CALIFORNIA INSTITUTE OF TECHNOLOGY

One Hundred Twenty-Ninth

Commencement

—

June 16, 2023

129th Annual Commencement

CALIFORNIA INSTITUTE OF TECHNOLOGY

Friday, June 16, 2023
10 a.m.

ACADEMIC PROCESSION

Chief Marshal
Warren C. Brown, Ph.D.

Marshals
Frances Arnold, Ph.D.
Azita Emami, Ph.D.
Elliot Meyerowitz, Ph.D.
Melany Hunt, Ph.D.
Nicholas R. Hutzler, Ph.D.

Faculty Officers
Azita Emami, Ph.D.
Brian Stoltz, Ph.D.

Marching Order
Candidates for the Degree of Bachelor of Science
Candidates for the Degree of Master of Science
Candidates for the Degree of Doctor of Philosophy
The Faculty Officers
The Faculty
The Chairs of the Divisions
The Deans
The Vice Provosts
The Provost
The Vice Presidents
The Caltech Alumni Association Executive Officers
The Trustees
The Commencement Speaker
The President
The Chair of the Board of Trustees

PROGRAM

Organ Prelude	Leslie J. Deutsch, Ph.D. (B.S. '76, M.S. '77, Ph.D. '80)
Processional	The Caltech Convocation Brass, Percussion, and Organ Ensemble *Glenn D. Price, D.M.A., Conductor*
Presiding	David W. Thompson (M.S. '78) *Chair of the Board of Trustees* *California Institute of Technology*
Commencement Speaker	Danielle Allen, Ph.D. *James Bryant Conant University Professor and* *Director of the Edmond and Lily Safra Center* *for Ethics, Harvard University*

Choral Selection
"Gaudeamus Igitur" Traditional,
   Arranged by Dr. Deutsch
   (Translation on page 70.)
	The Caltech Glee Club
	Nancy Sulahian, M.M., Conductor
	Convocation Brass, Percussion, and
	Organ Ensemble

Conferring of Degrees	Thomas F. Rosenbaum, Ph.D. *President* *Sonja and William Davidow Presidential Chair* *and Professor of Physics* *California Institute of Technology*

Presentation of Candidates for Degrees

For the Degree of Bachelor of Science	Kevin M. Gilmartin, Ph.D. *Vice President for Student Affairs*
For the Degree of Master of Science	David C. Chan, Ph.D. *Dean of Graduate Studies*

For the Degree of Doctor of Philosophy

Biology and Biological Engineering	Richard M. Murray, Ph.D. (B.S. '85) *Division Chair*
Chemistry and Chemical Engineering	Dennis A. Dougherty, Ph.D. *Division Chair*
Engineering and Applied Science	Harry A. Atwater, Ph.D. *Division Chair*
Geological and Planetary Sciences	John P. Grotzinger, Ph.D. *Division Chair*
Humanities and Social Sciences	Tracy K. Dennison, Ph.D. *Division Chair*
Physics, Mathematics and Astronomy	Fiona A. Harrison, Ph.D. *Division Chair*

ANNOUNCEMENT OF AWARDS AND
CONCLUDING REMARKS   President Rosenbaum

ALMA MATER
"Hail CIT"
    by Manton Barnes (B.S. '21)   The Caltech Glee Club, the Caltech
    Arranged by Raymond Burkhart   Convocation Brass, Percussion, and
    (The audience may join in;   Organ Ensemble
    lyrics are on page 71.)

RECESSIONAL   The Caltech Convocation Brass,
                Percussion, and Organ Ensemble

Organ Postlude   Dr. Deutsch
"The Throop Institute March,"
    composed by E. C. Kammermeyer
    in 1900 for the Throop Institute
    Guitar and Mandolin Society

Livestreaming of Caltech's 2023 commencement ceremony will begin shortly before 10 a.m. on Friday, June 16, at www.caltech.edu.

Follow along with the day's events on Twitter and Instagram. Share your photos and join the celebration by using #Caltech2023. (See page 72 for more information.)

All music for the Caltech Commencement arranged by Dr. Leslie Deutsch.

ABOUT THE KEYNOTE SPEAKER

Danielle Allen is the James Bryant Conant University Professor and director of the Edmond and Lily Safra Center for Ethics at Harvard University.

A MacArthur Fellow and the recipient of the Library of Congress's Kluge Prize for Achievement in the Study of Humanity, Allen serves as the principal investigator of the Democratic Knowledge Project, an initiative that provides K–16 educators and students with quality resources to promote the development of informed and skilled civic participants.

She is the author or co-author of 14 books, including the multiple-award-winning *Our Declaration: A Reading of the Declaration of Independence in Defense of Equality*; her memoir *Cuz: The Life and Times of Michael A.*, which was named one of the best books of the year by the *Washington Post*, the *San Francisco Chronicle*, and Booklist; and her essay, *Talking to Strangers: Anxieties of Citizenship since Brown v. Board of Education*, about developing political friendship. She also is a contributing columnist to the *Washington Post*.

Allen was born in Takoma Park, Maryland, and raised in Claremont, California. Her mother and father, a librarian and a professor, respectively, were married in California in the 1960s, a time when an interracial marriage such as theirs was still illegal in many states. They taught Allen and her brother to believe in the power of their own voices and to be prepared to use them to help others. Allen also found inspiring role models among her other family members, including her paternal grandfather, a Baptist preacher who helped establish the first NAACP chapter in his north Florida region, and her maternal great-grandparents, who fought for women's right to vote in Michigan.

After graduating from Claremont High School, Allen earned her A.B. in classics from Princeton University; her M.Phil. and Ph.D. in classics from King's College, University of Cambridge in the U.K.; and her M.A. and Ph.D. in government from Harvard. She is a former trustee of Amherst College and a past chair of the Pulitzer Prize board. She currently serves as president and board chair for Partners in Democracy, as a trustee for the Cambridge Health Alliance, and as a board member for Rank the Vote and FairVote.

ABOUT CALTECH

Caltech, founded in 1891, is a world-renowned science and engineering institute that marshals some of the world's brightest minds and most innovative tools to address fundamental scientific questions and pressing societal challenges.

A Caltech education is notable for its rigorous curriculum, close collaborations with faculty, and small class sizes. Caltech students work toward undergraduate and graduate degrees alongside their intellectual equals in an academic environment that emphasizes interdisciplinary teamwork, critical thinking, mutual support, and a deep understanding of core concepts and principles across fields.

Students graduate from Caltech prepared to become world leaders in science, engineering, academia, industry, and public service. Graduates are well trained in their ability to identify, analyze, and solve challenging problems within and across science and engineering disciplines, and are prepared to apply and communicate their expertise broadly throughout their professional careers.

An independent, privately supported institution, Caltech manages the Jet Propulsion Laboratory (JPL) for NASA. Together with JPL, Caltech is Pasadena's largest employer and a source of programs that benefit the entire region. Caltech also owns and operates the Seismological Laboratory, more than 50 research centers and institutes, and a global network of astronomical observatories, including the Palomar and W. M. Keck observatories. In addition, the Institute co-founded and co-manages the Laser Interferometer Gravitational-wave Observatory (LIGO).

Caltech's faculty, students, postdoctoral scholars, and staff produce transformative breakthroughs in fields ranging from quantum science and engineering to bioinformatics to energy and sustainability. Caltech faculty and alumni have earned national and international recognition, including 47 Nobel Prizes.

We celebrate today the 617 graduates who will earn 233 bachelor's degrees, 155 master's degrees, one engineer's degree, and 228 doctoral degrees, and who will contribute to Caltech's impressive legacy and record of achievement around the world.

CANDIDATES FOR DEGREES

Bachelor of Science

Maximilian Cyrus Adang *Tucson, Arizona* Mechanical Engineering and Control and
  Dynamical Systems (Minor) and Aerospace Engineering (Minor)

Olivia L Addington *San Antonio, Texas* Electrical Engineering

Jedidiah De Leon Alindogan *Fair Oaks, California* Mechanical Engineering

Eric Phillip Amaro *Johns Creek, Georgia* Mechanical Engineering

Emile Timothy Anand *Dubai, United Arab Emirates* Computer Science

Juan Alberto Arvelo *Miami, Florida* Materials Science and Mechanical Engineering

Abdullah Ossama Ateyeh *Frankfort, Kentucky* Applied and Computational Mathematics

Reid Adam Banciella *Miami, Florida* Biology

Sarah Lucia Barrett *San Diego, California* Mechanical Engineering

Daniel Wang Bi *Fairfax, Virginia* Computer Science

Chase Kelly Blagden *La Mirada, California* Information and Data Sciences

Chase Siyuan Blanchette *Ellicott City, Maryland* Electrical Engineering

Mihir Borkar *Palo Alto, California* Computer Science and Biology (Minor)

James Christopher Kapono Bowden *Northridge, California* Computer Science and
  Information and Data Sciences (Minor)

Maximus Tiger Bricken *Portland, Oregon* Information and Data Sciences

Matticus Sean Brown *Encinitas, California* Mechanical Engineering and Geobiology (Minor)

Hernan R Caceres *Congers, New York* Computer Science and Business, Economics, and
  Management

Joseph Tomas Cachaldora *Vero Beach, Florida* Applied and Computational Mathematics

Ali Çataltepe *Istanbul, Turkey* Mathematics

Paromita Cesano Bagchi *Melbourne, Australia* Physics

Isha Chakraborty *Chandler, Arizona* Computer Science and Information and Data Sciences
  (Minor)

Sophie Chan *Fremont, California* Applied and Computational Mathematics

Irene Chang *Diamond Bar, California* Computer Science

Katherine Chang *Irvine, California* Applied and Computational Mathematics and Economics

Diego Israel Chavez *Boynton Beach, Florida* Applied and Computational Mathematics

† *Students whose names are followed by a dagger are close to completion and will receive
diplomas at the end of the academic year in which all graduation requirements are met.*

Bachelor of Science *continued*

Sandra Monga Chea *Cerritos, California* Electrical Engineering

Cynthia Chen *San Diego, California* Computer Science and Information and Data Sciences (Minor)

Hannah Li Chen *Cerritos, California* Computer Science and Business, Economics, and Management

Hannah Xian Chen *Denton, Texas* Applied and Computational Mathematics and Astrophysics (Minor)

Sihan Chen *Xiamen, People's Republic of China* Physics

Reeya Chenanda *Columbus, Indiana* Electrical Engineering

Allison Siao Cheng *Cincinnati, Ohio* Mechanical Engineering

Seunghee Cho *San Diego, California* Electrical Engineering

Haeyoung Choi *Seoul, Republic of Korea* Mechanical Engineering

Devin Makana Chotzen-Hartzell *Honolulu, Hawaii* Computer Science

Velissarios Christodoulou *Athens, Greece* Computer Science

Norman H. Chung *Garland, Texas* Mechanical Engineering and Geophysics

Kaila Miki Yoshida Coimbra *San Diego, California* Mechanical Engineering and Aerospace Engineering (Minor)

Tyler Kiyoshi Colenbrander *Novato, California* Electrical Engineering

Adnan Contractor *Watchung, New Jersey* Mathematics

Jonathon Eduard Corrales de Oliveira *Miami, Florida* Computer Science and Business, Economics, and Management and Information and Data Sciences (Minor)

Brian Scott Cruz *Kensington, Maryland* Electrical Engineering

Miles Vincent Cua *Rancho Viejo, Texas* Mathematics

Isaiah John Curtis *Forestville, California* Physics

Robert Daniel Daigle *San Jose, California* Mechanical Engineering

Jose Carlos de la Fuente Campos *San Antonio, Texas* Mechanical Engineering

Isabel M. de la Torre Roehl *Altadena, California* Chemistry

Lucca Sukman de Mello *Rio de Janeiro, Brazil* Computer Science and Information and Data Sciences (Minor)

William Michael Dembski *Pella, Iowa* Computer Science and Information and Data Sciences (Minor)

Audrey Jane DeVault *Rochester, New York* Physics

Rachel Qianwen Ding *Iowa City, Iowa* Computation and Neural Systems and Biology (Minor)

Gabrielle Melia Dituri *Tampa, Florida* Physics and Biology (Minor)

Sarah Acadia Dunbar *Hanover, New Hampshire* Computer Science

Bachelor of Science continued

David A Dzingeleski *Catonsville, Maryland* Physics and Business, Economics, and
 Management

Ismail Mohammed Mounir Elmengad *Baldwin, New York* Physics

Olivia Mae Ernst *Garden Grove, California* Mechanical Engineering and Aerospace
 Engineering (Minor)

Eve Josephine Fine *Upper Brookville, New York* Bioengineering

Wei S Foo *Hacienda Heights, California* Electrical Engineering

Bruno Antonelli Freeman *Bloomingdale, New York* Computer Science

Diana Cristina Frias Franco *Morgan Hill, California* Mechanical Engineering

Lauren E Garriques† *Lake Forest, Illinois* Mechanical Engineering

Mahideremariyam N Gessesse *Bellevue, Washington* Computation and Neural Systems

Allison Taylor Glynn *Kingsport, Tennessee* Bioengineering

Axel Gogoi *Scottsdale, Arizona* Mechanical Engineering

Shir Goldfinger *Cherry Hill, New Jersey* Mechanical Engineering and Visual Culture (Minor)

Annabel Reyna Gomez *Dublin, California* Mechanical Engineering

Aanica Shazea Belicia Gonzales-Rogers *Tampa, Florida* Computation and Neural Systems

Michael Oliver Gonzalez *Miami, Florida* Computer Science and Mechanical Engineering

Elia Peter Gorokhovsky *Boulder, Colorado* Mathematics

Akshay Ramamurthy Gowrishankar *Acton, Massachusetts* Computer Science and Political
 Science and Information and Data Sciences (Minor)

Reggy M Granovskiy *Morganville, New Jersey* History and Computer Science (Minor)

Hannah E Grauer *Libertyville, Illinois* Electrical Engineering

Cameron Z Gray *Austin, Texas* Physics

Astral K Grayson† *Waikoloa, Hawaii* Computer Science

Leah Elizabeth Griffith *Austin, Texas* Computer Science and Business, Economics, and
 Management

Tomas Philip Grossmark *Larchmont, New York* Materials Science

Joshua T Grosso *Glendale, Arizona* Computer Science

Sirisha Gudavalli *Lafayette, Colorado* Computation and Neural Systems

Rishi Gundakaram *Wyoming, Delaware* Applied and Computational Mathematics

Bilge Gungoren *Istanbul, Turkey* Chemical Engineering (Biomolecular)

Amy Guo *Glastonbury, Connecticut* Mechanical Engineering

Matthew Roger Hajjar *San Jose, California* Computer Science and Business, Economics, and
 Management

Alexandra Julia Haraszti *Santa Rosa, California* Mechanical Engineering

Bachelor of Science *continued*

Logan Schaefer Hayes   *Redondo Beach, California*   Mechanical Engineering and English
      (Minor)

Melchor Herrera   *El Paso, Texas*   Mathematics

Sujai Hiremath   *Plano, Texas*   Applied and Computational Mathematics

Martin Skyler Holmes†   *San Diego, California*   Bioengineering

Alexandria Hong   *Salt Lake City, Utah*   Chemistry

David Ying Hou   *Fremont, California*   Computer Science and Mathematics (Minor)

Beryl Alma Cecilia Hovis-Afflerbach   *Bethesda, Maryland*   Astrophysics

Jennifer Ann Hritz   *Thousand Oaks, California*   Physics

Victor Wei Huang   *Temple City, California*   Computer Science and Business, Economics, and
      Management and Information and Data Sciences (Minor)

Wesley Young Huang   *San Marino, California*   Biology

Aelin Diana Hunt   *Solon, Maine*   Materials Science and Chemistry (Minor)

Isabella Uhles Hurvitz   *Santa Barbara, California*   Bioengineering

Justin Joon Hyon   *Sierra Madre, California*   Bioengineering and Neurobiology (Minor)

Neymika Jain†   *Redwood Shores, California*   Applied and Computational Mathematics

Nicholas Lawrence Jasinski   *Crystal Lake, Illinois*   Computer Science

Jenny Ji   *Diamond Bar, California*   Bioengineering and Neurobiology (Minor)

Abigail Yuan-Shan Jiang   *Camas, Washington*   Materials Science and History

Erick Jimenez Berumen   *Inglewood, California*   Applied and Computational Mathematics

Samir Ian Johnson†   *Portland, Oregon*   Physics

Ely Bernard Jrade   *Albany, California*   Mathematics

Benjamin Vincent Juarez   *El Dorado Hills, California*   Computer Science and Business,
      Economics, and Management

Calle Wilkes Junker   *Edenton, North Carolina*   Mechanical Engineering and Aerospace
      Engineering (Minor)

Elin Seyoung Kang   *Daejeon, Republic of Korea*   Chemistry and Neurobiology (Minor)

Sara Aurora Kangaslahti   *Los Angeles, California*   Computer Science and Information and Data
      Sciences (Minor)

Rohit Kantipudi   *Madbury, New Hampshire*   Physics

Catherine Fiona Kauber   *Pleasantville, New York*   Electrical Engineering

Jae Yoon Kim   *La Jolla, California*   Computer Science and Biology (Minor)

John Wonjoon Kim   *Cupertino, California*   Computer Science

Sam K Klauer   *Knoxville, Tennessee*   Computation and Neural Systems and Business,
      Economics, and Management

Viktor Sebastian Köhlin Lövfors   *Stockholm, Sweden*   Physics

Bachelor of Science *continued*

Jin Ming Koh   *Republic of Singapore*   Physics and Computer Science

Shwetha S Kunnam   *Rockville, Maryland*   Electrical Engineering

Shalini Kurinchi-Vendhan   *Lake Hiawatha, New Jersey*   Astrophysics and English (Minor)

Albert Yone-Che Kyi   *New York, New York*   Chemical Engineering (Sustainability)

Alexandra Lai   *Orange, California*   Computer Science

Pik Hoi Lam   *Easton, Pennsylvania*   Chemistry

Anna Pavlovna Lapteva   *Ventura, California*   Bioengineering

Vy Thao Le   *Seattle, Washington*   Mechanical Engineering

Iris Tse Hsiu Lee   *Irvine, California*   Bioengineering

Joshua H Lee   *Santa Clarita, California*   Mechanical Engineering

Katelyn Seungah Lee   *New York, New York*   Bioengineering

Gideon Leeper   *Brooklyn, New York*   Mathematics

Simon Jay Lequar†   *Evanston, Illinois*   Computer Science

Laura Limin Lewis   *Chester Springs, Pennsylvania*   Mathematics and Computer Science

Anna Xiao Li   *Woodbury, Minnesota*   Engineering and Applied Science

Shenyi Li   *Gilbert, Arizona*   Computer Science and Information and Data Sciences (Minor)

Grace Liu   *Richmond Hill, Canada*   Biology and English

Nathan E Lopez   *Jurupa Valley, California*   Chemistry

Julen Lujambio   *Wallingford, Connecticut*   Computer Science

Moya Phung Ly   *Cincinnati, Ohio*   Mechanical Engineering

Andrew Ma   *Miramar, Florida*   Computer Science

Sonali Madisetti   *Coto de Caza, California*   Electrical Engineering

Amritavarshini R Mayavaram   *Austin, Texas*   Mechanical Engineering and Business, Economics, and Management

Nathan Michael McAlister   *Reno, Nevada*   Applied and Computational Mathematics

Gavin Matthew McCabe   *Yorktown, Virginia*   Physics

Robin Meilu McDonald   *Phoenix, Arizona*   Materials Science

Kyle Alexander McGraw   *Los Altos Hills, California*   Computation and Neural Systems and Computer Science

Tyrone Jeffrey McNichols   *Saint Louis, Missouri*   Computer Science

David J. Melisso†   *Palo Alto, California*   Electrical Engineering

Esmir Mesic   *Dallas, Texas*   Computer Science and Business, Economics, and Management and Information and Data Sciences (Minor)

Arya Naresh Mevada   *Marietta, Georgia*   Computer Science and Information and Data Sciences (Minor)

Mohini Kavya Misra   *Nashville, Tennessee*   Computer Science and Biology (Minor)

Bachelor of Science *continued*

Prashanth Mohan   *Highland, California*   Computer Science

Noah Peyton Moran   *Corona, California*   Physics

Basel M Mostafa   *Santa Clara, California*   Computer Science

Matthew Vijay Muldowney   *Waunakee, Wisconsin*   Electrical Engineering

Veronica Marie Muller   *Altadena, California*   Bioengineering

Jessica Rachel Nassimi   *Great Neck, New York*   Computer Science

Daniel Yi Nee   *Wayland, Massachusetts*   Computer Science

Brian Luu Nguyen   *Brooklyn, New York*   Electrical Engineering

Tyler Duy Nguyen   *Portland, Oregon*   Mechanical Engineering and Aerospace Engineering (Minor)

Sandra O'Neill   *Walnut Creek, California*   Physics and Astrophysics (Minor)

Xin Hui Ooi   *Mission, Texas*   Mechanical Engineering

Noah Daniel Ortiz   *Albuquerque, New Mexico*   Mathematics

Chase Elliot Pagon   *San Diego, California*   Computer Science and Business, Economics, and Management

Elsa Katarina Palumbo   *Kirksville, Missouri*   Astrophysics and Physics and Philosophy

Katherine Cong Pan   *Livonia, Michigan*   Bioengineering

Eunice Hayeon Park   *Richmond, Canada*   Bioengineering

Jolly Patro   *Olathe, Kansas*   Chemistry

Elijah Gavril Paul   *Wayne, New Jersey*   Physics and Computer Science (Minor)

Malik Lloyd Paulino   *Frisco, Texas*   Chemical Engineering (Sustainability)

Joshua Gabriel Pawlak   *Encinitas, California*   Physics

Martin Francisco Peticco   *Newburgh, New York*   Mechanical Engineering and Aerospace Engineering (Minor)

Amy Thuy An Pham   *Bel Air, Maryland*   Computer Science

Gaurav V Phanse   *Dublin, California*   Mechanical Engineering and Aerospace Engineering (Minor)

Sophie Shufei Piao   *Thousand Oaks, California*   Computer Science

Jack Douglas Pierson   *Avoca, Minnesota*   Information and Data Sciences and Business, Economics, and Management and Computer Science (Minor)

Faith Jean-Marie Pinney   *Newman Lake, Washington*   Bioengineering

Amanda Piyapanee   *Dallas, Texas*   Computer Science

Geoffrey Michael Pomraning   *Madison, Wisconsin*   Physics and Mathematics

Max Popken   *Westport, Connecticut*   Information and Data Sciences

Anastasia Natalie Popova   *Tarrytown, New York*   Applied and Computational Mathematics

Bachelor of Science continued

Daniel Joseph Quintana   *Simi Valley, California*   Computer Science and Information and Data Sciences (Minor)

Kavya Akansha Rajagopalan   *Dover, Massachusetts*   Applied and Computational Mathematics

Eitan Rapaport Bruck   *Miami, Florida*   Physics and History and Philosophy of Science (Minor)

Jillian Therese Reed   *Hawthorne, California*   Materials Science

Galileo Alessio Resca-Candini   *San Diego, California*   Chemical Engineering (Materials)

Philippa Anne Richter   *Columbia, South Carolina*   Computer Science and Biology (Minor)

Makena L Rodriguez   *Fairmont, Minnesota*   Bioengineering

Michael Irey Rose   *Hartland, Wisconsin*   Chemistry and Computer Science (Minor)

Joshua Reuben Rosenberg   *Grapevine, Texas*   Electrical Engineering

Iyla Parisa Rossi   *South Pasadena, California*   Computation and Neural Systems and Business, Economics, and Management

Sahana Saikumar   *Arcadia, California*   Computer Science and Information and Data Sciences (Minor)

Louise Elisabeth Schul   *Columbia, Missouri*   Electrical Engineering

Aditi Seetharaman   *Chesterfield, Missouri*   Bioengineering

Jason Matthew M Sevilla   *Beverly Hills, Florida*   Astrophysics and Economics

Lorenzo Franceschini Shaikewitz   *Durham, North Carolina*   Mechanical Engineering and Control and Dynamical Systems (Minor)

Helen Joann Siavelis   *Arlington Heights, Illinois*   Computer Science and Business, Economics, and Management

Liam Matthew Silvera   *Frederick, Maryland*   Biology

Amritpal Singh   *Yuba City, California*   Chemical Engineering (Process Systems)

Aditya Diwakar Sivakumar   *Portland, Oregon*   Mathematics

Eric Fuhrman Smith   *Burke, Virginia*   Mechanical Engineering

Isaac George Bond Smith   *Tuscaloosa, Alabama*   Physics

Nina Vladimirovna Solovyeva   *Houston, Texas*   Computer Science and Business, Economics, and Management

Kalliopi Somis   *Baltimore, Maryland*   Physics

Johnathon Firas Soro   *San Diego, California*   Biology

Sidi Mohamed Larbi Soufi   *San Jose, California*   Bioengineering and Computer Science (Minor)

Emily Anne Springer   *South Elgin, Illinois*   Physics and Computer Science

Shiva Attiganal Sreeram   *Midland, Michigan*   Computer Science

Bachelor of Science *continued*

Pavlos Stavrinides   *Nicosia, Cyprus*   Applied and Computational Mathematics

Kristina Angelova Stoyanova   *Franklin, Massachusetts*   Computer Science and Business, Economics, and Management

Christian John Stromberger III   *Austin, Texas*   Mechanical Engineering and Computer Science (Minor)

Victoria Lily Su   *Jacksonville, Florida*   Physics

Margaret Yanzhu Sui   *Slingerlands, New York*   Bioengineering and English (Minor)

Tea Susskind   *Redmond, Washington*   Applied and Computational Mathematics

Aiden Ethan Swann   *Edina, Minnesota*   Mechanical Engineering and Control and Dynamical Systems (Minor)

Madeleine Caroline Swint   *Charleston, West Virginia*   Chemical Engineering (Sustainability)

Dallas Nicole Taylor   *Phoenix, Arizona*   Computation and Neural Systems and Computer Science

Kelsie Reed Taylor   *Las Cruces, New Mexico*   Physics

Felianne Teng   *Walnut, California*   Computer Science and Information and Data Sciences (Minor)

Kenny Thai   *Honolulu, Hawaii*   Geophysics and Business, Economics, and Management

Justin Ikuo Toyota   *Wahiawa, Hawaii*   Mathematics

Aaron Coe Tran   *San Jose, California*   Computer Science

An Nguyen Tran   *Houston, Texas*   Computer Science

Nathan Taylor Trevino Barton   *Mount Pleasant, Pennsylvania*   Mechanical Engineering

Arielle Karr Tycko   *Bethesda, Maryland*   Computation and Neural Systems

Michael McAlarney Valverde   *Bayonne, New Jersey*   Computer Science

Saskia Van Nieuwstadt   *Ann Arbor, Michigan*   Mechanical Engineering

Leah Vazsonyi   *Columbia, South Carolina*   Physics and Astrophysics (Minor) and Philosophy (Minor)

Aditi Tanvi Venkatesh   *San Jose, California*   Physics and Computer Science (Minor)

Alexander Zhong Wang   *Saratoga, California*   Computer Science

Jackie J Wang   *Winter Park, Florida*   Bioengineering

Richard Jiahuan Wang   *San Jose, California*   Computer Science

Jack Warren   *Foster City, California*   Computer Science

Amelia Yuna Whitworth†   *Carlsbad, California*   Information and Data Sciences and Business, Economics, and Management

Varyn Kalis Woo   *Los Altos Hills, California*   Computer Science

Bachelor of Science *continued*

Brittany Louise Wylie   *North Wales, Pennsylvania*   Mechanical Engineering and Aerospace
     Engineering (Minor)

George T Wythes   *Solana Beach, California*   Bioengineering

Travis Yu Xiang   *Casselberry, Florida*   Computer Science and Information and Data Sciences
     (Minor)

Xintong Iris Xiang   *Chapel Hill, North Carolina*   Computer Science

Alice Chih Ai Yang   *East Setauket, New York*   Computer Science

Noah Yared   *Washington, District of Columbia*   Mechanical Engineering

Donovan Ye   *Coconut Creek, Florida*   Computer Science

Steven Horii Yee   *Leawood, Kansas*   Computer Science

Eilleen Zhang†   *Foster City, California*   Electrical Engineering

Josephine R Zhang   *Buffalo Grove, Illinois*   Computer Science

Yuling Zhang   *Houston, Texas*   Computer Science

Emily Zheng   *Athens, Georgia*   Computer Science and Visual Culture (Minor)

Fangyu Nathan Zou   *Murfreesboro, Tennessee*   Chemical Engineering (Sustainability)

Master of Science

Ameera Yasser Abdelaziz *(Computer Science)* B.S.E., Princeton University 2015.

David Joshua Abramovitch *(Applied Physics)* B.A., University of California, Berkeley 2021.

Mary Agajanian *(Mechanical Engineering)* B.S., Harvard College 2019.

Joshua Somtochukwu Anadu *(Geobiology)* B.S., Oklahoma State University 2021.

Alejandro Arellano *(Applied Physics)* B.S., University of California, Merced 2020.

Margarita Artiukhova *(Neurobiology)* B.Sc., M.Sc., I.M. Sechenov First Moscow State Medical University 2021.

Eray Unsal Atay *(Electrical Engineering)* B.Sc., Bilkent University 2021.

J. Jackson Baglino *(Mechanical Engineering)* B.S., Cornell University 2021.

Samantha Rose Baker *(Planetary Science)* B.S., The University of Chicago 2021.

Charalampia Baliaka *(Environmental Science and Engineering)* M.Sc., University of Patras 2020.

Elie Bataille *(Applied Physics)* B.S., École Polytechnique 2018; M.Sc., 2022.

David Andrew Baum *(Electrical Engineering)* B.S., University of California, Los Angeles 2021.

Ryan Joseph Benavides *(Materials Science)* B.S., The University of Texas at Austin 2021.

Federico Benazzo *(Space Engineering)* B.S.E., University of Michigan, Ann Arbor 2021.

Subrahmanya Vignesh Bhide *(Space Engineering)* B.Tech., Indian Institute of Space Science and Technology 2022.

Jadon Ma Bienz *(Materials Science)* B.S., University of California, Santa Barbara 2022.

Souvik Biswas *(Applied Physics)* B.S., M.S., Indian Institute of Technology Kharagpur 2017.

Xavier Bruant *(Space Engineering)* M.S., École Polytechnique 2022.

Alejandro Cabrera-Cortez *(Geobiology)* B.S., University of California, Santa Cruz 2020.

Zilin Cai *(Electrical Engineering)* B.S., University of California, Los Angeles 2020.

Caroline Danielle Cardinale *(Mechanical Engineering)* B.S., University of Rochester 2021.

Adolfo Sjoberg de Carvalho *(Astrophysics)* B.S., Rice University 2019; M.S., 2020.

Sotirios Catsoulis *(Aeronautics)* B.Sc., Ecole Polytechnique Federale de Lausanne 2018; M.Sc., Swiss Federal Institute of Technology Zurich 2021.

Jiexin Chen *(Control and Dynamical Systems)* B.S., University of Michigan, Ann Arbor 2017.

Ting Yu Cheng *(Electrical Engineering)* B.S., National Taiwan University 2021.

Katsuya Lex Colón *(Chemistry)* B.S., The University of North Carolina at Greensboro 2018.

Chandler Jacob Conn *(Physics)* B.A., Northwestern University 2019.

Malaika Celia Cordeiro *(Bioengineering)* B.S., Roger Williams University 2021.

Ningxuan Dai *(Electrical Engineering)* B.E., Nanjing University 2020.

Samantha Isabel Davis *(Physics)* B.S., Stanford University 2019.

Sri Aditya Deevi *(Electrical Engineering)* B.Tech., Indian Institute of Space Science and Technology 2022.

Master of Science continued

Akash Sharan Dhawan *(Medical Engineering)* B.S., Rice University 2019.

Taleen Gaied Dilanyan *(Chemistry)* B.A., Smith College 2016.

Ana Isabel Duarte *(Physics)* B.S., University of Washington 2019.

Annika Dugad *(Physics)* B.S., University of Illinois at Urbana-Champaign 2019.

Delaney Anne Dunne *(Astrophysics)* B.Sc., McGill University 2020.

Haakon Ludvig Langeland Ervik *(Environmental Science and Engineering)* B.Sc., University of Bergen 2019.

Xiao Fan *(Electrical Engineering)* B.S., Zhejiang University 2020.

Kexin Feng *(Social Science)* B.S., The College of William & Mary 2020.

Alessandra Katrina Haeusler Flaherty *(Geochemistry)* B.S., University of California, Irvine 2021.

Alexander Froebel *(Chemistry)* B.S., University of Nevada, Reno 2016.

Rikuto Fukumori *(Applied Physics)* B.A., The University of Chicago 2020.

Eran Joel Funaro *(Geology)* B.Sc., Ben-Gurion University of the Negev 2018; M.Sc., 2021.

Jacob Golomb *(Physics)* B.S., University of Maryland, College Park 2020.

Adam Michael Guerin *(Physics)* B.S., Purdue University 2019.

Benjamin Kellin Gutierrez *(Applied Physics)* B.S., San Diego State University 2020.

Noah Guzman *(Computation and Neural Systems)* B.S., M.S., Brandeis University 2019.

Hong Han *(Medical Engineering)* B.S., Nankai University 2018; M.E., 2021.

Duxing Hao *(Physics)* B.S., Shanghai Jiao Tong University 2018.

Wenzheng Heng *(Medical Engineering)* B.E., Zhejiang University 2020.

Juan David Hernández Montenegro *(Geology)* B.Eng., Francisco José de Caldas District University 2015; B.Sc., National University of Colombia 2016; Magister, 2020.

Katelyn Horstman *(Astrophysics)* B.S., University of California, Los Angeles 2021.

Mo Hu *(Geophysics)* B.S., University of Science and Technology of China 2021.

Chien-Ying Huang *(Electrical Engineering)* B.S., National Cheng Kung University 2015; M.S., National Taiwan University 2017.

Wanying Huang *(Social Science)* B.A., The University of Queensland 2017.

Yue Hui *(Chemical Engineering)* B.S., Washington University in St. Louis 2017.

Ammar Faroog Ibrahim *(Chemistry)* B.S., University of Michigan, Ann Arbor 2019.

Mma G. Ikwut-Ukwa *(Planetary Science)* A.B., Harvard College 2020.

Arian Jadbabaie *(Physics)* A.B., Washington University in St. Louis 2015.

Miles Ross Johnson *(Applied Physics)* S.B., Massachusetts Institute of Technology 2021.

Nathan David Jones *(Mechanical Engineering)* B.S., University of California, Santa Barbara 2021.

Master of Science continued

Hirsh Kamakari *(Applied Physics)* B.Sc., University of British Columbia 2019.

Taylan Kargin *(Electrical Engineering)* B.S., Bilkent University 2019.

Maria Kechri *(Space Engineering)* M.Eng., National Technical University of Athens 2022.

Abigail May Keebler *(Planetary Science)* B.S., West Chester University 2021.

Sinan Kefeli *(Physics)* B.S., Boğaziçi University 2013.

Yeokyoung Kil *(Medical Engineering)* B.S., California Institute of Technology 2020.

Ethan Samuel Klein *(Materials Science)* B.S., University of California, Berkeley 2021.

Princekumar Balkrushna Kothadiya *(Electrical Engineering)* B.Tech., Indian Institute of Space Science and Technology 2022.

Jarek Vincent Kwiecinski *(Geobiology)* S.B., Massachusetts Institute of Technology 2021.

José Antonio Lasalde-Ramírez *(Medical Engineering)* B.S., University of Puerto Rico 2021.

Roey Lazarovits *(Medical Engineering)* A.A., Pierce College 2016; B.S., University of California, Berkeley 2018.

Emma Grace Lenz *(Aeronautics)* B.S., University of Minnesota, Twin Cities 2021.

Bo Li *(Chemistry)* B.S., Tianjin University 2021.

Jiahong Li *(Medical Engineering)* B.S., Wuhan University 2018; M.S., Northwestern University 2019.

Ka Yue Alvin Li *(Physics)* B.Sc., The Chinese University of Hong Kong 2019.

Shirley (Minqi) Li *(Bioengineering)* B.S., University of California, Berkeley 2021.

Hugo Libes *(Space Engineering)* M.S., École Polytechnique 2022.

Po-Hsuan Lin *(Social Science)* B.A., National Taiwan University 2016.

Ke Liu *(Environmental Science and Engineering)* B.A., Peking University 2020.

Noam Lotem *(Geochemistry)* B.Sc., Ben-Gurion University of the Negev 2020; M.Sc., 2022.

Sizheng Ma *(Physics)* B.S., Tsinghua University 2017.

Xiuqi Ma *(Physics)* B.A., University of Cambridge 2018.

Kristina Lynn Malinowski *(Materials Science)* B.S., Georgia Institute of Technology 2022.

Evan Mark Mastin *(Chemistry)* B.S., Baylor University 2021.

Daniel Brendan McHaffie *(Materials Science)* B.A.Sc., University of Waterloo 2019.

Zachariah Montana Milby *(Planetary Science)* B.A., University of Colorado at Boulder 2013; B.A., 2019.

Jessie Morgan Miller *(Astrophysics)* B.S., Michigan State University 2021.

Lorenzo Minutolo *(Physics)* B.S., Sapienza Università di Roma 2015; M.S., 2017.

Erica Morgan *(Physics)* B.S., Arizona State University 2015.

Joshua Quinn Morgan *(Applied Physics)* B.S., Harvey Mudd College 2020.

Jessica Marie Mueller *(Geochemistry)* B.S., Boise State University 2021.

Sean Patrick Mullan *(Materials Science)* B.S., University of California, Berkeley 2021.

Charles Bruce Musgrave III *(Applied Physics)* B.S., University of Colorado at Boulder 2019.

Kevin Hiroshi Kee Sun Nakahara *(Mechanical Engineering)* B.S., Harvey Mudd College 2020.

Boi-Lien Thi Nguyen *(Chemistry)* B.S., University of Houston 2019.

Micah Kalaihi Kushi Nishimoto *(Aeronautics)* B.S., University of Southern California 2022.

Kimberly Paragas *(Planetary Science)* B.A., Wesleyan University 2021.

Akiyoshi Park *(Physics)* B.A., International Christian University 2014; M.S., The University of Tokyo 2016.

Ashay Naren Patel *(Physics)* B.A., Williams College 2018.

Ronak Nishesh Patel *(Environmental Science and Engineering)* B.S., North Carolina State University 2021.

Phillippe Matthew Justin Pearson *(Applied Physics)* B.A.Sc., University of Waterloo 2020.

Nghia Tran Pham *(Social Science)* B.A., National Economics University 2016; M.S., Università Commerciale Luigi Bocconi 2020.

Yu Yu Phua *(Planetary Science)* B.Eng., The University of Tokyo 2019; M.Sc., 2021.

Konrad Pilch *(Mathematics)* B.Math., The University of Adelaide 2010; B.S., 2011; M.Phil., 2014.

Adriana Piña Páez *(Geology)* B.Sci., Universidad de Sonora 2020.

Prakash Rajan *(Electrical Engineering)* B.Tech., Indian Institute of Technology Gandhinagar 2020.

Jocelyn Nicole Reahl *(Geology)* B.A., Wellesley College 2019.

Jorge Rodriguez Gutierrez *(Aeronautics)* B.S., Carlos III University of Madrid 2021.

Antonio Cuevas Rodriguez *(Astrophysics)* B.S., Stanford University 2020.

Alexandros Yiannis Rosakis *(Medical Engineering)* Sc.B., Brown University 2017.

Arkadev Roy *(Electrical Engineering)* B.Tech., Indian Institute of Technology Kharagpur 2018.

Nicholas Zhao Rui *(Physics)* B.A., University of California, Berkeley 2020.

Catherine Nichole Ryczek *(Applied Physics)* B.A., Hamilton College 2021.

Morgan Laura Saidel *(Planetary Science)* B.S., University of New Hampshire 2020.

Andrew Lee Schacht *(Biochemistry and Molecular Biophysics)* B.S., University of Nebraska, Lincoln 2018.

Peter John Scherbak *(Astrophysics)* B.A., Cornell University 2020.

Elina Maria Sendonaris *(Applied Physics)* S.B., Massachusetts Institute of Technology 2020.

Chan-Mei Shao *(Electrical Engineering)* B.S., National Taiwan University 2021.

Ke Shi *(Social Science)* B.A., New York University 2020.

Yanlong Shi *(Physics)* B.S., University of Science and Technology of China 2018.

Emily Mary Silich *(Astrophysics)* B.S., The University of Iowa 2021.

Sarah Leila Simon *(Chemistry)* B.S., Carnegie Mellon University 2019.

Michael Kenneth Elliott Sleeman *(Mechanical Engineering)* B.A.Sc., University of British Columbia 2018; M.Sc., University of Toronto 2020.

Samuel Aaron Solomon *(Medical Engineering)* S.B., Massachusetts Institute of Technology 2020.

Sameer Sonar *(Applied Physics)* B.Tech., M.Tech., Indian Institute of Technology Bombay 2018.

Spiro Andrew Stameson *(Electrical Engineering)* B.S., California Institute of Technology 2022.

Korbinian Owen Thalhammer *(Geochemistry)* B.S., University of California, Berkeley 2018.

Rachel W Tham *(Materials Science)* B.S., University of Illinois at Urbana-Champaign 2021.

Benjamin James Thyer *(Geology)* B.S., University of North Carolina at Chapel Hill 2020.

Yashvardhan Tomar *(Astrophysics)* B.S., Georgia Institute of Technology 2022.

Xiao Tong *(Materials Science)* B.S., South University of Science and Technology of China 2015.

Susana Torres-Londono *(Applied Physics)* B.A., University of California, Berkeley 2020.

Alexandros Tsamopoulos *(Chemical Engineering)* Diplom, University of Patras 2019.

Bahadir Ulgey *(Social Science)* B.A., Boğaziçi University 2019; M.A., Koç University 2021.

Samuel Lee Varner *(Chemical Engineering)* B.S., Northwestern University 2020.

Seneca Jackson Velling *(Materials Science)* B.Sc., University of Waterloo 2020.

Canran Wang *(Medical Engineering)* B.S., Shanghai Jiao Tong University 2020.

Tianxiao Wei *(Electrical Engineering)* B.S., University of California, Los Angeles 2021.

Ray Francis Wendt *(Electrical Engineering)* B.S., California Institute of Technology 2022.

Adeline Emily Wihardja *(Mechanical Engineering)* B.S., University of Michigan, Ann Arbor 2021.

Madeleine Jean Wilner *(Geology)* B.A., Whitman College 2020.

Chun-Ju Wu *(Physics)* B.S., National Taiwan University 2018.

Jiajun Wu *(Electrical Engineering)* B.E., Nanjing University 2020.

Jinhua Xu *(Electrical Engineering)* B.S., University of California, San Diego 2020.

Wenhao Xuan *(Astrophysics)* B.A., Pomona College 2019; M.S., University of Cambridge 2020.

Frank Yuan-Shaw Yang *(Applied Physics)* B.S., Rice University 2021.

Jee Won Yang *(Chemical Engineering)* B.S., Cornell University 2019.

Jiani Yang *(Environmental Science and Engineering)* B.S., Beijing Forestry University 2014; M.S., Yale University 2017.

Noa Kathryn Yoder *(Aeronautics)* S.B., Massachusetts Institute of Technology 2019.

Zhen Yu *(Geophysics)* B.S., University of California, San Diego 2020.

Master of Science continued

Victor Hugo Zendejas Lopez *(Mechanical Engineering)* A.S., Chabot College 2017; B.S., University of California, Berkeley 2020.

Yiwen Zhang *(Physics)* B.S., University of Wisconsin-Madison 2019.

Tianzhe Zheng *(Applied Physics)* B.S., University of Science and Technology of China 2018.

Elizabeth Lin Zhou *(Applied Physics)* B.S., University of Southern California 2021.

Engineer

Peida Tian *(Electrical Engineering)* B.S., The Chinese University of Hong Kong 2016; M.S., California Institute of Technology 2017.

Doctor of Philosophy

DIVISION OF BIOLOGY AND BIOLOGICAL ENGINEERING

Jeremy David Bernstein *(Computation and Neural Systems)* B.A., M.Sc., University of
Cambridge 2016.

Thesis: Optimisation & Generalisation in Networks of Neurons.

Prashant Bhat *(Molecular Biology and Biochemistry)* B.A., University of California, Berkeley 2014.

Thesis: On the Role of Three-Dimensional Genome Organization in Gene Regulation and
mRNA Splicing.

Zachary Blumenfeld *(Biology)* B.S., University of California, Davis 2013.

Thesis: Genetically Encoded Biosensors for Ketamine and Other Rapidly Acting
Antidepressants in Zebrafish and Cell Culture.

Xinhong Chen *(Neurobiology)* B.S., Tongji University 2017.

Thesis: Non-Invasive Functional Gene Delivery to the Central and Peripheral Nervous
System Across Species.

Zhewei Chen *(Bioengineering)* B.S., University of Michigan, Ann Arbor 2011.

Thesis: Engineering Conditional Guide RNAs for Cell-Selective Regulation of CRISPR/
Cas9.

Miguel Roberto Estella Chuapoco *(Bioengineering)* B.S., Stanford University 2016; M.S.,
2017.

Thesis: Adeno-Associated Viral Vectors for Gene Delivery to the Non-Human Primate
Brain.

Kim-Marie Anh Dam *(Biology)* B.S., DePaul University 2017.

Thesis: Structural Insights into the Conformational Plasticity and Antibody Recognition of
HIV-1 Env.

Xiaozhe Ding *(Bioengineering and Computational Science and Engineering)* B.S., Tsinghua
University 2014.

Thesis: Computation-Aided Protein Engineering for Targeted Therapeutic Delivery.

Riley Galton *(Biology)* B.S., University of California, Davis 2014.

Thesis: Co-Option of the piRNA Pathway to Regulate Neural Crest Specification.

Ángel Gálvez Merchán *(Biology)* B.S., University of Seville 2016.

Thesis: Studies of mRNA Expression and Degradation.

‡ *Students whose names are followed by a double dagger had their degrees conferred in a
previous year's commencement ceremony.*

*When more than one field of study is listed, the first is the major and the second and others
are minors.*

Doctor of Philosophy *continued*

Sharareh Gholamin *(Biology)* M.D., Shahid Beheshti University 2010.
Thesis: Mechanism of Response and Resistance to CAR T Cell Therapies.

David Gerald Goertsen *(Bioengineering)* B.A.Sc., University of British Columbia 2017.
Thesis: Expanding Adeno-Associated Viral Capsid Engineering to Multiple Variable Regions for Diversified Tropism.

Whitney Scott Griggs *(Biology)* B.A., Whitman College 2013.
Thesis: Listening to the Internal Representation of Actions within the Posterior Parietal Cortex.

Charles Guan *(Bioengineering and Computer Science)* B.S., M.S., Stanford University 2016.
Thesis: Neural Coding of Finger Movements in Human Posterior Parietal Cortex and Motor Cortex.

Alice Hsu *(Bioengineering)* B.S., University of California, Los Angeles 2015.
Thesis: Neurotechnology for Multiplexed Interrogation of Brain Circuits and Synaptic Activity.

Jining Huang *(Bioengineering)* B.A.Sc., University of Waterloo 2015.
Thesis: Applications of Dynamic Nucleic Acid Nanotechnology in Closed-Loop Genetic Circuits and Detection of Viral Pathogens.

Robert Cooper Hurt *(Neurobiology)* B.S., Emory University 2015.
Thesis: Engineering of Second-Generation Acoustic Reporter Genes.

Victoria Lynn Jorgensen *(Developmental Biology)* B.A., University of California, Berkeley 2016.
Thesis: Stem Cell-Derived Embryo Models in Mouse and Human to Illuminate the "Black Box" of Pre- to Post-Implantation Development.

Eric Jer-Jiun Liaw *(Biology)* B.S., M.S., Stanford University 2014.
Thesis: A Novel, Rapid Phenotypic Assay for Beta-Lactam Antibiotic Susceptibility and an Analysis of Its Theoretical Limits.

Yicheng Luo *(Genetics)* B.S., Jilin University 2012.
Thesis: Maternally Inherited siRNAs Initiate piRNA Cluster Formation.

Yitong Ma *(Biology)* B.S., Peking University 2015.
Thesis: Multicellular Synthetic Biology in Mammalian Systems.

John Paul Marken *(Bioengineering)* B.S., The College of William & Mary 2017.
Thesis: Experimental and Theoretical Frameworks for Enabling Environmental Synthetic Biology.

James Mitchell McGehee *(Developmental Biology)* B.S., University of California, Davis 2013.
Thesis: Optogenetic Approaches for Determining the Temporal Role of Morphogen Inputs on Target Gene Expression.

Johan Matthijs Melis *(Bioengineering)* M.Sc., University of Technology Delft 2014.
Thesis: A Neural Network Model of an Insect's Wing Hinge Reveals How Steering Muscles Control Flight.

Doctor of Philosophy   *continued*

David Ryan Miller *(Genetics)* B.S., University of California, Los Angeles 2017.
  Thesis: Developing *Dalotia coriaria*, the Greenhouse Rove Beetle, as a Novel Model
  Organism.
Lambda Moses *(Biology)* B.S., University of California, Los Angeles 2017.
  Thesis: Computation Foundations of Spatial Transcriptomics.
Yu-Li Ni *(Neurobiology)* M.D., National Yang-Ming University 2014.
  Thesis: Developing Tools for Neurobiology: The Retina as a Neuropharmacology Testbed &
  Electrode Pooling to Boost Extracellular Array Recording.
Guruprasad Raghavan *(Bioengineering)* M.S., Carnegie Mellon University 2017.
  Thesis: Engineering Flexible Machine Learning Systems Inspired by Biological
  Intelligence.
Isabelle Anna Rosenthal *(Computation and Neural Systems)* B.A., Wellesley College 2016.
  Thesis: The Representation of Multimodal Tactile Sensations in the Human Somatosensory
  System.
Anish Anandsai Sarma *(Computation and Neural Systems and Control and Dynamical Systems)*
  Sc.B., Brown University 2012.
  Thesis: Multicellular Control.
Namita Sarraf *(Bioengineering)* B.S., University of Rochester 2015.
  Thesis: Towards Integrated Molecular Machines: Structural, Mechanical, and
  Computational Motifs.
Samuel Jordan Schulte *(Biology)* B.S., Iowa State University 2017.
  Thesis: New HCR Technologies: 10-Plex Quantitative Spectral Imaging of RNAs and
  Proteins; Multiplexed Quantitative Imaging of Protein:Protein Complexes; and Sensitive,
  Instrument-Free, At-Home Pathogen Detection.
Fayth Hui Tan *(Biology)* B.S., University of California, San Diego 2018.
  Thesis: Animal Regeneration and Its Loss: The Mouse as a Model of Limited Regeneration.
Zsofia E Torok *(Biology)* B.S., The City College of New York 2017.
  Thesis: Resilience of a Precise Motor Behavior.
Lev Maximovich Tsypin *(Microbiology)* B.A., The University of Chicago 2016.
  Thesis: The Discovery and Biological Mechanisms of a Widespread Phenazine's Oxidation.
Sarah Kim Wandelt *(Computation and Neural Systems)* M.S., Ecole Polytechnique Federale de
  Lausanne 2018.
  Thesis: Grasp, Speech and Internal Speech Representation in the Human Cortical Grasp
  Circuit.
Sheng Wang *(Bioengineering)* B.S., Tsinghua University 2011; M.S., 2014.
  Thesis: Synthetic Circuits for Multicellular Spatial Patterning.

Doctor of Philosophy *continued*

Steven Alexander Wilbert *(Microbiology)* B.S., Rochester Institute of Technology 2014.
> Thesis: The Role of Context-Dependent Metabolic Interactions in Organizing Microbial Communities.

Ronghui Zhu *(Biology)* B.S., The Hong Kong University of Science and Technology 2015.
> Thesis: Multicellular Circuit Design in Mammalian Cells.

DIVISION OF CHEMISTRY AND CHEMICAL ENGINEERING

Maria Paulene Bernal Abundo *(Chemical Engineering)* M.Eng., Imperial College London 2016.
> Thesis: Ultrasound Controlled Drug Delivery by Acoustically Switchable Hydrogels.

Patrick James Almhjell *(Biochemistry and Molecular Biophysics)* B.S., Arizona State University 2017.
> Thesis: Noncanonical Amino Acid Synthesis by Evolved Tryptophan Synthases.

Faisal H. Alshafei *(Chemical Engineering)* B.S., University of Southern California 2015; M.S., University of California, Los Angeles 2018.
> Thesis: Enhancing the Ethylene and Propylene Selectivities in the Methanol-to-Olefins Reaction by Exploiting the Intricate Relationship between Framework Topology and Acidity.

Christopher James Balzer *(Chemical Engineering and Applied and Computational Mathematics)* B.S.E., Arizona State University 2017; M.Phil., University of Cambridge 2019; M.S., California Institute of Technology 2021.
> Thesis: Polyelectrolytes Near Solid Surfaces.

Ross William Barber *(Chemistry)* B.A., The Johns Hopkins University 2015.
> Thesis: Mechanophore Strategies for the Development of Polymers with Mechanically Gated Responsive Behavior.

Alexandra Teresa Barth *(Chemistry)* B.S., Florida State University 2017.
> Thesis: Electronic Structures and Reactivity of Metal Complexes.

Stephanie Lynne Breunig *(Chemistry)* B.S., University of Minnesota, Twin Cities 2016.
> Thesis: Incorporation of Non-Canonical Proline Residues into Proteins Expressed in *Escherichia coli*.

Tyler Daniel Casselman *(Chemistry)* B.A., Boston University 2018; M.A., Columbia University 2019.
> Thesis: Unveiling Incipient Reactivity via Tandem Hydrosilylation Reaction Cascades and the Progress Toward the Total Synthesis of (–)-Cylindrocyclophane A.

Priya K Chittur *(Chemistry)* B.Tech., Anna University, Chennai 2016.
> Thesis: A Millifluidic Bulge Test for Multiscale Properties of Engineered Biofilms.

Zhi-Hao Cui *(Chemistry)* B.S., Peking University 2017.
> Thesis: Towards Ab Initio Simulations of High-Temperature Superconductivity.

Sara Elise Dibrell *(Chemistry)* B.S., The University of Texas at San Antonio 2018.
> Thesis: Development of Oxidation and Transition Metal-Mediated Reactions and Application to Natural Product Synthesis.

Jacqueline Anne Dowling *(Chemistry and Environmental Science and Engineering)* B.A., Carleton College 2017.
> Thesis: Long-Duration Energy Storage in Reliable Wind and Solar Electricity Systems.

Przemysław Dutka *(Biochemistry and Molecular Biophysics)* B.Sc., Jagiellonian University 2014; M.Sc., 2017.
> Thesis: Cryo-ET Reveals Molecular Details of Multi-Megadalton Bacterial Protein Complexes.

Sarah Emily Dutton *(Chemistry)* B.A., Middlebury College 2019.
> Thesis: Chirped Pulse Rotational Spectroscopy of Small Molecule Clusters.

Andrew Collin Friedman *(Chemical Engineering)* B.S., University of Southern California 2018.
> Thesis: Scalable Fabrication of Micro-Architected Water Filtering Membranes.

Quan Gan *(Chemistry)* B.Sc., Nankai University 2017.
> Thesis: Synthesis of Cyclic Polymer by Ring Expansion and Opening Metathesis Polymerization.

Gennady Gorin *(Chemical Engineering)* B.A., B.S., Rice University 2017.
> Thesis: Stochastic Foundations for Single-Cell RNA Sequencing.

Hao-Hsuan Hsieh *(Chemistry)* B.S., National Taiwan University 2016.
> Thesis: Coordination Between Mammalian Nascent Protein Targeting and Cotranslational Chaperones.

Shan Huang *(Chemistry)* B.S., Fudan University 2016.
> Thesis: DNA-Guided Genome Manipulation in *Escherichia coli*.

Yue Hui *(Chemical Engineering)* B.S., Washington University in St. Louis 2017.
> Thesis: Applications of Genetically Engineered *Bacillus subtilis* in Biocatalysis and Functional Materials.

Corey Christopher Husic *(Chemistry)* A.B., Harvard College 2017.
> Thesis: Strategies for the Mechanically Triggered Release of Small Molecules.

Zachary Philip Ifkovits *(Chemical Engineering)* B.S., Georgia Institute of Technology 2017.
> Thesis: Strategies for Enabling Stable and Efficient (Photo)Electrochemical Water Splitting.

Jeffrey Kevan Kerkovius *(Chemistry)* B.Sc., University of British Columbia 2016.
> Thesis: Total Synthesis of Lupin Alkaloids, Diterpenoid Alkaloids, and Progress Towards the Myrsinane Diterpenes.

Alexia Nahyun Kim *(Chemistry)* B.A., Princeton University 2017.
> Thesis: Enantioselective Syntheses of Tetrahydroisoquinolines (THIQs) via Iridium-Catalyzed Asymmetric Hydrogenation and Progress Toward the Total Synthesis of (+)-Cyanocycline A.

Hojin Kim *(Chemical Engineering)* B.S., Rice University 2016.
> Thesis: New Long End-Associative Polymers for Mist Control in I. Aqueous Solutions and II. Hydrocarbon Solvents.

Seong Shik (Steve) Kim *(Chemical Engineering)* B.S., Georgia Institute of Technology 2018; M.S., California Institute of Technology 2021.
> Thesis: Design Rules for Multi-Electron Systems in Next-Generation Batteries: From Mg Electrode-Electrolyte Interface to Anion Redox Activation in Li-Rich Sulfides.

Isabel McMillan Klein *(Chemistry)* B.A., Barnard College 2018.
> Thesis: Understanding the Origins of Photoexcited XUV Spectra.

Rachael Christine Kuintzle *(Biochemistry and Molecular Biophysics)* B.S., University of California, Santa Barbara 2011; M.S., Oregon State University 2016.
> Thesis: Diversity in Notch Ligand-Receptor Signaling Interactions.

James Joseph Lawniczak *(Chemistry)* B.S., University of Michigan, Ann Arbor 2017.
> Thesis: Computational Investigations of Organometallic Catalysis.

Bill Ling *(Chemical Engineering)* B.S., The Johns Hopkins University 2016.
> Thesis: Acoustic Biomolecules for Diagnostic Ultrasound Imaging.

Xinyan Liu *(Chemical Engineering)* B.S., National University of Singapore 2014; M.S., California Institute of Technology 2018.
> Thesis: Bioorthogonal Noncanonical Amino Acid Tagging for Understanding Bacterial Persistence.

Ailiena Okumura Maggiolo *(Chemistry)* B.S., Pennsylvania State University 2017.
> Thesis: Crystallographic Studies of Nitrogenase.

Molly Elizabeth McFadden *(Chemistry)* B.S., Indiana University Bloomington 2017.
> Thesis: The Emerging Mechanochemistry of Naphthopyran.

Madeline Claire Meier *(Chemistry)* B.S., University of Arkansas 2017.
> Thesis: Inorganic Phototropism: Emergent Properties Directing Growth of Mesostructured Semiconductors.

Doctor of Philosophy *continued*

Joseph Toshiro Meyerowitz *(Biochemistry and Molecular Biophysics)* B.S.E., Duke University
2009; M.S., California Institute of Technology 2011.
Thesis: Engineering and Rapid Prototyping for Biology in Extreme Conditions.

Maureen Baradi Morla *(Chemistry)* B.S., University of California, Berkeley 2017.
Thesis: Redox-Activated Covalent Functionalization of Semiconductor Surfaces.

Sepand K Nistanaki *(Chemistry)* B.S., University of California, Berkeley 2016.
Thesis: Application of Dewar Heterocycles and Vinyl Carbocations in Organic Synthesis.

Matthew John O'Rourke *(Chemistry)* B.A., Princeton University 2017.
Thesis: Towards High-Accuracy Simulations of Strongly Correlated Materials using Tensor
Networks.

Douglas Clifford Ober *(Chemistry)* B.A., Boston University 2016.
Thesis: Laser Spectroscopy of Hydrocarbons for Applications in Atmospheric and Space
Science.

James Anthony Ousey *(Biochemistry and Molecular Biophysics)* B.S., Stanford University 2016.
Thesis: Gut Microbiota Modulation of Host Feeding Behavior.

Anna Camille Overholts *(Chemistry)* B.A., Cornell University 2018.
Thesis: A Novel Platform for Mechanochemical Multicolor Lithography and Models for
Solution-Phase Mechanophore Activation.

Elyse Ann Pennington *(Chemical Engineering and Environmental Science and Engineering)* B.S.,
Harvey Mudd College 2017.
Thesis: Development of Numerical Models to Advance the Understanding of Air Quality
in Los Angeles.

Giovani Pinton Tomaleri *(Biochemistry and Molecular Biophysics)* B.S., Universidade de São
Paulo 2015.
Thesis: Structure and Mechanism of the Human ER Membrane Protein Complex.

Zhuoran Qiao *(Chemistry and Quantum Science and Engineering)* B.S., Peking University 2019.
Thesis: Physics-Informed Neural Approaches for Multiscale Molecular Modeling and
Design.

Nicholas Singh Sarai *(Biochemistry and Molecular Biophysics)* B.S., University of Denver 2016.
Thesis: Engineering Cytochrome $P450_{BM3}$ for Oxidation and Silicon–Carbon Bond
Cleavage of Volatile Methylsiloxanes.

Anna Gustavus Scott *(Chemistry)* B.S., Montana State University 2017.
Thesis: MFeS Clusters as Models for Complex Multimetallic Systems.

Doctor of Philosophy *continued*

Zachary Patrick Sercel *(Chemistry)* B.S., California State University, Los Angeles 2018.
Thesis: Synthesis of Organic Building Blocks and Synthetic Strategies Toward Aleutianamine.

Angela Ann Shiau *(Chemistry)* B.S., University of California, Berkeley 2017.
Thesis: Tetranuclear $CaMn_3O_4$ and Mn_4O_4 Complexes as Spectroscopic Models of the Oxygen Evolving Complex of Photosystem II.

Alexander Mitsuo Shimozono *(Chemistry)* B.S., University of Richmond 2017.
Thesis: The Development of Ni-Catalyzed Methodologies for Application in Total Synthesis.

Yujia Tao *(Chemistry)* B.S., University of California, Berkeley 2017.
Thesis: Synthetic Studies Toward Total Synthesis of Enterocin.

Ariana Linnae Tribby *(Chemistry)* B.A., Pomona College 2017.
Thesis: Inference of Global Methane Emissions from Oil and Gas Production.

Raymond Farnon Turro *(Chemistry)* B.S., Juniata College 2018.
Thesis: Mechanistic Investigations and Development of Ni-Catalyzed Cross-Electrophile Coupling Reactions.

Brooke Ann Versaw *(Chemistry)* B.S., Texas A&M University 2018.
Thesis: Thermally and Mechanically Responsive Platforms for Functional Polymeric Materials.

Chloe Gabrielle Williams *(Chemistry)* B.S., DePaul University 2018.
Thesis: Development of Selective Carbon–Carbon Bond-Forming Reactions of Vinyl Carbocations.

Shuoyan Xiong *(Chemistry)* B.A., University of Science and Technology of China 2017.
Thesis: Insertion of Olefins into Nickel Alkyl Complexes: Mechanistic Studies and Polymerization Catalysis.

Chien-I Yang *(Chemistry)* M.S., National Taiwan University 2014.
Thesis: Mechanism and Function of Nascent Protein Modification in Bacteria.

Joshua Joseph Zak *(Chemistry)* B.S., Carnegie Mellon University 2017.
Thesis: Complex Charge Compensation Mechanisms in Lithium-Rich Chalcogenide Cathodes.

Michael David Zott *(Chemistry)* B.S., Georgia Institute of Technology 2018.
Thesis: Strategic Applications of Electrochemistry in Ammonia Oxidation and Alkyl Halide Reduction.

Doctor of Philosophy   *continued*

DIVISION OF ENGINEERING AND APPLIED SCIENCE

Prithvi Akella *(Mechanical Engineering)* B.S., University of California, Berkeley 2018; M.S., California Institute of Technology 2020.
> Thesis: Reliable Controller Synthesis: Guarantees for Safety-Critical System Testing and Verification.

Andrew James Akerson *(Mechanical Engineering)* B.Eng., University of Minnesota, Twin Cities 2016; M.S., 2018; M.S., California Institute of Technology 2020.
> Thesis: Optimal Design of Soft Responsive Actuators and Impact Resistant Structures.

Carmen Amo Alonso *(Control and Dynamical Systems)* B.S., Universidad Politécnica de Madrid 2016; M.S., California Institute of Technology 2017.
> Thesis: Distributed and Localized Model Predictive Control.

Christoph Bauinger *(Applied and Computational Mathematics)* M.Sc., Graz University of Technology 2011.
> Thesis: The "Interpolated Factored Green Function" Method.

Sara Meghan Beery *(Computing and Mathematical Sciences)* B.S., Seattle University 2016.
> Thesis: Where the Wild Things Are: Computer Vision for Global-Scale Biodiversity Monitoring.

Souvik Biswas *(Applied Physics)* B.S., M.S., Indian Institute of Technology Kharagpur 2017.
> Thesis: Electro-Optic Excitations in van der Waals Materials for Active Nanophotonics.

Robert Andrew Buarque de Macedo *(Applied Mechanics)* B.S., Carnegie Mellon University 2016; M.S., California Institute of Technology 2019.
> Thesis: Methods for Control of Granular Material Attributes.

Fabricio Canales *(Aeronautics)* B.Sc., Universidad Nacional de Ingeniería 2017; M.S., California Institute of Technology 2019.
> Thesis: Numerical Analysis of Folding and Deployment Dynamics of Thin Shell Structures with Localized Folds.

Celia S. Chari *(Materials Science)* B.A., Trinity College Dublin 2017; M.S., California Institute of Technology 2019.
> Thesis: Degradation of Ceramic Surfaces and its Mitigation: From Electric Propulsion to Cultural Heritage.

Amylynn C. Chen *(Materials Science)* B.S., M.S., University of California, Los Angeles 2016; M.S., California Institute of Technology 2020.
> Thesis: 3D *in situ* Chemical Synthesis: Additive Manufacturing of Functional Polymeric Materials via Vat Photo-polymerization.

Doctor of Philosophy   continued

Yifan Chen *(Applied and Computational Mathematics)* B.S., Tsinghua University 2018.
Thesis: On Multiscale and Statistical Numerical Methods for PDEs and Inverse Problems.

Elijah Henry John Cole *(Computing and Mathematical Sciences)* B.S., Duke University 2017.
Thesis: Visual and Spatial Representation Learning with Applications in Ecology.

Lucia Belen De Rose *(Applied Physics)* B.S., Bates College 2016; M.S., California Institute of Technology 2018.
Thesis: Nanoscale Field Emission Devices for High-Temperature and High-Frequency Operation.

Anushri Dixit *(Control and Dynamical Systems)* B.S., Georgia Institute of Technology 2017.
Thesis: Risk-Aware Planning and Control in Extreme Environments.

Victor David Dorobantu *(Computing and Mathematical Sciences)* B.S., Cornell University 2017.
Thesis: Geometry and Dynamical Systems in Machine Learning and Control.

Kristján Eldjárn Hjörleifsson *(Computing and Mathematical Sciences)* B.S., University of Iceland 2015.
Thesis: Graph Modeling for Genomics and Epidemiology.

Rebecca Anne Gallivan *(Materials Science)* S.B., Massachusetts Institute of Technology 2017; M.S., California Institute of Technology 2022.
Thesis: The Role of Boundaries and Other Microstructural Features on Emergent Mechanical and Mechanically-coupled Phenomena at the Nanoscale.

Vatsa Bhupeshkumar Gandhi *(Aeronautics)* B.S., The University of Texas at Austin 2018; M.S., California Institute of Technology 2019.
Thesis: Shock Compression of Body-Centered Cubic Metals from the Atomistic to Continuum Scale: Iron and Molybdenum.

Rachel Gehlhar *(Mechanical Engineering)* B.S., University of St. Thomas 2016; M.S., California Institute of Technology 2018.
Thesis: Model-Based Lower-Limb Powered Prosthesis Control: Developing and Realizing Nonlinear Subsystem Control Methods for Generalizable Prosthesis Control.

Spencer Lane Gordon *(Computer Science)* Sc.B., Brown University 2014; M.S., University of Illinois at Urbana-Champaign 2017.
Thesis: The Identification of Discrete Mixture Models.

Zichen Gu *(Mechanical Engineering)* B.S., Nanjing University 2018; M.S., California Institute of Technology 2020.
Thesis: Interparticle Forces and Stress Transfer in Saturated and Unsaturated Granular Systems.

Doctor of Philosophy *continued*

Nian Guo *(Electrical Engineering)* B.Eng., The University of Hong Kong 2017; M.S., California Institute of Technology 2019.
> Thesis: Causal Sampling, Compressing, and Channel Coding of Streaming Data.

Stefan P Hägeli Lohaus *(Materials Science)* B.Sc., Swiss Federal Institute of Technology Zurich 2014; M.S., 2016; M.S., California Institute of Technology 2017.
> Thesis: Experimental Study on the Thermodynamic Interactions of Phonons and Magnetism in Fe Systems.

SooJean Han *(Control and Dynamical Systems)* B.S., University of California, Berkeley 2016.
> Thesis: Control and State-Estimation of Jump Stochastic Systems by Learning Recurrent Spatiotemporal Patterns.

Arian Hashemi Talkhooncheh *(Electrical Engineering)* B.S., Sharif University of Technology 2015; M.S., California Institute of Technology 2016.
> Thesis: Holistic Design in High-Speed Silicon Photonics and Low-Power Electronics Platforms.

Soichi Hirokawa *(Applied Physics)* B.A., Bowdoin College 2014; M.S., California Institute of Technology 2017.
> Thesis: Dynamics of Protein-Mediated Polymer Coupling and their Implications in Antibody Production and Emergent Patterning.

Peng Hu *(Medical Engineering)* B.S., M.S., Wuhan University 2015.
> Thesis: Computational Compensation for Model Imperfections in Photoacoustic Computed Tomography.

Omar Kamal *(Mechanical Engineering)* B.A.Sc., University of Waterloo 2018; M.S., California Institute of Technology 2020.
> Thesis: Optimal Receptivity and the Generalization of the One-Way Navier-Stokes (OWNS) Equations to Complex High-Speed Boundary Layers and Jets.

Brian Lee Kiwon Kim *(Mechanical Engineering)* B.S., Boston University 2018; M.S., California Institute of Technology 2020.
> Thesis: Dynamics of Time-Varying and Nonlinear Phononic Lattices.

Gunho Kim *(Mechanical Engineering)* B.S., Korea Advanced Institute of Science and Technology 2012; M.S., California Institute of Technology 2019.
> Thesis: Wave Propagation in Periodic Acoustic Metamaterials: From 1D to 3D.

Kevin Andreas Korner *(Mechanical Engineering)* B.S., University of California, Berkeley 2016; M.S., California Institute of Technology 2018.
> Thesis: Modeling Deformations of Active Rods, Ribbons, and Plates.

Doctor of Philosophy   *continued*

Ali Sahin Lale *(Electrical Engineering)* B.S., Boğaziçi University 2015; M.S., California Institute of Technology 2016.

    Thesis: Learning and Control of Dynamical Systems.

Robert Whitson Learsch *(Materials Science)* S.B., Massachusetts Institute of Technology 2015; M.S., California Institute of Technology 2021.

    Thesis: Droplet Control in Aqueous and Hydrocarbon Fluids: Long, End-Associative Polymers Dictate Fluid Behavior Under Elongational Flows.

Luis M. Ledezma *(Electrical Engineering)* B.S., University of Carabobo 2008; M.S., University of South Florida 2011.

    Thesis: Towards Universal Integrated Laser Sources with Nonlinear Photonics.

Matthew Emanuel Levine *(Computing and Mathematical Sciences)* B.A., Columbia University 2015.

    Thesis: Machine Learning and Data Assimilation for Blending Incomplete Models and Noisy Data.

Tongxin Li *(Computing and Mathematical Sciences)* B.Eng., B.Sc., The Chinese University of Hong Kong 2015; M.Phil., 2017.

    Thesis: Learning-Augmented Control and Decision-Making: Theory and Applications in Smart Grids.

Éowyn Lucas *(Materials Science)* B.S., North Carolina State University 2017; M.S., California Institute of Technology 2019.

    Thesis: Advancement of Asymmetric Bipolar Membranes for Tailoring Chemical Environments in Electrochemical Systems.

Conor Daniel Martin *(Aeronautics)* B.S., University at Buffalo, The State University of New York 2017; M.S., California Institute of Technology 2018.

    Thesis: Experiments in Thermal Ignition: Influence of Natural Convection on Properties of Gaseous Explosions.

Kai Matsuka *(Space Engineering)* B.S., University of California, Los Angeles 2016; M.S., California Institute of Technology 2018.

    Thesis: Vision-Based Navigation and Large-Scale Estimation for Spacecraft Swarms.

Widianto Putra Moestopo *(Mechanical Engineering)* B.S., University of Illinois at Urbana-Champaign 2017; M.S., California Institute of Technology 2019.

    Thesis: Design, Fabrication, and Mechanical Analysis of Intertwined and Frictional Micro-Architected Materials.

Ahmed Mohamed Soliman Mohamed *(Applied Physics)* B.Sc., Benha University 2009; M.Sc., Ain Shams University 2014; M.S., California Institute of Technology 2017.

> Thesis: BICEP Array Detectors and Instrumentation at 30/40 GHz: Design, Performance, and Deployment to the South Pole for Constraining Primordial Gravitational Waves.

Michael Thomas O'Connell *(Space Engineering)* B.S., University of Illinois at Urbana-Champaign 2017; M.S., California Institute of Technology 2018.

> Thesis: Methods for Robust Learning-Based Control.

Eric Ocegueda *(Mechanical Engineering)* B.S., University of California, Berkeley 2017; M.S., California Institute of Technology 2019.

> Thesis: Physics-Based and Data-Driven Computational Models of Inelastic Deformations.

Emile Kazuo Oshima *(Aeronautics)* B.S.E., Princeton University 2017; M.S., California Institute of Technology 2018.

> Thesis: Experimental Studies of Flow Control Techniques for Future Aircraft.

Emily Hope Palmer *(Aeronautics)* B.S., The Johns Hopkins University 2018; M.S., California Institute of Technology 2019.

> Thesis: Locomotory Control Algorithms and their Neuronal Implementation in *Drosophila melanogaster*.

Megan Elisabeth Phelan *(Materials Science)* B.S., Yale University 2015; M.S., California Institute of Technology 2019.

> Thesis: Optimization of Photovoltaic Performance for Luminescent Solar Concentrator Systems.

Robert Michael Polski *(Applied Physics)* B.S., Andrews University 2016.

> Thesis: Electronic Correlations and Topology in Graphene Moiré Multilayers and InAs/GaSb-Derivative Systems.

Alexander Mario Poremba *(Computer Science)* B.Sc., Ruprecht Karl University of Heidelberg 2015; M.Sc., 2017.

> Thesis: Revocable Cryptography in a Quantum World.

Cullen Mackenzie Quine *(Materials Science)* B.S., University of California, Los Angeles 2017; M.S., California Institute of Technology 2019.

> Thesis: Tunability of Gas Adsorption Enthalpies in Carbonaceous Materials for Energy-Related Applications.

Narravula Harshavardhan Reddy *(Aeronautics)* B.Tech., Indian Institute of Technology Guwahati 2015; M.S., California Institute of Technology 2018.

> Thesis: Folding and Dynamic Deployment of Ultralight Thin-Shell Space Structures.

Peter Ian James Renn *(Aeronautics)* B.S., M.S., California Institute of Technology 2019.

> Thesis: Applied Machine Learning for Prediction and Control of Fluid Flows.

Doctor of Philosophy *continued*

Alexandros Yiannis Rosakis *(Medical Engineering)* Sc.B., Brown University 2017.
Thesis: The Hemodynamics of Native and Surgical Aortic Valves with Regards to Wall Shear Stress and Residence Time.

Arkadev Roy *(Electrical Engineering)* B.Tech., Indian Institute of Technology Kharagpur 2018.
Thesis: Parametrically-Driven Nonlinear Optical Resonators and their Networks for Sensing and Computing.

Saransh Sharma *(Electrical Engineering)* B.Tech., Indian Institute of Technology Kharagpur 2017; M.S., California Institute of Technology 2018.
Thesis: Low-Power and Miniaturized Medical Electronics for In-Vivo Localization and Tracking.

Cheng Shen *(Electrical Engineering)* M.Phil., Harbin Institute of Technology 2018; M.S., California Institute of Technology 2020.
Thesis: Computational Imaging for Phase Retrieval and Biomedical Applications.

Guanya Shi *(Control and Dynamical Systems)* B.Eng., Tsinghua University 2017.
Thesis: Reliable Learning and Control in Dynamic Environments: Towards Unified Theory and Learned Robotic Agility.

Alessio Tamborini *(Medical Engineering)* B.S., Boston University 2018; M.S., California Institute of Technology 2019.
Thesis: A Novel Approach to Cardiac Health Assessment Using a Redesign of the Brachial Cuff Device.

Adrian Teck Keng Tan *(Applied Physics)* B.Eng., National University of Singapore 2015.
Thesis: Digital Quantum Simulation of Physical Systems on Noisy Intermediate-Scale Quantum Computers.

Ellande Tang *(Mechanical Engineering)* B.S., University of California, Berkeley 2017; M.S., California Institute of Technology 2019.
Thesis: Studies on Off-Nominal Rotor Aerodynamics for eVTOL Aircraft.

Andrew James Taylor *(Control and Dynamical Systems)* B.S., University of Michigan, Ann Arbor 2015; M.S., 2017.
Thesis: Robust Safety-Critical Control: A Lyapunov and Barrier Approach.

Hiroyasu Tsukamoto *(Space Engineering)* B.S., Kyoto University 2017; M.S., California Institute of Technology 2018.
Thesis: Contraction Theory for Robust Learning-Based Control: Toward Aerospace and Robotic Autonomy.

Doctor of Philosophy *continued*

Maegan Lindsay Tucker *(Mechanical Engineering)* B.S., Georgia Institute of Technology 2017; M.S., California Institute of Technology 2019.
> Thesis: Enabling Robust and User-Customized Bipedal Locomotion on Lower-Body Assistive Devices via Hybrid System Theory and Preference-Based Learning.

Kanthasamy (Uba) Ubamanyu *(Space Engineering)* B.Sc., University of Moratuwa 2016; M.S., California Institute of Technology 2018.
> Thesis: Time-Dependent Failure of Thin-Ply Composite Laminates.

Linghui Wang *(Applied Physics)* B.S., University of Illinois at Urbana-Champaign 2016; M.S., California Institute of Technology 2021.
> Thesis: Ion Transport in Temperature Sensitive Polyelectrolytes.

Ziyi Wang *(Materials Science)* B.E., Peking University 2017; M.S., Cornell University 2019.
> Thesis: Temperature Dependence of Gas Physisorption Energy: Experimental and Computational Studies of Krypton on Porous Carbon.

John Stephen Weeks IV *(Mechanical Engineering)* B.S.E., University of Michigan, Ann Arbor 2018; M.S., California Institute of Technology 2020.
> Thesis: Mechanical Response of Lattice Structures under High Strain-Rate and Shock Loading.

Nathaniel James Wei *(Aeronautics)* B.S.E., Princeton University 2017.
> Thesis: Dynamics and Performance of Wind-Energy Systems in Unsteady Flow Conditions.

Lucien Desloge Werner *(Computing and Mathematical Sciences)* A.B., Harvard College 2013; M.M., M.S., Northwestern University 2015.
> Thesis: Uncertainty and Decentralization: Two Themes in an Energy Transformation.

Chun-Wei Vince Wu *(Materials Science)* B.S., National Tsing Hua University 2013; M.S., 2015.
> Thesis: Freeze Casting - From Battery Separators to Ceramic Scaffolds.

Lealia Li Xiong *(Medical Engineering)* S.B., Massachusetts Institute of Technology 2015; M.S., California Institute of Technology 2018.
> Thesis: Expanding the Toolbox for Thermal Control of *E. coli*: Cold-Activated Transcription with Applications in Temperature Self-Regulation.

Yiran (Isabella) Yang *(Medical Engineering)* B.S., Rice University 2017; M.S., California Institute of Technology 2018.
> Thesis: Laser-engraved Wearable Sweat Sensor for Metabolic Monitoring.

Recep Can Yavas *(Electrical Engineering)* B.S., Bilkent University 2016; M.S., California Institute of Technology 2017.
> Thesis: Non-Asymptotic Analysis of Single-Receiver Channels with Limited Feedback.

Doctor of Philosophy   *continued*

Dominic Jeffrey Yurk *(Electrical Engineering)* B.S., California Institute of Technology 2017; M.S., 2021.

    Thesis: Advancements in Hemodynamic Measurement: Arterial Resonance, Ultrasound, and Machine Learning.

Shumao Zhang *(Applied and Computational Mathematics)* B.S., Tsinghua University 2017.

    Thesis: Singularity Formation in the High-Dimensional Euler Equations and Sampling of High-Dimensional Distributions by Deep Generative Networks.

Xueyue Zhang *(Applied Physics)* B.Eng., Tsinghua University 2017; M.S., California Institute of Technology 2020.

    Thesis: Superconducting Circuit Architectures Based on Waveguide Quantum Electrodynamics.

Ziyun Zhang *(Applied and Computational Mathematics)* B.Sc., Peking University 2018.

    Thesis: Low-Rank Matrix Recovery: Manifold Geometry and Global Convergence.

Yi Zhou *(Applied Physics)* B.A., University of California, Berkeley 2017.

    Thesis: Experimental and Theoretical Studies of Unstable Dynamics of Caltech's Plasma Jet: X-rays, Ultraviolet, and Visible Light.

DIVISION OF GEOLOGICAL AND PLANETARY SCIENCES

Danica Jeannine Adams *(Planetary Science)* B.A., University of California, Berkeley 2018; M.S., California Institute of Technology 2021.

    Thesis: Habitability through Time: Photochemistry and Aerosols of Planetary Atmospheres.

Aida Behmard *(Planetary Science)* B.S., Yale University 2015; M.S., California Institute of Technology 2019.

    Thesis: Planet Host Star Properties as Probes of Planet Formation and Evolution.

Rui Cheng *(Environmental Science and Engineering and Electrical Engineering)* B.S., Sun Yat-sen University 2015; M.S., Lehigh University 2017; M.S., California Institute of Technology 2019.

    Thesis: Remotely Evaluating the Seasonality of Gross Primary Production at High Latitudes.

Heng Dong *(Environmental Science and Engineering)* B.Eng., Tsinghua University 2018; M.S., California Institute of Technology 2020.

    Thesis: Optimization of Electrodes Towards More Practical Electrochemical Water Treatment.

Doctor of Philosophy *continued*

Madison Marie Douglas *(Geology)* S.B., Massachusetts Institute of Technology 2016; M.S., California Institute of Technology 2019.

Thesis: Mechanics of River Erosion and its Effects on Floodplain Biogeochemistry.

Lilian Aja Dove *(Environmental Science and Engineering)* S.B., Massachusetts Institute of Technology 2018; M.S., California Institute of Technology 2021.

Thesis: Impacts of Zonal Asymmetry on Southern Ocean Dynamics and Biogeochemistry.

Liyin He *(Environmental Science and Engineering and Applied and Computational Mathematics)* B.S., Nanjing University 2016; M.S., California Institute of Technology 2018.

Thesis: Agriculture and Its Role in Global Carbon Cycle.

Ignacio López Gómez *(Environmental Science and Engineering)* M.Sc., Institut Supérieur de l'Aéronautique et de l'Espace 2018; M.S., California Institute of Technology 2021.

Thesis: A Unified Data-Informed Model of Turbulence and Convection for Climate Prediction.

Yangcheng Luo *(Planetary Science)* B.S., Peking University 2018; M.S., California Institute of Technology 2020.

Thesis: Tracer Transport in Three Dimensions: Dispersion of Methane on Mars, Coupled Chemistry and Dynamics on Exoplanets, and Submesoscale Mixing in the Ocean.

Daniela Osorio Rodríguez *(Geobiology)* B.Sc., Universidad de los Andes 2013.

Thesis: Microbial Transformations of Sulfur: Environmental and (Paleo) Ecological Implications.

Olivia Sabine Pardo *(Geophysics)* B.S., The University of Chicago 2017; M.S., California Institute of Technology 2019.

Thesis: The Elastic, Electronic, and Structural Properties of Hydrous, Sulfur-Bearing Minerals in Planetary Environments: From the Surface to Deep Interiors.

Harrison Alexander Parker *(Environmental Science and Engineering)* B.S., University of California, San Diego 2014; M.S., California Institute of Technology 2020.

Thesis: A Novel Algorithm for Inferring the Vertical Distribution of Trace Gases Using Remote Sensing Measurements.

Cecilia Brooke Sanders *(Geobiology)* A.B., Harvard College 2016; M.S., California Institute of Technology 2018.

Thesis: Geological and Geochemical Explorations of the Salitre Formation Phosphorite, Eastern Brazil.

Benjamin Christopher Schulze *(Environmental Science and Engineering)* B.S., Rice University 2016; M.S., 2018.

Thesis: Insights into the Sources of Atmospheric Aerosols and Greenhouse Gases in California.

Oliver Laurent Stephenson *(Geophysics)* B.A., M.Sc., University of Cambridge 2015; M.S., California Institute of Technology 2019.
> Thesis: Investigating the Earthquake Cycle on Multiple Temporal and Spatial Scales using Satellites and Simulations.

Ethan Francis Williams *(Geophysics)* B.S., Stanford University 2017; M.S., California Institute of Technology 2019.
> Thesis: Probing Solid-Earth, Ocean, and Structural Dynamics with Distributed Fiber-Optic Sensing.

Yi Zhang *(Environmental Science and Engineering)* B.S., The College of William & Mary 2018; M.S., California Institute of Technology 2020.
> Thesis: Application of Heterojunction Ni-Sb-SnO$_2$ Anodes for Electrochemical Water Treatment.

DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES

Sumit Goel *(Social Science and Computer Science)* B.Tech., Delhi Technological University 2015; M.S., Indian Statistical Institute 2017; M.S., California Institute of Technology 2020.
> Thesis: Essays in Mechanism Design and Contest Theory.

Daniel Robert Guth *(Social Science)* B.S., California Institute of Technology 2016; M.S., 2019.
> Thesis: Essays in Health Economics.

Wade Daniel Hann-Caruthers *(Social Science)* B.S., California Institute of Technology 2016; M.S., 2019.
> Thesis: Essays on Social Learning and Social Choice.

Claudia Kenyon Kann *(Social Science)* B.S., Rice University 2017; M.S., California Institute of Technology 2019.
> Thesis: Computational Methods in the Study of Political Behavior.

Jeffrey Roy Zeidel *(Social Science)* B.S., University of California, Berkeley 2015.
> Thesis: Essays in Behavioral Economics.

DIVISION OF PHYSICS, MATHEMATICS AND ASTRONOMY

Sarah Blunt *(Astrophysics)* Sc.B., Brown University 2017; M.S., California Institute of Technology 2020.
> Thesis: The Orbits of Young Extrasolar Planets as Formation Probes.

Olmo Cerri *(Physics)* M.S., University of Pisa 2017; M.S., California Institute of Technology 2022.
> Thesis: New Physics Tools for Discovery, a New Era of Timing Detector, and Lepton Flavor Universality Test at CMS.

Doctor of Philosophy   continued

Yen-Yung Chang *(Physics)* B.S., National Taiwan University 2011.
 Thesis: SuperCDMS HVeV Run 2 Low-mass Dark Matter Search, Highly Multiplexed
 Phonon-mediated Particle Detector with Kinetic Inductance Detector, and the Blackbody
 Radiation in Cryogenic Experiments.

Aditya Ghanashyam Date *(Physics)* B.S., M.S., Indian Institute of Technology Kharagpur 2013.
 Thesis: Coupled Oscillators with Generalized Dissipation.

Dillon Zhejun Dong *(Astrophysics)* B.A., Pomona College 2015; M.S., California Institute of
 Technology 2018.
 Thesis: Shocks, Jets, and Emerging Nebulae: Direct Detection and Characterization of
 Extragalactic Radio Transients in the VLA Sky Survey.

Irene Dutta *(Physics)* B.S., M.S., Indian Institute of Science Education and Research, Pune 2017;
 M.S., California Institute of Technology 2020.
 Thesis: Rare Higgs Processes at CMS and Precision Timing Detector Studies for HL-LHC
 CMS Upgrade.

Angus Fred Wilkinson Gruen *(Mathematics)* B.Sc., The Australian National University 2017.
 Thesis: Regularities, Resurgence and R-Matrices in Chern Simons Theory.

Anchal Gupta *(Physics)* B.Tech., Indian Institute of Technology Bombay 2016; M.S., California
 Institute of Technology 2018.
 Thesis: Next-Generation Technologies for Gravitational Wave Detectors.

Tamir Hemo *(Mathematics)* B.Sc., Technion - Israel Institute of Technology 2015; M.Sc., 2017.
 Thesis: On the Categorical Approach to the Frobenius Trace.

Arian Jadbabaie *(Physics)* A.B., Washington University in St. Louis 2015.
 Thesis: Measuring Fundamental Symmetry Violation in Polyatomic Molecules.

Sinan Kefeli *(Physics)* B.S., Boğaziçi University 2013.
 Thesis: Constraints on the Polarized Dust and the Cosmic Microwave Background Using
 BICEP / Keck Array Series of Telescopes.

Chao-Jung Lee *(Physics)* B.S., National Taiwan University 2012; M.S., 2015.
 Thesis: The Effects of Disorder and Interaction in Metallic Systems.

Xiang Li *(Physics)* B.S., University of Science and Technology of China 2016.
 Thesis: Topics in Gravitational Wave Physics: Quantum Theory for Detector Improvement
 and High-Precision Modeling of Binary Black Hole Ringdown Waveform.

Han-Hsin Lin *(Physics)* B.A., National Taiwan University 2012; M.S., California Institute of
 Technology 2017.
 Thesis: Transient Behavior of Granular Material.

Doctor of Philosophy *continued*

Sizheng Ma *(Physics)* B.S., Tsinghua University 2017.
  Thesis: Topics in Gravitational Wave Physics: Black-Hole Spectroscopy, Neutron Star
  Dynamical Tides, and Numerical Relativity.

Xiuqi Ma *(Physics)* B.A., University of Cambridge 2018.
  Thesis: Fractonic Orders from Lattice Models and Field Theories.

Theodore Kenneth Macioce *(Physics)* B.A., Columbia University 2015; M.S., California
  Institute of Technology 2021.
  Thesis: Mock Observations of the Sunyaev-Zel'dovich Effect in Massive Galaxy Clusters
  and a Six-Layer Integral Antireflective Structure for Silicon Optics.

Jiajing Mao *(Physics)* B.S., University of Science and Technology of China 2016; M.S., California
  Institute of Technology 2019.
  Thesis: Search for Supersymmetry Using Higgs Boson to Diphoton Decays and Search for
  Long-lived Particles using Out-of-Time Trackless Jets at $\sqrt{s}$ = 13 TeV.

Omar Mehio *(Physics)* B.S., University of Illinois at Urbana-Champaign 2017.
  Thesis: Ultrafast Dynamics of Photo-Doped Mott Antiferromagnets.

Alexander Lorenzo Moss *(Physics)* S.B., Massachusetts Institute of Technology 2017; M.S.,
  California Institute of Technology 2022.
  Thesis: Ultraviolet Scalar Unification and Gravitational Radiation Reaction from Quantum
  Field Theory.

Honglie Ning *(Physics)* B.S., Peking University 2016.
  Thesis: Ultrafast Optical Control of Order Parameters in Quantum Materials.

Sean Nicholas Pike *(Physics)* Sc.B., Brown University 2015; M.S., California Institute of
  Technology 2019.
  Thesis: Exploring the Mass Accretion Rates of Neutron Star X-ray Binaries and the
  Properties of Cadmium Zinc Telluride for Hard X-ray Astronomy.

Nickolas Hovanec Pilgram *(Applied Physics)* B.S., California State Polytechnic University, San
  Luis Obispo 2015; M.S., California Institute of Technology 2018.
  Thesis: Production and Characterization of Ytterbium Monohydroxide (YbOH) for Next-
  Generation Parity and Time-Reversal Violating Physics Searches.

Xuejian Shen *(Physics)* B.S., Peking University 2018.
  Thesis: Explore the Nature of Dark Matter in the Context of Galaxy Formation.

Yanlong Shi *(Physics)* B.S., University of Science and Technology of China 2018.
  Thesis: Assembly of Intermediate-Mass Black Holes Along Star Formation.

Nikita A. Sopenko *(Physics)* B.S., Moscow Institute of Physics and Technology 2016; M.S.,
  2018.
  Thesis: Topological Invariants of Gapped Lattice Systems.

Guochao Sun *(Astrophysics)* B.S., University of California, Los Angeles 2015; M.S., California Institute of Technology 2018.

Thesis: Understanding the Cosmological Evolution of Galaxies with Intensity Mapping.

Xuan Sun ‡ *(Physics)* B.S., McGill University 2015.

Thesis: Measurements of Beyond Standard Model Interactions with the UCNA and nEDM@SNS Experiments.

Tian Wang *(Physics)* B.S., Shandong University 2012; M.S., University of Calgary 2014; M.S., California Institute of Technology 2020.

Thesis: Lorentz Symmetry and Non-Unitary Quantum Field Theories.

Liting Xiao *(Physics)* B.A., University of Virginia 2015; M.S., California Institute of Technology 2020.

Thesis: Searching for Gravitational Waves from Compact Binary Coalescences and Stochastic Backgrounds in the LIGO-Virgo Detector Network.

Bowen Yang *(Mathematics)* B.A., Amherst College 2018.

Thesis: Quantum States: With a View Toward Homological Algebra.

Yuhan Yao *(Astrophysics)* B.S., Peking University 2018; M.S., California Institute of Technology 2020.

Thesis: High Energy Transients Powered by Black Holes.

Cheng Zhang *(Physics)* B.S., Peking University 2016.

Thesis: The Development and Performance of the First BICEP Array Receiver at 30 and 40 GHz for Measuring the Polarized Synchrotron Foreground.

PRIZES AND AWARDS

Prizes and awards are listed only for those students participating in commencement this year, and include prizes and awards received by them in previous years.

MABEL BECKMAN PRIZE
Given in memory of Mabel Beckman's many years of commitment to Caltech's educational and research programs, this prize is awarded to an undergraduate woman (or women) who, upon completion of her junior or senior year at Caltech, has achieved academic excellence and demonstrated outstanding leadership skills, a commitment to personal excellence, good character, and a strong interest in the Caltech community.

2023 Aditi Seetharaman

FREDERIC W. HINRICHS, JR., MEMORIAL AWARD
This award, established by the Board of Trustees, is in memory of Frederick W. Hinrichs, Jr., who served for more than 20 years as dean and professor at Caltech. In remembrance of his honor, courage, and kindness, the annual award is given to the senior (or seniors) who, throughout their undergraduate years, made the greatest contribution to the student body and whose qualities of character, leadership, and responsibility have been outstanding. At the discretion of the dean, more than one award may be made in any year.

2023 Abigail Yuan-Shan Jiang, Jolly Patro

GEORGE W. HOUSNER PRIZE FOR ACADEMIC EXCELLENCE AND ORIGINAL RESEARCH
This prize is given annually to a senior or seniors in the upper 20 percent of their class who have demonstrated excellence in scholarship and in the preparation of an outstanding piece of original scientific research. The students are selected by the deans and the Undergraduate Academic Standards and Honors Committee. At the discretion of the deans, more than one award may be given in any year. This prize is made possible by a gift from the late George W. Housner, Carl F Braun Professor of Engineering, Emeritus.

2023 Jin Ming Koh

MILTON AND FRANCIS CLAUSER DOCTORAL PRIZE
This prize is given to a Ph.D. candidate whose thesis is judged by a committee of the Faculty Board to exhibit significant new work, ingenuity, and originality, and to have the greatest potential to open new avenues of human thought and endeavor.

2023 Carmen Amo Alonso

The previous four prizes are announced at the commencement ceremony.

ADVOCATING CHANGE TOGETHER (ACT) AWARD

Given by the Caltech Y, this award allows students to learn about a global, national, or local issue by immersing themselves with activists working on a cause over the summer and then challenges them to educate others by creating and leading programs designed to raise awareness on campus the following year.

2022	*José Antonio Lasalde-Ramírez*
2023	*Emily Zheng*

AMORI DOCTORAL PRIZE IN CMS

Established in 2017 by Michael Amori (MS '07), this prize honors outstanding dissertations in the computing and mathematical sciences during the current academic year. Awardees are selected by a committee of computing and mathematical sciences faculty each spring.

2022	*Sara Meghan Beery*
2023	*Elijah Henry John Cole*

APOSTOL AWARD FOR EXCELLENCE IN TEACHING IN MATHEMATICS

Named in honor of Tom Apostol, who taught at Caltech for over 50 years, this award recognizes excellence in teaching by graduate and undergraduate teaching assistants in mathematics.

2020	*Konrad Pilch*
2021	*Tamir Hemo*
2022	*Angus Fred Wilkinson Gruen*

CHARLES D. BABCOCK AWARD

Voted on by members of the aeronautics faculty, this award is given to a graduate student whose achievements in teaching or other assistance to students have made a significant contribution to the aeronautics department.

2020	*Kai Matsuka*
2021	*Emily Hope Palmer*

ROBERT P. BALLES CALTECH MATHEMATICS SCHOLARS AWARD

This award is given to the mathematics major finishing their senior year who has demonstrated the most outstanding performance in mathematics courses completed in the student's time at Caltech.

2023	*Elia Peter Gorokhovsky*

WILLIAM F. BALLHAUS PRIZE

This prize recognizes aeronautics students for outstanding doctoral dissertations.

2023   *Peter Ian James Renn, Hiroyasu Tsukamoto*

ERIC TEMPLE BELL UNDERGRADUATE MATHEMATICS RESEARCH PRIZE

This prize is given to one or more juniors or seniors for outstanding original research in mathematics.

2023   *Miles Vincent Cua*

THE BHANSALI FAMILY PRIZE IN COMPUTER SCIENCE

Established in 2001 by Vineer Bhansali (B.S. '87, M.S. '87) in memory of his grandfather, Mag Raj Bhansali, this prize is given to an undergraduate student for outstanding research in computer science in the current academic year. Awardees are selected by a committee of computer science faculty.

2023   *James Christopher Kapono Bowden, Laura Limin Lewis*

THE BHANSALI FAMILY DOCTORAL PRIZE IN COMPUTER SCIENCE

Established in 2018 by Vineer Bhansali (B.S. '87, M.S. '87) in memory of his grandfather, Mag Raj Bhansali, this prize is given to honor outstanding dissertations in computer science, broadly defined, during the current academic year. Awardees are selected by a committee of computer science faculty each spring.

2023   *Alexander Mario Poremba*

RICHARD G. BREWER PRIZE IN PHYSICS

This prize recognizes a freshman with the most interesting solutions to the Physics 11 "hurdles," demonstrating intellectual promise and creativity at the very beginning of their Caltech education.

2020   *Jin Ming Koh*

ROLF D. BUHLER MEMORIAL AWARD IN AERONAUTICS

This award is given to an aeronautics student for outstanding academic achievement in the master's program.

2023   *Jorge Rodriguez Gutierrez*

THE W. P. CAREY & CO. PRIZE IN APPLIED MATHEMATICS

Established by William P. Carey and W. P. Carey & Co., Inc., this prize is awarded to outstanding doctoral dissertations in applied mathematics in the current academic year. Awardees are selected by a committee of applied mathematics faculty.

2023   Christoph Bauinger, Yifan Chen

BONNIE CASHIN PRIZE FOR IMAGINATIVE THINKING

Awarded annually, this prize is given to the entering freshman who wrote the most imaginative essays in the application for their freshman admission.

2020   Gabrielle Melia Dituri, Bruno Antonelli Freeman

IAN CAMPBELL AWARD

The Ian Campbell Award is for outstanding performance in field geology courses during this academic year.

2023   Joshua Somtochukwu Anadu

CENTENNIAL PRIZE FOR THE BEST THESIS IN MECHANICAL AND CIVIL ENGINEERING

This prize, awarded annually to a Ph.D. candidate in applied mechanics, civil engineering, or mechanical engineering, is given to a student whose doctoral thesis is judged to be the most original and significant by a faculty committee appointed annually by the executive officer for mechanical and civil engineering. This prize was established with gifts from alumni following the Mechanical Engineering Centennial Celebration in 2007.

2023   Andrew James Akerson, Maegan Lindsay Tucker

RICHARD BRUCE CHAPMAN MEMORIAL AWARD

This award is given to a graduate student in hydrodynamics who has distinguished themselves in research in the Division of Engineering and Applied Science.

2023   Nathaniel James Wei

BEN P.C. CHOU DOCTORAL PRIZE IN IST

This prize recognizes outstanding doctoral dissertations in the broad area of information science and technology. The prize was established by Ben P.C. Chou's wife, June, and his son, Scott (B.S. '86), as a lasting tribute to his lifetime dedication to the pursuit of scholarly research and foregoing personal gain in favor of always doing the right thing for society.

2022   Guanya Shi

ROBERT F. CHRISTY PRIZE FOR AN OUTSTANDING SENIOR IN THEORETICAL PHYSICS

This prize is awarded annually to a senior who has demonstrated excellence in theoretical physics through research and/or coursework. Established in 2018, this prize honors the memory of Robert F. Christy, former provost and professor of theoretical physics at Caltech.

2023   Isaiah John Curtis

ROBERT F. CHRISTY PRIZE FOR AN OUTSTANDING DOCTORAL THESIS IN THEORETICAL PHYSICS

This prize is given annually to a student who has produced an outstanding thesis in theoretical physics. Established in 2018, this prize honors the memory of Robert F. Christy, former provost and professor of theoretical physics.

2023   Nikita A. Sopenko

DONALD S. CLARK MEMORIAL AWARD

This award is given to two juniors in recognition of service to the campus community and academic excellence. Preference is given to students in the Division of Engineering and Applied Science and to those in chemical engineering. The awards honor the work of Professor Clark, class of 1929, both in the field of engineering and in his service to the Alumni Association.

2022   Hannah E Grauer, Aditi Seetharaman

CMS AND IST GRADIENT FOR CHANGE AWARD

The CMS and IST Gradient for Change Awards honor students, postdocs, staff, and faculty in the Caltech community who demonstrate exceptional efforts to make Caltech and/or the broader scientific community a more diverse, equitable, and inclusive environment. The awards recognize and highlight individual contributors or small teams who are considered agents of change, community leaders, and/or allies to historically marginalized group(s) in the information sciences, including computer science, applied mathematics, and beyond.

2021   Sara Meghan Beery

DONALD COLES PRIZE IN AERONAUTICS

This prize is given to the graduating Ph.D. student in aeronautics whose thesis displays the best design of an experiment or the best design for a piece of experimental equipment.

2023   Vatsa Bhupeshkumar Gandhi

FRANCE A. CÓRDOVA GRADUATE STUDENT FUND

This fund provides resources for one to three graduate students annually to support research-related expenses. Each awardee shall be recognized as either a Neugebauer, Garmire, or Tombrello Scholar. Preference shall be given to student(s) studying broadly in areas in which professors Gerry Neugebauer, Gordon Garmire, and Thomas Tombrello made contributions.

2021	*Honglie Ning, Tombrello Scholar*
	Yuhan Yao, Garmire Scholar
2022	*Antonio Cuevas Rodriguez, Neugebauer Scholar*
	Guochao Sun, Tombrello Scholar
2023	*Chandler Jacob Conn, Tombrello Scholar*
	Emily Mary Silich, Garmire Scholar

JAMES A. CULLEN MEMORIAL FELLOWSHIP FUND

This memorial fund is awarded annually to a graduate student or students who have demonstrated outstanding academic achievement in physics.

2022	*Xuejian Shen*

DEANS' CUP

This award is presented to undergraduates whose concern for their fellow students has been demonstrated by their persistent efforts to improve the quality of undergraduate life and by effective communication with members of the faculty and administration.

2021	*Jolly Patro*
2022	*Mohini Kavya Misra*
2023	*Geoffrey Michael Pomraning*

DEMETRIADES-TSAFKA-KOKKALIS PRIZE IN BENIGN RENEWABLE ENERGY SOURCES OR RELATED FIELDS

This prize, awarded annually, recognizes a Ph.D. candidate for the best thesis, publication, discovery, or related efforts in benign renewable energy sources or related fields at the Institute in the preceding 12 months. This prize is made possible by a gift from Anna Kokkalis Demetriades and Sterge T. Demetriades (Eng. '58).

2023	*Nathaniel James Wei*

DEMETRIADES-TSAFKA-KOKKALIS PRIZE IN BIOTECHNOLOGY OR RELATED FIELDS

This prize, awarded annually, recognizes a Ph.D. candidate for the best thesis, publication, or discovery in biotechnology or related fields at the Institute in the preceding 12 months. This prize is made possible by a gift from Anna Kokkalis Demetriades and Sterge T. Demetriades (Eng. '58).

2023   Saransh Sharm

DEMETRIADES-TSAFKA-KOKKALIS PRIZE IN NANOTECHNOLOGY OR RELATED FIELDS

This prize, awarded annually, recognizes a Ph.D. candidate for the best thesis, publication, or discovery in nanotechnology or related fields at the Institute in the preceding 12 months. This prize is made possible by a gift from Anna Kokkalis Demetriades and Sterge T. Demetriades (Eng. '58).

2023   Rebecca Anne Gallivan

CONSTANTIN G. ECONOMOU MEMORIAL PRIZE

This prize is awarded to a chemical engineering graduate student distinguished by outstanding research accomplishments and exemplary attitude while fulfilling candidacy requirements for the Ph.D. degree.

2017   Bill Ling

2021   Samuel Lee Varner

EVERHART DISTINGUISHED GRADUATE STUDENT LECTURER AWARD

This award recognizes graduate students for their exemplary presentation skills and research ability. Awardees participate in the Everhart Lecture Series, a forum that is meant to encourage interdisciplinary interaction among graduate students and faculty, to share ideas about recent research developments.

2023   Prashant Bhat, Ahmed Mohamed Soliman Mohamed

LAWRENCE L. AND AUDREY W. FERGUSON PRIZE

The Ferguson prize is awarded to the graduating Ph.D. candidate in biology and biological engineering who has produced the outstanding doctoral thesis for the past year.

2023   Xinhong Chen

RICHARD FEYNMAN PRIZE IN THEORETICAL PHYSICS

This prize is awarded to a senior on the basis of excellence in theoretical physics.

2023   Jin Ming Koh

HAREN LEE FISHER MEMORIAL AWARD IN JUNIOR PHYSICS

This recognizes a junior physics major who demonstrates the greatest promise of future contributions in physics.

2022   Jin Ming Koh

HENRY FORD II SCHOLAR AWARD

This award recognizes either the engineering students with the best academic record at the end of the third year of undergraduate study or the engineering students with the best first-year record in the graduate program.

2022   Michael Oliver Gonzalez, Amy Thuy An Pham, Louise Elisabeth Schul, Lorenzo Franceschini Shaikewitz

JACK E. FROEHLICH MEMORIAL AWARD

This award, established by the family and friends of the late Jack E. Froehlich (B.S. '47, M.S. '48, Ph.D. '50), who did his undergraduate and graduate work at Caltech and was later the project manager for Explorer I for the Jet Propulsion Laboratory, provides an award to one or two juniors in the upper 5 percent of their class who show outstanding promise for a creative professional career. The recipients are selected by the deans and the Undergraduate Academic Standards and Honors Committee.

2022   Jin Ming Koh

BARRY M. GOLDWATER SCHOLARSHIP

This scholarship program honoring Senator Barry Goldwater was designed to foster and encourage outstanding students to pursue careers in the fields of mathematics, the natural sciences, and engineering. The Goldwater Scholarship is the premier undergraduate award of its type in these fields.

2022   Tyler Kiyoshi Colenbrander, Laura Limin Lewis

GPS AWARD FOR ACADEMIC EXCELLENCE IN RESEARCH

Awarded to a GPS graduate student for outstanding research achievements.

2023   Madison Marie Douglas, Danica Jeannine Adams

GRADUATE DEAN'S AWARD

This award is given to a Ph.D. candidate or candidates who, throughout their graduate study at the Institute, have made great contributions to graduate life and whose qualities of leadership and responsibility have been outstanding.

2023   Charles Guan

GEORGE W. AND BERNICE E. GREEN MEMORIAL PRIZE

This prize, awarded annually, recognizes an undergraduate student in any class for original research, an original paper or essay, or other evidence of creative scholarship beyond the normal requirements of specific courses. The student is selected by the deans and the Undergraduate Academic Standards and Honors Committee.

2022   *Jenny Ji, Sandra O'Neill*

2023   *Elsa Katarina Palumbo, Pavlos Stavrinidesh*

DAVID M. GRETHER PRIZE IN SOCIAL SCIENCE

The prize rewards outstanding performance and creativity by a Caltech undergraduate who completes one of the social science options. The prize was established by Susan G. Davis in recognition of David M. Grether's contributions to econometrics and experimental economics and his service to the Division of the Humanities and Social Sciences. The prize is awarded annually by a committee of social science faculty.

2023   *Katherine Chang*

ALEXANDER P. AND ADELAIDE F. HIXON PRIZE FOR WRITING

The Hixon Prize for Writing was established in 2000 by Alexander P. and Adelaide F. Hixon. The prize is awarded annually to an undergraduate student for the best composition in a first-year humanities course. The prize is administered by the writing center, and the winner is chosen by a committee from the humanities division.

2020   *Elsa Katarina Palumbo*

HANS G. HORNUNG PRIZE

This prize is awarded for the best oral Ph.D. defense presentation by a student advised by aerospace faculty. The decision is made by a committee of students who attend all thesis presentations for the year.

2023   *Nathaniel James Wei*

PATRICK HUMMEL AND HARRY GRAY TRAVEL FUND

Established as a joint gift from Carla and Paul Hummel, Patrick Hummel, and Shirley and Harry Gray, Caltech's Arnold O. Beckman Professor of Chemistry and founding director of the Beckman Institute, the endowed fund supports undergraduate travel opportunities that promote professional and leadership development and broaden students' perspectives as engaged, responsible citizens of the world.

2022   *Alexandra Julia Haraszti*

2023   *Abigail Yuan-Shan Jiang, Ke Shi*

RICHARD H. JAHNS TEACHING AWARD

The Richard H. Jahns Teaching award is given in recognition of outstanding achievement as a graduate teaching assistant. Dick Jahns got his B.S. and Ph.D. in geology from Caltech and from 1946–1960 was faculty here. He was known for giving superb lectures, legendary field trips, and spending long hours mentoring students. Dick said, "the most exciting and rewarding aspect of teaching is seeing already able young people come alive intellectually and seeing the emergence in them of a basic drive, enthusiasm, and enjoyment."

2022   Lilian Aja Dove

BIBI JENTOFT-NILSEN MEMORIAL AWARD

Family and friends of Bibi Jentoft-Nilsen, class of 1989, have provided this award in her memory. This award recognizes a junior or senior who exhibits outstanding qualities of leadership and who actively contributes to the quality of student life at Caltech.

2023   Albert Yone-Che Kyi

SCOTT RUSSELL JOHNSON PRIZE FOR EXCELLENCE IN GRADUATE STUDIES

This prize is awarded to continuing graduate students for excellence and extraordinary progress in research and/or excellence in teaching in mathematics.

2020   Tamir Hemo

SCOTT RUSSELL JOHNSON GRADUATE DISSERTATION PRIZE IN MATHEMATICS

This prize is awarded for the best graduate dissertation in mathematics.

2023   Angus Fred Wilkinson Gruen, Bowen Yang

KALAM PRIZE FOR AEROSPACE ENGINEERING

This prize, made possible by Dr. Abdul Kalam, the 11th president of India and an aerospace engineer, is awarded to a student in the aerospace engineering master's program whose academic performance was exemplary and who shows high potential for future achievements at Caltech.

2023   Federico Benazzo, Maria Kechri

R.K. KAR AWARD FOR RESEARCH IN PHYSICS

This award is given annually to an outstanding graduate student who is exceptional in their physics studies and research (emphasis on condensed matter physics).

2022   Omar Mehio

DR. JAMES KING JR. STUDENT DIVERSITY AWARD

The Dr. James King Jr. award is given to individuals who stand out as strong supporters of diversity within the Caltech student body. Dr. King is the first African American to receive a Ph.D. from Caltech in chemical physics (at that time it was chemistry and physics). Along with his many accomplishments as a scientist and the Assistant Laboratory Director at JPL, he had a reputation for mentoring students and encouraged diversity in the Caltech student body.

2021   Abigail Yuan-Shan Jiang

D. S. KOTHARI PRIZE IN PHYSICS

This prize is awarded to a graduating senior in physics who has produced an outstanding research project during the year.

2023   Aditi Tanvi Venkatesh

MARGIE LAURITSEN LEIGHTON PRIZE

This prize is awarded to one or two undergraduate women who are majoring in physics or astrophysics, and who have demonstrated academic excellence.

2021   Elsa Katarina Palumbo

2022   Elsa Katarina Palumbo, Shalini Kurinchi-Vendhan

JOHN O. LEDYARD PRIZE FOR GRADUATE RESEARCH IN SOCIAL SCIENCE

The prize rewards the best second-year paper by a graduate student in Social Science or Social and Decision Neuroscience. The prize was established by Susan G. Davis in recognition of John O. Ledyard's dedication to developing graduate students as independent researchers and his service to the Division of the Humanities and Social Sciences. The prize is awarded annually by a committee of social science faculty.

2019   Jeffrey Roy Zeidel

2021   Po-Hsuan Lin

MARI PETERSON LIGOCKI '81 MEMORIAL AWARD

This award is given to a student who has improved the quality of student life at Caltech through their personal character. It recognizes the student who provides quiet support and kind encouragement to peers. This fund was established by Mr. Jose F. Helu Jr. (B.S. '79) to honor the memory of Mari Peterson Ligocki, who possessed these qualities.

2022   Eilleen Zhang

2023   Rachel Qianwen Ding

GORDON MCCLURE MEMORIAL COMMUNICATIONS PRIZE

This prize is awarded to undergraduate students for excellence in written and oral communication skills. Awards will be given in the following fields: English, history, and philosophy.

2020   *Lucca Sukman de Mello, Philosophy*

2022   *Elsa Katarina Palumbo, Philosophy*

Elia Peter Gorokhovsky, History

2023   *Shwetha S Kunnam, English*

THE HERBERT NEWBY MCCOY AWARD

This award is given to one or more chemistry doctoral students for outstanding contributions to the science of chemistry.

2023   *Zhi-Hao Cui, Molly Elizabeth McFadden*

MARY A. EARL McKINNEY PRIZE IN LITERATURE

The Mary A. Earl McKinney Prize in Literature was established in 1946 by Samuel P. McKinney, M.D., of Los Angeles. Its purpose is to promote proficiency in writing. The terms under which it is given are decided each year by the literature faculty. It may be awarded for essays submitted in connection with regular literature classes or awarded on the basis of a special essay contest.

2022   *Margaret Yanzhu Sui, Prose Fiction*

2023   *Margaret Yanzhu Sui, Poetry*

MECHANICAL ENGINEERING AWARD

This award recognizes a B.S. candidate in mechanical engineering whose academic performance has demonstrated outstanding original thinking and creativity, as judged by a faculty committee appointed each year by the executive officer for mechanical engineering.

2023   *Kaila Miki Yoshida Coimbra*

MERCK INDEX AWARD

This award is given to one or more graduating students who have demonstrated outstanding achievement in the field of chemistry.

2023   *Alexandria Hong, Nathan E Lopez*

JAMES MICHELIN SCHOLARSHIP

Given in memory of geologist James Michelin, who worked in the oil fields of Southern California in the 1930s and dreamed of returning to college at Caltech, this annual prize recognizes one or more undergraduate students for their contributions to the field of geology or geophysics.

2022   Kenny Thai

2023   Norman H. Chung

PARK S. NOBEL PRIZE FOR EXCELLENCE IN BIOLOGY AND BIOLOGICAL ENGINEERING

This prize recognizes one or two undergraduate students demonstrating outstanding achievements within the Division of Biology and Biological Engineering at Caltech.

2023   Jenny Ji

ROBERT L. NOLAND LEADERSHIP AWARD

This award is given to one or more undergraduate students who exhibit qualities of outstanding leadership, which are most often expressed as personal actions that have helped other people and that have inspired others to fulfill their capabilities. The scholarship was set up by Ametek in 1978 in honor of its president, Robert L. Noland (B.S. '41), a Caltech alumnus.

2022   Abigail Yuan-Shan Jiang, Albert Yone-Che Kyi, Jolly Patro

2023   Audrey Jane DeVault, David J. Melisso, Kavya Akansha Rajagopalan

OFFICE OF RESIDENTIAL EXPERIENCE AWARDS

These awards recognize student leaders who have made a significant impact on their Caltech community by demonstrating their efforts to improve the quality of campus life by displaying effective communication with Caltech administration and their peers. These leaders can be at any student level or within a team and are determined by and at the discretion of the Office of Residential Experience. The Office of Residential Experience has presented awards such as: Residential Experience Leadership Award, Residential Experience Team Award, Residential Experience Outstanding Leader, Residential Experience Emerging Leader, and Student Residential Life award.

2021   Gavin Matthew McCabe—Student Residential Life

Mohini Kavya Misra—Residential Experience Leadership Award

Jolly Patro, Wesley Young Huang, Albert Yone-Che Kyi,

Felianne Teng, Jenny Ji (Science Olympiad)—Residential Experience Team Award

2023   Matthew Roger Hajjar, Arya Naresh Mevada, Eilleen Zhang—Residential Experience Leadership Award

OUTSTANDING MENTEE AWARD

This award is given to individuals who demonstrate a sincere desire to succeed as researchers and are committed to their personal development. This awardee is open and willing to learn from their mentor and receptive to guidance and counsel while working with their mentor to establish realistic goals and demonstrating a commitment to carrying them out.

2019   *Daniela Osorio Rodríguez*

2021   *Alexia Nahyun Kim*

2023   *Jenny Ji*

RODMAN W. PAUL HISTORY PRIZE

The Rodman W. Paul History Prize was established in 1986 by some of his many colleagues and friends to honor Professor Paul's 35 years of teaching and research at the Institute. The prize is awarded annually to a junior or senior who has shown unusual interest in and talent for history.

2023   *Reggy M Granovskiy*

DR. NAGENDRANATH REDDY BIOLOGICAL SCIENCES THESIS PRIZE

The Reddy prize is awarded to the graduating female Ph.D. candidate in the Division of Biology and Biological Engineering who has produced the outstanding thesis in the biological sciences or bioengineering for the past year.

2023   *Sarah Kim Wandelt*

THE CANDACE RYPISI OUTSTANDING MENTOR AWARD

This award is given to individuals who are willing to share knowledge and enhance their mentee's professional and personal development. This person has provided emotional and moral support and encouragement while improving or helping facilitate access to career-related information and exposure to various professional resources. This awardee is someone who actively promotes their mentee's sense of competence, confidence, and belonging.

2020   *Alexandra Teresa Barth*

HERBERT J. RYSER MEMORIAL SCHOLARSHIP

This scholarship is awarded to undergraduate students for academic excellence, preferably in mathematics.

2021   *Elia Peter Gorokhovsky*

2022   *Miles Vincent Cua, Laura Limin Lewis*

SANPIETRO TRAVEL PRIZE

This prize is awarded to one or more sophomores, juniors, or seniors to fund an adventurous and challenging summer travel experience that expands the recipients' cultural horizons and knowledge of the world.

2023   Hannah Li Chen, Elsa Katarina Palumbo, Isaac George Bond Smith

RICHARD P. SCHUSTER MEMORIAL PRIZE

This prize is awarded to one or more juniors or seniors in chemistry or chemical engineering on the basis of financial need and academic promise.

2023   Elin Seyoung Kang, Isabel M. de la Torre Roehl

ELEANOR SEARLE PRIZE IN LAW, POLITICS, AND INSTITUTIONS

The Eleanor Searle Prize was established in 1999 by friends and colleagues to honor Eleanor Searle, who was the Edie and Lew Wasserman Professor of History at Caltech. The prize is awarded to an undergraduate or graduate student whose work in history, or the social sciences exemplifies Eleanor Searle's interests in the use of power, government, and law.

2022   Abigail Yuan-Shan Jiang

ERNEST E. SECHLER MEMORIAL AWARD IN AERONAUTICS

This award recognizes an aeronautics student who has made the most significant contribution to the teaching and research efforts of GALCIT (Graduate Aerospace Laboratories of the California Institute of Technology). Preference is given to students working in structural mechanics.

2020   Michael Thomas O'Connell, Kai Matsuka
2023   Emile Kazuo Oshima

SENIOR UNDERGRADUATE THESIS PRIZE

This prize recognizes senior theses that exemplify research and the effective use of the scholarly record. It is awarded by the Caltech Library and the Undergraduate Academic Standards and Honors Committee. Winners receive a honorarium and recognition in Caltech's Commencement program. The honorarium for the winner is made possible by the Friends of the Caltech Library.

2023   Abigail Yuan-Shan Jiang

RENUKA D. SHARMA AWARD

This award recognizes a sophomore chemistry major for outstanding performance during their freshman year.

2021   Jolly Patro

C. S. SHASTRY PRIZE

This prize is awarded to a sophomore Ph 11 alumnus, majoring in physics, to provide support for a summer research project conducted at Caltech. The winner is chosen based on passion, curiosity, and demonstrated ability.

2021   Jin Ming Koh

HALLETT SMITH PRIZE

The Hallett Smith Prize was established in 1997 to commemorate Professor Smith's long career as one of this century's most distinguished Renaissance scholars. The cash prize is given annually by the English faculty to the student who writes the best essay on English literature.

2022   Shalini Kurinchi-Vendhan

2023   Grace Liu

JOHN STAGER STEMPLE MEMORIAL PRIZE IN PHYSICS

This prize is awarded annually to a graduate student in physics for outstanding progress in research as demonstrated by an excellent performance on the oral Ph.D. candidacy exam.

2020   Arian Jadbabaie, Omar Mehio

2021   Nikita A. Sopenko

R. BRUCE STEWART PRIZE FOR EXCELLENCE IN TEACHING

This prize is awarded annually to a graduate teaching assistant in physics who demonstrates, in the broadest sense, unusual ability, creativity, and innovation in undergraduate and graduate classroom or laboratory teaching.

2022   Annika Dugad

2023   Nicholas Zhao Rui

PAUL STUDENSKI MEMORIAL FUND

This travel grant is awarded to a Caltech undergraduate who would benefit from time away from the academic community in order to obtain a better understanding of self and of their plans for the future.

2022   *Aanica Shazea Belicia Gonzales-Rogers*

2023   *Shalini Kurinchi-Vendhan, Katelyn Seungah Lee*

THREE MINUTE THESIS

Originally conceived by the University of Queensland and jointly sponsored by the Caltech Library and the Graduate Studies Office, the Three Minute Thesis (3MT®) competition challenges Caltech graduate students to explain their research in an engaging and clear three-minute talk intended for a non-specialist audience.

2021   *Aida Behmard, First Prize; Anand Kumar Muthusamy, Second Prize*

2023   *Dominic Jeffrey Yurk, Third Prize*

THOMAS A. TISCH PRIZE FOR GRADUATE TEACHING IN COMPUTING AND MATHEMATICAL SCIENCES

The Graduate Teaching in CMS Awards were established in 2016 with a gift from Microsoft and then endowed through the generosity of Thomas A. Tisch (BS '61). The prize and honorarium are awarded to a graduate student for outstanding teaching and course development in computing and mathematical sciences. Awardees are selected by a committee of CMS faculty members.

2020   *Andrew James Taylor*

THOMAS A. TISCH PRIZE FOR UNDERGRADUATE TEACHING IN COMPUTING AND MATHEMATICAL SCIENCES

The Undergraduate Teaching in CMS Awards were established in 2016 with a gift from Microsoft and then endowed through the generosity of Thomas A. Tisch (BS '61). The prize and honorarium are awarded to an undergraduate student for outstanding teaching and course development in computing and mathematical sciences. Awardees are selected by a committee of CMS faculty members.

2022   *Sarah Acadia Dunbar*

2023   *Pavlos Stavrinides*

CHARLES AND ELLEN WILTS PRIZE

The Wilts Prize is awarded annually for outstanding independent research in electrical engineering leading to a Ph.D. degree. This prize was established in 1992 to honor Charles Wilts, a member of the electrical engineering faculty from 1947–1975, who made substantial contributions to the Department of Electrical Engineering.

2023   Arkadev Roy

FREDRICK J. ZEIGLER MEMORIAL AWARD

The Fredrick J. Zeigler Memorial Award was established in 1989 to honor Fredrick J. Zeigler, a member of the class of 1976 and an applied mathematics major. This award recognizes an outstanding sophomore or junior in pure or applied mathematics for their excellence in scholarship as demonstrated in class activities or in the preparation of an original paper or essay in any subject area.

2021   Hannah Xian Chen, Miles Vincent Cua
2022   Pavlos Stavrinides

Caltech | Alumni

Congratulations, Caltech class of 2023! Through hard work and talent, you have earned a degree that places you among the most accomplished and dynamic communities in the world. The resilience and agility you demonstrated to persevere through the COVID-19 pandemic will help set the foundation for your success in this ever-changing world.

Since 1891, Institute alumni have been making profound and positive impacts on the world. Your experience at Caltech has prepared you to carry on the legacy, and the Caltech Alumni Association (CAA) is honored to help you with your journey. We keep you connected to a community of more than 25,000 Techers living around the world who share your experiences and know your capabilities. We also believe that our best work results from living our best lives, so the Caltech alumni community uplifts the human element of the Caltech experience. We are dedicated to offering Techers more than just connection. Are you looking for the right job? Do your relationships foster your inspiration? Through programs like the Alumni Portal, Caltech In… (regional event series), Tables for Techers, Seminar Day, Alumni Weekend and Reunions, and so much more, the CAA will help you realize the full potential of your extended Techer family, personally and professionally. We encourage you to get involved with the CAA and stay connected with your Caltech community. When your efforts are multiplied by the power of this community, so much more is possible.

On behalf of the Caltech Alumni Association, I welcome you as members of the alumni community. Please visit alumni.caltech.edu to see what the CAA can provide for you.

Jennifer Lee, Ph.D. (Ph.D. '10)
Chair, Board of Directors, Caltech Alumni Association
alumni.caltech.edu

ACADEMIC REGALIA AT CALTECH

The symbolism in the academic regalia worn by graduates at commencement dates back many centuries. Although some aspects of the costume vary among academic institutions, many basic elements are similar. The cap or mortarboard is based on the medieval biretta worn by scholars and artists. The gown's cut and velvet trimming indicate academic rank. The doctoral hood may display the academic field of the wearer's degree and the institution from which it was received. In addition, tassels, cords, and medallions denote various honors awarded by the institution or academic societies.

Caltech graduates receiving a doctorate wear a black velvet cap, robes trimmed in blue velvet, and a blue velvet doctoral hood lined in a chevron pattern of orange and white. Those receiving a bachelor's or master's degree wear a simple black gown and a black mortarboard or cap.

In addition to these traditional items, an undergraduate may also choose to wear a colored stole to the graduation ceremony. While orange stoles denote Caltech pride, other colors may be chosen to represent the undergraduate's residential affiliation.

There are currently eight undergraduate houses at Caltech (**Avery**, **Blacker**, **Dabney**, **Fleming**, **Lloyd**, **Page**, **Ricketts**, and **Venerable**), and three undergraduate residences (**Bechtel**, **Braun**, and **Marks**).

- The students of the **Bechtel**, **Braun**, and **Marks** residences who affiliate with a house may choose to wear that house's tassel or stole.
- A *purple stole or a purple and white tassel* designates **Avery House**; Avery's house color is purple.
- A *silver stole or a black and white tassel* designates **Blacker House**; Blacker's house color is black.

- A *green stole or tassel* designates **Dabney House**; Dabney's house color is green.
- A *red stole or tassel* designates **Fleming House**; Fleming's house color is red.
- A *gold stole or a yellow and white tassel* designates **Lloyd House**; Lloyd's house color is gold.
- A *blue stole or tassel* designates **Page House**; Page's house color is blue.
- A *maroon stole or tassel* designates **Ricketts House**; Ricketts's house color is maroon.
- A *navy blue stole or tassel* designates **Venerable House**; Venerable's house color is navy blue.

GAUDEAMUS IGITUR (LET US REJOICE, THEREFORE)

The song *Gaudeamus igitur* has become an academic standard, sung around the world at graduations and other university ceremonies. Some verses of this anthem go back to 13th-century France, where they appear in a Latin hymn on the transitory nature of life. By the middle of the 18th century, students at German universities had combined the original medieval verses with new ones—including the now famous opening verse that begins *Gaudeamus igitur, juvenes dum sumus* ("Let us rejoice, therefore, while we are young")—to create a song that celebrated youth and the student life, in all of its highbrow (and lower-brow) aspects. In the mid-19th century, the song crossed the Atlantic to Yale, where still more verses were added for use at academic ceremonies.

Since then, verses have been added or subtracted for different occasions. The song also has been translated into many different languages, sometimes faithfully, sometimes quite imaginatively.

The verses below (which have been translated as closely as possible from Latin into English) combine the youthful energy and irreverent attitude towards authority that characterize Caltech students with a ringing endorsement of the academic enterprise to which they are devoted. The verses celebrate the Institute and the community of scholars—past, present, and future—who have done and will continue to do its work.

Gaudeamus igitur	Let us rejoice, therefore,
Iuvenes dum sumus.	While we are young.
Post iucundam iuventutem	After a pleasant youth
Post molestam senectutem	After a troubling old age
Nos habebit humus.	The earth will have us.
Ubi sunt qui ante nos	Where are they who, before us,
In mundo fuere?	Were in the world?
Vadite ad superos	Go to the heavens
Transite in inferos	Cross over into the infernal regions
Hos si vis videre.	If you wish to see them.
Vivat academia!	Long live the academy!
Vivant professores!	Long live the professors!
Vivat membrum quodlibet;	Long live each student;
Vivant membra quaelibet;	Long live the whole community;
Semper sint in flore.	For ever may they flourish!
Alma Mater floreat,	May our Alma Mater flourish,
Quae nos educavit;	Who taught us;
Caros et commilitones,	Who gathered together
Dissitas in regiones	Dear ones and comrades,
Sparsos, congregavit.	Scattered in remote places.

Translation by Warren C. Brown, Convocations Chair

HAIL CIT

(Caltech alma mater)
arranged by Raymond Burkhart

In Southern California with grace and splendor bound,
Where the lofty mountain peaks look out to lands beyond,
Proudly stands our Alma Mater, glorious to see;
We raise our voices proudly, hailing, hailing thee.
Echoes ringing while we're singing over land and sea,
The halls of fame resound thy name, noble CIT.

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We invite you to celebrate and honor our 2023 graduates. Post your well-wishes, words of wisdom, and congratulations with #Caltech2023 on Instagram and Twitter.