

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
2151 Berkeley Way, University of California, Berkeley CA 94720

Email: doudna@berkeley.edu
Telephone: (510) 643-0113
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	

Awards and Prizes

- 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 Scien

- 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 Heskell 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

- | | |
|--------------|---|
| 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, <i>CRISPR Journal</i>
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, <i>Molecular Cell</i>
2003–2019	Member, Scientific Advisory Board, David & Lucile Packard Foundation
2004–present	Member, Board of reviewing editors, <i>Science</i>
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, <i>ACS Chemical Biology</i>
2004–2014	Editorial board member, <i>PNAS</i>
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, <i>Journal of Molecular Biology</i>

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., 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. US10400253B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., O'Connell, M. R., Seletsky, A. E., Knight, S. C., & Cate, J. H. D. (2019). *Methods and compositions for detecting a target RNA* (U.S. Patent No. US10337051B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., O'Connell, M. R., Seletsky, A. E., Knight, S. C., & Cate, J. H. D. (2019). *Methods and compositions for detecting a target RNA* (U.S. Patent No. US10494664B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Sternberg, S. H., O'Connell, M., & Oakes, B. (2019). *Methods and compositions for modifying a single stranded target nucleic acid* (U.S. Patent No. US10494620B2). U.S. Patent and Trademark Office.
- Jinek, M., Charpentier, E., Chylinski, K., & DOUDNA, J. A. (2019). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10519467B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Sternberg, S. H., Jinek, M., Jiang, F., Kaya, E., & Taylor, Jr., D. W. (2018). *Cas9 crystals and methods of use thereof* (U.S. Patent No. US9963689B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Charpentier, E., & Chylinski, K. (2018). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10000772B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., Chylinski, K., & Charpentier, E. (2018). *Methods and compositions for RNA-directed target DNA modification and for RNA-directed modulation of transcription* (U.S. Patent No. US10113167B2). U.S. Patent and Trademark Office.
- Wiedenheft, B., Zhou, K., & DOUDNA, J. A. (2018). *Methods of generating nucleic acid fragments* (U.S. Patent No. US10087431B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Sternberg, S. H., O'Connell, M., & Oakes, B. (2018). *Methods and compositions for modifying a single stranded target nucleic acid* (U.S. Patent No. US9994831B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Qi, L. S., Haurwitz, R. E., & Arkin, A. P. (2017). *Methods and compositions for controlling gene expression by RNA processing* (U.S. Patent No. US9745610B2). U.S. Patent and Trademark Office.
- Haurwitz, R. E., DOUDNA, J. A., Wiedenheft, B., & Jinek, M. (2017). *Endoribonuclease compositions and methods of use thereof* (U.S. Patent No. US9708646B2). U.S. Patent and Trademark Office.
- Haurwitz, R. E., DOUDNA, J. A., Wiedenheft, B., & Jinek, M. (2017). *Endoribonuclease compositions and methods of use thereof* (U.S. Patent No. US9605246B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., Jinek, M., & Sternberg, S. H. (2017). *Endoribonuclease and methods of use thereof* (U.S. Patent No. US9688971B2). U.S. Patent and Trademark Office.
- DOUDNA, J. A., & Ma, E. (2016). *Method of producing dicer* (U.S. Patent No. US9434930B2). U.S. Patent and Trademark Office.
- May, A. P., Haurwitz, R. E., DOUDNA, J. A., Berger, J. M., Carter, M. M., & Donohue, P. (2016). *Compositions and methods of nucleic acid-targeting nucleic acids* (U.S. Patent No. US926052B2). U.S. Patent and Trademark Office.
- Haurwitz, R. E., DOUDNA, J. A., Wiedenheft, B., & Jinek, M. (2015). *Endoribonuclease compositions and methods of use thereof* (U.S. Patent No. US9115348B2). U.S. Patent and Trademark Office.

DOUDNA, J. A., & MA, E. (2014). *Method of producing dicer* (U.S. Patent No. US8852911B2). U.S. Patent and Trademark Office.

DOUDNA, J. A., Ma, E., & Macrae, I. J. (2013). *Modified dicer polypeptide and methods of use thereof*(U.S. Patent No. US8440430B2). U.S. Patent and Trademark Office.

MENTORING

UNDERGRADUATE STUDENTS

02/07/22	Stephen Martindale	08/21/17	Isaac Witte
01/18/22	Julia Zhou	07/28/17	Alex Hao
01/17/22	Mike Kwon	07/26/17	Katherine White
11/14/18	Cindy Espinoza	06/27/17	Talia Wenger
08/24/21	Alex Deyanov	06/12/17	Blake McMahon
03/24/21	Johanna Staples-Ager	05/31/17	Jesslyn Park
06/23/20	Allison Bien	04/12/17	Malvika Tejura
12/20/20	Sara Smith	02/01/17	Michael Xu
01/23/20	Mihir Shah	01/30/17	Bridget Bai
01/20/20	Defne Yigci	11/29/16	Yian Wu
10/4/19	Rittida Herabat	11/06/16	Paul Baik
10/07/19	Evelyn Chen	10/22/16	Mehk Mohan
09/02/19	Bayan Duwaik	06/14/16	Rachel Torrez
07/11/19	Stephanie Li	06/14/16	Kayana Correa
06/24/19	Yvette Ysabel Yao	06/14/16	Sharon Tian
06/10/19	Nicholas Lemus	06/10/16	Brandon Roman
05/29/19	Araz Vartoumian	04/13/16	Ireen Kulish
05/27/19	Noah Cheng	03/07/16	Abhishek Aditham
04/15/19	Ezra Bisom-Rapp	02/25/16	Ana Lyons
02/01/19	Virginia Hsiao	01/26/16	Gabriela Acevedo Munares
01/31/19	Mohak Jain	10/02/15	Joshua Elkington
01/23/19	Shirley Li	09/15/15	Shawn Ren
10/10/18	Charlie Alza	07/06/15	Ashwin A Banfal
10/08/18	Kimberly Tang	07/06/15	Lawrence Bai
10/08/18	Zeyi Zhou	06/08/15	Bridget Hansen
09/15/18	Casey Mogilevsky	03/03/15	Robert Nichols
09/06/18	Khang Dao	12/13/14	Tracey Hinder
09/03/18	YueXin Zhang	12/04/14	Dominic Castanzo
09/01/18	Phillip de Lorimier	09/29/14	Benjamin Lafrance
09/01/18	Natalie Perez	07/23/14	Lucy Zhang
06/25/18	Bayan Duwaik	06/11/14	Matias Kaplan
06/22/18	Maria Lozado	06/11/14	Philip J. Wright
08/30/17	Emira Romero	02/20/14	Brian Castellano
08/30/17	Biana Filart	01/22/14	Yichi Su
08/25/17	Samar Bhat		

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-	Basem Al-Shayeb	Active
2019-	Connor Tsuchida	Active
2019-2022	Joy Wang	Active
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	
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, UC Berkeley

POSTDOCTORAL FELLOWS / CURRENT POSITION

2022-	Jason Nomburg	Active
2021-	Chenglong Xia	Active
2021-	Matthew Kan	Active
2021-	Honglue Shi	Active
2021-	Gary Wang	Active
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, Academia 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	Jeremey 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 – 08/31/2022

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.

INV-037174 (Banfield, PI)

Bill & Melinda Gates Foundation

11/2021 – 02/2024

Borg-driven innovation for biological manipulation and to address climate change

Role: Collaborator

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.

R33 AI140465 (Ott, PI)

NIH/NIAID (subaward from Gladstone)

08/2019 – 07/2023

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

Role: Co-PI

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

08/24/2018 – 07/31/2023

Expanding CRISPR-Cas editing technology through exploration of novel Cas proteins and DNA repair systems

Role: Co-PI

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

5RM1HG009490 (Doudna, PI)

NIH/NHGRI

08/08/2017 – 05/31/2022

Center for Genome Editing and Recording

The major goals of this project are 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.

5P50AI150476 (Krogan, PD)

NIH/NIAID (subaward from UCSF)

08/27/2007 – 08/31/2022

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.

5U01MH115747 (Krogan, PD)

09/05/2018 – 06/30/2023

NIH/NIMH (subaward from UCSF)

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 – 07/31/2022

NIH/NIAID (subaward from UCSF)

HPMI: Host Pathogen Mapping Initiative

Role: Project Leader

Major Goals: 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).

5UG3AI150552 (Wilson/Doudna)

08/28/2019 – 07/31/2022

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 (TERT_p) 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.

DE-AC02-05CH11231 (Doudna, PI) 06/08/2020 – 09/30/2022
Department of Energy (subaward from Lawrence Berkeley National Laboratory)
m-CAFEs Microbial Community Analysis & Functional Evaluation in Soils

The major goal of this project is 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 is 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.

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 are using Cas9-transcriptional activators delivered to mouse brain to determine the effect of glial cell specific Hsf1 activation on Tau pathology.

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 – 08/2022

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

208713 (Doudna, PI)

09/2018 – 02/2022

Biogen Research Corporation

Major Goals: The major goals are 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 Φ 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 are 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 is 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 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.

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 is 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 are 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 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.

PEER-REVIEWED RESEARCH ARTICLES

Suryawanshi RK, Chen IP., Ma T, Syed AM, Simoneau CR, Ceiling A, Khalid MM, Sreekumar B, Chen P-Y, Kumar RK, Montano M, Gascon R, Tsou C-L, Soveg FW, George AF, Greene WC, Roan NR, Doudna JA, Ott M. Limited cross-variant immunity from SARS-CoV-2 Omicron without vaccination. *Nature* (2022). <https://doi.org/10.1038/s41586-022-04865-0>

Wang JY, Pausch P, Doudna JA. Structural biology of CRISPR-Cas immunity and genome editing enzymes. *Nat Rev Microbiol.* 2022 May 13. doi: 10.1038/s41579-022-00739-4. Epub ahead of print. PMID: 35562427.

Cofsky JC, Knott GJ, Gee CL, Doudna JA. Crystal structure of an RNA/DNA strand exchange junction. *PLoS One.* 2022 Apr 18;17(4):e0263547. doi: 10.1371/journal.pone.0263547. PMID: 35436289; PMCID: PMC9015157.

Hiatt J, Hultquist JF, McGregor MJ, Bouhaddou M, Leenay RT, Simons LM, Young JM, Haas P, Roth TL, Tobin V, Wojcechowskyj JA, Woo JM, Rathore U, Cavero DA, Shifrut E, Nguyen TT, Haas KM, Malik HS, Doudna JA, May AP, Marson A, Krogan NJ. A functional map of HIV-host interactions in primary human T cells. *Nat Commun.* 2022 Apr 1;13(1):1752. doi: 10.1038/s41467-022-29346-w. PMID: 35365639; PMCID: PMC8976027.

Tsuchida CA, Zhang S, Doost MS, Zhao Y, Wang J, O'Brien E, Fang H, Li CP, Li D, Hai ZY, Chuck J, Brötzmann J, Vartoumian A, Burstein D, Chen XW, Nogales E, Doudna JA, Liu JG. Chimeric CRISPR-CasX enzymes and guide RNAs for improved genome editing activity. *Mol Cell.* 2022 Mar 17;82(6):1199-1209.e6. doi: 10.1016/j.molcel.2022.02.002. Epub 2022 Feb 25. PMID: 35219382.

Lin-Shiao E, Pfeifer WG, Shy BR, Saffari Doost M, Chen E, Vykunta VS, Hamilton JR, Stahl EC, Lopez DM, Sandoval Espinoza CR, Deyanov AE, Lew RJ, Poirer MG, Marson A, Castro CE, Doudna JA. CRISPR-Cas9-mediated nuclear transport and genomic integration of nanostructured genes in human primary cells. *Nucleic Acids Res.* 2022 Feb 22;50(3):1256-1268. doi: 10.1093/nar/gkac049. PMID: 35104875; PMCID: PMC8860605.

Aris KDP, Cofsky J, Wright AV, Ivanov IE, Balaji A, Doudna JA, Bryant Z. Single-molecule analysis of DNA interrogation by Cas9 and Cas12a on supercoiled DNA. *Biophysical J.* 121:288a, 2022. <https://doi.org/10.1016/j.bpj.2021.11.1308>.

- Rubin BE, Diamond S, Cress BF, Crits-Christoph A, Lou YC, Borges AL, Shivram H, He C, Xu M, Zhou Z, Smith SJ, Rovinsky R, Smock DCJ, Tang K, Owens TK, Krishnappa N, Sachdeva R, Barrangou R, Deutschbauer AM, Banfield JF, Doudna JA. Species- and site-specific genome editing in complex bacterial communities. *Nat Microbiol.* 7:34-37, 2021. PMID: 34873292.
- Brook CE, Northrup GR, Ehrenberg AJ; IGI SARS-CoV-2 Testing Consortium, Doudna JA, Boots M. Optimizing COVID-19 control with asymptomatic surveillance testing in a university environment. *Epidemics.* 2021 Nov 15;37:100527. doi: 10.1016/j.epidem.2021.100527. PMID: PMC8591900.
- Stahl EC, Gopez AR, Tsuchida CA, Fan VB, Moehle EA, Witkowsky LB, Hamilton JR, Lin-Shiao E, McElroy M, McDevitt SL, Ciling A, Tsui CK, Pestal K, Gildea HK, Keller A, Sylvain IA, Williams C, Hirsh A, Ehrenberg AJ, Kantor R, Metzger M, Nelson KL, Urnov FD, Ringeisen BR, Giannikopoulos P, Doudna JA; IGI Testing Consortium. LuNER: Multiplexed SARS-CoV-2 detection in clinical swab and wastewater samples. *PLoS One.* 2021 Nov 10;16(11):e0258263. doi: 10.1371/journal.pone.0258263. PMID: 34758033; PMID: PMC8580221.
- Syed AM, Taha TY, Tabata T, Chen IP, Ciling A, Khalid MM, Sreekumar B, Chen PY, Hayashi JM, Soczek KM, Ott M, Doudna JA. Rapid assessment of SARS-CoV-2-evolved variants using virus-like particles. *Science.* 2021 Dec 24;374(6575):1626-1632. doi: 10.1126/science.aba6184. Epub 2021 Nov 4. PMID: 34735219; PMID: PMC9005165.
- Liu TY, Knott GJ, Smock DCJ, Desmarais JJ, Son S, Bhuiya A, Jakhanwal S, Prywes N, Agrawal S, Díaz de León Derby M, Switz NA, Armstrong M, Harris AR, Charles EJ, Thornton BW, Fozouni P, Shu J, Stephens SI, Kumar GR, Zhao C, Mok A, Iavarone AT, Escajeda AM, McIntosh R, Kim S, Dugan EJ; IGI Testing Consortium, Pollard KS, Tan MX, Ott M, Fletcher DA, Lareau LF, Hsu PD, Savage DF, Doudna JA. Publisher Correction: Accelerated RNA detection using tandem CRISPR nucleases. *Nat Chem Biol.* 2021 Oct 6:1. doi: 10.1038/s41589-021-00882-8. Epub ahead of print. Erratum for: *Nat Chem Biol.* 2021 Sep;17(9):982-988. PMID: 34616098; PMID: PMC8493939.
- Shams A, Higgins SA, Fellmann C, Laughlin TG, Oakes BL, Lew R, Kim S, Lukarska M, Arnold M, Staahl BT, Doudna JA, Savage DF. Comprehensive deletion landscape of CRISPR-Cas9 identifies minimal RNA-guided DNA-binding modules. *Nat Commun.* 2021 Sep 27;12(1):5664. doi: 10.1038/s41467-021-25992-8. PMID: 34580310; PMID: PMC8476515.
- Nalefski EA, Patel N, Leung PJY, Islam Z, Kooistra RM, Parikh I, Marion E, Knott GJ, Doudna JA, Le Ny AM, Madan D. Kinetic analysis of Cas12a and Cas13a RNA-Guided nucleases for development of improved CRISPR-Based diagnostics. *iScience.* 2021 Aug 18;24(9):102996. doi: 10.1016/j.isci.2021.102996. PMID: 34505008; PMID: PMC8411246.
- Pausch P, Soczek KM, Herbst DA, Tsuchida CA, Al-Shayeb B, Banfield JF, Nogales E, Doudna JA. DNA interference states of the hypercompact CRISPR-Cas Φ effector. *Nat Struct Mol Biol.* 2021 Aug;28(8):652-661. doi: 10.1038/s41594-021-00632-3. Epub 2021 Aug 11. PMID: 34381246; PMID: PMC8496406.
- Mogilevsky CS, Lobba MJ, Brauer DD, Marmelstein AM, Maza JC, Gleason JM, Doudna JA, Francis MB.J. Synthesis of Multi-Protein Complexes through Charge-Directed Sequential Activation of Tyrosine Residues. *Am Chem Soc.* 2021 Aug 12. doi:10.1021/jacs.1c03079. Online ahead of print. PMID: 34382787
- Stahl EC, Tsuchida CA, Lin-Shiao E, Tsui CK, Pestal K, Gildea HK, Witkowsky LB, Moehle EA, McDevitt SL, McElroy M, Keller A, Sylvain I, Hirsh A, Ciling A, Ehrenberg AJ, Ringeisen BR, Huberty G, Urnov FD, Giannikopoulos P, Doudna JA; IGI SARS-CoV-2 Consortium. Robotic RNA extraction for SARS-CoV-2 surveillance using saliva samples. *PLoS One.* 2021 Aug 5;16(8):e0255690. doi: 10.1371/journal.pone.0255690. PMID: 34351984; PMID: PMC8341588.
- Hamilton JR, Stahl EC, Tsuchida CA, Lin-Shiao E, Tsui CK, Pestal K, Gildea HK, Witkowsky LB, Moehle EA, McDevitt SL, McElroy M, Keller A, Sylvain I, Hirsh A, Ciling A, Ehrenberg AJ, Ringeisen BR, Huberty G,

- Urnov FD, Giannikopoulos P, Doudna JA; IGI SARS-CoV-2 Consortium. Robotic RNA extraction for SARS-CoV-2 surveillance using saliva samples. *PLoS One*. 2021 Aug 5;16(8):e0255690. doi: 10.1371/journal.pone.0255690. PMID: 34351984; PMCID: PMC8341588.
- Shim H, Shivram H, Lei S, Doudna JA, Banfield JF. Diverse ATPase Proteins in Mobilomes Constitute a Large Potential Sink for Prokaryotic Host ATP. *Front Microbiol*. 2021 Jul 8;12:691847. doi: 10.3389/fmicb.2021.691847. PMID: 34305853; PMCID: PMC8297831.
- Hamilton JR, Tsuchida CA, Nguyen DN, Shy BR, McGarrigle ER, Sandoval Espinoza CR, Carr D, Blaeschke F, Marson A, Doudna JA. Targeted delivery of CRISPR-Cas9 and transgenes enables complex immune cell engineering. *Cell Rep*. 2021 Jun 1;35(9):109207. doi: 10.1016/j.celrep.2021.109207. PMID: 34077734; PMCID: PMC8236216.
- Ehrenberg AJ, Moehle EA, Brook CE, Doudna JA, Cate AH, Witkowsky LB, Sachdeva R, Hirsh A, Barry K, Hamilton JR, Lin-Shiao E, McDevitt S, Valentin-Alvarado L, Letourneau KN, Hunter L, Keller A, Pestal K, Frankino PA, Murley A, Nandakumar D, Stahl EC, Tsuchida CA, Gildea HK, Murdock AG, Hochstrasser ML, O'Brien E, Ciling A, Tsitsiklis A, Worden K, Dugast-Darzacq C, Hays SG, Barber CC, McGarrigle R, Lam EK, Ensminger DC, Bardet L, Sherry C, Harte A, Nicolette G, Giannikopoulos P, Hockemeyer D, Petersen M, Urnov FD, Ringeisen BR, Boots M, Doudna JA; IGI SARS-CoV-2 Testing Consortium. Launching a saliva-based SARS-CoV-2 surveillance testing program on a university campus. *PLoS One*. 2021 May 26;16(5):e0251296. doi: 10.1371/journal.pone.0251296. PMID: 34038425; PMCID: PMC8153421.
- Wang JY, Hoel CM, Al-Shayeb B, Banfield JF, Brohawn SG, Doudna JA. Structural coordination between active sites of a CRISPR reverse transcriptase-integrase complex. *Nat Commun*. 2021 May 6;12(1):2571. doi: 10.1038/s41467-021-22900-y. PMID: 33958590; PMCID: PMC8102632.
- Saha K, Sontheimer EJ, Brooks PJ, Dwinell MR, Gersbach CA, Liu DR, Murray SA, Tsai SQ, Wilson RC, Anderson DG, Asokan A, Banfield JF, Bankiewicz KS, Bao G, Bulte JWM, Bursac N, Campbell JM, Carlson DF, Chaikof EL, Chen ZY, Cheng RH, Clark KJ, Curiel DT, Dahlman JE, Deverman BE, Dickinson ME, Doudna JA, Ekker SC, Emborg ME, Feng G, Freedman BS, Gamm DM, Gao G, Ghiran IC, Glazer PM, Gong S, Heaney JD, Hennebold JD, Hinson JT, Khvorova A, Kiani S, Lagor WR, Lam KS, Leong KW, Levine JE, Lewis JA, Lutz CM, Ly DH, Maragh S, McCray PB Jr, McDevitt TC, Mirochnitchenko O, Morizane R, Murthy N, Prather RS, Ronald JA, Roy S, Roy S, Sabbisetti V, Saltzman WM, Santangelo PJ, Segal DJ, Shimoyama M, Skala MC, Tarantal AF, Tilton JC, Truskey GA, Vandsburger M, Watts JK, Wells KD, Wolfe SA, Xu Q, Xue W, Yi G, Zhou J; SCGE Consortium. The NIH Somatic Cell Genome Editing program. *Nature*. 2021 Apr;592(7853):195-204. doi: 10.1038/s41586-021-03191-1. Epub 2021 Apr 7. PMID: 33828315; PMCID: PMC8026397.
- Liu TY, Knott GJ, Smock DCJ, Desmarais JJ, Son S, Bhuiya A, Jakhanwal S, Prywes N, Agrawal S, Díaz de León Derby M, Switz NA, Armstrong M, Harris AR, Charles EJ, Thornton BW, Fozouni P, Shu J, Stephens SI, Kumar GR, Zhao C, Mok A, Iavarone AT, Escajeda AM, McIntosh R, Kim S, Dugan EJ; IGI Testing Consortium, Pollard KS, Tan MX, Ott M, Fletcher DA, Lareau LF, Hsu PD, Savage DF, Doudna JA. Accelerated RNA detection using tandem CRISPR nucleases. *Nat Chem Biol*. 2021 Aug 5. doi: 10.1038/s41589-021-00842-2. Epub ahead of print. PMID: 34354262.
- Jakhanwal S, Cress BF, Maguin P, Lobba MJ, Marraffini LA, Doudna JA. A CRISPR-Cas9-integrase complex generates precise DNA fragments for genome integration. *Nucleic Acids Res*. 2021 Apr 6;49(6):3546-3556. doi: 10.1093/nar/gkab123. PMID: 33693715; PMCID: PMC8034620.
- Amen AM, Fellmann C, Soczek KM, Ren SM, Lew RJ, Knott GJ, Park JE, McKinney AM, Mancini A, Doudna JA, Costello JF. Cancer-specific loss of TERT activation sensitizes glioblastoma to DNA damage. *Proc Natl Acad Sci U S A*. 2021 Mar 30;118(13):e2008772118. doi: 10.1073/pnas.2008772118. PMID: 33758097; PMCID: PMC8020668.
- He C, Keren R, Whittaker ML, Farag IF, Doudna JA, Cate JHD, Banfield JF. Genome-resolved metagenomics reveals site-specific diversity of episymbiotic CPR bacteria and DPANN archaea in groundwater

ecosystems. *Nat Microbiol.* 2021 Mar;6(3):354-365. doi: 10.1038/s41564-020-00840-5. Epub 2021 Jan 25. PMID: 33495623; PMCID: PMC7906910.

- Qi LS, Larson MH, Gilbert LA, Doudna JA, Weissman JS, Arkin AP, Lim WA. Repurposing CRISPR as an RNA-guided platform for sequence-specific control of gene expression. *Cell.* 2021 Feb 4;184(3):844. doi: 10.1016/j.cell.2021.01.019. Erratum for: *Cell.* 2013 Feb 28;152(5):1173-83. PMID: 33545038.
- Boyle EA, Becker WR, Bai HB, Chen JS, Doudna JA, Greenleaf WJ. Quantification of Cas9 binding and cleavage across diverse guide sequences maps landscapes of target engagement. *Sci Adv.* 2021 Feb 19;7(8):eabe5496. doi: 10.1126/sciadv.abe5496. PMID: 33608277; PMCID: PMC7895440.
- Fozouni P, Son S, Díaz de León Derby M, Knott GJ, Gray CN, D'Ambrosio MV, Zhao C, Switz NA, Kumar GR, Stephens SI, Boehm D, Tsou CL, Shu J, Bhuiya A, Armstrong M, Harris AR, Chen PY, Osterloh JM, Meyer-Franke A, Joehnk B, Walcott K, Sil A, Langelier C, Pollard KS, Crawford ED, Puschnik AS, Phelps M, Kistler A, DeRisi JL, Doudna JA, Fletcher DA, Ott M. Amplification-free detection of SARS-CoV-2 with CRISPR-Cas13a and mobile phone microscopy. *Cell.* 2021 Jan 21;184(2):323-333.e9. doi: 10.1016/j.cell.2020.12.001. Epub 2020 Dec 4. PMID: 33306959; PMCID: PMC7834310.
- Shivram H, Cress BF, Knott GJ, Doudna JA. Controlling and enhancing CRISPR systems. *Nat Chem Biol.* 2021 Jan;17(1):10-19. doi: 10.1038/s41589-020-00700-7. Epub 2020 Dec 16. PMID: 33328654; PMCID: PMC8101458.
- Noureddine A, Maestas-Olguin A, Saada EA, LaBauve AE, Agola JO, Baty KE, Howard T, Sabo JK, Espinoza CRS, Doudna JA, Schoeniger JS, Butler KS, Negrete OA, Brinker CJ, Serda RE. Corrigendum to "Engineering of monosized lipid-coated mesoporous silica nanoparticles for CRISPR delivery" *Acta Biomaterialia* (2020), 114, 358-368. *Acta Biomater.* 2021 Feb;121:764. doi: 10.1016/j.actbio.2020.11.038. Epub 2020 Dec 9. Erratum for: *Acta Biomater.* 2020 Sep 15;114:358-368. PMID: 33309186.
- Collins FS, Doudna JA, Lander ES, Rotimi CN. Human Molecular Genetics and Genomics - Important Advances and Exciting Possibilities. *N Engl J Med.* 2021 Jan 7;384(1):1-4. doi: 10.1056/NEJMp2030694. Epub 2021 Jan 2. PMID: 33393745.
- Angrist M, Barrangou R, Baylis F, Brokowski C, Burgio G, Caplan A, Chapman CR, Church GM, Cook-Deegan R, Cwik B, Doudna JA, Evans JH, Greely HT, Hercher L, Hurlbut JB, Hynes RO, Ishii T, Kiani S, Lee LH, Levrier G, Liu DR, Lunshof JE, Macintosh KL, Mathews DJH, Meslin EM, Mills PHR, Montoliu L, Musunuru K, Nicol D, O'Neill H, Qiu R, Ranisch R, Sherkow JS, Soni S, Terry S, Topol E, Williamson R, Zhang F, Davies K. Reactions to the National Academies/Royal Society Report on Heritable Human Genome Editing. *CRISPR J.* 2020 Oct;3(5):332-349. doi: 10.1089/crispr.2020.29106.man. PMID: 33095048; PMCID: PMC8935482.
- Cofsky JC, Doudna JA. Attachment of a 32P-phosphate to the 3' Terminus of a DNA Oligonucleotide. *Bio Protoc.* 2020 Oct 20;10(20):e3787. doi: 10.21769/BioProtoc.3787. PMID: 33659442; PMCID: PMC7842656.
- Lobba MJ, Fellmann C, Marmelstein AM, Maza JC, Kissman EN, Robinson SA, Staahl BT, Urnes C, Lew RJ, Mogilevsky CS, Doudna JA, Francis MB. Site-Specific Bioconjugation through Enzyme-Catalyzed Tyrosine-Cysteine Bond Formation. *ACS Cent Sci.* 2020 Sep 23;6(9):1564-1571. doi: 10.1021/acscentsci.0c00940. Epub 2020 Aug 21. PMID: 32999931; PMCID: PMC7517114.
- Jones SK Jr, Hawkins JA, Johnson NV, Jung C, Hu K, Rybarski JR, Chen JS, Doudna JA, Press WH, Finkelstein IJ. Massively parallel kinetic profiling of natural and engineered CRISPR nucleases. *Nat Biotechnol.* 2021 Jan;39(1):84-93. doi: 10.1038/s41587-020-0646-5. Epub 2020 Sep 7. PMID: 32895548.

- Liu TY, Doudna JA. Chemistry of Class 1 CRISPR-Cas effectors: Binding, editing, and regulation. *J Biol Chem.* 2020 Oct 16;295(42):14473-14487. doi: 10.1074/jbc.REV120.007034. Epub 2020 Aug 14. PMID: 32817336; PMCID: PMC7573268.
- Lapinaite A, Knott GJ, Palumbo CM, Lin-Shiao E, Richter MF, Zhao KT, Beal PA, Liu DR, Doudna JA. DNA capture by a CRISPR-Cas9-guided adenine base editor. *Science.* 2020 Jul 31;369(6503):566-571. doi: 10.1126/science.abb1390. PMID: 32732424; PMCID: PMC8598131.
- Noureddine A, Maestas-Olguin A, Saada EA, LaBauve AE, Agola JO, Baty KE, Howard T, Sabo JK, Espinoza CRS, Doudna JA, Schoeniger JS, Butler KS, Negrete OA, Brinker CJ, Serda RE. Engineering of monosized lipid-coated mesoporous silica nanoparticles for CRISPR delivery. *Acta Biomater.* 2020 Sep 15;114:358-368. doi: 10.1016/j.actbio.2020.07.027. Epub 2020 Jul 21. Erratum in: *Acta Biomater.* 2021 Feb;121:764. PMID: 32702530.
- Pausch P, Al-Shayeb B, Bisom-Rapp E, Tsuchida CA, Li Z, Cress BF, Knott GJ, Jacobsen SE, Banfield JF, Doudna JA. CRISPR-Cas Φ from huge phages is a hypercompact genome editor. *Science.* 2020 Jul 17;369(6501):333-337. doi: 10.1126/science.abb1400. PMID: 32675376; PMCID: PMC8207990.
- Harrington LB, Ma E, Chen JS, Witte IP, Gertz D, Paez-Espino D, Al-Shayeb B, Kyripides NC, Burstein D, Banfield JF, Doudna JA. A scoutRNA Is Required for Some Type V CRISPR-Cas Systems. *Mol Cell.* 2020 Aug 6;79(3):416-424.e5. doi: 10.1016/j.molcel.2020.06.022. Epub 2020 Jul 8. PMID: 32645367; PMCID: PMC8196889.
- Cofsky JC, Karandur D, Huang CJ, Witte IP, Kuriyan J, Doudna JA. CRISPR-Cas12a exploits R-loop asymmetry to form double-strand breaks. *Elife* (2020) 9:e55143. PMCID: PMC7286691
- Richter MF, Zhao KT, Eton E, Lapinaite A, Newby GA, Thuronyi BW, Wilson C, Koblan LW, Zeng J, Bauer DE, Doudna JA, Liu DR. Phage-assisted evolution of an adenine base editor with improved Cas domain compatibility and activity. *Nat Biotechnol.* 2020 Jul;38(7):883-891. doi: 10.1038/s41587-020-0453-z. Epub 2020 Mar 16. Erratum in: *Nat Biotechnol.* 2020 May 20;: PMID: 32433547; PMCID: PMC7357821.
- Eitzinger S, Asif A, Watters KE, Iavarone AT, Knott GJ, Doudna JA, Minhas FUA. Machine learning predicts new anti-CRISPR proteins. *Nucleic Acids Res.* (2020) 48(9):4698-4708. PMCID: PMC7229843
- Watters KE, Shivram H, Fellmann C, Lew RJ, McMahon B, Doudna JA. Potent CRISPR-Cas9 inhibitors from *Staphylococcus* genomes. *Proc Natl Acad Sci U S A.* 2020 Mar 24;117(12):6531-6539. doi: 10.1073/pnas.1917668117. Epub 2020 Mar 10. PMID: 32156733; PMCID: PMC7104187.
- Al-Shayeb B, Sachdeva R, Chen LX, Ward F, Munk P, Devoto A, Castelle CJ, Olm MR, Bouma-Gregson K, Amano Y, He C, Méheust R, Brooks B, Thomas A, Lavy A, Matheus-Carnevali P, Sun C, Goltsman DSA, Borton MA, Sharrar A, Jaffe AL, Nelson TC, Kantor R, Keren R, Lane KR, Farag IF, Lei S, Finstad K, Amundson R, Anantharaman K, Zhou J, Probst AJ, Power ME, Tringe SG, Li WJ, Wrighton K, Harrison S, Morowitz M, Relman DA, Doudna JA, Lehours AC, Warren L, Cate JHD, Santini JM, Banfield JF. Clades of huge phages from across Earth's ecosystems. *Nature.* 2020 Feb;578(7795):425-431. doi: 10.1038/s41586-020-2007-4. Epub 2020 Feb 12. PMID: 32051592; PMCID: PMC7162821.
- Hamilton JR, Doudna JA. Knocking out barriers to engineered cell activity. *Science.* 2020 Feb 28;367(6481):976-977. doi: 10.1126/science.aba9844. Epub 2020 Feb 6. PMID: 32029685.
- Cao Y, Ma E, Cestellos-Blanco S, Qiu R, Su Y, Doudna JA, Yang P. Reply to Nathamgari et al.: Nanopore electroporation for intracellular delivery of biological macromolecules. *Proc. Natl. Acad. Sci. USA* (2019) 116:22911. PMCID: PMC6859330
- Knott GJ, Cress BF, Liu JJ, Thornton BW, Lew RJ, Al-Shayeb B, Rosenberg DJ, Hammel M, Adler BA, Lobba MJ, Xu M, Arkin AP, Fellmann C, Doudna JA. Structural basis for AcrVA4 inhibition of specific CRISPR-Cas12a. *Elife* (2019) pii: e49110. PMCID: PMC6711708

- Liu TY, Liu JJ, Aditham AJ, Nogales E, Doudna JA. Target preference of type III-A CRISPR-Cas complexes at the transcription bubble. *Nat. Commun.* (2019) 10:3001. doi: 10.1038/s41467-019-10780-2. PMID: PMC6611850
- Thavalingam A, Cheng Z, Garcia B, Huang X, Shah M, Sun W, Wang M, Harrington L, Hwang S, Hidalgo-Reyes Y, Sontheimer EJ, Doudna J, Davidson AR, Moraes TF, Wang Y, Maxwell KL. Inhibition of CRISPR-Cas9 ribonucleoprotein complex assembly by anti-CRISPR AcrIIIC2. *Nat. Commun.* (2019) 10(1):2806. doi: 10.1038/s41467-019-10577-3. PMID: PMC6594998
- Chen LX, Al-Shayeb B, Méheust R, Li WJ, Doudna JA, Banfield JF. Candidate phyla radiation Roizmanbacteria from hot springs have novel and unexpectedly abundant CRISPR-Cas systems. *Front. Microbiol.* (2019) May 3:10:928. doi: 10.3389/fmicb.2019.00928. PMID: PMC6509639
- Kundert K, Lucas JE, Watters KE, Fellmann C, Ng AH, Heineike BM, Fitzsimmons CM, Oakes BL, Qu J, Prasad N, Rosenberg OS, Savage DF, El-Samad H, Doudna JA, Kortemme T. Controlling CRISPR-Cas9 with ligand-activated and ligand-deactivated sgRNAs. *Nat. Commun.* (2019) 10:2127. PMID: PMC6509140
- Ricci CG, Chen JS, Miao Y, Jinek M, Doudna JA, McCammon JA, Palermo G. Deciphering Off-Target Effects in CRISPR-Cas9 through accelerated molecular dynamics. *ACS Cent. Sci.* (2019) 5:651-662. PMID: PMC6487449
- Bondy-Denomy J, Davidson AR, Doudna JA, Fineran PC, Maxwell KL, Moineau S, Peng X, Sontheimer EJ, Wiedenheft B. A Unified Resource for Tracking Anti-CRISPR Names. *CRISPR J.* 2018 Oct;1:304-305. doi: 10.1089/crispr.2018.0043. PMID: 31021273.
- Liu JJ, Orlova N, Oakes BL, Ma E, Spinner HB, Baney KLM, Chuck J, Tan D, Knott GJ, Harrington LB, Al-Shayeb B, Wagner A, Brötzmann J, Staahl BT, Taylor KL, Desmarais J, Nogales E, Doudna JA. Author Correction: CasX enzymes comprise a distinct family of RNA-guided genome editors. *Nature* (2019) 568:E8-E10. PMID: 30944483
- Knott GJ, Thornton BW, Lobba MJ, Liu JJ, Al-Shayeb B, Watters KE, Doudna JA. Broad-spectrum enzymatic inhibition of CRISPR-Cas12a. *Nat. Struct. Mol. Biol.* (2019) 26:315-321. PMID: PMC6449189
- Cao Y, Ma E, Cestellos-Blanco S, Zhang B, Qiu R, Su Y, Doudna JA, Yang P. Nontoxic nanopore electroporation for effective intracellular delivery of biological macromolecules. *Proc. Natl. Acad. Sci. USA* (2019) 116:7899-7904. PMID: PMC6475394
- Liu JJ, Orlova N, Oakes BL, Ma E, Spinner HB, Baney KLM, Chuck J, Tan D, Knott GJ, Harrington LB, Al-Shayeb B, Wagner A, Brötzmann J, Staahl BT, Taylor KL, Desmarais J, Nogales E, Doudna JA. CasX enzymes comprise a distinct family of RNA-guided genome editors. *Nature* (2019) 566:218-223. PMID: PMC6662743
- Heler R, Wright AV, Vucelja M, Doudna JA, Marraffini LA. Spacer Acquisition Rates Determine the Immunological Diversity of the Type II CRISPR-Cas Immune Response. *Cell Host Microbe* (2019) 25:242-249.e3. PMID: PMC6640137
- Wright AV, Wang JY, Burstein D, Harrington LB, Paez-Espino D, Kyrpides NC, Iavarone AT, Banfield JF, Doudna JA. A Functional Mini-Integrase in a Two-Protein-type V-C CRISPR System. *Mol. Cell* (2019) 73:727-737.e3. PMID: PMC6386590
- Oakes BL, Fellmann C, Rishi H, Taylor KL, Ren SM, Nadler DC, Yokoo R, Arkin AP, Doudna JA, Savage DF. CRISPR-Cas9 circular permutants as programmable scaffolds for genome modification. *Cell* (2019) 176:254-267.e16. PMID: PMC6414052
- Watters KE, Fellmann C, Bai HB, Ren SM, Doudna JA. Systematic discovery of natural CRISPR-Cas12a inhibitors. *Science* (2018) 362:236-239. PMID: PMC6185749

- Tambe A, East-Seletsky A, Knott GJ, Doudna JA, O'Connell MR. RNA Binding and HEPN-Nuclease Activation Are Decoupled in CRISPR-Cas13a. *Cell Rep.* (2018) 24:1025-1036. PMID: PMC6085867
- Strutt SC, Torrez RM, Kaya E, Negrete OA, Doudna JA. RNA-dependent RNA targeting by CRISPR-Cas9. *Elife* (2018) 7. PMID: PMC5796797
- Rouet R, Thuma BA, Roy MD, Lintner NG, Rubitski DM, Finley JE, Wisniewska HM, Mendonsa R, Hirsh A, de Oñate L, Compte Barrón J, McLellan TJ, Bellenger J, Feng X, Varghese A, Chrnyk BA, Borzilleri K, Hesp KD, Zhou K, Ma N, Tu M, Dullea R, McClure KF, Wilson RC, Liras S, Mascitti V, Doudna JA. Receptor-Mediated Delivery of CRISPR-Cas9 Endonuclease for Cell-Type-Specific Gene Editing. *J. Am. Chem. Soc.* (2018) 140:6596-6603. PMID: PMC6002863
- Mancini A, Xavier-Magalhaes A, Woods WS, Nguyen KT, Amen AM, Hayes JL, Fellmann C, Gapinske M, McKinney AM, Hong C, Jones LE, Walsh KM, Bell RJA, Doudna JA, Costa BM, Song JS, Perez-Pinera P, Costello JF. Disruption of the beta1L Isoform of GABP reverses glioblastoma replicative immortality in a TERT promoter mutation-dependent manner. *Cancer Cell* (2018) 34:513-528 e518. PMID: PMC6135086
- Lintner NG, McClure KF, Petersen D, Londregan AT, Piotrowski DW, Wei L, Wei L, Xiao J, Bolt M, Loria PM, Maguire B, Geoghegan KF, Huang A, Rolph T, Liras S, Doudna JA, Dullea RG, Cate JHD. Correction: Selective stalling of human translation through small-molecule engagement of the ribosome nascent chain. *PLoS Biol.* (2018) 16:e1002628. PMID: PMC5903592
- Lapinaite A, Doudna JA, Cate JHD. Programmable RNA recognition using a CRISPR-associated Argonaute. *Proc. Natl. Acad. Sci. USA* (2018) 115:3368-3373. PMID: PMC5879674
- Knott GJ, Doudna JA. CRISPR-Cas guides the future of genetic engineering. *Science* (2018) 361:866-869.
- Knight SC, Tjian R, Doudna JA. Genomes in Focus: Development and applications of CRISPR-Cas9 imaging technologies. *Angew Chem. Int. Ed. Engl.* (2018) 57:4329-4337. PMID: PMC6014596
- Kiessling LL, Doudna JA. Spotlight: A Conversation with Laura Kiessling and Jennifer Doudna. *ACS Chem. Biol.* (2018) 13:290-295.
- Huang CH, Lee KC, Doudna JA. Applications of CRISPR-Cas enzymes in cancer therapeutics and detection. *Trends Cancer* (2018) 4:499-512.
- Harrington LB, Burstein D, Chen JS, Paez-Espino D, Ma E, Witte IP, Cofsky JC, Kyrpides NC, Banfield JF, Doudna JA. Programmed DNA destruction by miniature CRISPR-Cas14 enzymes. *Science* (2018) 362:839-842. PMID: PMC6659742
- Chen JS, Ma E, Harrington LB, Da Costa M, Tian X, Palefsky JM, Doudna JA. CRISPR-Cas12a target binding unleashes indiscriminate single-stranded DNase activity. *Science* (2018) 360:436-439. PMID: PMC6628903
- Wright AV, Liu JJ, Knott GJ, Doxzen KW, Nogales E, Doudna JA. Structures of the CRISPR genome integration complex. *Science* (2017) 357:1113-1118. PMID: PMC5748385
- Stahl BT, Benekareddy M, Coulon-Bainier C, Banfal AA, Floor SN, Sabo JK, Urnes C, Munares GA, Ghosh A, Doudna JA. Efficient genome editing in the mouse brain by local delivery of engineered Cas9 ribonucleoprotein complexes. *Nat. Biotechnol.* (2017) 35:431-434. PMID: PMC6649674
- Shin J, Jiang F, Liu JJ, Bray NL, Rauch BJ, Baik SH, Nogales E, Bondy-Denomy J, Corn JE, Doudna JA. Disabling Cas9 by an anti-CRISPR DNA mimic. *Sci. Adv.* (2017) 3:e1701620. PMID: PMC5507636
- Moreno-Mateos MA, Fernandez JP, Rouet R, Vejnár CE, Lane MA, Mis E, Khokha MK, Doudna JA, Giraldez AJ. CRISPR-Cpf1 mediates efficient homology-directed repair and temperature-controlled genome editing. *Nat. Commun.* (2017) 8:2024. PMID: PMC5722943

- Liu TY, Iavarone AT, Doudna JA. RNA and DNA targeting by a reconstituted *Thermus thermophilus* Type III-A CRISPR-Cas system. *PLoS One* (2017) 12:e0170552. PMID: PMC5256923
- Liu TY, Iavarone AT, Doudna JA. Correction: RNA and DNA Targeting by a Reconstituted *Thermus thermophilus* Type III-A CRISPR-Cas System. *PLoS One* (2017) 12:e0175612. PMID: PMC5383342
- Lintner NG, McClure KF, Petersen D, Londregan AT, Piotrowski DW, Wei L, Xiao J, Bolt M, Loria PM, Maguire B, Geoghegan KF, Huang A, Rolph T, Liras S, Doudna JA, Dullea RG, Cate JH. Selective stalling of human translation through small-molecule engagement of the ribosome nascent chain. *PLoS Biol.* (2017) 15:e2001882. PMID: PMC5360235
- Lee K, Conboy M, Park HM, Jiang F, Kim HJ, Dewitt MA, Mackley VA, Chang K, Rao A, Skinner C, Shobha T, Mehdipour M, Liu H, Huang WC, Lan F, Bray NL, Li S, Corn JE, Kataoka K, Doudna JA, Conboy I, Murthy N. Nanoparticle delivery of Cas9 ribonucleoprotein and donor DNA in vivo induces homology-directed DNA repair. *Nat. Biomed. Eng.* (2017) 1:889-901. PMID: PMC5968829
- Knott GJ, East-Seletsky A, Cofsky JC, Holton JM, Charles E, O'Connell MR, Doudna JA. Guide-bound structures of an RNA-targeting A-cleaving CRISPR-Cas13a enzyme. *Nat. Struct. Mol. Biol.* (2017) 24:825-833. PMID: PMC5961731
- Jiang F, Doudna JA. CRISPR-Cas9 structures and mechanisms. *Ann. Rev. Biophys.* (2017) 46:505-529.
- Heler R, Wright AV, Vucelja M, Bikard D, Doudna JA, Marraffini LA. Mutations in Cas9 enhance the rate of acquisition of viral spacer sequences during the CRISPR-Cas immune response. *Mol. Cell* (2017) 65:168-175. PMID: PMC5218886
- Harrington LB, Paez-Espino D, Staahl BT, Chen JS, Ma E, Kyripides NC, Doudna JA. A thermostable Cas9 with increased lifetime in human plasma. *Nat. Commun.* (2017) 8:1424. PMID: PMC5681539
- Harrington LB, Doxzen KW, Ma E, Liu JJ, Knott GJ, Edraki A, Garcia B, Amrani N, Chen JS, Cofsky JC, Kranzusch PJ, Sontheimer EJ, Davidson AR, Maxwell KL, Doudna JA. A broad-spectrum inhibitor of CRISPR-Cas9. *Cell* (2017) 170:1224-1233 e1215. PMID: PMC5875921
- Gorski SA, Vogel J, Doudna JA. RNA-based recognition and targeting: sowing the seeds of specificity. *Nat. Rev. Mol. Cell. Biol.* (2017) 18:215-228.
- Gaj T, Staahl BT, Rodrigues GMC, Limsirichai P, Ekman FK, Doudna JA, Schaffer DV. Targeted gene knock-in by homology-directed genome editing using Cas9 ribonucleoprotein and AAV donor delivery. *Nucleic Acids Res.* (2017) 45:e98. PMID: PMC5499784
- Fellmann C, Gowen BG, Lin PC, Doudna JA, Corn JE. Cornerstones of CRISPR-Cas in drug discovery and therapy. *Nat. Rev. Drug Discov.* (2017) 16:89-100. PMID: PMC5459481
- East-Seletsky A, O'Connell MR, Burstein D, Knott GJ, Doudna JA. RNA targeting by functionally orthogonal Type VI-A CRISPR-Cas enzymes. *Mol. Cell* (2017) 66:373-383 e373. PMID: PMC5999320
- Doxzen KW, Doudna JA. DNA recognition by an RNA-guided bacterial Argonaute. *PLoS One* (2017) 12:e0177097. PMID: PMC5435312
- Dagdas YS, Chen JS, Sternberg SH, Doudna JA, Yildiz A. A conformational checkpoint between DNA binding and cleavage by CRISPR-Cas9. *Sci. Adv.* (2017) 3:eaao0027. PMID: PMC5547770
- Chen JS, Dagdas YS, Kleinstiver BP, Welch MM, Sousa AA, Harrington LB, Sternberg SH, Joung JK, Yildiz A, Doudna JA. Enhanced proofreading governs CRISPR-Cas9 targeting accuracy. *Nature* (2017) 550:407-410. PMID: PMC5918688
- Burstein D, Harrington LB, Strutt SC, Probst AJ, Anantharaman K, Thomas BC, Doudna JA, Banfield JF. New CRISPR-Cas systems from uncultivated microbes. *Nature* (2017) 542:237-241. PMID: PMC5300952

Boyle EA, Andreasson JOL, Chircus LM, Sternberg SH, Wu MJ, Guegler CK, Doudna JA, Greenleaf WJ. High-throughput biochemical profiling reveals sequence determinants of dCas9 off-target binding and unbinding. *Proc. Natl. Acad. Sci. USA* (2017) 114:5461-5466. PMID: PMC5448226

Blair JD, Hockemeyer D, Doudna JA, Bateup HS, Floor SN. Widespread translational remodeling during human neuronal differentiation. *Cell Rep.* (2017) 21:2005-2016. PMID: PMC5759054

Wright AV, Nunez JK, Doudna JA. Biology and applications of CRISPR systems: Harnessing nature's toolbox for genome engineering. *Cell* (2016) 164:29-44. PMID: 26771484

Wright AV, Doudna JA. Protecting genome integrity during CRISPR immune adaptation. *Nat. Struct. Mol. Biol.* (2016) 23:876-883. PMID: 27595346

Singh D, Sternberg SH, Fei J, Doudna JA, Ha T. Real-time observation of DNA recognition and rejection by the RNA-guided endonuclease Cas9. *Nat. Commun.* (2016) 7:12778. PMID: PMC5027287

Schulze-Gahmen U, Echeverria I, Stjepanovic G, Bai Y, Lu H, Schneidman-Duhovny D, Doudna JA, Zhou Q, Sali A, Hurley JH. Insights into HIV-1 proviral transcription from integrative structure and dynamics of the Tat:AFF4:P-TEFb:TAR complex. *Elife* (2016) 5. PMID: PMC5072841

Oh S, Flynn RA, Floor SN, Purzner J, Martin L, Do BT, Schubert S, Vaka D, Morrissy S, Li Y, Kool M, Hovestadt V, Jones DT, Northcott PA, Risch T, Warnatz HJ, Yaspo ML, Adams CM, Leib RD, Breese M, Marra MA, Malkin D, Lichter P, Doudna JA, Pfister SM, Taylor MD, Chang HY, Cho YJ. Medulloblastoma-associated DDX3 variant selectively alters the translational response to stress. *Oncotarget* (2016) 7:28169-28182. PMID: PMC5053718

Oakes BL, Nadler DC, Flamholz A, Fellmann C, Staahl BT, Doudna JA, Savage DF. Profiling of engineering hotspots identifies an allosteric CRISPR-Cas9 switch. *Nat. Biotechnol.* (2016) 34:646-651. PMID: PMC4900928

Nunez JK, Harrington LB, Doudna JA. Chemical and Biophysical Modulation of Cas9 for Tunable Genome Engineering. *ACS Chem. Biol.* (2016) 11:681-688. PMID: 26857072

Nunez JK, Bai L, Harrington LB, Hinder TL, Doudna JA. CRISPR Immunological Memory Requires a Host Factor for Specificity. *Mol. Cell* (2016) 62:824-833. PMID: 27211867

Nelles DA, Fang MY, O'Connell MR, Xu JL, Markmiller SJ, Doudna JA, Yeo GW. Programmable RNA Tracking in Live Cells with CRISPR/Cas9. *Cell* (2016) 165:488-496. PMID: PMC4826288

Lee AS, Kranzusch PJ, Doudna JA, Cate JH. eIF3d is an mRNA cap-binding protein that is required for specialized translation initiation. *Nature* (2016) 536:96-99. PMID: PMC5003174

Kaya E, Doxzen KW, Knoll KR, Wilson RC, Strutt SC, Kranzusch PJ, Doudna JA. A bacterial Argonaute with noncanonical guide RNA specificity. *Proc. Natl. Acad. Sci USA* (2016) 113:4057-4062. PMID: PMC4839417

Jiang F, Taylor DW, Chen JS, Kornfeld JE, Zhou K, Thompson AJ, Nogales E, Doudna JA. Structures of a CRISPR-Cas9 R-loop complex primed for DNA cleavage. *Science* (2016) 351:867-871. PMID: PMC5111852

Isaac RS, Jiang F, Doudna JA, Lim WA, Narlikar GJ, Almeida R. Nucleosome breathing and remodeling constrain CRISPR-Cas9 function. *Elife* (2016) 5. PMID: PMC4880442

Hochstrasser ML, Taylor DW, Kornfeld JE, Nogales E, Doudna JA. DNA Targeting by a Minimal CRISPR RNA-Guided Cascade. *Mol. Cell* (2016) 63:840-851. PMID: PMC5111854

Floor SN, Doudna JA. Tunable protein synthesis by transcript isoforms in human cells. *Elife* (2016) 5. PMID: PMC4764583

- Floor SN, Condon KJ, Sharma D, Jankowsky E, Doudna JA. Autoinhibitory Interdomain Interactions and Subfamily-specific Extensions Redefine the Catalytic Core of the Human DEAD-box Protein DDX3. *J. Biol. Chem.* (2016) 291:2412-2421. PMID: PMC4732223
- Floor SN, Barkovich KJ, Condon KJ, Shokat KM, Doudna JA. Analog sensitive chemical inhibition of the DEAD-box protein DDX3. *Protein Sci.* (2016) 25:638-649. PMID: PMC4815421
- East-Seletsky A, O'Connell MR, Knight SC, Burstein D, Cate JH, Tjian R, Doudna JA. Two distinct RNase activities of CRISPR-C2c2 enable guide-RNA processing and RNA detection. *Nature* (2016) 538:270-273. PMID: PMC5576363
- Chen X, Shen Y, Draper W, Buenrostro JD, Litzenburger U, Cho SW, Satpathy AT, Carter AC, Ghosh RP, East-Seletsky A, Doudna JA, Greenleaf WJ, Liphardt JT, Chang HY. ATAC-seq reveals the accessible genome by transposase-mediated imaging and sequencing. *Nat. Methods* (2016) 13:1013-1020. PMID: PMC5509561
- Carlson LA, Bai Y, Keane SC, Doudna JA, Hurley JH. Reconstitution of selective HIV-1 RNA packaging in vitro by membrane-bound Gag assemblies. *Elife* (2016) 5. PMID: PMC4946900
- Barrangou R, Doudna JA. Applications of CRISPR technologies in research and beyond. *Nat. Biotechnol.* (2016) 34:933-941. PMID: 27606440
- Wright AV, Sternberg SH, Taylor DW, Staahl BT, Bardales JA, Kornfeld JE, Doudna JA. Rational design of a split-Cas9 enzyme complex. *Proc. Natl. Acad. Sci. USA* (2015) 112:2984-2989. PMID: PMC4364227
- Wilson RC, Tambe A, Kidwell MA, Noland CL, Schneider CP, Doudna JA. Dicer-TRBP complex formation ensures accurate mammalian microRNA biogenesis. *Mol. Cell* (2015) 57:397-407. PMID: PMC4320653
- Taylor DW, Zhu Y, Staals RH, Kornfeld JE, Shinkai A, van der Oost J, Nogales E, Doudna JA. Structural biology. Structures of the CRISPR-Cmr complex reveal mode of RNA target positioning. *Science* (2015) 348:581-585. PMID: PMC4582657
- Sternberg SH, LaFrance B, Kaplan M, Doudna JA. Conformational control of DNA target cleavage by CRISPR-Cas9. *Nature* (2015) 527:110-113. PMID: PMC4859810
- Sternberg SH, Doudna JA. Expanding the Biologist's Toolkit with CRISPR-Cas9. *Mol. Cell* (2015) 58:568-574. PMID: 26000842
- Schumann K, Lin S, Boyer E, Simeonov DR, Subramaniam M, Gate RE, Haliburton GE, Ye CJ, Bluestone JA, Doudna JA, Marson A. Generation of knock-in primary human T cells using Cas9 ribonucleoproteins. *Proc. Natl. Acad. Sci. USA* (2015) 112:10437-10442. PMID: PMC4547290
- Redding S, Sternberg SH, Marshall M, Gibb B, Bhat P, Guegler CK, Wiedenheft B, Doudna JA, Greene EC. Surveillance and Processing of Foreign DNA by the Escherichia coli CRISPR-Cas System. *Cell* (2015) 163:854-865. PMID: PMC4636941
- Nunez JK, Lee AS, Engelman A, Doudna JA. Integrase-mediated spacer acquisition during CRISPR-Cas adaptive immunity. *Nature* (2015) 519:193-198. PMID: PMC4359072
- Nunez JK, Harrington LB, Kranzusch PJ, Engelman AN, Doudna JA. Foreign DNA capture during CRISPR-Cas adaptive immunity. *Nature* (2015) 527:535-538. PMID: PMC4662619
- Ma E, Harrington LB, O'Connell MR, Zhou K, Doudna JA. Single-Stranded DNA Cleavage by Divergent CRISPR-Cas9 Enzymes. *Mol. Cell* (2015) 60:398-407. PMID: PMC4636735
- Kranzusch PJ, Wilson SC, Lee AS, Berger JM, Doudna JA, Vance RE. Ancient Origin of cGAS-STING Reveals Mechanism of Universal 2',3' cGAMP Signaling. *Mol. Cell* (2015) 59:891-903. PMID: PMC4575873

- Knight SC, Xie L, Deng W, Guglielmi B, Witkowsky LB, Bosanac L, Zhang ET, El Beheiry M, Masson JB, Dahan M, Liu Z, Doudna JA, Tjian R. Dynamics of CRISPR-Cas9 genome interrogation in living cells. *Science* (2015) 350:823-826. PMID: 26564855
- Jiang F, Zhou K, Ma L, Gressel S, Doudna JA. STRUCTURAL BIOLOGY. A Cas9-guide RNA complex preorganized for target DNA recognition. *Science* (2015) 348:1477-1481.
- Jiang F, Doudna JA. The structural biology of CRISPR-Cas systems. *Curr. Opin. Struct. Biol.* (2015) 30:100-111. PMID: PMC4417044
- Hochstrasser ML, Doudna JA. Cutting it close: CRISPR-associated endoribonuclease structure and function. *Trends Biochem. Sci.* (2015) 40:58-66. PMID: 25468820
- Floor SN, Doudna JA. Get in LINE: Competition for Newly Minted Retrotransposon Proteins at the Ribosome. *Mol. Cell* (2015) 60:712-714. PMID: 26638173
- Doudna JA, Gersbach CA. Genome editing: the end of the beginning. *Genome Biol.* (2015) 16:292. PMID: PMC4699356
- Doudna JA. Genomic engineering and the future of medicine. *JAMA* (2015) 313:791-792. PMID: 25710652
- Baltimore D, Berg P, Botchan M, Carroll D, Charo RA, Church G, Corn JE, Daley GQ, Doudna JA, Fenner M, Greely HT, Jinek M, Martin GS, Penhoet E, Puck J, Sternberg SH, Weissman JS, Yamamoto KR. Biotechnology. A prudent path forward for genomic engineering and germline gene modification. *Science* (2015) 348:36-38. PMID: PMC4394183
- Sternberg SH, Redding S, Jinek M, Greene EC, Doudna JA. DNA interrogation by the CRISPR RNA-guided endonuclease Cas9. *Nature* (2014) 507:62-67. PMID: PMC4106473
- Staals RH, Zhu Y, Taylor DW, Kornfeld JE, Sharma K, Barendregt A, Koehorst JJ, Vlot M, Neupane N, Varossieau K, Sakamoto K, Suzuki T, Dohmae N, Yokoyama S, Schaap PJ, Urlaub H, Heck AJ, Nogales E, Doudna JA, Shinkai A, van der Oost J. RNA targeting by the type III-A CRISPR-Cas Csm complex of *Thermus thermophilus*. *Mol. Cell* (2014) 56:518-530. PMID: PMC4342149
- O'Connell MR, Oakes BL, Sternberg SH, East-Seletsky A, Kaplan M, Doudna JA. Programmable RNA recognition and cleavage by CRISPR/Cas9. *Nature* (2014) 516:263-266. PMID: PMC4268322
- Nunez JK, Kranzusch PJ, Noeske J, Wright AV, Davies CW, Doudna JA. Cas1-Cas2 complex formation mediates spacer acquisition during CRISPR-Cas adaptive immunity. *Nat. Struct. Mol. Biol.* (2014) 21:528-534. PMID: PMC4075942
- Niewoehner O, Jinek M, Doudna JA. Evolution of CRISPR RNA recognition and processing by Cas6 endonucleases. *Nucleic Acids Res.* (2014) 42:1341-1353. PMID: PMC3902920
- Mortimer SA, Kidwell MA, Doudna JA. Insights into RNA structure and function from genome-wide studies. *Nat. Rev. Genet.* (2014) 15:469-479. PMID: 24821474
- Lin S, Staahl BT, Alla RK, Doudna JA. Enhanced homology-directed human genome engineering by controlled timing of CRISPR/Cas9 delivery. *Elife* (2014) 3:e04766. PMID: PMC4383097
- Kranzusch PJ, Lee ASY, Wilson SC, Solovykh MS, Vance RE, Berger JM, Doudna JA. Structure-guided reprogramming of human cGAS dinucleotide linkage specificity. *Cell* (2014) 158:1011-1021. PMID: PMC4157622
- Kidwell MA, Chan JM, Doudna JA. Evolutionarily conserved roles of the dicer helicase domain in regulating RNA interference processing. *J. Biol. Chem.* (2014) 289:28352-28362. PMID: PMC4192488

- Kapral GJ, Jain S, Noeske J, Doudna JA, Richardson DC, Richardson JS. New tools provide a second look at HDV ribozyme structure, dynamics and cleavage. *Nucleic Acids Res.* (2014) 42:12833-12846. PMID: PMC4227795
- Jinek M, Jiang F, Taylor DW, Sternberg SH, Kaya E, Ma E, Anders C, Hauer M, Zhou K, Lin S, Kaplan M, Iavarone AT, Charpentier E, Nogales E, Doudna JA. Structures of Cas9 endonucleases reveal RNA-mediated conformational activation. *Science* (2014) 343:1247997. PMID: PMC4184034
- Hochstrasser ML, Taylor DW, Bhat P, Guegler CK, Sternberg SH, Nogales E, Doudna JA. CasA mediates Cas3-catalyzed target degradation during CRISPR RNA-guided interference. *Proc. Natl. Acad. Sci. USA* (2014) 111:6618-6623. PMID: PMC4020112
- Doudna JA, Sontheimer EJ. Methods in Enzymology. The use of CRISPR/Cas9, ZFNs, and TALENs in generating site-specific genome alterations. Preface. *Methods Enzymol.* (2014) 546:xix-xx. PMID: 25398356
- Doudna JA, Charpentier E. Genome editing. The new frontier of genome engineering with CRISPR-Cas9. *Science* (2014) 346:1258096. PMID: 25430774
- Bai Y, Tambe A, Zhou K, Doudna JA. RNA-guided assembly of Rev-RRE nuclear export complexes. *Elife* (2014) 3:e03656. PMID: PMC4142337
- Wilson RC, Doudna JA. Molecular mechanisms of RNA interference. *Annu. Rev. Biophys.* (2013) 42:217-239. PMID: PMC5895182
- Jinek M, East A, Cheng A, Lin S, Ma E, Doudna J. RNA-programmed genome editing in human cells. *elife*. 2013 Jan 29;2:e00471. DOI: 10.7554/eLife.00471
- Taylor DW, Ma E, Shigematsu H, Cianfrocco MA, Noland CL, Nagayama K, Nogales E, Doudna JA, Wang HW. Substrate-specific structural rearrangements of human Dicer. *Nat. Struct. Mol. Biol.* (2013) 20:662-670. PMID: PMC3676429
- Sun C, Querol-Audi J, Mortimer SA, Arias-Palomo E, Doudna JA, Nogales E, Cate JH. Two RNA-binding motifs in eIF3 direct HCV IRES-dependent translation. *Nucleic Acids Res.* (2013) 41:7512-7521. PMID: PMC3753635
- Staals RHJ, Agari Y, Maki-Yonekura S, Zhu Y, Taylor DW, van Duijn E, Barendregt A, Vlot M, Koehorst JJ, Sakamoto K, Masuda A, Dohmae N, Schaap PJ, Doudna JA, Heck AJR, Yonekura K, van der Oost J, Shinkai A. Structure and activity of the RNA-targeting Type III-B CRISPR-Cas complex of *Thermus thermophilus*. *Mol. Cell* (2013) 52:135-145. PMID: PMC4006948
- Qi LS, Larson MH, Gilbert LA, Doudna JA, Weissman JS, Arkin AP, Lim WA. Repurposing CRISPR as an RNA-guided platform for sequence-specific control of gene expression. *Cell* (2013) 152:1173-1183. PMID: PMC3664290
- Pattanayak V, Lin S, Guilinger JP, Ma E, Doudna JA, Liu DR. High-throughput profiling of off-target DNA cleavage reveals RNA-programmed Cas9 nuclease specificity. *Nat. Biotechnol.* (2013) 31:839-843. PMID: PMC3782611
- Noland CL, Doudna JA. Multiple sensors ensure guide strand selection in human RNAi pathways. *RNA* (2013) 19:639-648. PMID: PMC3677279
- Mortimer SA, Doudna JA. Unconventional miR-122 binding stabilizes the HCV genome by forming a trimolecular RNA structure. *Nucleic Acids Res.* (2013) 41:4230-4240. PMID: PMC3627571
- Lo TW, Pickle CS, Lin S, Ralston EJ, Gurling M, Schartner CM, Bian Q, Doudna JA, Meyer BJ. Precise and heritable genome editing in evolutionarily diverse nematodes using TALENs and CRISPR/Cas9 to engineer insertions and deletions. *Genetics* (2013) 195:331-348. PMID: PMC3781963

- Lee HY, Zhou K, Smith AM, Noland CL, Doudna JA. Differential roles of human Dicer-binding proteins TRBP and PACT in small RNA processing. *Nucleic Acids Res.* (2013) 41:6568-6576. PMID: PMC3711433
- Lee HY, Haurwitz RE, Apffel A, Zhou K, Smart B, Wenger CD, Laderman S, Bruhn L, Doudna JA. RNA-protein analysis using a conditional CRISPR nuclease. *Proc. Natl. Acad. Sci. USA* (2013) 110:5416-5421. PMID: PMC3619310
- Kranzusch PJ, Lee AS, Berger JM, Doudna JA. Structure of human cGAS reveals a conserved family of second-messenger enzymes in innate immunity. *Cell Rep.* (2013) 3:1362-1368. PMID: PMC3800681
- Koh HR, Kidwell MA, Ragunathan K, Doudna JA, Myong S. ATP-independent diffusion of double-stranded RNA binding proteins. *Proc. Natl. Acad. Sci. USA* (2013) 110:151-156. PMID: PMC3538233
- Kidwell MA, Doudna JA. Activating silent argonauts. *Nat. Struct. Mol. Biol.* (2013) 20:769-771.
- Gilbert LA, Larson MH, Morsut L, Liu Z, Brar GA, Torres SE, Stern-Ginossar N, Brandman O, Whitehead EH, Doudna JA, Lim WA, Weissman JS, Qi LS. CRISPR-mediated modular RNA-guided regulation of transcription in eukaryotes. *Cell* (2013) 154:442-451. PMID: PMC3770145
- Cox EM, Sagan SM, Mortimer SA, Doudna JA, Sarnow P. Enhancement of hepatitis C viral RNA abundance by precursor miR-122 molecules. *RNA* (2013) 19:1825-1832. PMID: PMC3884667
- Charpentier E, Doudna JA. Biotechnology: Rewriting a genome. *Nature* (2013) 495:50-51.
- Bai Y, Zhou K, Doudna JA. Hepatitis C virus 3'UTR regulates viral translation through direct interactions with the host translation machinery. *Nucleic Acids Res.* (2013) 41:7861-7874. PMID: PMC3763534
- Wiedenheft B, Sternberg SH, Doudna JA. RNA-guided genetic silencing systems in bacteria and archaea. *Nature* (2012) 482:331-338. PMID: 22337052
- van Duijn E, Barbu IM, Barendregt A, Jore MM, Wiedenheft B, Lundgren M, Westra ER, Brouns SJ, Doudna JA, van der Oost J, Heck AJ. Native tandem and ion mobility mass spectrometry highlight structural and modular similarities in clustered- regularly- interspaced shot-palindromic-repeats (CRISPR)-associated protein complexes from *Escherichia coli* and *Pseudomonas aeruginosa*. *Mol. Cell Proteomics* (2012) 11:1430-1441. PMID: PMC3494201
- Sternberg SH, Haurwitz RE, Doudna JA. Mechanism of substrate selection by a highly specific CRISPR endonuclease. *RNA* (2012) 18:661-672. PMID: PMC3312554
- Sashital DG, Wiedenheft B, Doudna JA. Mechanism of foreign DNA selection in a bacterial adaptive immune system. *Mol. Cell* (2012) 46:606-615. PMID: PMC3397241
- Qi L, Haurwitz RE, Shao W, Doudna JA, Arkin AP. RNA processing enables predictable programming of gene expression. *Nat. Biotechnol.* (2012) 30:1002-1006. PMID: 22983090
- Mehle A, Dugan VG, Taubenberger JK, Doudna JA. Reassortment and mutation of the avian influenza virus polymerase PA subunit overcome species barriers. *J. Virol.* (2012) 86:1750-1757. PMID: PMC3264373
- Ma E, Zhou K, Kidwell MA, Doudna JA. Coordinated activities of human dicer domains in regulatory RNA processing. *J. Mol. Biol.* (2012) 422:466-476. PMID: PMC3461841
- Lee HY, Doudna JA. TRBP alters human precursor microRNA processing in vitro. *RNA* (2012) 18:2012-2019. PMID: PMC3479391
- Kaya E, Doudna JA. Biochemistry. Guided tour to the heart of RISC. *Science* (2012) 336:985-986. PMID: 22628640
- Jinek M, Chylinski K, Fonfara I, Hauer M, Doudna JA, Charpentier E. A programmable dual-RNA-guided DNA endonuclease in adaptive bacterial immunity. *Science* (2012) 337:816-821. PMID: PMC6286148

- Haurwitz RE, Sternberg SH, Doudna JA. Csy4 relies on an unusual catalytic dyad to position and cleave CRISPR RNA. *EMBO J* (2012) 31:2824-2832. PMID: PMC3380207
- Wiedenheft B, van Duijn E, Bultema JB, Waghmare SP, Zhou K, Barendregt A, Westphal W, Heck AJ, Boekema EJ, Dickman MJ, Doudna JA. RNA-guided complex from a bacterial immune system enhances target recognition through seed sequence interactions. *Proc. Natl. Acad. Sci. USA* (2011) 108:10092-10097. PMID: PMC3121849
- Wiedenheft B, Lander GC, Zhou K, Jore MM, Brouns SJJ, van der Oost J, Doudna JA, Nogales E. Structures of the RNA-guided surveillance complex from a bacterial immune system. *Nature* (2011) 477:486-489. PMID: PMC4165517
- Sun C, Todorovic A, Querol-Audi J, Bai Y, Villa N, Snyder M, Ashchyan J, Lewis CS, Hartland A, Gradia S, Fraser CS, Doudna JA, Nogales E, Cate JH. Functional reconstitution of human eukaryotic translation initiation factor 3 (eIF3). *Proc. Natl. Acad. Sci. USA* (2011) 108:20473-20478. PMID: PMC3251073
- Sashital DG, Jinek M, Doudna JA. An RNA-induced conformational change required for CRISPR RNA cleavage by the endoribonuclease Cse3. *Nat. Struct. Mol. Biol.* (2011) 18:680-687. PMID: 21572442
- Noland CL, Ma E, Doudna JA. siRNA repositioning for guide strand selection by human Dicer complexes. *Mol. Cell* (2011) 43:110-121. PMID: PMC3143821
- Lucks JB, Mortimer SA, Trapnell C, Luo S, Aviran S, Schroth GP, Pachter L, Doudna JA, Arkin AP. Multiplexed RNA structure characterization with selective 2'-hydroxyl acylation analyzed by primer extension sequencing (SHAPE-Seq). *Proc. Natl. Acad. Sci. USA* (2011) 108:11063-11068. PMID: PMC3131332
- Jore MM, Lundgren M, van Duijn E, Bultema JB, Westra ER, Waghmare SP, Wiedenheft B, Pul U, Wurm R, Wagner R, Beijer MR, Barendregt A, Zhou K, Snijders AP, Dickman MJ, Doudna JA, Boekema EJ, Heck AJ, van der Oost J, Brouns SJ. Structural basis for CRISPR RNA-guided DNA recognition by Cascade. *Nat. Struct. Mol. Biol.* (2011) 18:529-536. PMID: 21460843
- Jinek M, Coyle SM, Doudna JA. Coupled 5' nucleotide recognition and processivity in Xrn1-mediated mRNA decay. *Mol. Cell* (2011) 41:600-608. PMID: PMC3090138
- Berry KE, Waghray S, Mortimer SA, Bai Y, Doudna JA. Crystal structure of the HCV IRES central domain reveals strategy for start-codon positioning. *Structure* (2011) 19:1456-1466. PMID: PMC3209822
- Berry KE, Peng B, Koditek D, Beeman D, Pagratis N, Perry JK, Parrish J, Zhong W, Doudna JA, Shih IH. Optimized high-throughput screen for hepatitis C virus translation inhibitors. *J. Biomol. Screen.* (2011) 16:211-220. PMID: PMC3260011
- Aviran S, Trapnell C, Lucks JB, Mortimer SA, Luo S, Schroth GP, Doudna JA, Arkin AP, Pachter L. Modeling and automation of sequencing-based characterization of RNA structure. *Proc. Natl. Acad. Sci. USA* (2011) 108:11069-11074. PMID: PMC3131376
- Ataide SF, Schmitz N, Shen K, Ke A, Shan SO, Doudna JA, Ban N. The crystal structure of the signal recognition particle in complex with its receptor. *Science* (2011) 331:881-886. PMID: PMC3758919
- Arribere JA, Doudna JA, Gilbert WV. Reconsidering movement of eukaryotic mRNAs between polysomes and P bodies. *Mol. Cell* (2011) 44:745-758. PMID: PMC3240842
- Weeks AM, Coyle SM, Jinek M, Doudna JA, Chang MC. Structural and biochemical studies of a fluoroacetyl-CoA-specific thioesterase reveal a molecular basis for fluorine selectivity. *Biochemistry* (2010) 49:9269-9279. PMID: PMC3461317
- Sashital DG, Doudna JA. Structural insights into RNA interference. *Curr. Opin. Struct. Biol.* (2010) 20:90-97. PMID: PMC2855239

- Mehle A, Doudna JA. A host of factors regulating influenza virus replication. *Viruses* (2010) 2:566-573. PMID: PMC3185602
- Jinek M, Fabian MR, Coyle SM, Sonenberg N, Doudna JA. Structural insights into the human GW182-PABC interaction in microRNA-mediated deadenylation. *Nat. Struct. Mol. Biol.* (2010) 17:238-240. PMID: PMC2920127
- Haurwitz RE, Jinek M, Wiedenheft B, Zhou K, Doudna JA. Sequence- and structure-specific RNA processing by a CRISPR endonuclease. *Science* (2010) 329:1355-1358. PMID: PMC3133607
- Clarkson BK, Gilbert WV, Doudna JA. Functional overlap between eIF4G isoforms in *Saccharomyces cerevisiae*. *PLoS One* (2010) 5:e9114. PMID: PMC2817733
- Chakravarthy S, Sternberg SH, Kellenberger CA, Doudna JA. Substrate-specific kinetics of Dicer-catalyzed RNA processing. *J. Mol. Biol.* (2010) 404:392-402. PMID: PMC3005596
- Berry KE, Waghray S, Doudna JA. The HCV IRES pseudoknot positions the initiation codon on the 40S ribosomal subunit. *RNA* (2010) 16:1559-1569. PMID: PMC2905755
- Wiedenheft B, Zhou K, Jinek M, Coyle SM, Ma W, Doudna JA. Structural basis for DNase activity of a conserved protein implicated in CRISPR-mediated genome defense. *Structure* (2009) 17:904-912. PMID: 19523907
- Wang HW, Noland C, Siridechadilok B, Taylor DW, Ma E, Felderer K, Doudna JA, Nogales E. Structural insights into RNA processing by the human RISC-loading complex. *Nat. Struct. Mol. Biol.* (2009) 16:1148-1153. PMID: PMC2845538
- Mehle A, Doudna JA. Adaptive strategies of the influenza virus polymerase for replication in humans. *Proc. Natl. Acad. Sci. USA* (2009) 106:21312-21316. PMID: PMC2789757
- Jinek M, Doudna JA. A three-dimensional view of the molecular machinery of RNA interference. *Nature* (2009) 457:405-412. PMID: 19158786
- Fukunaga R, Doudna JA. dsRNA with 5' overhangs contributes to endogenous and antiviral RNA silencing pathways in plants. *EMBO J.* (2009) 28:545-555. PMID: PMC2657584
- Fraser CS, Hershey JW, Doudna JA. The pathway of hepatitis C virus mRNA recruitment to the human ribosome. *Nat. Struct. Mol. Biol.* (2009) 16:397-404. PMID: PMC2689074
- Fabian MR, MATHONNET G, Sundermeier T, Mathys H, Zipprich JT, Svitkin YV, Rivas F, Jinek M, Wohlschlegel J, Doudna JA, Chen CY, Shyu AB, Yates JR 3rd, Hannon GJ, Filipowicz W, Duchaine TF, Sonenberg N. Mammalian miRNA RISC recruits CAF1 and PABP to affect PABP-dependent deadenylation. *Mol. Cell* (2009) 35:868-880. PMID: PMC2803087
- Coyle SM, Gilbert WV, Doudna JA. Direct link between RACK1 function and localization at the ribosome in vivo. *Mol. Cell Biol.* (2009) 29:1626-1634. PMID: PMC2648249
- Zhou M, Sandercock AM, Fraser CS, Ridlova G, Stephens E, Schenauer MR, Yokoi-Fong T, Barsky D, Leary JA, Hershey JW, Doudna JA, Robinson CV. Mass spectrometry reveals modularity and a complete subunit interaction map of the eukaryotic translation factor eIF3. *Proc. Natl. Acad. Sci. USA* (2008) 105:18139-18144. PMID: PMC2587604
- Puglisi JD, Doudna JA. Nucleic acids and their protein partners. *Curr. Opin. Struct. Biol.* (2008) 18:279-281. PMID: 18547801
- Mehle A, Doudna JA. An inhibitory activity in human cells restricts the function of an avian-like influenza virus polymerase. *Cell Host Microbe* (2008) 4:111-122. PMID: PMC2597520

- MacRae IJ, Ma E, Zhou M, Robinson CV, Doudna JA. In vitro reconstitution of the human RISC-loading complex. *Proc. Natl. Acad. Sci. USA* (2008) 105:512-517. PMID: PMC2206567
- Ma E, MacRae IJ, Kirsch JF, Doudna JA. Autoinhibition of human Dicer by its internal helicase domain. *J. Mol. Biol.* (2008) 380:237-243. PMID: PMC2927216
- Wu S, Ke A, Doudna JA. A fast and efficient procedure to produce scFvs specific for large macromolecular complexes. *J. Immunol. Methods* (2007) 318:95-101. PMID: PMC2920608
- Siu FY, Spanggaard RJ, Doudna JA. SRP RNA provides the physiologically essential GTPase activation function in cotranslational protein targeting. *RNA* (2007) 13:240-250. PMID: PMC1781372
- MacRae IJ, Zhou K, Doudna JA. Structural determinants of RNA recognition and cleavage by Dicer. *Nat. Struct. Mol. Biol.* (2007) 14:934-940. PMID: 17873886
- MacRae IJ, Doudna JA. Ribonuclease revisited: structural insights into ribonuclease III family enzymes. *Curr. Opin. Struct. Biol.* (2007) 17:138-145. PMID: 17194582
- MacRae IJ, Doudna JA. An unusual case of pseudo-merohedral twinning in orthorhombic crystals of Dicer. *Acta Crystallogr. D Biol. Crystallogr.* (2007) 63:993-999. PMID: 17704568
- Kiessling LL, Doudna JA, Johnsson K, Mapp AK, Marletta MA, Seeberger PH, Williamson JR, Wedde SG. A higher degree of difficulty. *ACS Chem. Biol.* (2007) 2:197-199. PMID: 17455890
- Ke A, Ding F, Batchelor JD, Doudna JA. Structural roles of monovalent cations in the HDV ribozyme. *Structure* (2007) 15:281-287. PMID: 17355864
- Gilbert WV, Zhou K, Butler TK, Doudna JA. Cap-independent translation is required for starvation-induced differentiation in yeast. *Science* (2007) 317:1224-1227. PMID: 17761883
- Fraser CS, Doudna JA. Structural and mechanistic insights into hepatitis C viral translation initiation. *Nat. Rev. Microbiol.* (2007) 5:29-38. PMID: 17128284
- Fraser CS, Doudna JA. Quantitative studies of ribosome conformational dynamics. *Q. Rev. Biophys.* (2007) 40:163-189. PMID: 18072984
- Fraser CS, Berry KE, Hershey JW, Doudna JA. eIF3j is located in the decoding center of the human 40S ribosomal subunit. *Mol. Cell* (2007) 26:811-819. PMID: 17588516
- Damoc E, Fraser CS, Zhou M, Videler H, Mayeur GL, Hershey JW, Doudna JA, Robinson CV, Leary JA. Structural characterization of the human eukaryotic initiation factor 3 protein complex by mass spectrometry. *Mol. Cell Proteomics* (2007) 6:1135-1146. PMID: 17322308
- Macrae IJ, Zhou K, Li F, Repic A, Brooks AN, Cande WZ, Adams PD, Doudna JA. Structural basis for double-stranded RNA processing by Dicer. *Science* (2006) 311:195-198. PMID: 16410517
- Macrae IJ, Li F, Zhou K, Cande WZ, Doudna JA. Structure of Dicer and mechanistic implications for RNAi. *Cold Spring Harb. Symp. Quant. Biol.* (2006) 71:73-80. PMID: 17381283
- Karbstein K, Doudna JA. GTP-dependent formation of a ribonucleoprotein subcomplex required for ribosome biogenesis. *J. Mol. Biol.* (2006) 356:432-443. PMID: 16376378
- Green R, Doudna JA. RNAs regulate biology. *ACS Chem. Biol.* (2006) 1:335-338. PMID: 17163766
- Chmiel NH, Rio DC, Doudna JA. Distinct contributions of KH domains to substrate binding affinity of Drosophila P-element somatic inhibitor protein. *RNA* (2006) 12:283-291. PMID: PMC1370908
- Yu Y, Ji H, Doudna JA, Leary JA. Mass spectrometric analysis of the human 40S ribosomal subunit: native and HCV IRES-bound complexes. *Protein Sci.* (2005) 14:1438-1446. PMID: PMC2253395

Spanggard RJ, Siu F, Ke A, Doudna JA. RNA-mediated interaction between the peptide-binding and GTPase domains of the signal recognition particle. *Nat. Struct. Mol. Biol.* (2005) 12:1116-1122. PMID: 16299512

Siridechadilok B, Fraser CS, Hall RJ, Doudna JA, Nogales E. Structural roles for human translation factor eIF3 in initiation of protein synthesis. *Science* (2005) 310:1513-1515. PMID: 16322461

MacRae IJ, Doudna JA. Ro's role in RNA reconnaissance. *Cell* (2005) 121:495-496. PMID: 15907458

Karbstein K, Jonas S, Doudna JA. An essential GTPase promotes assembly of preribosomal RNA processing complexes. *Mol. Cell* (2005) 20:633-643. PMID: 16307926

Doudna JA, Lorsch JR. Ribozyme catalysis: not different, just worse. *Nat. Struct. Mol. Biol.* (2005) 12:395-402. PMID: 15870731

Doudna JA. Chemical biology at the crossroads of molecular structure and mechanism. *Nat. Chem. Biol.* (2005) 1:300-303. PMID: 16408062

Chen L, Lullo DJ, Ma E, Celniker SE, Rio DC, Doudna JA. Identification and analysis of U5 snRNA variants in *Drosophila*. *RNA* (2005) 11:1473-1477. PMCID: PMC1370830

Sagar MB, Lucast L, Doudna JA. Conserved but nonessential interaction of SRP RNA with translation factor EF-G. *RNA* (2004) 10:772-778. PMCID: PMC1370567

Rambo RP, Doudna JA. Assembly of an active group II intron-maturase complex by protein dimerization. *Biochemistry* (2004) 43:6486-6497. PMID: 15157082

Luptak A, Doudna JA. Distinct sites of phosphorothioate substitution interfere with folding and splicing of the *Anabaena* group I intron. *Nucleic Acids Res.* (2004) 32:2272-2280. PMCID: PMC407829

Ke A, Zhou K, Ding F, Cate JH, Doudna JA. A conformational switch controls hepatitis delta virus ribozyme catalysis. *Nature* (2004) 429:201-205. PMID: 15141216

Ke A, Doudna JA. Crystallization of RNA and RNA-protein complexes. *Methods* (2004) 34:408-414. PMID: 15325657

Karbstein K, Doudna JA. RNA: primed for packing? *Chem. Biol.* (2004) 11:149-151. PMID: 15123272

Ji H, Fraser CS, Yu Y, Leary J, Doudna JA. Coordinated assembly of human translation initiation complexes by the hepatitis C virus internal ribosome entry site RNA. *Proc. Natl. Acad. Sci. USA* (2004) 101:16990-16995. PMCID: PMC534415

Fraser CS, Lee JY, Mayeur GL, Bushell M, Doudna JA, Hershey JW. The j-subunit of human translation initiation factor eIF3 is required for the stable binding of eIF3 and its subcomplexes to 40 S ribosomal subunits in vitro. *J. Biol. Chem.* (2004) 279:8946-8956. PMID: 14688252

Doudna JA, Batey RT. Structural insights into the signal recognition particle. *Annu. Rev. Biochem.* (2004) 73:539-557. PMID: 15189152

Zhang L, Doudna JA. Structural insights into group II intron catalysis and branch-site selection. *Science* (2002) 295:2084-2088. PMID: 11859154

Kieft JS, Zhou K, Grech A, Jubin R, Doudna JA. Crystal structure of an RNA tertiary domain essential to HCV IRES-mediated translation initiation. *Nat. Struct. Biol.* (2002) 9:370-374. PMID: 11927953

Doudna JA, Rath VL. Structure and function of the eukaryotic ribosome: the next frontier. *Cell* (2002) 109:153-156. PMID: 12007402

Doudna JA, Cech TR. The chemical repertoire of natural ribozymes. *Nature* (2002) 418:222-228. PMID: 12110898

- Battle DJ, Doudna JA. Specificity of RNA-RNA helix recognition. *Proc. Natl. Acad. Sci. USA* (2002) 99:11676-11681. PMID: PMC129328
- Batey RT, Doudna JA. Structural and energetic analysis of metal ions essential to SRP signal recognition domain assembly. *Biochemistry* (2002) 41:11703-11710. PMID: 12269812
- Spahn CM, Kieft JS, Grassucci RA, Penczek PA, Zhou K, Doudna JA, Frank J. Hepatitis C virus IRES RNA-induced changes in the conformation of the 40s ribosomal subunit. *Science* (2001) 291:1959-1962. PMID: 11239155
- Murray JM, Doudna JA. Creative catalysis: pieces of the RNA world jigsaw. *Trends Biochem. Sci.* (2001) 26:699-701. PMID: 11738588
- Luptak A, Ferre-D'Amare AR, Zhou K, Zilm KW, Doudna JA. Direct pK(a) measurement of the active-site cytosine in a genomic hepatitis delta virus ribozyme. *J. Am. Chem. Soc.* (2001) 123:8447-8452. PMID: 11525650
- Lucast LJ, Batey RT, Doudna JA. Large-scale purification of a stable form of recombinant tobacco etch virus protease. *Biotechniques* (2001) 30:544-546, 548, 550 passim. PMID: 11252791
- Kieft JS, Zhou K, Jubin R, Doudna JA. Mechanism of ribosome recruitment by hepatitis C IRES RNA. *RNA* (2001) 7:194-206. PMID: PMC1370078
- Doudna JA. Mechanisms of internal ribosome entry in translation initiation. *Cold Spring Harb. Symp. Quant. Biol.* (2001) 66:277-283. PMID: 12762029
- Ferre-D'Amare AR, Doudna JA. Methods to crystallize RNA. *Curr. Protoc. Nucleic Acid Chem.* (2001) Chapter 7:Unit 7.6. PMID: 18428874
- Doherty EA, Doudna JA. Ribozyme structures and mechanisms. *Annu. Rev. Biophys. Biomol. Struct.* (2001) 30:457-475. PMID: 11441810
- Doherty EA, Batey RT, Masquida B, Doudna JA. A universal mode of helix packing in RNA. *Nat. Struct. Biol.* (2001) 8:339-343. PMID: 11276255
- Battle DJ, Doudna JA. The stem-loop binding protein forms a highly stable and specific complex with the 3' stem-loop of histone mRNAs. *RNA* (2001) 7:123-132. PMID: PMC1370062
- Batey RT, Sagar MB, Doudna JA. Structural and energetic analysis of RNA recognition by a universally conserved protein from the signal recognition particle. *J. Mol. Biol.* (2001) 307:229-246. PMID: 11243816
- Kieft JS, Grech A, Adams P, Doudna JA. Mechanisms of internal ribosome entry in translation initiation. *Cold Spring Harb Symp Quant Biol.* 2001;66:277-83. doi: 10.1101/sqb.2001.66.277. PMID: 12762029.
- Jubin R, Vantuno NE, Kieft JS, Murray MG, Doudna JA, Lau JY, Baroudy BM. Hepatitis C virus internal ribosome entry site (IRES) stem loop IIIId contains a phylogenetically conserved GGG triplet essential for translation and IRES folding. *J. Virol.* (2000) 74:10430-10437. PMID: PMC110917
- Hanna RL, Gryaznov SM, Doudna JA. A phosphoramidate substrate analog is a competitive inhibitor of the Tetrahymena group I ribozyme. *Chem. Biol.* (2000) 7:845-854. PMID: 11094338
- Hanna R, Doudna JA. Metal ions in ribozyme folding and catalysis. *Curr. Opin. Chem. Biol.* (2000) 4:166-170. PMID: 1074
- Ferre-D'Amare AR, Doudna JA. Crystallization and structure determination of a hepatitis delta virus ribozyme: use of the RNA-binding protein U1A as a crystallization module. *J. Mol. Biol.* (2000) 295:541-556. PMID: 10623545

Engelhardt MA, Doherty EA, Knitt DS, Doudna JA, Herschlag D. The P5abc peripheral element facilitates preorganization of the tetrahymena group I ribozyme for catalysis. *Biochemistry* (2000) 39:2639-2651. PMID: 10704214

Doudna JA. Structural genomics of RNA. *Nat. Struct. Biol.* (2000) 7 Suppl:954-956. PMID: 11103998

Doherty EA, Doudna JA. Ribozyme structures and mechanisms. *Annu. Rev. Biochem.* (2000) 69:597-615. PMID: 11441810

Cate JH, Doudna JA. Solving large RNA structures by X-ray crystallography. *Methods Enzymol.* (2000) 317:169-180. PMID: 10829280

Batey RT, Rambo RP, Lucast L, Rha B, Doudna JA. Crystal structure of the ribonucleoprotein core of the signal recognition particle. *Science* (2000) 287:1232-1239. PMID: 10678824

Wadkins TS, Perrotta AT, Ferre-D'Amare AR, Doudna JA, Been MD. A nested double pseudoknot is required for self-cleavage activity of both the genomic and antigenomic hepatitis delta virus ribozymes. *RNA* (1999) 5:720-727. PMCID: PMC1369799

Kieft JS, Zhou K, Jubin R, Murray MG, Lau JY, Doudna JA. The hepatitis C virus internal ribosome entry site adopts an ion-dependent tertiary fold. *J. Mol. Biol.* (1999) 292:513-529. PMID: 10497018

Ferre-D'Amare AR, Doudna JA. RNA folds: insights from recent crystal structures. *Annu. Rev. Biophys. Biomol. Struct.* (1999) 28:57-73. PMID: 10410795

Doudna JA. Cashing in on crystals. *Curr. Biol.* (1999) 9:R731-734. PMID: 10530999

Doherty EA, Herschlag D, Doudna JA. Assembly of an exceptionally stable RNA tertiary interface in a group I ribozyme. *Biochemistry* (1999) 38:2982-2990. PMID: 10074350

Batey RT, Rambo RP, Doudna JA. Tertiary Motifs in RNA Structure and Folding. *Angew Chem. Int. Ed. Engl.* (1999) 38:2326-2343. PMID: 10458781

Ferre-D'Amare AR, Zhou K, Doudna JA. A general module for RNA crystallization. *J. Mol. Biol.* (1998) 279:621-631. PMID: 9641982

Ferre-D'Amare AR, Zhou K, Doudna JA. Crystal structure of a hepatitis delta virus ribozyme. *Nature* (1998) 395:567-574. PMID: 9783582

Doudna JA. Ribozymes: the hammerhead swings into action. *Curr. Biol.* (1998) 8:R495-497. PMID: 9663384

Batey RT, Doudna JA. The parallel universe of RNA folding. *Nat. Struct. Biol.* (1998) 5:337-340. PMID: 9586989

Basu S, Rambo RP, Strauss-Soukup J, Cate JH, Ferre-D'Amare AR, Strobel SA, Doudna JA. A specific monovalent metal ion integral to the AA platform of the RNA tetraloop receptor. *Nat. Struct. Biol.* (1998) 5:986-992. PMID: 9808044

Strobel SA, Doudna JA. RNA seeing double: close-packing of helices in RNA tertiary structure. *Trends Biochem. Sci.* (1997) 22:262-266. PMID: 9255068

Ferre-d'Amare AR, Doudna JA. Establishing suitability of RNA preparations for crystallization. Determination of polydispersity. *Methods Mol. Biol.* (1997) 74:371-377. PMID: 9204452

Doudna JA, Doherty EA. Emerging themes in RNA folding. *Fold. Des.* (1997) 2:R65-70. PMID: 9377708

Doudna JA, Cate JH. RNA structure: crystal clear? *Curr Opin Struct Biol* (1997) 7:310-316. PMID: 9204271

- Doudna JA. Preparation of homogeneous ribozyme RNA for crystallization. *Methods Mol. Biol.* (1997) 74:365-370. PMID: 9204451
- Doudna JA. RNA structure. A molecular contortionist. *Nature* (1997) 388:830-831.
- Doherty EA, Doudna JA. The P4-P6 domain directs higher order folding of the Tetrahymena ribozyme core. *Biochemistry* (1997) 36:3159-3169. PMID: 9115992
- Cate JH, Hanna RL, Doudna JA. A magnesium ion core at the heart of a ribozyme domain. *Nat. Struct. Biol.* (1997) 4:553-558. PMID: 9228948
- Cate JH, Doudna JA. A sparse matrix approach to crystallizing ribozymes and RNA motifs. *Methods Mol. Biol.* (1997) 74:379-386. PMID: 9204453
- Jones JT, Barnes CL, Lietzke SE, Weichenrieder O, Doudna JA, Kundrot CE. Preliminary X-ray diffraction studies of an RNA pseudoknot that inhibits HIV-1 reverse transcriptase. *Acta Crystallogr. D Biol. Crystallogr.* (1996) 52:1018-1020. PMID: 15299613
- Ferre-D'Amare AR, Doudna JA. Use of cis- and trans-ribozymes to remove 5' and 3' heterogeneities from milligrams of in vitro transcribed RNA. *Nucleic Acids Res.* (1996) 24:977-978. PMCID: PMC145725
- Cate JH, Gooding AR, Podell E, Zhou K, Golden BL, Szewczak AA, Kundrot CE, Cech TR, Doudna JA. RNA tertiary structure mediation by adenosine platforms. *Science* (1996) 273:1696-1699. PMID: 8781229
- Cate JH, Gooding AR, Podell E, Zhou K, Golden BL, Kundrot CE, Cech TR, Doudna JA. Crystal structure of a group I ribozyme domain: principles of RNA packing. *Science* (1996) 273:1678-1685. PMID: 8781224
- Cate JH, Doudna JA. Metal-binding sites in the major groove of a large ribozyme domain. *Structure* (1996) 4:1221-1229. PMID: 8939748
- Doudna JA, Cech TR, Sullenger BA. Selection of an RNA molecule that mimics a major autoantigenic epitope of human insulin receptor. *Proc. Natl. Acad. Sci. USA* (1995) 92:2355-2359. PMCID: PMC42482
- Doudna JA, Cech TR. Self-assembly of a group I intron active site from its component tertiary structural domains. *RNA* (1995) 1:36-45. PMCID: PMC1369057
- Doudna JA. Hammerhead ribozyme structure: U-turn for RNA structural biology. *Structure* (1995) 3:747-750. PMID: 7582890
- Doudna JA. Hammering out the shape of a ribozyme. *Structure* (1994) 2:1271-1272. PMID: 7704535
- Doudna JA, Usman N, Szostak JW. Ribozyme-catalyzed primer extension by trinucleotides: a model for the RNA-catalyzed replication of RNA. *Biochemistry* (1993) 32:2111-2115. PMID: 7680575
- Doudna JA, Grosshans C, Gooding A, Kundrot CE. Crystallization of ribozymes and small RNA motifs by a sparse matrix approach. *Proc. Natl. Acad. Sci. USA* (1993) 90:7829-7833. PMCID: PMC47236
- Doudna JA, Couture S, Szostak JW. A multisubunit ribozyme that is a catalyst of and template for complementary strand RNA synthesis. *Science* (1991) 251:1605-1608. PMID: 1707185
- Bartel DP, Doudna JA, Usman N, Szostak JW. Template-directed primer extension catalyzed by the Tetrahymena ribozyme. *Mol. Cell Biol.* (1991) 11:3390-3394. PMCID: PMC360195
- Doudna JA, Szostak JW, Rich A, Usman N. Chemical synthesis of oligoribonucleotides containing 2-aminopurine: substrates for the investigation of ribozyme function. *J. Org. Chem.* (1990) 55:5547-5549. PMID: 1700131

- Couture S, Ellington AD, Gerber AS, Cherry JM, Doudna JA, Green R, Hanna M, Pace U, Rajagopal J, Szostak JW. Mutational analysis of conserved nucleotides in a self-splicing group I intron. *J. Mol. Biol.* (1990) 215:345-358.
- Rajagopal J, Doudna JA, Szostak JW. Stereochemical course of catalysis by the Tetrahymena ribozyme. *Science* (1989) 244:692-694. PMID: 2470151
- Doudna JA, Szostak JW. RNA-catalysed synthesis of complementary-strand RNA. *Nature* (1989) 339:519-522. PMID: 2660003
- Doudna JA, Szostak JW. Miniribozymes, small derivatives of the sunY intron, are catalytically active. *Mol. Cell. Biol.* (1989) 9:5480-5483. PMCID: PMC363717
- Doudna JA, Cormack BP, Szostak JW. RNA structure, not sequence, determines the 5' splice-site specificity of a group I intron. *Proc. Natl. Acad. Sci. USA* (1989) 86:7402-7406. PMCID: PMC298070
- Doudna JA, Gerber AS, Cherry JM, Szostak JW. Genetic dissection of an RNA enzyme. *Cold Spring Harb. Symp. Quant. Biol.* (1987) 52:173-180. PMID: 2456876

Book Chapters and Invited Reviews (Since 2001)

- Doudna JA. The promise and challenge of therapeutic genome editing. *Nature* (2020) 578:229-236. PMID: 32051598
- Knott GJ, Doudna JA. (2018) CRISPR-Cas guides the future of genetic engineering. *Science* 361, 866-69. Review.
- Huang CH, Lee KC, Doudna JA. (2018) Applications of CRISPR-Cas enzymes in cancer therapeutics and detection. *Trends Cancer* 4, 499-512. doi: 10.1016/j.trecan.2018.05.006. Epub 2018 Jun 13. Review.
- Willsey AJ, Morris MT, Wang S, Willsey HR, Sun N, Teerikorpi N, Baum TB, Cagney G, Bender KJ, Desai TA, Srivastava D, Davis GW, Doudna J, Chang E, Sohal V, Lowenstein DH, Li H, Agard D, Keiser MJ, Shoichet B, von Zastrow M, Mucke L, Finkbeiner S, Gan L, Sestan N, Ward ME, Huttenhain R, Nowakowski TJ, Bellen HJ, Frank LM, Khokha MK, Lifton RP, Kampmann M, Ideker T, State MW, Krogan NJ. (2018) The Psychiatric Cell Map Initiative: A Convergent Systems Biological Approach to Illuminating Key Molecular Pathways in Neuropsychiatric Disorders. *Cell* 174, 505-520. doi: 10.1016/j.cell.2018.06.016. Review.
- Kiessling, L.L., and Doudna, J.A. (2018) Spotlight: A Conversation with Laura Kiessling and Jennifer Doudna. *ACS Chem Biol* 13, 290-295.
- Jiang, F. and Doudna, J.A. (2017) CRISPR-Cas9 structures and mechanisms. *Annu. Rev. Biophys.* 46:505-529.
- Gorski, S.A., Vogel, J. and Doudna, J.A. (2017) RNA-based recognition and targeting: sowing the seeds of specificity. *Nat. Rev. Mol. Cell Biol.* 18, 215-228. doi: 10.1038/nrm.2016.174. Review.
- Fellmann, C., Gowen, B.G., Lin, P.C., Doudna, J.A. and Corn, J.E. (2016) Cornerstones of CRISPR-Cas in drug discovery and therapy. *Nat. Rev. Drug Discov.* 16, 89-100. doi: 10.1038/nrd.2016.238. Review.

- Barrangou, R. and Doudna, J.A. (2016) Applications of CRISPR technologies in research and beyond. *Nat. Biotechnol.* 34, 933-941. Review.
- Nuñez, J.K., Harrington, L.B. and Doudna, J.A. (2016) Chemical and biophysical modulation of Cas9 for tunable genome engineering. *ACS Chem. Biol.* 11, 681-688. doi: 10.1021/acscchembio.5b01019. Review
- Wright, A.V., Nuñez, J.K. and Doudna, J.A. (2016) Biology and applications of CRISPR systems: Harnessing nature's toolbox for genome engineering. *Cell* 164, 29-44. doi: 10.1016/j.cell.2015.12.035. Review.
- Doudna, J. (2015) Genome-editing revolution: My whirlwind year with CRISPR. *Nature* 528, 469-471. doi: 10.1038/528469a.
- Doudna, J.A. and Gersbach, C.A. (2015) Genome editing: the end of the beginning. *Genome Biol.* 16, 292. doi: 10.1186/s13059-015-0860-5.
- Floor, S.N. and Doudna, J.A. (2015) Get in LINE: Competition for newly minted retrotransposon proteins at the ribosome. *Mol. Cell* 60, 712-714. doi: 10.1016/j.molcel.2015.11.014.
- Doudna, J.A. (2015) Perspective: Embryo editing needs scrutiny. *Nature* 528, S6. doi: 10.1038/528S6a.
- Sternberg, S.H. and Doudna, J.A. (2015) Expanding the Biologist's Toolkit with CRISPR-Cas9. *Mol. Cell* 58, 568-574. doi: 10.1016/j.molcel.2015.02.032.
- Baltimore, B.D., Berg, P., Botchan, M., Carroll, D., Charo, R.A., Church, G., Corn, J.E., Daley, G.Q., Doudna, J.A., Fenner, M., Greely, H.T., Jinek, M., Martin, G.S., Penhoet, E., Puck, J., Sternberg, S.H., Weissman, J.S., Yamamoto, K.R. (2015) A prudent path forward for genomic engineering and germline gene modification. *Science* 348, 36-38. doi: 10.1126/science.aab1028.
- Jiang, F. and Doudna, J.A. (2015) The structural biology of CRISPR-Cas systems. *Curr. Opin. Struct. Biol.* 30, 100-111. doi: 10.1016/j.sbi.2015.02.002.
- Doudna, J.A. (2015) Genomic engineering and the future of medicine. *JAMA* 313, 791-792. doi: 10.1001/jama.2015.287.
- Hochstrasser, M.L. and Doudna, J.A. (2014) Cutting it close: CRISPR-associated endoribonuclease structure and function. *Trends Biochem. Sci.* 40, 58-66. doi: 10.1016/j.tibs.2014.10.007.
- Doudna, J.A. and Charpentier, E. (2014) The New Frontier of Genome Engineering with CRISPR-Cas9. *Science* 346, 1258096. doi: 10.1126/science.1258096.
- Doudna, J.A. and Sontheimer, E.J. (2014) Preface. *Methods Enzymol.* 546:xix-xx. doi: 10.1016/B978-0-12-801185-0.09983-9.
- Mortimer, S.A., Kidwell, M.A. and Doudna, J.A. (2014) Insights into RNA structure and function from genome-wide studies. *Nat. Rev. Genet.* 15, 469-479. doi: 10.1038/nrg3681.
- Wilson, R.C. and Doudna, J.A. (2013) Molecular mechanisms of RNA interference. *Annu. Rev. Biophys.* 42, 217-239. doi: 10.1146/annurev-biophys-083012-130404. Review.
- Charpentier, E. and Doudna, J.A. (2013) Biotechnology: Rewriting a genome. *Nature* 495, 50-51. doi: 10.1038/495050a.
- Kidwell, M.A. and Doudna, J.A. (2013) Activating silent Argonautes. *Nat. Struct. Mol. Biol.* 20, 769-771.
- Wiedenheft, B., Sternberg, S.H. and Doudna, J.A. (2012) RNA-guided genetic silencing systems in bacteria and archaea. *Nature* 482, 331-338. doi: 10.1038/nature10886. PMID: 22337052.
- Kaya, E. and Doudna, J.A. (2012) Biochemistry. Guided tour to the heart of RISC. *Science* 336, 985-986. PMID: 22628640

- Sashital, D. and Doudna, J.A. (2010) Structural insights into RNA interference. *Curr. Opin. Struct. Biol.* 20, 90-97. doi: 10.1016/j.sbi.2009.12.001. Review.
- Jinek, M. and Doudna, J.A. (2009) A three-dimensional view of the molecular machinery of RNA interference. *Nature* 457, 405-412. doi: 10.1038/nature07755.
- Puglisi, J.D. and Doudna, J.A. (2008) Nucleic acids and their protein partners. *Curr. Opin. Struct. Biol.* 18, 279-281. doi: 10.1016/j.sbi.2008.05.004.
- Doudna, J.A. (2007) The right chemistry: an updated nucleic acids textbook. *ACS Chem. Biol.* 2, 211-212.
- Fraser, C.S. and Doudna, J.A. (2007) Quantitative studies of ribosome conformational dynamics. *Q. Rev. Biophys.* 40, 163-189.
- Kiessling, L.L., Doudna, J.A., Johnsson, K., Mapp, A.K., Marletta, M.A., Seeberger, P.H., Williamson, J.R. and Wedde, S.G. (2007) A higher degree of difficulty. *ACS Chem. Biol.* 2, 197-199.
- MacRae, I.J. and Doudna, J.A. (2007) Ribonuclease revisited: structural insights into ribonuclease III family enzymes. *Curr. Opin. Struct. Biol.* 17, 138-145.
- Fraser, C.F. and Doudna, J.A. (2007) Structural and mechanistic insights into hepatitis C viral translation initiation. *Nat. Rev. Microbiol.* 5, 29-38.
- MacRae, I.J., Li, F., Zhou, K., Cande, W.Z. and Doudna, J.A. (2006) Structure of Dicer and mechanistic implications for RNAi. *Cold Spring Harbor Symp. Quant. Biol.* 71, 73-80.
- Green, R. and Doudna, J.A. (2006) RNAs regulate biology. *ACS Chem. Biol.* 1, 335-338.
- Ke, A. and Doudna, J.A. (2005) Catalytic Strategies of Self-Cleaving Ribozymes: Relics of an RNA World? *The RNA World*, 3rd edition, pp 109-131.
- Doudna, J.A. (2005) Chemical biology at the crossroads of molecular structure and mechanism. *Nat. Chem. Biol.* 1, 300-303.
- Doudna, J.A. (2005) A biochemist exchanges her ideas about molecular motion. *Nature* 437, 172-173.
- MacRae, I.M. and Doudna, J.A. (2005) Ro's role in RNA reconnaissance. *Cell* 121: 495-501.
- Aggarwal AK and Doudna JA (2005) Protein-nucleic interactions: unlocking mysteries old and new. *Curr. Opin. Struct. Biol.* 1:65-67.
- Doudna JA and Lorsch JR. (2005) Ribozyme catalysis: not different, just worse. *Nat. Struct. Mol. Biol.* 12:395-402.
- Ke A and Doudna JA (2004) Crystallization of RNA and RNA-protein complexes. In *Methods: A Companion to Methods in Enzymology* 34:408-414.
- Karbstein, K. and Doudna, J.A. (2004) RNA: Primed for packing? *Chem. Biol.* 11:149-151.
- Doudna, J.A. and Batey, R.T. (2004) Structural insights into the signal recognition particle. *Ann. Rev. Biochem.* 73:539-557.
- Aggarwal, A.K. and Doudna, J.A. (2003) Editorial Overview: Protein-nucleic acid interactions. *Curr. Opin. Struct. Biol.* 13:3-5.
- Doudna, J.A. and Cech, T.R. (2002) Chemical repertoire of natural ribozymes. *Nature* 418: 222-228.
- Doudna, J.A. and Rath, V.L. (2002) Structure and function of the eukaryotic ribosome. *The next frontier. Cell* 109:153-156.

- Murray, J. and Doudna, J.A. (2001) Creative catalysis: pieces of the RNA world jigsaw. *Trends Biochem. Sci.* 26:699-701.
- Ferré-d'Amaré, A.R. and Doudna, J.A. (2001) Methods to crystallize RNA. *Curr. Protoc. Nucleic Acid Chem.* May; Chapter 7, Unit 7.6. PMID: 18428874
- Kieft, J.S., Grech, A., Adams, P. and Doudna, J.A. (2001) Mechanisms of internal ribosome entry in translation initiation. *Cold Spring Harbor Symp. Quant. Biol.* 66:277-283.
- Doudna, J.A. and Richmond, T.J. (2001) Editorial Overview: Protein-nucleic acid interactions. *Curr. Opin. Struct. Biol.* 11:11-13.