



# 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

#### Scientists all over the world

Research  
Grants

Postdoctoral  
Fellowships

CDA  
Career Development  
Award

#### The Management Supporting Parties (MSPs)

HFSP is supported by the Management Supporting Parties (MSPs) below:

Japan, Australia, Canada, the European Union (EU), France, Germany, India, Italy, Republic of Korea, New Zealand, Norway, Singapore, Switzerland, the United Kingdom and the United States of America.



Applying for  
HFSP Programs

Selection and  
Award

Reporting on  
Activities

Contribution of  
Financial Support,  
Establishment of a Three Year  
Budgetary Plan

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



Strasbourg ●  
France

#### Board of Trustees

The Board of Trustees is responsible for overall policy concerning the operation of the Program. Its members are appointed by MSPs.

#### Council of Scientists

The Council of Scientists deliberates and decides on scientific matters. Its members are appointed by MSPs.

#### 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 member country.

## Information of Funding

### How to apply

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

■ **Web site URL of HFSP**  
<http://www.hfsp.org/>

### Review

There is one competition each year for each program. Applications are made for award the following years. 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-MSP (details are available at the web-site above.)

# Achievements of the Program

Since its establishment in 1990, HFSP has awarded **1,059 collaborative Research Grants** involving **3,902 scientists** throughout the world, and **3,079 fellowships** to young postdoctoral scientists.

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

## 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
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 Sancar	United States / Turk	2015	Chemistry	1992
27	Jeffrey C. Hall	United States	2017	Physiology or Medicine	1991 / 2001

## Japanese Contributions to the Program

HFSP was established at the initiative of the Government of Japan. Together with its partner Management Supporting Parties, Japan provides financial support to the Program; **21.0 million USD (38.8% of the total contributions) in FY 2016** and **21.0 million USD (38.1% of the total contributions) in FY 2017**.

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 MSPs

	Australia	Canada	EU	France	Germany	India	Italy	Japan	Korea	New Zealand	Norway	Singapore	Switzerland	UK	USA	TOTAL
Contributions amounts for 2016FY (million USD)	0,76	1,51	5,51	2,58	5,13	1,05	1,04	<b>21,04</b>	0,83	0,14	0,65	0,54	0,92	2,36	10,13	54,18
Contributions rates for 2016FY (%)	1,40%	2,78%	10,17%	4,76%	9,47%	1,94%	1,92%	<b>38,84%</b>	1,53%	0,27%	1,19%	1,00%	1,70%	4,35%	18,70%	100,00%
Contributions amounts for 2017FY (million USD) (estimated)	0,77	1,54	5,62	2,63	5,23	1,07	1,06	<b>21,04</b>	0,85	0,15	0,66	0,55	0,94	2,40	10,75	55,26
Contributions rates for 2017FY (%) (estimated)	1,40%	2,78%	10,17%	4,76%	9,47%	1,94%	1,92%	<b>38,08%</b>	1,53%	0,27%	1,19%	1,00%	1,70%	4,35%	19,45%	100,00%

### Cumulative total contributions to 2016FY

	Australia	Canada	EU	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)	7,29	23,68	88,16	55,60	81,39	9,14	17,23	<b>832,00</b>	8,38	1,30	5,22	1,56	17,31	36,09	185,78	1.370,12
Total contributions rates (%)	0,53%	1,73%	6,43%	4,06%	5,94%	0,67%	1,26%	<b>60,72%</b>	0,61%	0,10%	0,38%	0,11%	1,26%	2,63%	13,56%	100,00%

# Nakasone Award



**Established to mark HFSP's 20<sup>th</sup> Anniversary**, the 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. At the 17<sup>th</sup> Awardees Meeting in Lisbon in July 2017, of The 2017 Nakasone Award gave the lecture, "The molecular mechanism of thermal sensing in animals : lessons learned from bacteria" by Prof. *David Julius*.



[Photo on the right]

Left to right: *Nobutaka Hirokawa*, President of HFSP, *David Julius* and *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	Max Planck Institute for Infection Biology in Berlin (Germany)	for their seminal work on the CRISPR-Cas9 system
	Jennifer Doudna	University of California at Berkeley (United States)	
2017	David Julius	University of California, San Francisco (United States)	for his discovery of the molecular mechanism of thermal sensing in animals

## Inquiries

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

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For Postdoctoral Fellowships	+33 3 88 21 51 27	fellow@hfsp.org
For CDA	+33 3 88 21 51 34	fellow@hfsp.org

### Involving Ministries and Agency 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