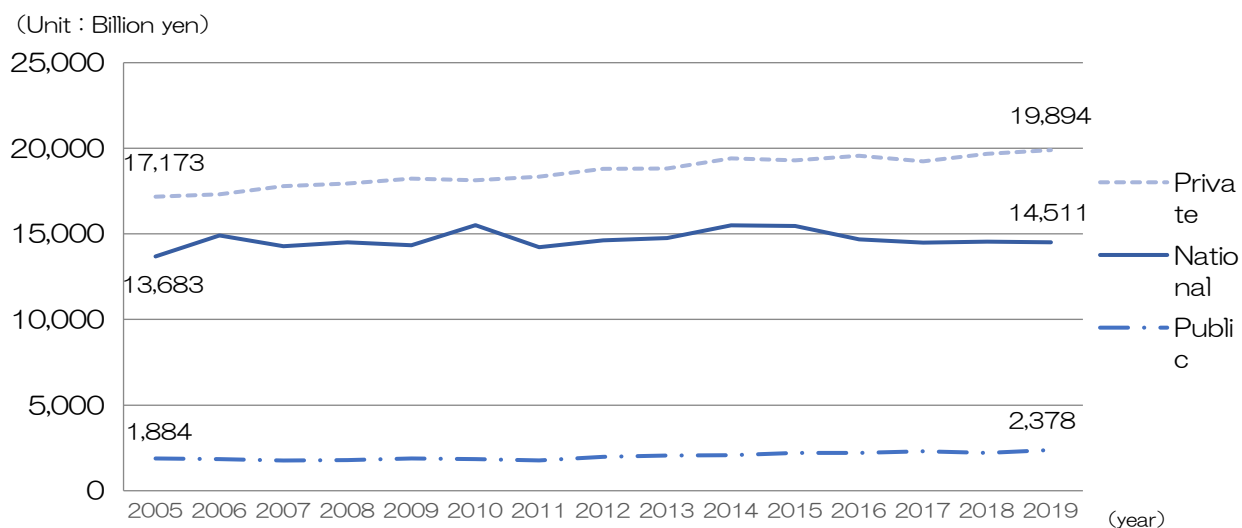
(Note 1) The breakdown of research expenses is personnel costs, raw material costs, property, plant and equipment purchase costs, intangible property purchase costs, lease fees, and other expenses.

(Note 2) This is the result of the survey conducted in 2019, and the research expenses are the results of one year going back from March 31 of the survey year or its latest closing date.

(Source) Prepared JANU from the Ministry of Internal Affairs and Communications "Science and Technology Research Survey"

8. Research(2)

8-3. Trend of research expenditures in universities etc. (including personnel expenses etc.)

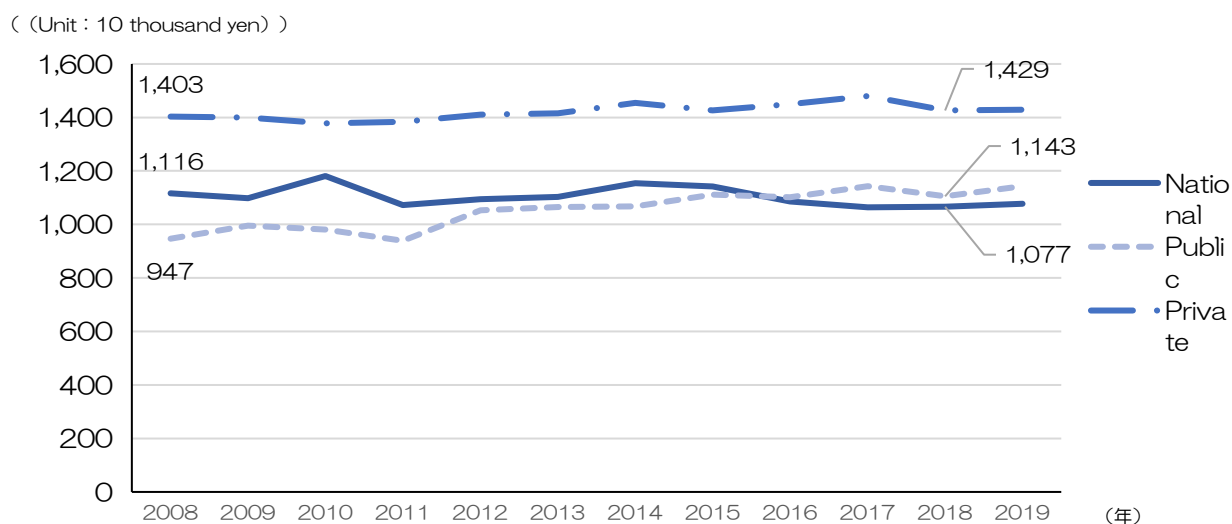


(Note 1) The breakdown of research expenses is personnel costs, raw material costs, property, plant and equipment purchase costs, intangible property purchase costs, lease fees, and other expenses.

(Note 2) The horizontal axis is the year in which the survey was conducted, and the survey target is the results for one year starting from March 31 of each year or the latest closing date.

(Source) Prepared by JANU from MEXT 'Science and Technology Directory II Science and Technology in Japan' and the Ministry of Internal Affairs and Communications 'Science and Technology Research Survey' (Each Year)

8-4. Research expenditures per researcher at universities etc. (including personnel expenses etc.)



(Note 1) Faculty is defined as professors, associate professors, assistant professors, and lecturers (regular faculty.)

(Note 2) The breakdown of research expenses is personnel costs, raw material costs, property, plant and equipment purchase costs, intangible property purchase costs, lease fees, and other expenses.

(Note 3) The horizontal axis is the year in which the survey was conducted, and the survey target is the results for one year starting from March 31 of each year or the latest closing date.

(Source) Prepared by JANU from MEXT 'Science and Technology Directory II Science and Technology in Japan' and the Ministry of Internal Affairs and Communications 'Science and Technology Research Survey' (Each Year)

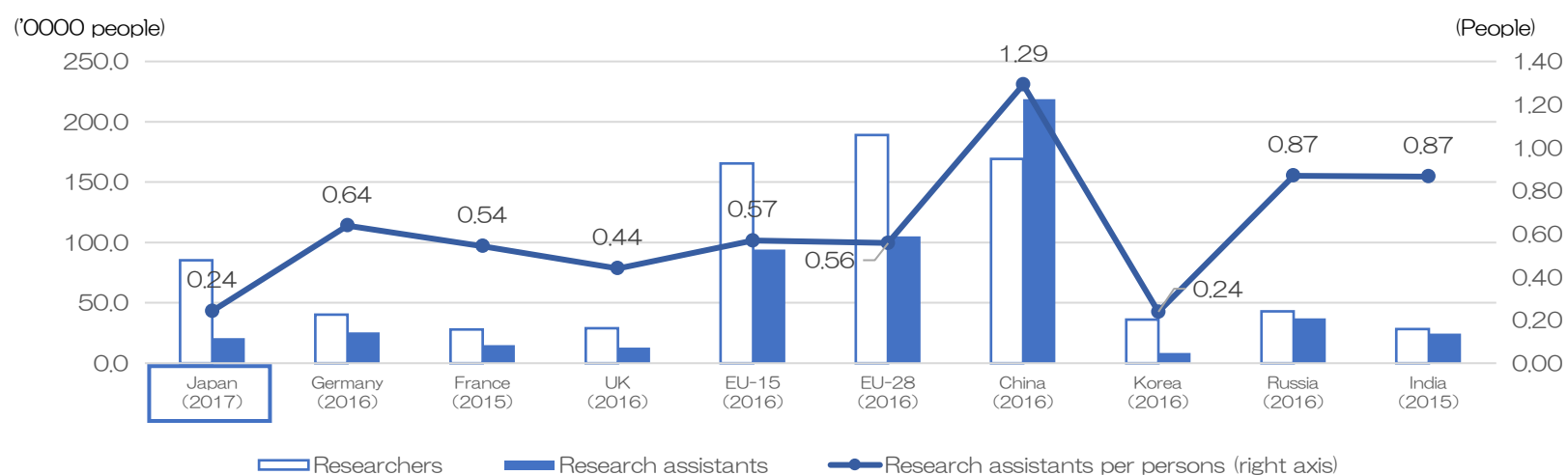
8. Research(3)

8-5. Nobel Prize laureates

Year of award	Name	Field	Graduating university	University / Affiliation at the time of award
1949	Hideki Yukawa	Physics	Kyoto University	Kyoto University, Columbia University
1965	Shinichiro Tomonaga	Physics	Kyoto University	Tokyo University of Education
1968	Yasunari Kawabata	Nobel Prize in literature	The University of Tokyo	–
1973	Reona Esaki	Physics	The University of Tokyo	IBM Thomas J. Watson Research Center
1974	Eisaku Sato	Peace	The University of Tokyo	–
1981	Kenichi Fukui	Chemistry	Kyoto University	Kyoto University
1987	Susumu Tonegawa	Physiology or Medicine	Kyoto University	Massachusetts Institute of Technology
1994	Kenzaburo Oe	literature	The University of Tokyo	–
2000	Hideki Shirakawa	Chemistry	Tokyo Institute of Technology	University of Tsukuba
2001	Ryoji Noyori	Chemistry	Kyoto University	Nagoya University
2002	Masatoshi Koshihara	Physics	The University of Tokyo	University of Tokyo
	Koichi Tanaka	Chemistry	Tohoku University	Shimadzu Corporation
2008	Makoto Kobayashi	Physics	Nagoya University	High Energy Accelerator Research Organization
	Toshihide Maskawa	Physics	Nagoya University	Kyoto Sangyo University
	Yoichiro Nambu	Physics	The University of Tokyo	University of Chicago
	Osamu Shimomura	Chemistry	Nagasaki University	Boston University
2010	Akira Suzuki	Chemistry	Hokkaido University	Hokkaido University
	Eiichi Negishi	Chemistry	The University of Tokyo	Purdue University
2012	Shinya Yamanaka	Physiology or Medicine	Kobe University	Kyoto University
2014	Isamu Akasaki	Physics	Kyoto University	Meijo University
	Hiroshi Amano	Physics	Nagoya University	Nagoya University
	Shuji Nakamura	Physics	Tokushima University	University of California at Santa Barbara
2015	Takaaki Kajita	Physics	Saitama University	University of Tokyo
	Satoshi Omura	Physiology or Medicine	Yamanashi University	Kitasato University
2016	Yoshinori Ohsumi	Physiology or Medicine	The University of Tokyo	Tokyo Institute of Technology
2018	Tasuku Honjo	Physiology or Medicine	Kyoto University	Kyoto University
2019	Akira Yoshino	Chemistry	Kyoto University	AsahiKasei

(Source) Prepared by JANU from the Nobel Prize.Org website.

8-6. Number of research assistants per researcher in major countries



(Note 1) The number of research assistants per researcher is estimated by the Ministry of Education, Culture, Sports, Science and Technology based on the number of researchers and the number of research assistants.

(Note 2) Humanities and social sciences are included for all countries.

(Note 3) Research assistants are those who assist researchers, those who provide technical services that accompany research, and those who are engaged in research affairs. In Japan, they are research supporters, technicians and research clerks and others.

(Note 4) Figures for Germany are estimates.

(Note 5) The number of researchers in the UK is an interim value, and the number of research assistants is underestimated.

(Note 6) EU values are estimates by the OECD.

(Source) Prepared by JANU from MEXT 'Science and Technology Directory' (2018)

8. Research(4)

8-7. Ranking of number of papers etc. in domestic institutions

• Chemistry (5th in the world)

Domestic ranking	Institution	No. of papers highly cited	Proportion of papers highly cited (%)
1	The University of Tokyo	157	1.7%
2	Kyoto University	153	1.4%
3	National Institute for Materials Science	100	2.7%
4	Osaka University	96	1.1%
5	National Institute of Advanced Industrial Science and Technology	86	1.3%
6	Tokyo Institute of Technology	56	0.8%
7	Hokkaido University	53	1.0%
8	Nagoya University	52	1.2%
9	Kyushu University	48	0.9%
10	Tohoku University	47	0.7%

• Biology / Biochemistry (10th in the world)

Domestic ranking	Institution	No. of papers highly cited	Proportion of papers highly cited (%)
1	The University of Tokyo	60	0.9%
2	Kyoto University	55	1.3%
3	Institute of Physical and Chemical Research	43	1.3%
4	Osaka University	28	0.7%
5	Tohoku University	19	0.8%
6	National Institute of Advanced Industrial Science and Technology	15	0.8%
6	Kyushu University	15	0.6%
8	Research Organization of Information and Systems	13	3.3%
8	Hokkaido University	13	0.5%
10	National Center Hospital, National Center of Neurology and Psychiatry	12	6.2%

• Immunology (8th in the world)

Domestic ranking	Institution	No. of papers highly cited	Proportion of papers highly cited (%)
1	Osaka University	58	4.7%
2	Institute of Physical and Chemical Research	36	4.7%
3	The University of Tokyo	28	2.0%
4	Kyoto University	24	2.7%
5	Keio University	17	3.3%
6	Chiba University	14	2.9%
7	Nippon Medical School	11	6.3%
8	Juntendo University	10	2.0%
9	Tokyo Medical and Dental University	9	2.0%
10	Yokohama City University	8	3.4%

• Material science (7th in the world)

Domestic ranking	Institution	No. of papers highly cited	Proportion of papers highly cited (%)
1	National Institute for Materials Science	118	2.2%
2	The University of Tokyo	62	1.6%
3	Tohoku University	57	0.9%
4	National Institute of Advanced Industrial Science and Technology	56	1.5%
5	Institute of Physical and Chemical Research	34	4.3%
6	Kyoto University	27	0.8%
7	Osaka University	21	0.5%
8	Kyushu University	19	0.7%
9	Hokkaido University	17	0.8%
10	Waseda University	15	1.8%

• Geoscience (10th in the world)

Domestic ranking	Institution	No. of papers highly cited	Proportion of papers highly cited (%)
1	The University of Tokyo	82	1.5%
2	Japan Agency for Marine-Earth Science and Technology	75	2.0%
3	National Institute for Environmental Studies	59	5.0%
4	Meteorological Research Institute	30	2.6%
5	Japan Aerospace Exploration Agency	27	4.2%
6	Nagoya University	27	1.6%
7	Kyoto University	26	1.0%
8	Kochi University	22	3.5%
9	Tohoku University	18	0.9%
10	Kyushu University	17	1.2%
10	Hokkaido University	17	0.7%

• Physics (6th in the world)

Domestic ranking	Institution	No. of papers highly cited	Proportion of papers highly cited (%)
1	The University of Tokyo	452	2.6%
2	Kyoto University	228	2.3%
3	Institute of Physical and Chemical Research	219	2.8%
4	Osaka University	163	1.7%
5	High Energy Accelerator Research Organization	160	3.2%
6	Nagoya University	157	2.6%
7	Tokyo Institute of Technology	154	2.3%
8	University of Tsukuba	138	2.9%
9	Tohoku University	134	1.3%
10	Tokyo Metropolitan University	113	4.9%

• Plant & Animal science (8th in the world)

Domestic ranking	Institution	No. of papers highly cited	Proportion of papers highly cited (%)
1	Institute of Physical and Chemical Research	134	8.4%
2	The University of Tokyo	106	2.5%
3	Kyoto University	51	1.3%
4	National Agriculture and Food Research Organization	46	3.3%
5	Nagoya University	43	3.1%
6	Okayama University	38	3.4%
7	Tohoku University	38	2.8%
8	Japan International Research Center for Agricultural Sciences	25	7.1%
8	Nara Institute of Science and Technology	25	5.0%
8	National Institutes of Natural Sciences	25	5.0%
8	Chiba University	25	3.2%

(Note 1) As for the total number of highly cited papers where Japanese research institutes are included in the author institutes, Japanese universities and research institutes are extracted from the top fields in the world rankings.

(Note 2) The world ranking is the ranking of the total number of highly cited papers by category.

(Source) Prepared by JANU from the Clarivate Analytics "Ranking of Japanese Research Institutes Based on the Analysis of High-impact Papers Release of 2019 Edition" (April 11, 2019 Japan time)