



GRUBER

F O U N D A T I O N



FY 2016 Annual Report

July 1, 2015 – June 30, 2016

A supporting organization of **Yale**

A. Sarah Hreha, Executive Director
The Gruber Foundation
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sarah.hreha@gruber.yale.edu

Executive Summary

The Gruber Foundation honors individuals in the fields of Cosmology, Genetics, Neuroscience, Justice, and Women's Rights, whose groundbreaking work provides new models that inspire and enable fundamental shifts in knowledge and culture.

The Gruber Foundation is a 509(a)(3) Type 1 supporting organization operated, supervised, or controlled by Yale University and incorporated in 2011 under the 501(c)(3) section of U.S. Corporate Law. It was funded by The Peter and Patricia Gruber Foundation, and Peter and Patricia Gruber were its Co-founders. As President Emeritus, Patricia Gruber has a lifetime seat on the Board.



A. Sarah Hreha, Executive Director

The Foundation ended its fifth year at Yale with the first Gruber Symposium organized by and for Gruber Science Fellows, in May 2016. Participants ranged from the life sciences to Astronomy, and the cross-disciplinarily brought a dynamism to the presentations as well as thoughtful questions. The second annual Gruber Cosmology Conference was held in October, and included the 2015 Cosmology Prize recipients. The 2015 Gruber International Prizes were awarded in Honolulu, HI, Baltimore, MD, and Chicago, IL; the Gruber Program for Global Justice and Women's Rights held a lecture by, and satellite discussions with, Catherine E. Lhamon, as well as other events such as the Global Constitutionalism Seminar. Along with their first symposium, the Gruber Science Fellowship Program provided support to another cohort of exceptional students. The three programs are described in more detail in their respective sections.

We are comfortably settled into the Yale community, and it is gratifying that our International Prize Program stakeholders report no appreciable difference in programming or administration post-transition. On campus, The Gruber Program for Global Justice and Women's Rights and the Gruber Science Fellowship continue to take root and blossom.

The Board of Directors of The Gruber Foundation comprises: Peter Salovey, Chairman; Ben Polak, President; Patricia Gruber, President Emeritus; Joan O'Neill; Waring Partridge. The Treasurer is Robert Herr, and the Executive Director is A. Sarah Hreha.

Further information on the Foundation is available online at gruber.yale.edu

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Fiscal Year 2016 Financial Overview

Statement of Financial Position as of June 30, 2016

Assets

Cash and cash equivalents	\$ 77,626
Investments	96,785,815
Beneficial interest in charitable gift annuity	<u>30,135,092</u>
Total assets	<u>126,998,533</u>

Liabilities

Accounts payable	<u>13,087</u>
Total liabilities	<u>13,087</u>

Net assets	<u>\$126,985,446</u>
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PROGRAM SPENDING

Grants to Yale University

The Gruber Foundation provides grants to Yale University for the Gruber Science Fellowship Program and the Gruber Program for Global Justice and Women's Rights. The agreement provides that The Gruber Foundation will distribute for the benefit of the Gruber Science Fellowship Program the greater of \$2.5 million or 1.6% of the net value of The Gruber Foundation's assets as of the beginning of each fiscal year. In addition, the agreement provides for disbursements of \$1.2 million for the benefit of the Global justice and Women's Rights Program.

The following grants have been distributed through June 30:

Gruber Science Fellowship Program	\$2,500,000
Gruber Justice and Women's Rights	<u>\$1,200,000</u>
	\$3,700,000

Gruber Prizes

Gruber Prizes disbursed through June 30, 2016 were as follows:

2015 Cosmology Prize	\$500,000
2015 Genetics Prize	\$500,000
2015 Neuroscience Prize	\$500,000
	\$1,500,000

Gruber International Prize Program

Fiscal year 2016 saw the 2015 Gruber Prizes awarded and the 2016 recipients selected. The program mission statement is: *The International Prize Program honors individuals in the fields of Cosmology, Genetics, and Neuroscience, whose groundbreaking work provides new models that inspire and enable fundamental shifts in knowledge and culture.*

The 2015 Prizes

COSMOLOGY



Sarah Hreha, 2015 Prize co-recipients Lyman Page, Selection Advisory Board Chair Wendy Freedman, Prize co-recipients John Carlstrom and Jeremy Ostriker, Patricia Gruber

August 3, 2015

XXIX General Assembly of the International Astronomical Union
Honolulu, HI

Gruber Lectures: *What do we know about dark matter? An historical approach (Ostriker),*

The Cosmic Microwave Background: Where We Are and Where Are We Headed (Carlstrom and Page)

Prize Citation:

The Gruber Foundation proudly presents the **2015 Cosmology Prize** to **Jeremiah P. Ostriker** for wide-ranging theoretical work over 50 years, which has clarified our understanding of galactic structure and evolution, dark matter, the intergalactic medium and high energy astrophysics; and to **John Carlstrom** and **Lyman Page** for their leadership in ground-based observational CMB cosmology, including instrumentation: from TOCO and DAS1 to the South Pole Telescope and the Atacama Cosmology Telescope.

Selection Advisory Board: Andrew Fabian, Wendy Laurel Freedman (Chair), Owen Gingerich (non-voting), Helge Kragh, Sadanori Okamura, Frans Pretorius, Martin Rees (non-voting), Subir Sarkar, Rashid Sunyaev



Rosalind Franklin Fellows Maria Barna and Carolyn McBride, Sarah Hreha, Selection Advisory Board Chair Huda Zoghbi, Prize co-recipients Jenifer Doudna and Emmanuelle Charpentier, Patricia Gruber

GENETICS

October 9, 2015

65th Annual Meeting of the American Society of Human Genetics,
Baltimore, MD

Gruber Lecture: *CRISPR-Cas9 Genome Editing: Origins and Development of a Revolutionary Technology*

Prize Citation:

The Gruber Foundation proudly presents the **2015 Genetics Prize** to **Emmanuelle Charpentier** and **Jennifer Doudna** for establishing a framework for universal genome editing.

Charpentier and Doudna discovered that the bacterial enzyme Cas9 is an endonuclease that cuts DNA at sites specified by a guide RNA, and defined biochemically the components required for this reaction. They showed that the sequence of the guide RNA could be modified to target the endonuclease to virtually any site. This provided the mechanism by which bacteria acquire immunity to specific viral infections, allowed introduction of specific mutations at desired sites, and provided the means to transfer efficient Cas9-directed break, repair, and editing to any cell type. This method has broadly enabled genome editing for uses in basic biology, medicine, biotechnology, and agriculture.

Selection Advisory Board: Bonnie Bassler, Utpal Banerjee, Martin Chalfie, Kay Davies, Helen Hobbs, Richard Lifton, Huda Zoghbi (Chair)



2015 Prize co-recipient **Michael Greenberg**,
Patricia Gruber

NEUROSCIENCE

October 18, 2015

45th Annual Meeting of the Society for
Neuroscience,
Chicago, IL

**Gruber Lecture: *Nature and nurture in synapse
development, maturation, and disease***



2015 Prize co-recipient **Carla Shatz**,
Selection Advisory Board Chair **Robert Wurtz**

Prize Citation:

The Gruber Foundation proudly presents the **2015 Neuroscience Prize** to **Carla Shatz** and **Michael Greenberg** for their elucidation of the molecular mechanisms through which neural activity controls wiring and plasticity of the brain.

Shatz's pioneering studies showed that neural activity is needed for the refinement of connections in early brain development and revealed an unexpected role for immune signaling in neurons.

Greenberg discovered that the "L-type" voltage-gated Ca²⁺ channel couples membrane excitability to gene transcription, elucidating in elegant detail the signaling pathways responsible.

Together their ground-breaking studies have provided new insight into how neural circuit function regulates brain development and plasticity and how dysfunction can contribute to neuropsychiatric disorders such as autism and schizophrenia.

Selection Advisory Board: Ben Barres, Tobias Bonhoeffer, Martin Chalfie, Frances Jensen, Erin Schuman, Leslie Ungerleider, Robert Wurtz (Chair)

More information on the 2015 Gruber Prizes is available at: <http://gruber.yale.edu/gruber-prizes>

Gruber Program for Global Justice and Women's Rights

The Gruber Program for Global Justice and Women's Rights has four core components: 1) the Global Constitutionalism Seminar; 2) the Gruber Distinguished Global Justice and Women's Rights Lectures; 3) the Gruber Global Justice and Women's Rights Fellowships; and 4) the Gruber Project.

Global Constitutionalism Seminar

The Global Constitutionalism Seminar took place September 16-19, 2015, in New Haven, with the theme "The Reach of Rights." Twenty-three judges from 17 courts participated in the seminar's roundtable format, including several new participants. The Faculty Director was Judith Resnik, Liman Professor of Law.

Gruber Distinguished Lectures in Global Justice and Women's Rights

Catherine Lhamon presented "Women's Civil Rights and Education: Building on Legacy, Delivering for our Future" as the Gruber Distinguished Lecture in Women's Rights on November 9, 2015. Lhamon discussed policy and enforcement at the Office of Civil Rights, where as Assistant Secretary she enforces federal civil rights laws, including Title IX.

Alex Aleinikoff presented "Rethinking the International Refugee Regime" as the Gruber Distinguished Lecture in Global Justice on February 8, 2016. Aleinikoff discussed the refugee crisis in Syria as well as the broader state of refugee politics globally, urging innovations that might enhance civil society's role in alleviating the crisis including private investment in job and infrastructure development in refugee hosting areas and privately sponsored resettlement of refugees.

Gruber Global Justice and Women's Rights Fellowships

Post-Graduate Fellowships

The fifth class of Gruber Fellows in Global Justice and Women's Rights will have completed their fellowship projects as of fall 2016.

Erin Beasley (Yale School of Forestry and Environmental Studies '15, **WR**) works with a local NGO, Gaia Pacha, to improve food security, women's leadership, and rural livelihoods in central Bolivia in light of global climate change. She will also develop a radio program designed by women farmers.

Sarah Casson (Yale School of Forestry and Environmental Studies '15, **J**) works with the WILD Foundation on international wilderness protection guidelines ensuring Indigenous peoples' rights to traditional territories. The International Union of Conserving Nature will disseminate the guidelines.

Gillian Gillers (Yale Law School '13, **WR**) works with the Southern Poverty Law Center's Immigrant Justice Project on litigation and policy measures to challenge abuses of migrant women who work on J-1 visas in the hospitality industry in the Southeastern USA.

Yuvraj Joshi (Yale Law School '15, J) works with Human Rights Watch to advocate the repeal of Section 377 of the Indian Penal Code (India's sodomy law) and on a human rights report on the law's impact LGBT people in areas such as harassment, violence, and access to healthcare.

Charanya Krishnaswami (Yale Law School '13, J) works with Public Counsel in Los Angeles on a joint immigration and appellate law project focused on immigrant children from Mexico and Central America who are seeking asylum in the US to escape pervasive gang- and cartel-based violence.

The Gruber Committee selected five post-graduate 2015-2016 Peter and Patricia Gruber Fellows in Global Justice and Women's Rights, from a pool of 24 applications received from Yale graduate students and alumni from the Law School, the School of Forestry and Environmental Studies (FES), the School of Public Health, the Divinity School, the School of Nursing, and the Jackson Institute for Global Affairs.

Faculty Fellowships

The Law School will host three Peter and Patricia Gruber Fellows in the 2015-2016 academic year: Michelle Anderson and Julia Goldscheid (Women's Rights), and Menaka Guruswamy (Global Justice).

Gruber Project

The Gruber Project provides support for clinical and experiential learning initiatives, and supports four initiatives in 2015-2016: (i) the Gruber Initiative for Detained Families; (ii) the Global Health Justice Partnership; (iii) the Veterans Legal Services Clinic; and (iv) and the International Refugee Assistance Project (IRAP).

2015-2016 Gruber Committee

The Gruber Committee is appointed by the Yale Law School Dean and is responsible for selecting Fellows and the Gruber Distinguished Lecturers. The 2015-2016 Gruber Committee includes: **Reva Siegel**, Chair (Nicholas deB. Katzenbach Professor of Law); **Muneer Ahmed**, Spring term (Clinical Professor of Law); **Michael Cappello** (Professor of Pediatrics, of Epidemiology, and of Microbial Pathogenesis; Chair of the Africa Studies Council); **Anika Singh Lemar**, Fall term (Clinical Associate Professor of Law); **Robert C. Post** (Dean and Sol & Lillian Goldman Professor of Law); **Judith Resnik** (Arthur Liman Professor of Law); **Elisabeth Wood** (Professor of Political Science & and International and Area Studies); and **Sara Lulo** (ex officio).

Gruber Science Fellowship Program

The purpose of the Gruber Science Fellowship is to recruit and support the very best graduate students to pursue doctoral studies in the life sciences, cosmology and astrophysics at Yale's Graduate School of Arts and Sciences.



Carl Hashimoto, Sarah Hreha and Graduate School Dean Lynn Cooley pose with the 2015 cohort of Gruber Science Fellows at Yale.

2015 Gruber science fellows:

Maria Sol Bernardez Sarria,
Neuroscience

Wei-Sheng (Jeff) Chen,
Immunology

Adan Codina, Molecular Cell
Biology, Genetics, and
Development

Daniel Ehrlich, Neuroscience

Mei Elgindi, Immunology

Erica Gorenberg,
Neuroscience

Sarah Herald, Neuroscience

Abigail Jarrett, Immunology

Acadia Kocher, Microbiology

Sharif Kronemer,
Neuroscience

Shannon Leslie, Neuroscience

Kun Lyu, Molecular Medicine,
Pharmacology, and
Physiology

Holly Merta, Molecular Cell
Biology, Genetics, and
Development

Jenna Pappalardo,
Immunology

Jinyao Qiu, Molecular Cell
Biology, Genetics, and
Development

Tyler Rice, Immunology

Camila Robles-Oteiza,
Immunology

Connor Rosen, Immunology

Darryl Seligman, Astronomy

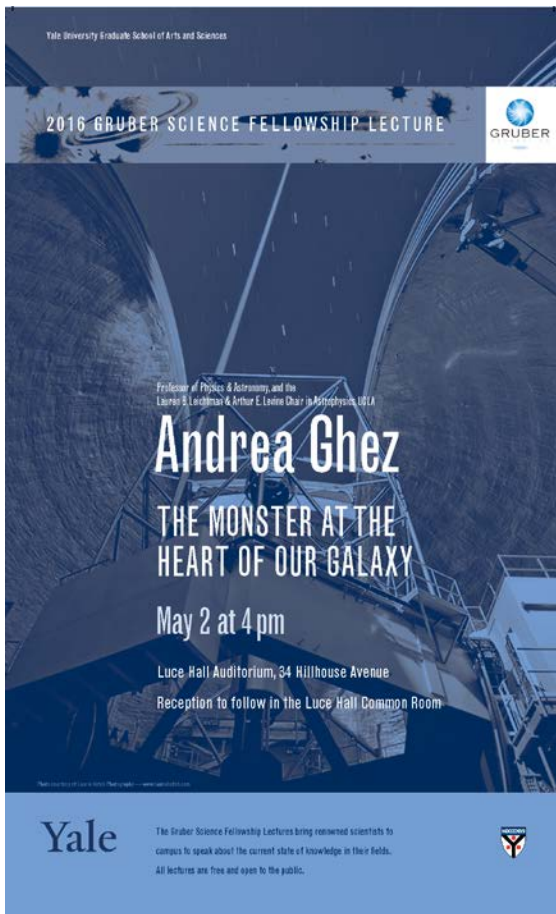
Joshua Temple, Biochemistry,
Biophysics, and Structural
Biology

Guste Urbonaite, Molecular
Cell Biology, Genetics, and
Development

Pok Fai Wong, Molecular Cell
Biology, Genetics, and
Development

Quan Zhou, Computational
Biology and Bioinformatics

Gruber Science Fellowship Lecture



Andrea Ghez, Professor of Physics & Astronomy, and the Lauren B. Leichtman & Arthur E. Levine Chair in Astrophysics, UCLA, delivered the Gruber Science Fellowship Lecture on May 2, 2016.

Professor Ghez's lecture was titled **"The Monster at the Heart of our Galaxy"**
