

# Nan Hao

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## Research

I have a combined background in experimental and computational biology. In my research, I use multidisciplinary approaches, integrating biology, engineering, and computer science, to investigate how molecular networks govern the dynamics and function of regulatory responses to stress, aging and diseases. A major direction in my lab is to combine systems and synthetic biology approaches to probe, quantify, and rationally reprogram single-cell aging processes for promoting longevity. Our recent studies have been published in major journals, including *Science*, *PNAS*, and *eLife*, and have been featured by major news outlets, such as *CNN*, *DailyMail*, and *Fox News*.

## Education

Ph.D. in Biochemistry and Biophysics, 2006  
University of North Carolina at Chapel Hill, Chapel Hill, NC, United States

B.S. in Biochemistry and Molecular Biology, 2001  
Peking University, China

## Positions Held

2022 – Present	Associate Director, Synthetic Biology Institute University of California San Diego, La Jolla, CA, USA
2022 – Present	Professor, Molecular Biology and Bioengineering University of California San Diego, La Jolla, CA, USA
2018 – 2022	Associate Professor, Molecular Biology University of California San Diego, La Jolla, CA, USA
2013 – 2018	Assistant Professor, Molecular Biology University of California San Diego, La Jolla, CA, USA
2008 – 2013	Research Associate, Systems Biology Harvard University/Howard Hughes Medical Institute, Cambridge, MA, USA
2006 – 2008	Postdoctoral Fellow, Computational Biology University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

## Publications

Zhen Zhou, Yuting Liu, Yushen Feng, Stephen Klepin, Lev S. Tsimring, Lorraine Pillus, Jeff Hasty, **Nan Hao** (2023) Engineering longevity – design of a synthetic gene oscillator to slow cellular aging. *Science*, 380: 376-381.

Featured on *KPBS, Yahoo, VICE, Inverse, Genetic Engineering & Biotechnology News*, and many other news outlets. *Highlighted in Science and Nature Reviews Genetics*.

Andres J. Nevarez, **Nan Hao** (2022) Quantitative cell imaging approaches to metastatic state profiling. *Frontiers in Cell and Developmental Biology*, 10:1048630.

Julie Paxman, Zhen Zhou, Richard O’Laughlin, Yuting Liu, Yang Li, Wanying Tian, Hetian Su, Yanfei Jiang, Shayna E. Holness, Elizabeth Stasiowski, Lev S. Tsimring, Lorraine Pillus, Jeff Hasty, **Nan Hao** (2022) Age-dependent aggregation of ribosomal RNA-binding proteins links deterioration in chromatin stability with challenges to proteostasis. *eLife*, 11:e75978.

Alan A. Cohen, Luigi Ferrucci, Tamas Fulop, Dominique Gravel, **Nan Hao**, Andres Kriete, Morgan E. Levine, Lewis A. Lipsitz, Marcel G.M. Olde Rikkert, Andrew Rutenberg, Nicholas Stroustrup, Ravi Varadhan (2022) A complex systems approach to aging biology. *Nature Aging*, 2:580-591.

Yanfei Jiang, **Nan Hao** (2021) Memorizing environmental signals through feedback and feedforward loops. *Current Opinion in Cell Biology*, 69:96-102.

Anusorn Mudla, Yanfei Jiang, Kei-Ichiro Arimoto, Bingxian Xu, Adarsh Rajesh, Andy P. Ryan, Wei Wang, Matthew D. Daugherty, Dong-Er Zhang, **Nan Hao** (2020) Cell-cycle-gated feedback control mediates desensitization to interferon stimulation. *eLife*, 9:e58825.

Featured on *UCSD News, The Medical News, and ScienceDaily*.

Yang Li, Yanfei Jiang, Julie Paxman, Richard O’Laughlin, Stephen Klepin, Yuelian Zhu, Lorraine Pillus, Lev S. Tsimring, Jeff Hasty, **Nan Hao** (2020) A programmable fate decision landscape underlies single-cell aging in yeast. *Science*, 369(6501):325-329.

Featured on *CNN, DailyMail, Fox News, Metro World News, Genetic Engineering & Biotechnology News*, and many other news outlets. *Highlighted in Mechanisms of Aging and Development*.

Yanfei Jiang, Zohreh AkhavanAghdam, Yutian Li, Brian M. Zid, **Nan Hao** (2020) A protein kinase A-regulated network encodes short- and long-lived cellular memories. *Science Signaling*, 13(632):eaay3585.

Richard O’Laughlin, Meng Jin, Yang Li, Lorraine Pillus, Lev S. Tsimring, Jeff Hasty, **Nan Hao** (2020) Advances in quantitative biology methods for studying replicative aging in *Saccharomyces cerevisiae*. *Translational Medicine of Aging*, 4:151-160.

James P. Shellhammer, Amy E. Pomeroy, Yang Li, Lorena Dujmusic, Timothy C. Elston, **Nan Hao**, Henrik G. Dohlman (2019) Quantitative analysis of the yeast pheromone pathway. *Yeast*, 36(8):495-518.

Meng Jin, Yang Li, Richard O’Laughlin, Philip Bittihn, Lorraine Pillus, Lev S. Tsimring, Jeff Hasty, **Nan Hao** (2019) Divergent aging of isogenic yeast cells revealed through single-cell phenotypic dynamics. *Cell Systems*, 8(3):242-253.

Bridget L. Baumgartner, Richard O’Laughlin, Meng Jin, Lev S Tsimring, **Nan Hao**, Jeff Hasty (2018) Flavin-based metabolic cycles are integral features of growth and division in single yeast cells. *Scientific Reports*, 8(1):18045.

Yang Li, Julie Roberts, Zohreh AkhavanAghdam, **Nan Hao** (2017) Mitogen-activated protein kinase (MAPK) dynamics determine cell fate in the yeast mating response. *The Journal of Biological Chemistry*, 292(50):20354-20361.

Yang Li, Meng Jin, Richard O’Laughlin, Philip Bittihn, Lev S. Tsimring, Lorraine Pillus, Jeff Hasty, **Nan Hao** (2017) Multigenerational silencing dynamics control cell aging. *Proceedings of the National Academy of Sciences of the USA*. 114 (42): 11253-11258.

Featured on *UCSD News*, *UCSD Guardian*, and *ScienceDaily*.

Recommended in *Faculty Opinions* (formerly *F1000*).

Bin Shao, Haiyu Yuan, Rongfei Zhang, Xuan Wang, Shuwen Zhang, Qi Ouyang, **Nan Hao\***, Chunxiong Luo\* (2017) Reconstructing the regulatory circuit of cell fate determination in yeast mating response. *PLoS Computational Biology*, 13(7): e1005671. (\*Co-Correspondence)

Yanfei Jiang, Zohreh AkhavanAghdam, Lev S. Tsimring, **Nan Hao** (2017) Coupled feedback loops control the stimulus-dependent dynamics of the yeast transcription factor Msn2. *The Journal of Biological Chemistry*, 292(30): 12366-12372.

Rongfei Zhang, Haiyu Yuan, Shujing Wang, Qi Ouyang, Yong Chen, **Nan Hao**, Chunxiong Luo (2017) High-throughput single-cell analysis for the proteomic dynamics study of the yeast osmotic stress response. *Scientific Reports*, 7:42200.

Zohreh AkhavanAghdam, Joydeb Sinha, Omar P. Tabbaa, **Nan Hao** (2016) Dynamic control of gene regulatory logic by seemingly redundant transcription factors. *eLife*, 5. pii: e18458.

Recommended in *Faculty Opinions* (formerly *F1000*).

Haiyu Yuan, Rongfei Zhang, Bin Shao, Xuan Wang, Qi Ouyang, **Nan Hao**, Chunxiong Luo (2016) Protein expression patterns of the yeast mating response. *Integrative Biology*, 8(6): 712-9.

Anders S. Hansen, **Nan Hao**, Erin K. O’Shea (2015) High-throughput microfluidics to control and measure signaling dynamics in single yeast cells. *Nature Protocols*, 10(8):1181-97.

**Nan Hao**, Bogdan Budnik, Jeremy Gunawardena, Erin K. O’Shea (2013) Tunable signal processing through modular control of transcription factor translocation. *Science*, 339(6118): 460-4.

Highlighted in *Nature Reviews Genetics*.

**Nan Hao**, Necmettin Yildirim, Michal J. Nagiec, Stephen Parnell, Beverly Errede, Henrik G. Dohlman, Timothy C. Elston (2012) Combined computational and experimental analysis reveals MAP kinase-mediated feedback phosphorylation as a mechanism for signaling specificity. *Molecular Biology of the Cell*, 23(19): 3899-910.

**Nan Hao**, Erin K. O’Shea (2012) Signal-dependent dynamics of transcription factor translocation controls gene expression. *Nature Structural & Molecular Biology*, 19(1): 31-9.

**Nan Hao**, Yaxue Zeng, Timothy C. Elston, Henrik G. Dohlman (2008) Control of MAP kinase signaling specificity by feedback phosphorylation of a shared adaptor protein Ste50. *The Journal of Biological Chemistry*, 283(49): 33798-802.

Marcelo Behar, **Nan Hao**, Henrik G. Dohlman, Timothy C. Elston (2008) Dose-to-duration encoding and signaling beyond saturation in intracellular signaling networks. *PLoS Computational Biology*, 4(10): e1000197.

**Nan Hao**, Sujata Nayak, Marcelo Behar, Ryan Shanks, Michal Nagiec, Beverly Errede, Jeffrey Hasty, Timothy C. Elston, Henrik G. Dohlman (2008) Regulation of cell signaling dynamics by the protein kinase-scaffold Ste5. *Molecular Cell*, 30(5): 649-656.

Recommended in *Faculty Opinions* (formerly *F1000*).

Marcelo Behar, **Nan Hao**, Henrik G. Dohlman, Timothy C. Elston (2007) Mathematical and computational analysis of adaptation via feedback inhibition in signal transduction pathways. *Biophysical Journal*, 93(3): 806-21.

**Nan Hao**, Marcelo Behar, Timothy C. Elston, Henrik G. Dohlman (2007) Systems biology analysis of G protein and MAP kinase signaling in yeast. *Oncogene*, 26(22): 3254-66.

**Nan Hao**, Marcelo Behar, Stephen C. Parnell, Matthew P. Torres, Christoph H. Borchers, Timothy C. Elston, Henrik G. Dohlman (2007) A systems-biology analysis of feedback inhibition in the Sho1 osmotic-stress response pathway. *Current Biology*, 17(8): 659-67.

Scott A. Chasse, Paul Flanary, Stephen C. Parnell, **Nan Hao**, Jiyoung Y. Cha, David P. Siderovski, Henrik G. Dohlman (2006) Genome-scale analysis reveals Sst2 as the principal regulator of mating pheromone signaling in the yeast *Saccharomyces cerevisiae*. *Eukaryotic Cell*, 5(2): 330-46.

Xiao Wang, **Nan Hao**, Henrik G. Dohlman, Timothy C. Elston (2006) Bistability, stochasticity, and oscillations in the mitogen-activated protein kinase cascade. *Biophysical Journal*, 90(6): 1961-78.

Necmettin Yildirim, **Nan Hao**, Henrik G. Dohlman, Timothy C. Elston (2004) Mathematical modeling of RGS and G-protein regulation in yeast. *Methods in Enzymology*, 389: 383-98.

**Nan Hao**, Necmettin Yildirim, Yuqi Wang, Timothy C. Elston, Henrik G. Dohlman (2003) Regulators of G protein signaling and transient activation of signaling: experimental and computational analysis reveals negative and positive feedback controls on G protein activity. *The Journal of Biological Chemistry*, 278(47): 46506-15.

Highlighted in *Science Signaling* (formerly *STKE*).

## Funding

### Active

NIH R01 GM144595 (09/20/22 – 07/31/26)

Reprogramming cell-fate decisions through predictive modeling and synthetic biology  
The goal of this project is to use computationally-guided synthetic biology approaches to reprogram fate decisions toward progressive cellular deterioration.

Role: PI

NIH R01 AG068112 (09/15/21 – 05/31/26)

Systems Biology analysis of RNA-binding protein aggregation during cellular aging  
The goal of this project is to perform a systems-level analysis of RNA-binding protein (RBP) aggregation during yeast aging and to evaluate the functional consequences on cellular function, physiology and lifespan.

Role: PI

NIH R01 AG056440 (08/01/17 – 02/29/28)

Network-driven dynamics of replicative aging

The goal of this project is to combine high-throughput measurement technologies and computational modeling to obtain a predictive understanding of the emergent aging dynamics from molecular networks in the model organism *S. cerevisiae*.

Role: PI

NIH R01 GM111458 (08/15/14 – 06/30/24)

Dynamically compartmentalized control of gene expression by messenger ribonucleoprotein granules

The goal of this project is to combine experiments with modeling to systematically investigate how processing bodies and stress granules process dynamic PKA signaling inputs and control gene expression and long-term stress responses in yeast cells.

Role: PI

### **Completed**

NSF MCB-1616127 (08/15/16 – 07/30/21)

Engineered control of cellular aging

Role: PI

NIH P50 GM085764 (09/01/15 – 05/31/19)

Center for Systems Biology of Cellular Stress Responses

Role: Co-Investigator

UCSD Frontiers of Innovation Scholars Program (03/01/16 – 09/30/16)

Reverse engineering of microbial mediation of host tolerance to infection

Role: PI

### **Teaching**

2016 – Present          BIMM100 - Molecular Biology

BIMM100 is an upper-division large enrollment undergraduate class, focusing on gene structure, function and regulation at the molecular level. I teach BIMM 100 every Winter since 2016. I have been one of the most highly recommended instructors, with a reputation for rigorous classes, yet also noted for enthusiasm for the subject and genuine concern for student learning (see the statistics below from UCSD Course And Professor Evaluations).

<b>Term</b>	<b>Enrollment</b>	<b>Recommend class</b>	<b>Recommend instructor</b>
WI2016	152	96.8%	98.4%
WI2017	193	98.3%	98.8%
WI2018	395	96.0%	95.7%
WI2019	378	97.8%	98.4%
WI2021	324	98.2%	97.4%
WI2022	309	97.0%	96.1%
WI2023	316	93.2%	93.5%

### 2016 – Present BIMM140 – Quantitative Principles in Biology

BIMM140 is the very first quantitative biology lecture course at UCSD. The course aims to meet a longstanding need for equipping UCSD undergraduate students with quantitative skills and concepts and for providing a new option towards graduation in quantitative systems biology, a rapidly growing field that integrates quantitative measurement technologies with math-based theoretical frameworks to address fundamental biological problems. I co-developed the class with Prof. Gurol Suel in 2016 and co-teach the class every Fall since then. This course, since its creation in 2016, has been very well-reviewed by students and many noted that the class was “eye opening” as it provides new perspectives in biology that have never been taught in other classes (see the statistics below from UCSD Course And Professor Evaluations).

<b>Term</b>	<b>Enrollment</b>	<b>Recommend class</b>	<b>Recommend instructor</b>
FA2016	80	94.5%	89.1%
FA2017	92	90.8%	96.1%
FA2018	96	93.9%	97.0%
FA2019	121	97.2%	95.3%
FA2020	122	97.7%	94.3%
FA2022	158	97.3%	96.3%

### Mentorship

In my lab, I aim at building a training environment that enables a close coupling between experiment and theory and fosters the expansion of scientific expertise of every lab member. I am currently mentoring four postdoctoral fellows, three Ph.D. students, and three Masters students. Below I include a table of lab alumni since my lab started in 2013. I have been proud to serve as their mentor and look forward to continue nurturing their career growth in the years ahead.

<b>Name</b>	<b>Undergrad/Grad/Postdoc</b>	<b>Current Position</b>
Zohreh AkhavanAghdam	PhD Student (2013-2017)	Scientist at 10x Genomics, CA
Anusorn Mudla	PhD Student (2015-2020)	Postdoc fellow at UCSD
Julie Paxman	PhD Student (2016-2021)	Dentons law firm, CA
Andres Nevarez	PhD student (2018-2022)	Postdoc fellow at MD Anderson Cancer Center, TX
Joydeb Sinha	Master’s Student (2014-2016)	PhD Student at Stanford Univ.
Gavin Shih	Master’s Student (2015-2018)	Senior Research Associate at DNA Electronics, Inc., CA
Gary Le	Master’s Student (2016-2018)	Scientist at Epinoma, CA
Yutian Li	Master’s Student (2016-2019)	PhD Student at Caltech
Adarsh Rajesh	Master’s Student (2019-2020)	PhD student at SBP Medical Discovery Institute
Bingxian Xu	Master’s Student (2018-2020)	PhD student at Northwestern University
Wanying Tian	Master’s Student (2018-2021)	PhD student at UCSD

Xiaoyan Ren	Master's Student (2018-2021)	PhD student at Kyoto University, Japan
Yijin Liu	Master's Student (2018-2021)	DDS student at USC School of Dentistry
Guoyu Zhu	Undergraduate Researcher (2018-2019)	PhD Student at Yale
Omar Tabaa	Postdoc (2015-2016)	Director of Computational Biotechnology, Battelle, OH
Yanfei Jiang	Postdoc (2016-2021)	Senior Optical Systems Engineer, Element Biosciences, CA
Yang Li	Postdoc (2014-2021)	Bioinformatician at UCSD

### Honors and Awards

2022	Chinese Biological Investigators Society (CBIS) Young Investigator Award
2014	Nominee, Presidential Early Career Award for Scientists and Engineers
2004 - 2006	Pre-doctoral Fellowship, American Heart Association
2001	Excellence Fellowship, University of North Carolina at Chapel Hill

### Professional Memberships

2019 – Present	Member, Gerontological Society of America
2017 – Present	Member, The American Society for Biochemistry and Molecular Biology
2013 – Present	Member, The American Association for the Advancement of Science
2013 – Present	Member, Genetics Society of America
2007 – Present	Full Member, Sigma Xi, The Scientific Research Society

### Professional Presentations

2023	Biology of Aging Symposium IV – Toward the Biology of Healthy Longevity, Montreal, Canada (invited talk)
2023	Department of Molecular Biosciences, Northwestern University, Evanston, IL (invited seminar)
2023	NIA Workshop: Harnessing computational approaches to advance aging and AD/ADRD research (invited talk)
2022	Yeast Genetics Meeting 2022, Los Angeles, CA (invited in-person talk)
2022	International Conference on Systems Biology of Human Disease, Nashville, TN (invited in-person talk)
2022	Biology of Aging Seminar, Huffington Center on Aging, Baylor College of Medicine, Houston, TX (Invited in-person seminar)
2022	Frontier in Biological Science seminar series, Tsinghua University, Beijing, China (Invited zoom seminar)
2022	Department of Biology, Saint Louis University, Saint Louis, MO (Invited zoom seminar)
2021	Quantitative Biology Symposium: Aging and Rejuvenation, Beijing, China (Invited zoom talk)

- 2021 Society for Mathematical Biology (SMB) Annual Meeting, Riverside, CA  
(Invited zoom talk)
- 2021 Department of Chemistry, University of Washington, Seattle, WA (Invited zoom seminar)
- 2020 The Interdisciplinary Center for Quantitative Modeling in Biology, UC Riverside  
(Invited zoom seminar)
- 2020 The 3<sup>rd</sup> Worldwide Chinese Computational Biology Conference (Invited zoom talk)
- 2020 International Conference on Complex Systems – Workshop: Complex Systems Dynamics & Aging Biology (Invited zoom talk)
- 2020 Aging Science Talks (zoom talk)
- 2020 INsights in Signaling Dynamics and Encoding (INSIDE) 2020 (zoom talk)
- 2020 The 8<sup>th</sup> Annual Winter q-bio Meeting, Hawaii (Invited talk)
- 2019 The Gerontological Society of America Annual Meeting, Austin, TX (invited talk)
- 2019 The 13<sup>th</sup> Annual q-bio Conference, San Francisco, CA (Contributed talk)
- 2019 Dynamic Signaling in Cells and Embryos, Yantai, China (Invited talk)
- 2019 UCSD Q-Bio program 2019 Spring Symposium, La Jolla, CA (Invited talk)
- 2019 Biophysics, University of Chicago, Chicago, IL (Invited seminar)
- 2019 The 3<sup>rd</sup> La Jolla Aging Meeting, La Jolla, CA (Invited talk)
- 2019 The 8<sup>th</sup> Annual Southern California Regional Conference on Systems Biology, Irvine, CA (Invited talk)
- 2018 Center for Circadian Biology Fall Workshop on Biological Timing, La Jolla, CA  
(Invited talk)
- 2018 Center for Quantitative Biology, Peking University, Beijing, China (Invited seminar)
- 2018 International Conference on Biological Aging from the Perspective of Physics, Information Science and Life Sciences, Bremen, Germany (Invited talk)
- 2018 San Diego Chromatin Club Seminar Series, San Diego, CA (Invited seminar)
- 2018 The 6<sup>th</sup> Annual Winter q-bio Meeting, Hawaii (Plenary talk)
- 2017 Interdisciplinary Research Center on Biology and Chemistry, Chinese Academy of Sciences, Shanghai, China (Invited seminar)
- 2017 Life Sciences and Biotechnology, Shanghai JiaoTong University, Shanghai, China (Invited seminar)
- 2017 Biomedical Engineering, Shanghai JiaoTong University, Shanghai, China (Invited talk)
- 2017 The 16<sup>th</sup> Society of Chinese Bioscientists in America (SCBA) Symposium, Hangzhou, China (Contributed talk)
- 2017 Bioengineering, Duke University, Durham, NC (Invited seminar)
- 2017 UNC Biochemistry and Biophysics Retreat, Chapel Hill, NC (Alumnus keynote speaker)
- 2017 Experimental Biology Annual Meeting, Chicago (Spotlight talk)
- 2017 The 5<sup>th</sup> Annual Winter q-bio Meeting, Hawaii (Plenary talk)
- 2017 The 7<sup>th</sup> Annual Southern California Regional Conference on Systems Biology, Irvine, CA (Invited talk)
- 2016 The Synthetic Biology Young Scholar Forum, Beijing, China (Invited talk)
- 2015 The ninth q-bio Summer School, San Diego, CA (Invited lecture)



- 2014 Center for Synthetic & Systems Biology, Tsinghua University, Beijing, China (Invited seminar)
- 2014 International Young Scholars Systems and Synthetic Biology Symposium, Beijing, China (Invited talk)
- 2014 The eighth q-bio Summer School, San Diego, CA (Invited lecture)
- 2014 The second Annual Winter q-bio Meeting, Hawaii (Plenary talk)
- 2014 BioCircuits Institute, UCSD (Invited seminar)
- 2013 The seventh q-bio Summer School, San Diego, CA (Invited lecture)
- 2013 Biological Sciences, University of California San Diego, La Jolla, CA (Invited seminar)
- 2013 Biophysics, University of Michigan, Ann Arbor, MI (Invited seminar)
- 2013 Bioengineering, University of Washington, Seattle, WA (Invited seminar)
- 2013 Biology, University of Iowa, Iowa City, IA (Invited seminar)
- 2013 Cell Biology, University of Texas Southwestern Medical Center, Dallas, TX (Invited seminar)
- 2013 Systems Biology, University of Massachusetts Medical School, Worcester, MA (seminar)
- 2013 Biotechnology Institute, University of Minnesota - Twin Cities, Minneapolis, MN (Invited seminar)
- 2013 Genetics, Development and Cell Biology, Iowa State University, Ames, Iowa (Invited seminar)
- 2012 Stadtman Symposium, National Institutes of Health, Bethesda, MD (Invited talk)
- 2012 Howard Hughes Medical Institute Science Meeting, Chevy Chase, MD (Poster)
- 2011 International Conference on Systems Biology of Human Disease, Boston, MA (Poster)
- 2011 Department of Chemistry & Chemical Biology, Harvard University, Cambridge, MA (Invited seminar)
- 2008 Systems Biology of MAPK pathways workshop, Okinawa, Japan (Talk)
- 2007 Deconstructing Biochemical Networks, Montreal, Canada (Poster)
- 2007 Gordon Research Conference: Phosphorylation and G protein Mediated Signaling Networks, University of New England, Biddeford, ME (Poster)
- 2007 American Society for Biochemistry and Molecular Biology (ASBMB)/ Experimental Biology 2007 Annual Meeting, Washington DC (Talk)

## **Campus Service**

- 2022 Chair, Molecular Biology Faculty Search Committee, UCSD
- 2021 – Present Chair, Retreat Committee, School of Biological Sciences, UCSD
- 2021 – Present Committee for Limited Submissions in the Sciences and Engineering
- 2020 – Present Leadership Team, Synthetic Biology Institute (SBI), UCSD
- 2020 – Present BS/MS Committee, School of Biological Sciences, UCSD
- 2013 – Present Executive Committee, UCSD Quantitative Biology (q-Bio) program
- 2021 Teaching Professor Search Committee, Division of Biological Sciences
- 2019 Molecular Biology hiring plan committee, Division of Biological Sciences
- 2018 – 2021 Alternate for the Academic Senate Representative Assembly, UCSD
- 2018 – 2021 Graduate Admission Committee, Division of Biological Sciences, UCSD
- 2018 – 2019 Biological Sciences program teaching assessment workgroup, Division of Biological Sciences, UCSD

2016 UCSD Frontiers of Innovation Scholars Program (FISP) committee  
2015 – 2021 Divisional Retreat Committee, Division of Biological Sciences, UCSD  
2015 Colloquium Committee, UCSD Quantitative Biology (q-Bio) program  
2014 Organizer, the UCSD BioCircuits Institute Fall Seminar Series  
2013 Graduate Admission Committee, UCSD Bioinformatics and Systems  
Biology Program

### Professional Service

2023 External reviewer, Alfred P. Sloan Foundation  
2023 *ad hoc* reviewer, NSF MCB – Systems and Synthetic Biology  
2023 *ad hoc* reviewer, NIH Director’s Transformative Research Award  
2022 *ad hoc* reviewer, NIH Cellular Mechanisms in Aging and Development  
(CMAD) Study Section  
2022 *ad hoc* reviewer, NIH Maximizing Investigators’ Research Award  
(MIRA) Study Section  
2021 – Present Editorial Board, *Frontiers in Aging*  
2014 – Present Editorial Board, *Journal of Metabolomics & Systems Biology*  
2021 Guest Editor, *Mechanisms of Ageing and Development, Special Issue on  
yeast aging*  
2019 Guest Editor, *eLife*

Acting as a manuscript reviewer for the following journals: *Science*, *Cell*, *PNAS*, *eLife*, *Nature Communications*, *Cell Systems*, *Cell Reports*, *The Journal of Cell Biology*, *Molecular Systems Biology*, *Science Signaling*, *PLoS Genetics*, *The Journal of Biological Chemistry*, *Biophysical Journal*, *ACS Synthetic Biology*, *PLoS Computational Biology*, *Integrative Biology*, *BMC Systems Biology*, *iScience*, *Lab on a Chip*, and others