



# HFSP

# Human Frontier Science Program

## What is the Human Frontier Science Program (HFSP)?

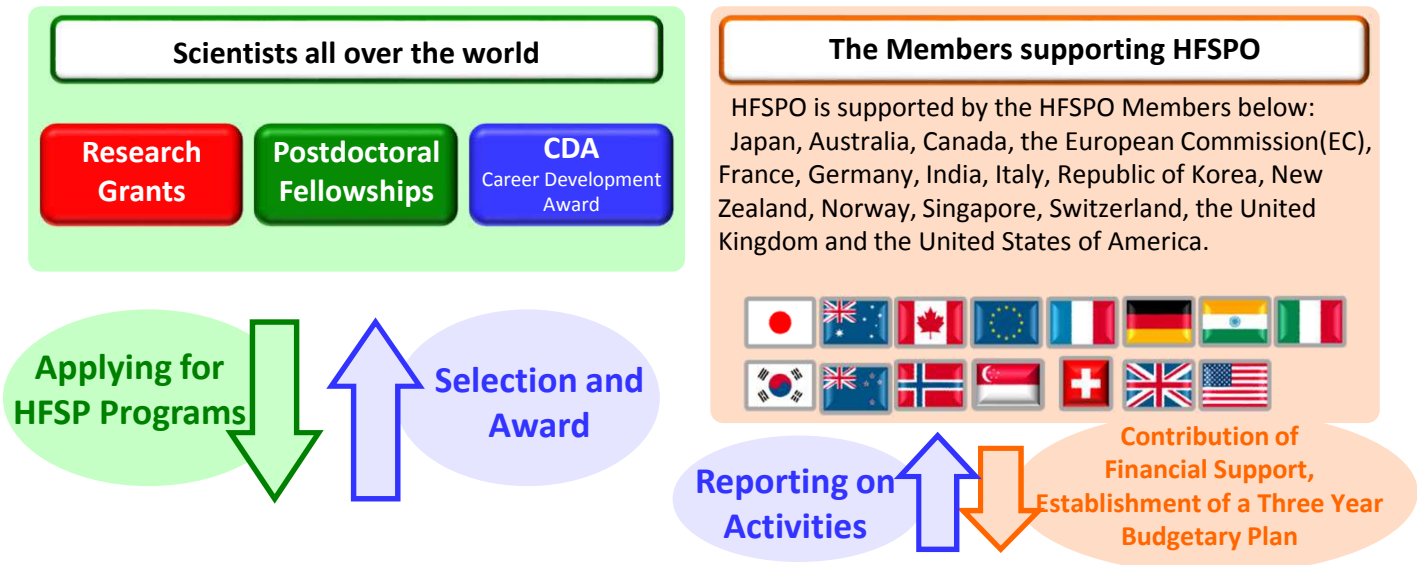
The Human Frontier Science Program (HFSP) is an international program proposed by former Prime Minister Nakasone of Japan at the 1987 G7 summit in Venice. The Program promotes ambitious frontier research into the complex mechanisms of living organisms. It aims to making the fullest possible utilization of the research results for the benefit of all humankind.

To this end, the International Human Frontier Science Program Organization (HFSP/O) was founded in 1989 in Strasbourg, France. Since 1990, the Program has provided support for highly innovative cross-border collaborative research to scientists all over the world through the Research Grant program. It has also provided international research opportunities for early career researchers through postdoctoral fellowships and facilitated the transition to independence by means of the Career Development Award. Awardees Meetings bring together the HFSP community annually.



The G7 summit in Venice (June 1987)

## Framework



## The International Human Frontier Science Program Organization (HFSP/O)



- Board of Trustees** The Board of Trustees is responsible for overall policy concerning the operation of the Program. Its members are appointed by HFSP/O Members.
- Council of Scientists** The Council of Scientists deliberates and decides on scientific matters. Its members are appointed by HFSP/O Members.
- Review Committees** A Review Committee for each program evaluates the applications and selects the awardees.
- Secretariat** The Secretariat executes the Program in accordance with the policies determined by the Board of Trustees and the Council of Scientists.



HFSP/O office (Strasbourg)

# Activities

## Program objectives

HFSP provides support for **innovative, interdisciplinary and highly original basic research** into the complex mechanisms of living organisms. Topics range from molecular and cellular approaches to biological functions to systems neuroscience including cognitive functions. Clear emphasis is placed on **novel collaborative research at the cutting-edge of the life sciences, drawing on the expertise of scientists from other research areas (physics, mathematics, chemistry, computer science, engineering etc.)**

## Programs

HFSP programs are a flexible tool for the support of **international collaboration and novel, ambitious, interdisciplinary research**, with special emphasis on **early career scientists**.

### Research Grants

#### ■ Support for international scientific collaboration

##### ● Program Grants

Grants for interdisciplinary teams in different countries at any stage of their career. The award amount is a maximum of 450,000 USD per year for three years.

##### ● Young Investigator Grants

Grants for interdisciplinary teams of researchers in different countries, each within 5 years of starting their first independent position (and within 10 years of receiving their PhD). The term and amount is same as for Program Grants.

### Postdoctoral Fellowships

#### ■ Support for early career scientists with the potential to become frontier researchers through international research opportunities in excellent host laboratories in a foreign country

##### ● Long-Term Fellowships

Fellowships for scientists within 3 years of receiving their PhD. The emphasis is placed on extending expertise through novel research projects.

Payable for 3 years, awardees can choose to return to the home country or to stay in host country in the last year, which may be deferred for up to 2 years.

##### ● Cross-Disciplinary Fellowships

Fellowships for scientists with PhD.s in non-biological disciplines, who seek training in the life sciences. Modeled on the Long-Term Fellowship program, the conditions are the same.

### CDA Career Development Award

#### ■ Support for the transition to independence

Support for former HFSP Fellows to establish their independent laboratory either in the home country or in another HFSP Member country. The term is 3 years. Candidates must have completed at least 2 years of the HFSP fellowship before the start of the CDA and should apply within 3 years of terminating the HFSP fellowship.

### Awardees Meeting

#### ■ HFSP Annual Awardees Meeting

HFSP Awardees Meetings enable awardees to meet and exchange ideas, as well as to report on research performed under HFSP support. The meetings were initiated in 2001 and are held once annually in a different HFSP Member country.

# Information on Funding

## How to apply

Guidelines and application forms are **available for downloading** on the HFSP website. **Applications are made exclusively on-line.**

■ Website URL of HFSP  
<http://www.hfsp.org/>

## Review

There is one competition each year for each program. Applications are made for awards made the following year. All applications are subject to the most rigorous peer review. Applications are invited from researchers from all over the world, with some limitations for those from non-HFSP Members (details are available at the website above.)

## Achievements of the Program

### Nobel Prize winners who were first supported by the HFSP Research Grant program

	Laureate	Country	Year of Nobel Prize	Prizes	Year of HFSP Grant Award
1	Christiane Nüsslein-Volhard	Germany	1995	Physiology or Medicine	1993
2	Rolf M. Zinkernagel	Switzerland	1996	Physiology or Medicine	1994
3	Steven Chu	United States	1997	Physics	1993
4	Stanley B. Prusiner	United States	1997	Physiology or Medicine	1994
5	John E. Walker	United Kingdom	1997	Chemistry	1996
6	Tim Hunt	United Kingdom	2001	Physiology or Medicine	1992 / 1997
7	Paul Nurse	United Kingdom	2001	Physiology or Medicine	1994
8	John E. Sulston	United Kingdom	2002	Physiology or Medicine	1991
9	Peter Agre	United States	2003	Chemistry	2000
10	Linda B. Buck	United States	2004	Physiology or Medicine	1995
11	Avram Hershko	Israel	2004	Chemistry	1998
12	Roger D. Kornberg	United States	2006	Chemistry	1990 / 1993 / 1997 / 2000
13	Roger Y. Tsien	United States	2008	Chemistry	1995
14	Jack W. Szostak	United States	2009	Physiology or Medicine	2001
15	Venkatraman Ramakrishnan	United States	2009	Chemistry	2000/2009
16	Ada E. Yonath	Israel	2009	Chemistry	2003
17	Jules A. Hoffmann	France	2011	Physiology or Medicine	1995
18	Ralph M. Steinman	United States	2011	Physiology or Medicine	1996 / 2006
19	James E. Rothman	United States	2013	Physiology or Medicine	1990 / 1994 / 2005
20	Randy W. Schekman	United States	2013	Physiology or Medicine	1991 / 1995
21	Thomas C. Südhof	United States	2013	Physiology or Medicine	1995
22	Martin Karplus	United States / Austria	2013	Chemistry	2005
23	Michael Levitt	United States / United Kingdom / Israel	2013	Chemistry	2008
24	John O'Keefe	United States / United Kingdom	2014	Physiology or Medicine	1994
25	Stefan W. Hell	Germany	2014	Chemistry	2010
26	Aziz Sançar	United States / Turk	2015	Chemistry	1992
27	Jeffrey C. Hall	United States	2017	Physiology or Medicine	1991 / 2000
28	Tasuku Honjo	Japan	2018	Physiology or Medicine	1990

Since its establishment in 1990, HFSP has awarded **1,090 collaborative Research Grants** involving **4,004 scientists** throughout the world, and **3,157 fellowships** to young postdoctoral scientists.

**28 Nobel Prize winners** were supported by the HFSP Research Grant program prior to receiving this prestigious award.



[Description of the photo above]  
6 December, 2018, Warwick Anderson, Secretary General of HFSP, meets Prof. Tasuku Honjo, in Stockholm, Sweden, before the Award ceremony at which Prof. Honjo received the Nobel Prize for Physiology or Medicine

## Japanese Contributions to the Program

**HFSP was established on the initiative of the Government of Japan.** Together with its HFSP Members, Japan provides financial support to the Program; **20.96 million USD (38.78% of the total contributions) in FY 2017 and 21.04 million USD (36.55% of the total contributions) in FY 2018.**

Japanese financial contributions are **provided by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Ministry of Economy, Trade and Industry (METI) through the Japan Agency for Medical Research and Development (AMED).**

#### Contributions from HFSP Members

	Australia	Canada	EC	France	Germany	India	Italy	Japan	Korea	New Zealand	Norway	Singapore	Switzerland	UK	USA	TOTAL
Contributions amounts for 2017FY (million USD)	0,77	1,55	5,35	2,65	5,33	1,07	1,04	<b>20,96</b>	0,85	0,15	0,66	0,55	0,94	1,92	10,26	54,05
Contributions rates for 2017FY (%)	1,43%	2,86%	9,90%	4,91%	9,87%	1,98%	1,93%	<b>38,78%</b>	1,57%	0,27%	1,22%	1,02%	1,74%	3,54%	18,99%	100,00%
Contributions amounts for 2018FY (million USD) (estimated)	0,79	1,70	6,45	3,02	6,01	1,09	1,22	<b>21,04</b>	0,86	0,15	0,67	0,56	0,98	2,07	10,96	57,57
Contributions rates for 2018FY (%) (estimated)	1,37%	2,95%	11,20%	5,24%	10,43%	1,90%	2,12%	<b>36,55%</b>	1,50%	0,26%	1,17%	0,98%	1,70%	3,59%	19,04%	100,00%

#### Cumulative total contributions to 2017FY

	Australia	Canada	EC	France	Germany	India	Italy	Japan	Korea	New Zealand	Norway	Singapore	Switzerland	UK	USA	TOTAL
Fiscal year of starting contributions	2005	1990	1991	1989	1990	2007	1990	<b>1989</b>	2005	2006	2008	2014	1991	1992	1991	
Cumulative total contributions (million USD)	8,05	25,31	93,45	58,26	86,64	9,92	18,30	<b>852,96</b>	9,22	1,45	5,87	2,11	18,27	37,80	196,04	1 423,65
Total contributions rates (%)	0,57%	1,78%	6,56%	4,09%	6,09%	0,70%	1,29%	<b>59,91%</b>	0,65%	0,10%	0,41%	0,15%	1,28%	2,66%	13,77%	100,00%

# HFSP Nakasone Award

Established to mark HFSP's 20<sup>th</sup> Anniversary, the Nakasone Award honors an outstanding scientist who has made frontier-moving research in biology. The Award is open to all, not just those who have received support from HFSP.



Each year, the recipient of the Nakasone Award receives an Award certificate and medal and gives the Nakasone lecture at the Awardees Meeting of the year.

The 2018 HFSP Nakasone Award was presented to Svante Pääbo for his discovery of the extent to which hybridization with Neanderthals and Denisovans has shaped the evolution of modern humans, and his development of techniques for sequencing DNA from fossils.



[Photo on the right]

Left to right: Nobutaka Hirokawa (Previous), President of HFSP, Svante Pääbo, Warwick Anderson, Secretary-General of HFSP

## Recipients of the Nakasone Award since 2010

Year	Awardees	Universities / Institutes	Prize motivation
2010	Karl Deisseroth	Stanford University (United States)	for his pioneering work on the application of microbial opsins as "optogenetic" tools in neurobiology
2011	Michael Elowitz	California Institute of Technology (United States)	for his key studies on gene expression noise
2012	Gina Turrigiano	Brandeis University (United States)	for introducing the concept of homeostatic synaptic plasticity
2013	Stephen Quake	Stanford University (United States)	for his pioneering work advancing biological measurement techniques
2014	Uri Alon	Weizmann Institute of Science (Israel)	for his ground-breaking work on network motifs
2015	James J. Collins	Boston University (United States)	for his innovative work on synthetic gene networks and programmable cells
2016	Emmanuelle Charpentier Jennifer Doudna	Max Planck Institute for Infection Biology in Berlin (Germany) University of California at Berkeley (United States)	for their seminal work on the CRISPR-Cas9 system
2017	David Julius	University of California, San Francisco (United States)	for his discovery of the molecular mechanism of thermal sensing in animals
2018	Svante Pääbo	Max Planck Institute for Evolutionary Anthropology in Leipzig (Germany)	for his discovery of the extent to which hybridization with Neanderthals and Denisovans has shaped the evolution of modern humans, and his development of techniques for sequencing DNA from fossils

## Inquiries

### ■ The International Human Frontier Science Program Organization (HFSP)

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### Ministries and Agency Involved in Japan

- The Ministry of Education, Culture, Sports, Science and Technology (MEXT)  
Research Promotion Bureau
- The Ministry of Economy, Trade and Industry (METI)  
Industrial Science and Technology Policy and Environment Bureau
- The Japan Agency for Medical Research and Development (AMED)  
Division of International Collaboration, Department of International Affairs