

**JENNIFER A. DOUDNA**  
CURRICULUM VITAE

**PRESENT ADDRESS** Investigator, Howard Hughes Medical Institute  
Professor of Molecular and Cell Biology, UC Berkeley  
Professor of Chemistry, UC Berkeley  
Li Ka Shing Chancellor's Chair in Biomedical Sciences, UC Berkeley  
Investigator, Gladstone Institutes  
President & Chair of the IGI Governance Board, UC Berkeley/UCSF  
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Place of Birth: Washington, DC, USA  
Date of Birth: February 19, 1964

**EDUCATION AND TRAINING**

1985 B.A., Biochemistry, Pomona College  
1989 Ph.D., Biological Chemistry and Molecular Pharmacology,  
Harvard Medical School; Advisor: Professor Jack W. Szostak  
1989–1991 Postdoctoral Fellow in Molecular Biology, Massachusetts General Hospital and  
Postdoctoral Fellow in Genetics, Harvard Medical School  
Advisor: Professor Jack W. Szostak  
1991–1994 Lucille P. Markey Postdoctoral Scholar in Biomedical Science  
University of Colorado, Department of Chemistry and Biochemistry  
Advisor: Professor Thomas R. Cech

**CHRONOLOGY OF EMPLOYMENT**

2018–present Senior Investigator, Gladstone Institute of Data Science and Biotechnology  
2014–2020 Executive Director, Innovative Genomics Institute, UC Berkeley/UCSF  
2020–present President & Chair of the IGI Governance Board, Innovative Genomics Institute  
UC Berkeley/UC San Francisco  
2013–present Li Ka Shing Chancellor's Chair in Biomedical Sciences, UC Berkeley  
2013–2015 Head, Division of Biochemistry, Biophysics and Structural Biology, UC Berkeley  
2003–present Faculty Affiliate, Biophysics Graduate Group, UC Berkeley  
2003–present Faculty Scientist, Physical Biosciences Division, Lawrence Berkeley National Laboratory  
2002–present Professor, Department of Molecular and Cell Biology and Department of Chemistry, UCB  
1997–present Investigator, Howard Hughes Medical Institute  
2000–2002 Henry Ford II Professor, Yale University, Department of Molecular Biophysics and  
Biochemistry  
1999–2002 Professor, Yale University, Department of Molecular Biophysics & Biochemistry  
1998 Associate Professor, Yale Univ, Department of Molecular Biophysics & Biochemistry  
1994–1997 Assistant Professor, Yale University, Department of Molecular Biophysics &  
Biochemistry

## HONORS AND AWARDS

### Honorary Doctorates of Science

University of Leuven, 2015	Bates College, 2019
Yale University, 2016	York University, 2019
Mount Sinai School of Medicine, 2017	University of Oxford, 2019
Hong Kong University, 2017	University of Chicago, 2021
University of Southern California, 2018	Pomona College, 2022

### Awards and Prizes

- 2022
  - Kimberly Prize in Biochemistry and Molecular Genetics, Northwestern University School of Medicine and the Simpson Querrey Institute for Epigenetics
- 2021
  - Award for Excellence in Molecular Diagnostics, The Association for Molecular Pathology
  - 2021 Alma Dea Morani Renaissance Woman Award, the Women in Medicine Legacy Foundation
- 2020
  - Nobel Prize for Chemistry
  - Vanderbilt Prize in Biomedical Science.
  - Wolf Prize in Medicine, The Wolf Foundation, Israel
- 2019
  - Harvey Prize, Technion, Israel
  - Nierenberg Prize, Scripps Oceanographic Institute
  - Lui Che Woo Welfare Betterment Prize
  - Microbiology Society Prize Medal, Scotland
- 2018
  - American Cancer Society Medal of Honor
  - Kavli Prize in Nanoscience, Norway
  - V de Vida Award, Spain
  - Croonian Medal, Royal Society
  - National Academy of Sciences Award in Chemical Sciences
  - Gustavus John Esselen Award for Chemistry, Northeastern Sec Amer Chemical Society
  - Lila & Murray Gruber Memorial Cancer Research Award, American Academy of Dermatology
  - Dickson Prize in Science, Carnegie Mellon University
  - Pearl Meister Greengard Prize, Rockefeller University
- 2017
  - Genius 100 Award, Canada
  - George R. Stibitz Computer & Communications Pioneer Award
  - The Edward O. Wilson Biodiversity Technology Pioneer Award
  - Golden Plate Award, International Achievement Organization
  - Albert Einstein Foundation Award
  - Wallace H. Coulter Lectureship Award, The American Association for Clinical Chemistry
  - Albany Medical Center Prize
  - BBVA Frontiers of Knowledge Award, Spain
  - F.A. Cotton Medal, The Texas A&M Section of the American Chemical Society
  - The Japan Prize, Japan Prize Foundation
  - Luminary Award, Precision Medicine World Conference
- 2016
  - John Scott Medal and Premium, Philadelphia
  - Heineken Prize, Netherlands
  - Tang Prize in Biopharmaceutical Science, Taiwan
  - Paul Allen Distinguished Investigator

- Canada Gairdner Prize, Canada
  - Warren Alpert Foundation Prize, Harvard Medical School
  - Nakasone Award, Human Frontier Science Program
  - Paul Ehrlich and Ludwig Darmstaedter Prize, Germany
  - L'Oreal-UNESCO International Prize for Women in Science
- 2015
- Association of Biomolecular Resource Facilities Award
  - Charles Butcher Award, University of Colorado
  - Massry Prize, UCLA/USC
  - Gruber Prize in Genetics
  - Princess of Asturias Award for Technical and Scientific Research
  - International Society for Transgenic Technologies Prize
  - Time 100, *Time Magazine's* 100 Most Influential People in the World
- 2014
- Breakthrough Prize in Life Sciences
  - Member, National Academy of Inventors
  - Foreign Policy's 100 Leading Global Thinkers
  - Jacob Heskel Gabbay Award in Biotechnology and Medicine
  - Dr. Paul Janssen Award for Biomedical Research
  - Lurie Prize, Foundation for the NIH
- 2013
- BayBio Pantheon Award
  - Hans Neurath Award, Protein Society
  - Mildred Cohn Award, ASBMB
- 1996-2007
- The Nucleic Acid Group Award, NACON VII, Sheffield, UK (2007)
  - Eli Lilly Award in Biological Chemistry, American Chemical Society (2000)
  - Jean Francois LeFevre Memorial Lectureship, CNRS, Strasbourg, France (2000)
  - R.B. Woodward Visiting Professorship, Harvard University (2000)
  - Alan T. Waterman Award, National Science Foundation (2000)
  - National Academy of Sciences Award for Initiatives in Research (1999)
  - Johnson Foundation Prize for Innovative Research (1996)
  - Beckman Young Investigators Award (1996)

## **SOCIETY MEMBERSHIPS**

- Member, National Academy of Sciences, elected 2002
- Member, American Academy of Arts and Sciences, elected 2003
- Fellow, American Association for the Advancement of Science, elected 2008
- Member, National Academy of Medicine, elected 2010
- Member, National Academy of Inventors, elected 2014
- Fellow, American Society for Microbiology, elected 2015
- Foreign Member, The Royal Society, elected 2016
- Fellow, American Association for Cancer Research, elected 2017
- Member, Pontifical Academy of Science, Appointed by His Holiness Pope Francis, 2021

## **UNIVERSITY SERVICE**

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|--------------|---|
| 2022–present | Founder, Women in Enterprising Science program, IGI / UC Berkeley                   |
| 2019–present | Chair, Innovative Genomics Institute Governance Board                               |
| 2014–present | Founder, Innovative Genomics Institute, UC Berkeley/UCSF                            |
| 2014–present | Awards Committee, Biochemistry, Biophysics & Structural Biology (BBS) Division, MCB |

2015–2018 Chair, Chancellor’s Advisory Committee on Biology, UC Berkeley  
 2012–2015 Division Head, Biochemistry, Biophysics and Structural Biology (BBS)  
 2007 Search Committee member, Dean of Letters & Science  
 2004–2012 Faculty search committee, Departments of MCB and Chemistry  
 2003–2006 Member and Chair, MCB Graduate Admissions

## PROFESSIONAL SERVICE

2022–present Chief Science Advisor, Sixth Street  
 2021–present Director, Altos  
 2021–present Scientific Advisory Board member, The Column Group  
 2021–present Director, Tempus  
 2018–present Director, Johnson & Johnson  
 2018–present Editorial board member, *CRISPR Journal*  
 2014–present Member, Scientific advisory board, Welch Foundation  
 2014–2020 Executive Director, Innovative Genomics Institute  
 2012–present Member, Scientific Advisory Board, Shurl and Kay Curci Foundation  
 2010–present Scientific Advisory Board member for biotech companies including eFFECTOR, Therapeutics, Caribou Biosciences, Intellia, Synthego, Inari, Mammoth Biosciences, Scribe, Algen Biotechnology, and Felix Biosciences  
 2006–2019 Editorial board member, *Molecular Cell*  
 2003–2019 Member, Scientific Advisory Board, David & Lucile Packard Foundation  
 2004–present Member, Board of reviewing editors, *Science*  
 2003–present Faculty, Biophysics Graduate Group, UC Berkeley  
 2015–2018 Chair, Chancellor’s Advisory Committee on Biology, UC Berkeley  
 2016–2018 Trustee, Pomona College  
 2006–2016 Editorial board member, *ACS Chemical Biology*  
 2004–2014 Editorial board member, *PNAS*  
 2003–2006 Member and Chair, MCB Graduate Admissions Committee, UCB  
 2000–2012 Trustee, Pomona College  
 2000–2012 Member, Life Sciences Institute Advisory Board, University of Michigan  
 1998–2010 Editorial Board Member, *Journal of Molecular Biology*

## SELECT INVITED PRESENTATIONS

### 2022

- Commencement Speaker, Class of 2022, Pomona College
- Keynote Speaker, First Annual UCLA Ginsburg Symposium 2022 in Precision Medicine
- John A. and Betty C. Moore Science as a Way of Knowing Lecture / Chancellor’s Distinguished Lecture Series, University of California, Riverside
- Plenary Speaker, Plant & Animal Genome XXIX, San Diego, CA

### 2021

- Nobel Prize Summit ‘Our Planet, Our Future’ hosted by the Nobel Foundation
- IBM Research Distinguished Speaker Series
- DCAT Week Keynote Address
- Plenary Lecture for 7th Annual BRAIN Initiative Investigators Meeting
- Scripps ISCB Bicoastal Seminar
- MedImpact Healthcare Conference Lecture
- Invited Speaker, Vanderbilt University Discovery Lecture
- Lecturer, McGill University’s Department of Anatomy and Cell Biology

- Keynote, ARCS Symposium
- Keynote, Johns Hopkins Research Retreat
- Virginia State University STEAM-H Seminar Series
- Oxford University, 7th Centre for Personalised Medicine Annual lecture
- Schrödinger Annual Lecture, Imperial College, London
- Duke University MEDx Fall 2022 Distinguished Lecturer
- Annual Shattuck Lecture, Massachusetts Medical Society
- ACS Presidential Symposium Keynote Address

## **2020**

- Ernst Knobil Distinguished Lecture, Houston, Texas

## **2019**

- University College London Prize Lecture
- UC Irvine Your Distinctive Voices Public Lecture
- UCLA Donald Cram Lecture
- VanZant Seminar, Rice University, Houston, TX
- Cold Spring Harbor Lab CRISPR meeting
- World Science Festival, New York, NY
- Bampton Lecture, Columbia University
- A. Richard Newton Distinguished Innovator Lecture, Berkeley, California
- Koch Seminar, Cambridge, Massachusetts
- Probst Lecture at Southern Illinois University-Edwardsville
- Keynote Lecture at Emergent BioSolutions, Gaithersburg, MD
- Keystone Symposium, Whistler, BC, Canada
- Tom Steitz Memorial Symposium, Yale University
- ISSCR Nucleus Forum, Menlo Park, CA

## **2018**

- 2nd International Summit on Human Genome Editing, Hong Kong
- UCSB Arts & Lecture Series, Santa Barbara, California
- Sunney I Chan and Sunney and Irene Chan lectureship, Taiwan and Hong Kong
- Tseng Lecture, Hawaii
- American Chemical Society, Boston, Massachusetts
- Tohoku University, Japan
- Japan Neuroscience Society, Japan
- ISSCR 2018, Melbourne, Australia
- Royal Society Croonian Lecture, London
- Harvard University Prather Lecture series
- Frankenstein Symposium, Cal Tech
- Haselkorn Lecture, University of Chicago
- ARVO Annual Meeting, Hawaii
- George E. Palade Lecture, Yale University
- Vassar College
- Neekeyfar Lecture, Harvard University
- Keystone Symposium, Whistler, Canada
- University of Utah
- HHMI/Janelia Lecture Series
- Royal Society Lecture, London
- Gurdon Institute Lecture, London
- National Lecture at Annual Meeting of Biophysical Society, San Francisco
- Lorne Genome meeting, Australia
- Congressional Audience briefing on NSF's role in fueling genetics
- Keystone Symposium, Keystone, Colorado
- ISSCR Nucleus Forum, Menlo Park

## **2017**

- Duke University
- Sontag Foundation Annual Meeting, San Francisco
- Oregon Health & Science University
- Government Accountability Office, Washington D.C.
- Kossiakoff Lecture, Johns Hopkins University
- Annenberg Retreat at Sunnylands, Rancho Mirage, CA
- Beadle & Tatum Lecture, Stanford University
- World Conference of Scientific Journalists, San Francisco, CA

- Allen Frontiers Symposium, San Francisco, CA
- Rosalind Franklin Lecture at Kings College, London, UK
- Hans Neurath Lecture, University of Washington
- Max Planck Institute, Germany
- EMBO BASEL LIFE meeting, Switzerland
- CRISPRcon, UC Berkeley
- NIH Workshop, Bethesda, MD
- Cold Springs Harbor Lab CRISPR meeting
- A.T. Kearney CEO Retreat
- CRISPR Meeting, University of Montana
- Gordon Research Conference on Nucleic Acids
- UC Berkeley Plant Genome Engineering Symposium
- UC Berkeley's 2nd Annual Plant Genome Engineering Symposium
- Molecular Frontiers Symposium, The Royal Swedish Academy of Sciences, Stockholm
- Renaissance Technologies, New York
- Google Zeitgeist, London, UK
- Streisinger Lecture, University of Oregon
- American Chemical Society Kavli Lecture, San Francisco, CA
- 44th UCSD-EMD MILLIPORE Lectures
- Dean's Distinguished Lectureship, University of Colorado
- Orthopedic Research Society (San Diego, CA)
- Memorial Herbert Lecture, Vollum Institute at OHSU
- SXSW, Austin, TX
- The Franklin Institute, Philadelphia
- Pritchett Lecture, University of Pennsylvania
- Jenkinson Lecture, Oxford University
- Science/Biotechnology Department, Berkeley City College
- CHUPP Lecture, Lawrence Hall of Science, Berkeley, CA
- Immunology of Diabetes Society, San Francisco, CA
- Keystone Symposia - Breckenridge, CO

## **2016**

- Warner Bros. Feature Films Guest Speakers Series
- Furchgott Lecture, SUNY Downstate
- Memorial Sloan Kettering Cancer Center
- 148th Alameda-Contra Costa Medical Association (ACCMA) Annual Meeting
- Maclyn McCarty Lecture, Helen Hay Whitney Foundation
- HRA-FDA Lecture, Washington, DC
- American Association for Cancer Research (AACR) Conference
- OHSU Foundation's Tanabe Lecture
- Utrecht University, Netherlands
- Fourth annual symposium on Re-writing Genomes, UC Berkeley
- Marine Biological Laboratory, Woods Hole, MA
- American Society for Microbe Biology (ASM)
- The Joint Bioenergy Institute (JBEI) Annual Meeting, Napa, CA
- Schwartz Lecture at Icahn School of Medicine at Mount Sinai, New York
- The Fred Kavli Science at the Frontiers Lecture for Council of Scientific Society Presidents
- Milken Institute Global Conference, Beverly Hills, CA
- John F. Enders Lecture, Boston Children's Hospital
- Horizons in Biotechnology seminar series, DuPont Industrial Biosciences, Palo Alto, CA
- ACS Annual Meeting, San Diego, CA
- McCormick Lecture, Stanford University
- 44th Annual Verna & Marrs McLean Lectures, Baylor College of Medicine, Houston, TX
- Gordon Tomkins Lecture, UCSF
- Vanuxem Lecture, Princeton University
- MIT Biology Colloquium
- Pacific Symposium on Biocomputing, Kohala, Coast, HI
- Invited speaker, Louis Clark Vanuxem Lecture Series, Vanderbilt University

## **2015**

- UCLA Annual School of Medicine Lecture
- First International Summit on Human Genome Editing, National Academy of Sciences, Washington, DC
- Pollard Lecture, The Pennsylvania State University
- pgEd's Congressional Briefing, Washington, DC
- Rosalind Kornfeld Lecture, Washington University in St. Louis
- Brilliance of Berkeley Event, New York, NY
- Sixteenth Annual New Yorker Festival

- TED Talk, London, UK
- Rishwain Lecture, UCSF
- Calistoga Ranch/venBio Retreat, Calistoga, CA
- Inaugural Pfizer Lecture, Cambridge, MA
- Novozymes Conference, Davis, CA
- Insight Series on Genome Editing, Sacramento, CA
- FASEB Conference, Steamboat Springs, CO
- Biochemical and Molecular Engineering XIX, Puerto Vallarta, Mexico
- Northern California Science Writers Association
- Orgel Memorial Lecture, Salk Institute, La Jolla
- BASF Sustainable Food Meeting, The Art Institute of Chicago
- CRISPR Meeting, The Rockefeller University
- SEED 15, Boston, MA
- Frank Rothman Forum 2015, Brown University

- NYU Genomics Symposium 2015
- Harvard Medical School Cell Biology Departmental Seminar Series
- NY Genome Center "Five Points Lecture"
- Harvey Lecture, The Rockefeller University
- Brandeis University: Joint Biology and Neuroscience Colloquium
- Karl Meyer Lecture, UCSF
- Margaret Pittman Lecture, National Institutes of Health
- Deuel Conference on Lipids
- Celsius-Linne Symposium, Uppsala University, Sweden
- Molecular Medicine Tri-Con, San Francisco, CA
- Keystone Genome Editing Symposium, Big Sky, MT
- Flexner Lecture, Vanderbilt University

## **2014**

- 37th Annual Meeting of the Molecular Biology Society of Japan
- Friedrich Miescher Lecture, FMI Basel, Switzerland
- Uncharted: The Berkeley Festival of Ideas
- Novartis Institutes for BioMedical Research (Cambridge, MA), VIVA Awards
- Novartis Institutes for Biomedical Research (Emeryville, CA)
- Harvard Program in Cellular & Molecular Medicine Retreat, Boston Children's Hospital
- Jerry A. Weisbach Memorial Lecture, The Rockefeller University
- FASEB Meeting, Snowmass CO
- Koch Institute annual symposium, MIT
- Medical Research Council, Cambridge UK
- Karolinska Institute
- Foundation for the National Institutes of Health (FNIH)

- Howard Hughes Medical Institute science meeting
- BASF/UC Berkeley Dept. of Chemistry conference
- National Institutes of Health
- Agilent Laboratories
- The University of Chicago
- Monsanto, St. Louis MO
- Amgen, South San Francisco
- Stanford University Dept. of BioEngineering
- Keystone Symposium, Regulatory RNA
- Keystone Symposium, Long-noncoding RNA
- Scripps Biomedical Symposium
- Keystone Symposium, RNA Silencing
- Storer Lecture, UC Dav

## **2013**

- Instituto Gulbenkian de Ciência, Lisbon Portugal
- Howard Hughes Medical Institute science meeting
- Case Western University
- UCSF/UCB Genome Foundry Meeting
- Kavli Symposium
- Yale University
- University of Texas Southwestern

- EMBO/EMBL Symposium, Heidelberg Germany
- Lawrence Berkeley National Laboratory
- Cold Spring Harbor Laboratory conference
- Amgen annual meeting, Thousand Oaks, CA
- Harvard University Dept. of Chemistry and Chemical Biology
- CRISPR conference, St. Andrews University
- RNA Society annual meeting

- Harvard University Dept. of Biological Chemistry and Molecular Pharmacology
- University of Massachusetts Medical School
- American Society for Biochemistry and Molecular Biology (ASBMB)
- John Innes Centre, UK

- MD Anderson Cancer Center
- Howard Hughes Medical Institute Science Meeting
- New York University School of Medicine
- Lawrence Berkeley Laboratory Genome Sciences Meeting

## **2012**

- Defense Advanced Research Projects Agency (DARPA)
- Monod Conference, Paris France
- Centre for Biochemistry of the University of Heidelberg (BZH)
- Dow AgroSciences
- University of Notre Dame
- Fudan University, China
- Cold Spring Harbor Laboratory
- Columbia University
- Harvard University
- FASEB Meeting
- Monsanto, Davis, CA

- Columbia University
- DARPA Meeting, Washington, DC
- The Rockefeller University
- Princeton University
- Weill Cornell Medical College
- Duke University
- Howard Hughes Medical Institute scientific conference
- Leary Symposium, UC Davis
- Pfizer, Cambridge, MA
- Harvard University Department of Chemistry and Chemical Biology
- Keystone Symposium, Non-coding RNA

## **2011**

- American Society for Cell Biology
- University of Maryland
- Institute of Biophysics, Beijing, China
- RNA Society annual meeting, Kyoto, Japan
- Harvard University
- Cell Press Symposium, Chicago, IL
- RiboClub Meeting, Montreal Canada
- NCCR Symposium, Zurich, Switzerland
- University of California, Berkeley Synthetic Biology-Agilent Workshop
- University of California, Berkeley CRISPR Meeting
- Howard Hughes Medical Center Science Meeting
- University of Pennsylvania

- University of California, San Diego
- Yale University
- University of Colorado, Boulder
- University of Montreal
- University of Utah
- American Society of Biochemistry and Molecular Biology (ASBMB)
- Georgia Tech
- American Society for Microbiology (ASM), Puerto Rico
- Federation of the Israel Societies for Experimental Biology (FISEB)
- Stanford University

## **PATENTS AWARDED**

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpintier, E. (2021). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10900054B2). U.S. Patent and Trade Office.

DOUDNA, J. A., Banfield, J., Burstein, D., Harrington, L. B., & Strutt, S. C. (2020). *RNA-guided nucleic acid modifying enzymes and methods of use thereof* (U.S. Patent No. US10570415B2). U.S. Patent and Trademark Office.

Liras, S., Mascitti, V., Thuma, B. A., DOUDNA, J. A., & Rouet, R. (2020). *Tissue-specific genome engineering using CRISPR-Cas9* (U.S. Patent No. US10851367B2). U.S. Patent and Trademark Office.



DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. 10,676,759). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. 10,597,680). U.S. Patent and Trademark Office.

Sternberg, S. H., & DOUDNA, J. A. (2020). *Cas9 variants and methods of use thereof* (U.S. Patent No. US10793842B2). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. 10,752,920). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. 10,793,878). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. 10,774,344). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020f). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10669560B2). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10626419B2). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10640791B2). U.S. Patent and Trade Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10533190B2). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10526619B2). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10570419B2). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10563227B2). U.S. Patent and Trademark Office.

DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10550407B2). U.S. Patent and Trademark Office.

- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10577631B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2020). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10612045B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Lin, S., & Staahl, B. T. (2020). *Methods and compositions for RNA-directed target DNA modification* (U.S. Patent No. US10570418B2). U.S. Patent and Trademark Office.
- Sternberg, S. H., & DOUDNA, J. A. (2019). *Cas9 variants and methods of use thereof* (U.S. Patent No. US10392607B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Kaya, E., & Knoll, K. R. (2019). *Methods and compositions for using argonaute to modify a single stranded target nucleic acid* (U.S. Patent No. US10253311B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Chen, J. S., Harrington, L. B., & Enbo, M. (2019). *Activation of Non-specific ssDNA Cleavage by Cpf1/Cas12a/Type V Effectors* (U.S. Patent No. US10253365B1). U.S. Patent and Transfer Office.
- DOUDNA, J. A., Jinek, J., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10227611B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Charpentier, E., & Chylinski, K. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10266850B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Charpentier, E., & Chylinski, K. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10301651B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Charpentier, E., & Chylinski, K. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10266850B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10308961B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10415061B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10421980B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10351878B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10358659B2). U.S. Patent and Trademark Office.

- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10337029B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10358658B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10443076B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10428352B2). U.S. Patent and Trademark Office.
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## **MENTORING**

### UNDERGRADUATE STUDENTS

02/07/22	Stephen Martindale	01/23/20	Mihir Shah
01/18/22	Julia Zhou	01/20/20	Defne Yigci
01/17/22	Mike Kwon	10/4/19	Rittida Herabat
11/14/18	Cindy Espinoza	10/07/19	Evelyn Chen
08/24/21	Alex Deyanov	09/02/19	Bayan Duwaik
03/24/21	Johanna Staples-Ager	07/11/19	Stephanie Li
06/23/20	Allison Bien	06/24/19	Yvette Ysabel Yao
12/20/20	Sara Smith	06/10/19	Nicholas Lemus

05/29/19	Araz Vartoumian	01/30/17	Bridget Bai
05/27/19	Noah Cheng	11/29/16	Yian Wu
04/15/19	Ezra Bisom-Rapp	11/06/16	Paul Baik
02/01/19	Virginia Hsiao	10/22/16	Mehek Mohan
01/31/19	Mohak Jain	06/14/16	Rachel Torrez
01/23/19	Shirley Li	06/14/16	Kayana Correa
10/10/18	Charlie Alza	06/14/16	Sharon Tian
10/08/18	Kimberly Tang	06/10/16	Brandon Roman
10/08/18	Zeyi Zhou	04/13/16	Ireen Kulish
09/15/18	Casey Mogilevsky	03/07/16	Abhishek Aditham
09/06/18	Khang Dao	02/25/16	Ana Lyons
09/03/18	YueXin Zhang	01/26/16	Gabriela Acevedo Munares
09/01/18	Phillip de Lorimier	10/02/15	Joshua Elkington
09/01/18	Natalie Perez	09/15/15	Shawn Ren
06/25/18	Bayan Duwaik	07/06/15	Ashwin A Banfal
06/22/18	Maria Lozado	07/06/15	Lawrence Bai
08/30/17	Emira Romero	06/08/15	Bridget Hansen
08/30/17	Biana Filart	03/03/15	Robert Nichols
08/25/17	Samar Bhat	12/13/14	Tracey Hinder
08/21/17	Isaac Witte	12/04/14	Dominic Castanzo
07/28/17	Alex Hao	09/29/14	Benjamin Lafrance
07/26/17	Katherine White	07/23/14	Lucy Zhang
06/27/17	Talia Wenger	06/11/14	Matias Kaplan
06/12/17	Blake McMahan	06/11/14	Philip J. Wright
05/31/17	Jesslyn Park	02/20/14	Brian Castellano
04/12/17	Malvika Tejura	01/22/14	Yichi Su
02/01/17	Michael Xu		

#### GRADUATE STUDENTS / CURRENT POSITION

2022-	Kevin Wasko	Active
2022-	Rithu Pattali	Active
2022-	Owen Tuck	Active
2021-	Julia Tartaglia	Active
2021-	Muntathar Al-Shimary	Active
2020-	Peter Yoon	Active
2020-	Vienna Thomas	Active
2020-	Brittney Thornton	Active
2019-	Hannah Karp	Active
2019-	Amy Eggers	Active
2019-	Carolyn Huang	Active
2019-2022	Basem Al-Shayeb	Founder, Cerebus Biosciences
2019-	Connor Tsuchida	Active
2019-2022	Joy Wang	Update pending
2017-2021	Emeric Charles	Scientist, Scribe Therapeutics
2017-2021	Joshua Cofsky	Postdoc
2016-	Arturo Ortega	Active
2015-2020	Marbo Lobba	CEO/Co-Founder at Catena Biosciences

2015-2018	Janice Chen	Co-founder, Chief Research Officer, Mammoth Biosciences
2015-2018	Lucas Harrington	Co-founder, Chief Discovery Officer, Mammoth Biosciences
2014-2018	Jorge Bardales Mendieta	Co-founder, Nextbiotics
2014-2018	Ben Oakes	Entrepreneurial Fellow, Innovative Genomics Institute
2014-2018	Spencer Knight	Data Scientist, Foresite Capital
2014-2018	Steven Strutt	Scientist, Spotlight Therapeutics
2014-2018	Stephen C. Wilson	Celgene Corporation
2013-2018	Addison Wright	Postdoc, Harvard (Zhuang lab)
2013-2018	Akshay Tambe	Scientist, Spotlight Therapeutics
2013-2017	Kevin Doxzen	Science Media Communications Innovative Genomics Institute
2012-2017	Alexandra Seletsky	RNA Biology Scientist, Arrakis Therapeutics
2012-2016	James Nunez	Postdoc, Weissman lab, UCSF
2012-2016	Megan Hochstrasser	Communications Manager, IGI
2011-2012	Mark Luskus	New User Acquisition Manager Grokker, Inc.
2009-2014	Mary Anne Kidwell	Consultant, Boston Consulting Group
2009-2015	Sam Sternberg	Assistant Professor, Columbia University
2008-2008	Amy Weeks	Postdoc, Wells Lab, UCSF
2008-2012	Rachel Haurwitz	President/CEO, Caribou Biosciences.
2007-2011	Bryan Clarkson	Instructor, Diablo Valley College
2007-2012	Cameron Noland	Principal Scientific Researcher, Structural Biology, Genentec
2006-2011	Katherine Berry	Clare Boothe Luce Asst Professor of Biochemistry at Mount Holyoke
2004-2007	Eric M. Friedman	Unknown
2003-2006	Adrian Repic	Radiology Resident, VCU Medical Center
2003-2005	Dennis Lullo	Quality Engineer II, Lifecell
2003-2008	Fai Y. Siu	Postdoc. Research Assoc., R. Stevens Lab, Scripps Research Institute
2002-2006	Bunpote Siridechadilok	Research Scientist, Siriraj Hospital, Thailand
2002-2005	Lisa Valdin	Assoc. Product Mgr., Alpha Innotech Corp.
2001-2002	Kristi Pullen	Director, Science and Data - Health Program, NRDC
1999-2001	Angie Grech	Global Director of Customer Success, LinkedIn Learning
1998-2002	Miguel Talavera	Grad. Student Researcher, E.M. De La Cruz Lab, Yale University
1997-2001	Andrej Luptak	Asst. Professor, UC Irvine
1997-2001	Lan Zhang	Principal Scientist at Merck
1997-2003	Robert Rambo	Diamond Light Source Ltd.
1996-2001	Daniel Battle	Asst. Professor, Ohio State University
1996-2000	Rebecca Hanna	Owner and Proprietor, MadeWithMolecules.com
1995-2000	Elizabeth Doherty	Technical Specialist, Washington DC
1994-1997	Jamie Cate	Professor of Chemistry, Biochemistry and Molecular Biology, Berkeley

#### POSTDOCTORAL FELLOWS / CURRENT POSITION

2022-	Erin Doherty	Active
2022-	Jason Nomburg	Active
2021-	Chenglong Xia	Active
2021-	Matthew Kan	Active

2021-	Honglue Shi	Active
2021-2022	Gary Wang	Clinical Instructor, Medicine, UCSF
2020-	Ben Adler	Active
2020-	Petr Skopintsev	Active
2020-	Kai Chen	Active
2020-	Abdullah Syed	Active
2019-	David Colognori	Active
2019-	Katarzyna Soczek	Active
2019-	Elizabeth Stahl	Active
2019-	I-Li Tan	Active
2019-2021	Enrique Lin Shiao	Asset Acquisitions Associate, BridgeBio
2019-2021	Haridha Shivram	Bioinformatician, Genetech
2019-2021	Patrick Pausch	Investigator, Vilnius University
2018-2020	Elizabeth O'Brien	Bioscience Sales Specialist for Nikon, Inc.
2018-2021	Shrutee Jakhanwal	Senior Research Investigator, Syngene
2018-	Ben Rubin	Active
2018-	Jennifer Hamilton	Active
2017-2021	Bastia Minkenberg	Research Scientist, Inari Agriculture
2017-	Brady Cress	Active
2017-2020	Christine He	Scientist, Invitae
2017-2021	Alexandra Amen	Asset Acquisitions Associate, BridgeBio
2017-2018	Natalia Orlova	Scientist at Grifols Therapeutics
2016-2018	Kyle Watters	Senior Bioengineer, Arbor Biotechnologies
2016-2021	Gavin Knott	Investigator, Monash University
2016-2020	Jun-Jie (Gogo) Liu	Assistant Professor, Tsinghua University
2016-2017	April Pawluk	Scientific Editor, <i>Cell</i> Magazine
2016-2018	Chun-Hao Huang	Co-Founder / CEO Chairman, CLINICAL Co-Founder/CEO of Algen Biotechnologies
2015-2021	Tina Liu	Senior Scientist, Beam Therapeutics
2015-2019	Audrone Lapinaite	Assistant Professor, Arizona State University
2015-2018	Christof Fellman	Assistant Adjunct Professor, Department of Cellular & Molecular Pharmacology, School of Medicine, University of California, San Francisco; Research Investigator, Gladstone Institutes
2015-2018	David Burstein	Assistant Professor, Tel Aviv University
2015-2017	Romain Rouet	Postdoc, Garvan Institute of Medical Research in Sydney
2014-2016	David Taylor	Member, LIVESTRONG Cancer Institutes Dell Medical School at the University of Texas at Austin
2014-2017	Mitch O'Connell	Assistant Professor, University of Rochester Medical Center
2013-2018	Brett Staahl	Co-founder, Scribe Therapeutics
2013-2018	Fuguo Jiang	Deceased; former Assistant Professor, UT MD Anderson Cancer Center
2012-2016	Emine Kaya	Scientist, Global Blood Therapeutics
2012-2016	Philip Kranzusch	Asst Professor Harvard Medical School
2012-2015	Steven Lin	Assistant Professor, Academica Sinica
2011-2016	Nathanael Lintner	Senior Scientist, Pfizer
2011-2017	Stephen Floor	Assistant Professor, UC San Francisco

2011-2012	Monika Martick	Lead Research Scientist, Miroculus
2011-2015	Yun Bai	Assistant Professor, ShanghaiTech
2010-2015	Ross Wilson	Project Scientist & PI, UC Berkeley
2010-2013	Aaron Brewster	Postdoctoral Associate, Lawrence Berkeley National Lab
2009-2013	Stefanie Mortimer	Senior Scientist at Guardant Health
2008-2012	Dipali Sashital	Asst. Professor, Iowa State University
2008-2013	Ho Young Lee	TD Sr. Scientist at Genentech
2007-2012	Blake Wiedenheft	Associate Professor in the Department of Microbiology and Immunology, Montana State University
2007-2008	Euiyoung Bae	Asst. Professor, Seoul National University
2007-2008	Glen Borchert	Assistant Professor, University of Southern Alabama
2007-2012	Martin Jinek	Associate Professor of Biochemistry, Institute of Biochemistry, University of Zurich
2007-2008	Ryuya Fukunaga	Associate Professor of Biological Chemistry, Johns Hopkins University School of Medicine
2006-2008	Karin Felderer	Director / Laboratory Leader - Protein Production DSP at MorphoSys AG
2006-2008	Sandro Ataide	Lecturer in Structural Biology - School of Molecular Bioscience, University of Sydney
2006-2009	Srinivas Chakavarthy	Deputy Director, Biophysics Collaborative Access Team (BioCAT) - APS / Illinois Institute of Technology
2005-2011	Andrew Mehle	Associate Professor, Univ. of Wisconsin, Madison
2004-2008	Wendy V. Gilbert	Associate Professor, Molecular Biophysics and Biochemistry, Yale University
2003-2008	Chris S. Fraser	Associate Professor, UC Davis
2003-2006	Katrin Karbstein	Associate Professor, Department of Cancer Biology, Scripps Florida
2002-2005	Ailong Ke	Professor, MBG, Cornell Univ.
2002-2007	Ian J MacRae	Asst. Professor, Scripps Research Institute
2002-2007	Nik H. Chmiel	R&D Manager, Systems Integration, Bio-Rad Laboratories
2002-2006	Rich Spanggord	Senior Scientist, Baxalta, Inc
2001-2005	Li Chen	Sigma-Aldrich, Shanghai, China
2000-2002	Bidya Sagar	Asst. Professor, Texas Heart Institute, Houston
2000-2002	Peter Adams	Research Scientist, NIH
1999-2000	Benoit Masquida	Research Director, University of Strasbourg, Strasbourg, France
1999-2002	Jeremy M. Murray	Scientist, Genentech
1998-2001	Jeffrey S. Kieft	Professor and Vice Chair, U. Colorado Health Sci. Ctr., Denver, CO
1997-2001	Robert Batey	Professor & Associate Chair for Graduate Affairs, U. Colorado, Boulder, CO
1995-1999	Adrian Ferré-D'Amaré	Senior Investigator RNA Biophysics and Cellular Physiology, NIH
1995-1996	Sonia DeMorais	Sr. Scientist, Boehringer Ingelheim Inc.

## RESEARCH SUPPORT



## Active

### **HHMI (Doudna, PI)**

Howard Hughes Medical Institute

09/01/2002 – 08/31/2023

Salary support / budget determined annually

Major Goals: The approved budget includes support for two technicians, two postdoctoral fellows, a systems administrator and a part-time administrative assistant, as well as travel, supplies and other expenses. There is no specific HHMI project, as this support is intended for the lab in general.

### **U19AI171110 (Krogan, PI)**

NIH/NIAID (Subaward from UCSF)

AVIDD - QCRG Pandemic Response Program

05/2022 – 04/2025

Our goal is to develop and test a SARS-CoV-2 replicon in a bacterial artificial chromosome system in order to determine the potential for the emergence of resistant clones and the sites that are essential for replication. This will eventually help us design virus-targeting inhibitors

### **INV-037174 (Banfield, PI)**

Bill & Melinda Gates Foundation

Borg-Driven Innovation for Biological Manipulation and to Address Climate Change

Role: Collaborator

11/2021 – 02/2024

The main goal of this project is to harness novel archaeal extrachromosomal genetic elements to provide tools to decrease methane emissions and improve control of cell functioning.

### **U24HG010423 (Dwinell, PI)**

NIH/NHGRI (Subaward from Medical College of Wisconsin)

Evaluation of Immune Responses to Novel Editors in Rhesus Monkeys

Role: Collaborator

12/2021 – 11/2022

The main goal of this project is to investigate the editing efficiency and potential for immune responses of both the CasF double-stranded DNA nuclease and the Cas13d single-stranded RNA nuclease.

### **R33 AI140465 (Ott, PI)**

NIH/NIAID (subaward from Gladstone)

Harnessing the RNA-Binding Properties of Cas13a for HIV-1 Self-Testing

Role: Co-PI

08/2019 – 07/2023

The major goal of this project is to explore Cas13a functions in collaboration with the program, and will optimize the sensitivity and specificity of Cas13a for the identification of HIV RNA within serum samples at clinically relevant titers, enabling this technology to be used in an at-home diagnostic setting.

### **5U01AI142817 (Doudna/Banfield)**

NIH/NIAID

Expanding CRISPR-Cas Editing Technology Through Exploration of Novel Cas Proteins and DNA Repair Systems

Role: Co-PI

08/24/2018 – 07/31/2023

We will focus our investigation on newly described CRISPR-Cas systems and DNA-interacting proteins that occur in conserved genomic context.

### **U01MH115747 (Krogan, PD)**

NIH/NIMH (subaward from UCSF)

09/05/2018 – 06/30/2023

Research Center for Psychiatric Systems Biology: Psychiatric Cell Map Initiative (PCMI)

Role: Project Leader

This project aims to uncover functional relationships between the large number of genes definitively associated with ASD and emergent higher-order phenotypes, a connection that is critical for developing novel therapeutics.

**5U19AI135990 (Krogan, PD)**

08/17/2018 – 07/31/2023

NIH/NIAID (subaward from UCSF)

HPMI: Host Pathogen Mapping Initiative

Role: Project Leader

Major Goal: The Doudna lab will be involved with developing gene knockout methodologies in human macrophages (to be used for subsequent infection studies) and creating epitope-tagged alleles of endogenous genes (for mass spec-based interaction mapping).

**U54AI170792 (Krogan, PD)**

07/2022 – 04/2023

NIH/NIAID (subaward from UCSF)

HARC Center: HIV Accessory and Regulatory Complexes

Role: Project Leader

Major Goal: The Doudna lab will be utilizing their latest advances in CRISPR-Cas9-based gene-editing technology to enable both pooled knock-out and knock-in in primary human T cells to better understand HIV-host interactions.

**DE-AC02-05CH11231 (Doudna, PI)**

06/08/2020 – 12/31/2022

Department of Energy (subaward from Lawrence Berkeley National Laboratory)

Joint BioEnergy Institute

Major Goal: The goal is to optimize the composition of bioenergy crops, the deconstruction and separation process, and the metabolism of our biofuel- and bioproduct-producing microorganism to maximize the conversion of biomass into biofuels and bioproducts.

**5UG3AI150552 (Wilson/Doudna)**

08/28/2019 – 07/31/2023

NIH/NIAD

Cas9 RNP Delivery to Immune Cells in Vivo via Molecular Targeting

Role: Co-PI

The major goals of this project are to develop a versatile, modular platform for in vivo genome editing of immune cells - T cells in particular - that is based on an RNP complex tethered to accessory molecules to achieve specificity and uptake.

**5P01CA118816 (Chang, PD)**

07/01/2007 – 07/31/2024

NIH/NCI

Project 2 (Costello, PI)

Role: Collaborator

Noninvasive Metabolic Signatures to Improve Management of Molecular Subtypes of Glioma - Project 2

Our project's goal is to understand how factors uniquely recruited to the mutant TERT promoter (TERTp) together with factors that are native to the wildtype (WT) promoter activate TERT to achieve tumor cell immortality.

**24180 (Doudna, PI)**

03/02/2020 – 3/01/2023

Apple Tree Partners

## Design, Preparation and Functional Evaluation of Novel Cas9 Enzymes

The major goal of this project is the de novo design, preparation and functional evaluation of small designer Cas9 enzymes, capable of encapsulation in non-viral drug delivery vehicles with the potential for tissue and cellular targeting specificity. Furthermore, the systematic design of proteins with reduced immunogenic response by rationally detecting and substituting immunogenic fragments with application of machine learning approaches.

### **URNOV19XX0 (Urnov, PI)**

02/01/2020 – 01/31/2023

Cystic Fibrosis Foundation

Advancing Delivery of Novel Genome Editing Enzymes to Correct Orphan CF Mutations

Role: Collaborator

The major goal of this project is to develop three novel delivery methods for base editing tools to correct CF mutations.

### **051269 (Urnov, PI)**

04/2021 – 03/2024

Genentech, Inc.

ATN Project-Development of a Vertically Integrated CRISPR-Cas-based Approach for Epigenome Editing of MAPT/Tau as a Potential Treatment for Alzheimer's Disease

Role: Collaborator

The major goals of this project are to engineer new CRISPR-Cas to recognize and silence the gene involved in Alzheimer's disease and characterize the consequences of this silencing at cell and organ levels.

### **051268 (Urnov, PI)**

04/2021 – 03/2024

Genentech, Inc.

Development of a Vertically Integrated CRISPR-Cas-based Approach for Allele-Specific Splicing Editing as a Potential Treatment for Huntington's Disease

Role: Collaborator

The major goal of this project is to engineer CRISPR-Cas to recognize and silence the gene involved in Huntington's Disease in neuronal and glial cells.

### **2221195 (Doudna, PI)**

03/2021 – 12/2022

Department of Energy (Subaward from Sandia National Laboratory)

Intrinsic Control for Genome and Transcriptome Editing in Communities and Novel Chassis

The major goal of this project is to pioneer a new approach using cell-free methods, genome synthesis and programmable integrases to rapidly turn a virus into a useful vector chassis paired with a helper host cell line for production for both bacteria and eukaryotic algae.

### **R21AI159666 (Doudna, PI)**

07/2021 – 06/2023

NIH/NIAID

Identifying and Inhibiting the SARS-CoV-2 Packaging Mechanism

This study aims to define the viral packaging signal that enables SARS-CoV-2 virion formation and to develop an effective screen for viral packaging inhibitors.

### **MCB-1817593 (Doudna, PI)**

09/2018 – 08/31/2023

NSF

Mechanism of Acquired Immunity in Bacteria

Major Goals: The major goals of this project are to determine three key aspects of newly discovered CRISPR systems: (1) how CRISPR integrases insert new sequences to confer immunity; (2) how CasX achieves RNA-guided DNA cleavage; and (3) how the CasY family functions.

## RESEARCH SUPPORT

### Completed

**DE-AC02-05CH11231 (Doudna, PI)** 06/08/2020 – 12/31/2022  
Department of Energy (subaward from Lawrence Berkeley National Laboratory)  
m-CAFEs Microbial Community Analysis & Functional Evaluation in Soils

The major goal of this project was to interrogate the function of soil microbiomes with critical implications for carbon cycling and sequestration, nutrient availability and plant productivity in natural and managed ecosystems. Our initial focus was on key microbial metabolic networks of importance to carbon transformation, determining the roles of genes and genomes that regulate the flow of carbon through microbial networks.

**5P50AI150476 (Krogan, PD)** 08/27/2007 – 08/31/2022  
NIH/NIAID (subaward from UCSF)  
HARC Center: HIV Accessory and Regulatory Complexes  
Role: Project Leader

The major goals are to explore RNA structure-mediated functions, and to identify RNA structures important for expression of HIV and host genes. Additionally we will establish collaborations to develop small-molecule inhibitors using proprietary methods for testing activity against key RNA motifs and interactions.

**048016 (Dillin, PI)** 07/01/2020 – 06/30/2022  
Rainwater Charitable Foundation  
Cell Non-Autonomous Activation of Hsf1 in Glial Cells using CRISPR/Cas9 to Combat Tauopathies  
Role: Collaborator

Major Goals: Human tauopathies, such as Alzheimer's Disease, are associated with misfolded and aggregated proteins that can be rescued when both neurons and glial cells overexpress heat shock factor 1 (Hsf1). In this project, we used Cas9-transcriptional activators delivered to mouse brain to determine the effect of glial cell specific Hsf1 activation on Tau pathology.

**5RM1HG009490 (Doudna, PI)** 08/08/2017 – 05/31/2022  
NIH/NHGRI  
Center for Genome Editing and Recording

The major goals of this project were to create, detect, alter and record the sequence and output of the genome in individual cells and tissues. Building on the CRISPR-Cas9 genome engineering technology harnessed from bacteria, CGER will couple the RNA-guided DNA cleavage activity of the Cas9 enzyme to strategies for enhancing DNA sequence replacement using homology-directed double-strand break repair. In parallel, CGER will conjugate Cas9 to DNA "base editing" domains to enable accurate introduction or correction of point mutations without double-stranded DNA cleavage.

**208713 (Doudna, PI)** 09/2018 – 02/2022  
Biogen Research Corporation

Major Goals: The major goals were to develop a fundamental understanding of the efficiency of gene editing in the central nervous system (CNS) using different delivery vehicles, and to establish methods and molecules that are best adapted to neuronal delivery in animals.

**5U24HG010423 (Dwinell, PD)** 12/01/2020 – 11/30/2021  
NIH/NHGRI (Subaward, Medical College of Wisconsin)  
Development of a single AAV vector CRISPR-Cas $\Phi$  platform technology  
Role: Project Leader

**HR0011-17-2-0043 (Doudna, PI)** 05/2017 – 10/2021  
DOD Advanced Research Projects Agency  
Next-Generation CRISPR and anti-CRISPR Tools and Delivery Systems for Safely Engineering the Genome and Epigenome

The major goals of this project were to create a revolutionary platform for using and controlling gene editing for both clinical and biotechnology applications, with wide-ranging benefits for treating infectious diseases and cancer. From a biosecurity perspective, we hope that our technologies displace less safe technologies (making their use stand out), and demonstrate that gene editing activity can be prophylactically or therapeutically shut down, discouraging its potential intentional misuse.

**1655264 (Doudna, PI)** 10/1/2020 – 9/30/2021  
DOE (subaward from Sandia National Laboratory)  
Detection and Visualization Tags for Newly Discovered Cas Variants

The major goal of this project was to develop and characterize affinity tags for Cas orthologs amenable to live cell imaging and single cell analysis.

**5R61AI140465 (Ott, PI)** 08/01/2018 – 07/31/2021  
NIH/NIAID  
Harnessing the RNA-Binding Properties of Cas13a for HIV-1 Self-Testing  
Role: Collaborator

The major goal of this project was to explore Cas13a functions in collaboration with the program, and will optimize the sensitivity and specificity of Cas13a for the identification of HIV RNA within serum samples at clinically relevant titers, enabling this technology to be used in an at-home diagnostic setting.

**N660012024033 (Savage, PD)** 09/28/2020 – 9/27/2021  
DOD Advanced Research Projects Agency  
COVID-19: CRISPR Nuclease Chain Reaction for Rapid COVID-19 Diagnosis  
Role: Project Leader

The major goal of this project was to make COVID19 diagnosis rapid and scalable.

**20181713 (Doudna, PI)** 09/2018 – 09/2021  
Biogen Research Corporation  
CRISPR-Cas9 Delivery Strategies for Enhanced in Vivo Gene Editing Biogen Collaboration Project

The major goals were to develop a fundamental understanding of the efficiency of gene editing in the central nervous system (CNS) using different delivery vehicles, and to establish methods and molecules that are best adapted to neuronal delivery in animals.

**MCB-1817593 (Doudna, PI)** 9/1/2018 – 8/31/2021  
NSF  
Mechanism of Acquired Immunity in Bacteria

The major goals of this project were to determine three key aspects of newly discovered CRISPR systems: (1) how CRISPR integrases insert new sequences to confer immunity; (2) how CasX achieves RNA-guided DNA cleavage; and (3) how the CasY family functions.

#### **PEER-REVIEWED RESEARCH ARTICLES (reverse chronological order)**

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- Al-Shayeb B, Schoelmerich MC, West-Roberts J, Valentin-Alvarado LE, Sachdeva R, Mullen S, Crits-Christoph A, Wilkins MJ, Williams KH, Doudna JA, Banfield JF. Borgs are giant genetic elements with potential to expand metabolic capacity. *Nature.* 2022 Oct 19. doi: 10.1038/s41586-022-05256-1. Epub ahead of print. PMID: 36261517.
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- Kan MJ, Doudna JA. Treatment of Genetic Diseases With CRISPR Genome Editing. *JAMA.* 2022 Sep 13;328(10):980-981. doi: 10.1001/jama.2022.13468. PMID: 36098733.
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- Servellita V, Syed AM, Morris MK, Brazer N, Saldhi P, Garcia-Knight M, Sreekumar B, Khalid MM, Ciling A, Chen PY, Kumar GR, Gliwa AS, Nguyen J, Sotomayor-Gonzalez A, Zhang Y, Frias E, Prostko J, Hackett J Jr, Andino R, Wadford DA, Hanson C, Doudna J, Ott M, Chiu CY. Neutralizing immunity in vaccine breakthrough infections from the SARS-CoV-2 Omicron and Delta variants. *Cell.* 2022 Apr 28;185(9):1539-1548.e5. doi: 10.1016/j.cell.2022.03.019. Epub 2022 Mar 18. PMID: 35429436; PMCID: PMC8930394.
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