




Karl Deisseroth

D. H. Chen Professor, Professor of Bioengineering and of Psychiatry and Behavioral Sciences

 NIH Biosketch available Online

 Curriculum Vitae available Online

CLINICAL OFFICE (PRIMARY)

- **Psychiatry and Behavioral Sciences**

401 Quarry Rd

MC 5795

Stanford, CA 94305

Tel (650) 498-9111

Fax (650) 724-9900

ACADEMIC CONTACT INFORMATION

- **Alternate Contact**

Cynthia Delacruz - Executive Assistant

Email cdelacruz@stanford.edu

Bio

BIO

Karl Deisseroth is the D.H. Chen Professor of Bioengineering and of Psychiatry and Behavioral Sciences at Stanford University, and Investigator of the Howard Hughes Medical Institute. He received his undergraduate degree from Harvard, his PhD from Stanford, and his MD from Stanford. He also completed postdoctoral training, medical internship, and adult psychiatry residency at Stanford, and he is board-certified by the American Board of Psychiatry and Neurology. He continues as a practicing psychiatrist at Stanford with specialization in affective disorders and autism-spectrum disease, employing medications along with neural stimulation.

CLINICAL FOCUS

- Psychiatry

ACADEMIC APPOINTMENTS

- Professor, Bioengineering
- Professor, Psychiatry and Behavioral Sciences
- Member, Bio-X
- Member, Wu Tsai Human Performance Alliance
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- Asan Award in Basic Medicine, for optogenetics (2025)
- Japan Prize in Life Sciences, for optogenetics (2023)
- Luisa Gross Horwitz Prize, for optogenetics (2022)
- Lasker Basic Medical Research Award, for development of optogenetics (2021)
- Ariëns Kappers Award, Royal Netherlands Academy of Arts and Sciences (2020)
- Lifetime Achievement Award in Medicine, J.E. Wallace Sterling (2020)

- Heineken Prize in Medicine, Royal Netherlands Academy of Arts and Sciences (2020)
- Kyoto Prize, for the discovery of optogenetics and the development of causal systems neuroscience (2018)
- Harvey Prize in Human Health, Technion, Israel (2017)
- Dickson Prize in Medicine, for optogenetics (2015)
- Breakthrough Prize in Life Science, for optogenetics (2015)
- Massry Prize, Massry Foundation (2017)
- Warren Alpert Prize, Harvard (2019)
- Berthold Leibinger Prize, for development of optogenetics (2018)
- Eisenberg Prize, University of Michigan (2018)
- Rumford Prize, AAAS (2018)
- NOMIS Distinguished Scientist Award, NOMIS Foundation (2017)
- BBVA Award, for optogenetics (2016)
- Redelsheimer Award, for optogenetics and CLARITY (2016)
- Albany Prize in Medicine, for optogenetics (2015)
- Young investigator Award, Society for Neuroscience (2009)
- Lurie Prize in Biomedical Sciences, Foundation for the NIH (2015)
- Meyer Award, American Psychiatric Association (2015)
- Dickson Prize in Science, for optogenetics (2014)
- Keio Medical Science Prize, for optogenetics (2014)
- Wilson Prize, Harvard (2014)
- BRAIN Prize, Lundbeck Research Foundation (2013)
- Gabbay Award, Brandeis (2013)
- Goldman-Rakic Award, Yale (2013)
- Pasarow Foundation Award, Pasarow Foundation (2013)
- Premio Citta' di Firenze for Molecular Sciences, for optogenetics and CLARITY (2013)
- Richard Lounsbery Prize, National Academy of Sciences (2013)
- Perl Prize, UNC (2012)
- Zuelch Prize, Max-Planck Society (2012)
- Spencer Prize, Columbia (2011)
- Koetser Prize, Zurich Switzerland (2010)
- Nakasone Prize, HFSP (2010)
- Gill YIA Award, Indiana University (2009)
- Lawrence C. Katz Prize, Duke University (2008)
- Schuetze Prize, Columbia (2008)
- McKnight Foundation Scholar Award, McKnight Foundation (2007)
- Presidential Early Career Award in Science and Engineering (PECASE), NIH (2006)
- Director's Pioneer Award, National Institutes of Health (2005)
- Early Career Translational Research Award, Coulter Foundation (2005)
- Klingenstein Fellowship, Klingenstein Foundation (2005)

- McKnight Foundation Technological Innovations in Neuroscience Award, McKnight Foundation (2005)
- Culpiper Scholar Award, Rockefeller Brothers Fund, Goldman Philanthropic Partnerships (2004)
- Outstanding Resident, National Institute of Mental Health (2002)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, National Academy of Medicine (2011 - present)
- Member, National Academy of Engineering (2019 - present)
- Member, National Academy of Sciences (2012 - present)

PROFESSIONAL EDUCATION

- Residency: Stanford University Psychiatry Residency (2004) CA
- Internship: Stanford University Psychiatry Residency (2001) CA
- Medical Education: Stanford University School of Medicine (2000) CA
- Board Certification: Psychiatry, American Board of Psychiatry and Neurology (2006)
- Ph.D., Stanford University , Neuroscience (1998)
- M.D., Stanford University (2000)
- A.B., Harvard , Biochemical Sciences (1992)

LINKS

- Deisseroth Lab Website: <https://web.stanford.edu/group/dlab/>
- optogenetics technology portal: <http://optogenetics.org>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Karl Deisseroth is the D.H. Chen Professor of Bioengineering and of Psychiatry and Behavioral Sciences at Stanford University, and Investigator of the Howard Hughes Medical Institute. Over the last sixteen years, his laboratory created and developed optogenetics, hydrogel-tissue chemistry (beginning with CLARITY), and a broad range of enabling methods. He also has employed his technologies to discover the neural cell types and connections that cause adaptive and maladaptive behaviors, and has disseminated the technologies to thousands of laboratories around the world.

CLINICAL TRIALS

- HNC study, Recruiting
- Understanding Ketamine Dissociative Effects, Recruiting

Teaching

COURSES

2025-26

- Principles and Practice of Optogenetics for Optical Control of Biological Tissues: BIOE 291 (Aut)
- Systems Physiology and Design: BIOE 103 (Spr)

2024-25

- Principles and Practice of Optogenetics for Optical Control of Biological Tissues: BIOE 291 (Aut)
- Systems Physiology and Design: BIOE 103 (Spr)

2023-24

- Principles and Practice of Optogenetics for Optical Control of Biological Tissues: BIOE 291 (Aut)
- Systems Physiology and Design: BIOE 103 (Spr)

2022-23

- Principles and Practice of Optogenetics for Optical Control of Biological Tissues: BIOE 291 (Aut)
- Systems Physiology and Design: BIOE 103 (Spr)
- Systems Physiology and Design: BIOE 103B (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Spencer Zhao

Postdoctoral Faculty Sponsor

YoungJu Jo, John Kochalka, Sam Vesuna, Wendy Wenderski, Alex White, Tomomi Yoshida

Doctoral Dissertation Advisor (AC)

Lucas Encarnacion-Rivera, Aviv Korman, Tony Liu, Kang Yong Loh, Joseph Noh, Morgan Phillips-Batra, Kaiwen Sheng, Valerie Tsai

Doctoral Dissertation Co-Advisor (AC)

Chelsea Li, David Li

Doctoral (Program)

Chibuike Uwakwe

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Bioengineering (Phd Program)
- Neurosciences (Phd Program)
- Psychiatry and Behavioral Science (Fellowship Program)

Publications

PUBLICATIONS

- **Human OPRM1 and murine Oprm1 promoter driven viral constructs for genetic access to μ -opioidergic cell types.** *Nature communications*
Salimando, G. J., Tremblay, S., Kimmey, B. A., Li, J., Rogers, S. A., Wojick, J. A., McCall, N. M., Wooldridge, L. M., Rodrigues, A., Borner, T., Gardiner, K. L., Jayakar, S. S., Singeç, et al
2023; 14 (1): 5632
- **Lifelong restructuring of 3D genome architecture in cerebellar granule cells.** *Science (New York, N.Y.)*
Tan, L., Shi, J., Moghadami, S., Parasar, B., Wright, C. P., Seo, Y., Vallejo, K., Cobos, I., Duncan, L., Chen, R., Deisseroth, K.
2023; 381 (6662): 1112-1119
- **Structural basis for ion selectivity in potassium-selective channelrhodopsins.** *Cell*
Tajima, S., Kim, Y. S., Fukuda, M., Jo, Y., Wang, P. Y., Paggi, J. M., Inoue, M., Byrne, E. F., Kishi, K. E., Nakamura, S., Ramakrishnan, C., Takaramoto, S., Nagata, et al
2023
- **Cardiogenic control of affective behavioural state.** *Nature*
Hsueh, B., Chen, R., Jo, Y., Tang, D., Raffiee, M., Kim, Y. S., Inoue, M., Randles, S., Ramakrishnan, C., Patel, S., Kim, D. K., Liu, T. X., Kim, et al
2023
- **All-optical physiology resolves a synaptic basis for behavioral timescale plasticity.** *Cell*
Fan, L. Z., Kim, D. K., Jennings, J. H., Tian, H., Wang, P. Y., Ramakrishnan, C., Randles, S., Sun, Y., Thadhani, E., Kim, Y. S., Quirin, S., Giocomo, L., Cohen, et al

2023

- **Video-based pooled screening yields improved far-red genetically encoded voltage indicators.** *Nature methods*
Tian, H., Davis, H. C., Wong-Campos, J. D., Park, P., Fan, L. Z., Gmeiner, B., Begum, S., Werley, C. A., Borja, G. B., Upadhyay, H., Shah, H., Jacques, J., Qi, et al
2023
- **Multiregion neuronal activity: the forest and the trees.** *Nature reviews. Neuroscience*
Machado, T. A., Kauvar, I. V., Deisseroth, K.
2022
- **Cell-type-specific population dynamics of diverse reward computations.** *Cell*
Sylwestrak, E. L., Jo, Y., Vesuna, S., Wang, X., Holcomb, B., Tien, R. H., Kim, D. K., Fenno, L., Ramakrishnan, C., Allen, W. E., Chen, R., Shenoy, K. V., Sussillo, et al
2022; 185 (19): 3568
- **Structural basis for channel conduction in the pump-like channelrhodopsin ChRmine.** *Cell*
Kishi, K. E., Kim, Y. S., Fukuda, M., Inoue, M., Kusakizako, T., Wang, P. Y., Ramakrishnan, C., Byrne, E. F., Thadhani, E., Paggi, J. M., Matsui, T. E., Yamashita, K., Nagata, et al
1800
- **From microbial membrane proteins to the mysteries of emotion.** *Cell*
Deisseroth, K.
2021
- **A Molecular Calcium Integrator Reveals a Striatal Cell Type Driving Aversion.** *Cell*
Kim, C. K., Sanchez, M. I., Hoerbelt, P., Fenno, L. E., Malenka, R. C., Deisseroth, K., Ting, A. Y.
2020
- **Deep posteromedial cortical rhythm in dissociation.** *Nature*
Vesuna, S., Kauvar, I. V., Richman, E., Gore, F., Oskotsky, T., Sava-Segal, C., Luo, L., Malenka, R. C., Henderson, J. M., Nuyujukian, P., Parvizi, J., Deisseroth, K.
2020
- **Multiple convergent hypothalamus-brainstem circuits drive defensive behavior.** *Nature neuroscience*
Lovett-Barron, M., Chen, R., Bradbury, S., Andalman, A. S., Wagle, M., Guo, S., Deisseroth, K.
2020
- **Genetically targeted chemical assembly of functional materials in living cells, tissues, and animals.** *Science (New York, N.Y.)*
Liu, J. n., Kim, Y. S., Richardson, C. E., Tom, A. n., Ramakrishnan, C. n., Birey, F. n., Katsumata, T. n., Chen, S. n., Wang, C. n., Wang, X. n., Joubert, L. M., Jiang, Y. n., Wang, et al
2020; 367 (6484): 1372–76
- **Deep brain optogenetics without intracranial surgery.** *Nature biotechnology*
Chen, R. n., Gore, F. n., Nguyen, Q. A., Ramakrishnan, C. n., Patel, S. n., Kim, S. H., Raffiee, M. n., Kim, Y. S., Hsueh, B. n., Krook-Magnusson, E. n., Soltesz, I. n., Deisseroth, K. n.
2020
- **Comprehensive Dual- and Triple-Feature Intersectional Single-Vector Delivery of Diverse Functional Payloads to Cells of Behaving Mammals.** *Neuron*
Fenno, L. E., Ramakrishnan, C. n., Kim, Y. S., Evans, K. E., Lo, M. n., Vesuna, S. n., Inoue, M. n., Cheung, K. Y., Yuen, E. n., Pichamoorthy, N. n., Hong, A. S., Deisseroth, K. n.
2020
- **Cortical Observation by Synchronous Multifocal Optical Sampling Reveals Widespread Population Encoding of Actions.** *Neuron*
Kauvar, I. V., Machado, T. A., Yuen, E. n., Kochalka, J. n., Choi, M. n., Allen, W. E., Wetzstein, G. n., Deisseroth, K. n.
2020
- **Neuronal Dynamics Regulating Brain and Behavioral State Transitions** *CELL*
Andalman, A. S., Burns, V. M., Lovett-Barron, M., Broxton, M., Poole, B., Yang, S. J., Grosenick, L., Lerner, T. N., Chen, R., Benster, T., Mourrain, P., Levoy, M., Rajan, et al

2019; 177 (4): 970+

- **Thirst regulates motivated behavior through modulation of brainwide neural population dynamics** *SCIENCE*
Allen, W. E., Chen, M. Z., Pichamoorthy, N., Tien, R. H., Pachitariu, M., Luo, L., Deisseroth, K.
2019; 364 (6437): 253+
- **Interacting neural ensembles in orbitofrontal cortex for social and feeding behaviour** *NATURE*
Jennings, J. H., Kim, C. K., Marshel, J. H., Raffiee, M., Ye, L., Quirin, S., Pak, S., Ramakrishnan, C., Deisseroth, K.
2019; 565 (7741): 645+
- **Cortical layer-specific critical dynamics triggering perception.** *Science (New York, N.Y.)*
Marshel, J. H., Kim, Y. S., Machado, T. A., Quirin, S. n., Benson, B. n., Kadmon, J. n., Raja, C. n., Chibukhchyan, A. n., Ramakrishnan, C. n., Inoue, M. n., Shane, J. C., McKnight, D. J., Yoshizawa, et al
2019
- **Crystal structure of the natural anion-conducting channelrhodopsin GtACR1** *NATURE*
Kim, Y., Kato, H. E., Yamashita, K., Ito, S., Inoue, K., Ramakrishnan, C., Fenno, L. E., Evans, K. E., Paggi, J. M., Dror, R. O., Kandori, H., Kobilka, B. K., Deisseroth, et al
2018; 561 (7723): 343+
- **Structural mechanisms of selectivity and gating in anion channelrhodopsins** *NATURE*
Kato, H. E., Kim, Y., Paggi, J. M., Evans, K. E., Allen, W. E., Richardson, C., Inoue, K., Ito, S., Ramakrishnan, C., Fenno, L. E., Yamashita, K., Hilger, D., Lee, et al
2018; 561 (7723): 349+
- **5-HT release in nucleus accumbens rescues social deficits in mouse autism model** *NATURE*
Walsh, J. J., Christoffel, D. J., Heifets, B. D., Ben-Dor, G. A., Selimbeyoglu, A., Hung, L. W., Deisseroth, K., Malenka, R. C.
2018; 560 (7720): 589+
- **Three-dimensional intact-tissue sequencing of single-cell transcriptional states** *SCIENCE*
Wang, X., Allen, W. E., Wright, M. A., Sylwestrak, E. L., Samusik, N., Vesuna, S., Evans, K., Liu, C., Ramakrishnan, C., Liu, J., Nolan, G. P., Bava, F., Deisseroth, et al
2018; 361 (6400): 380+
- **Hydrogel-Tissue Chemistry: Principles and Applications** *ANNUAL REVIEW OF BIOPHYSICS, VOL 47*
Gradinaru, V., Treweek, J., Overton, K., Deisseroth, K.
edited by Dill, K. A.
2018; 47: 355–76
- **Optical and chemical discoveries recognized for impact on biology and psychiatry.** *EMBO reports*
Deisseroth, K.
2017; 18 (6): 859-860
- **Global Representations of Goal-Directed Behavior in Distinct Cell Types of Mouse Neocortex** *NEURON*
Allen, W. E., Kauvar, I. V., Chen, M. Z., Richman, E. B., Yang, S. J., Chan, K., Gradinaru, V., Deverman, B. E., Luo, L., Deisseroth, K.
2017; 94 (4): 891-?
- **Integration of optogenetics with complementary methodologies in systems neuroscience** *NATURE REVIEWS NEUROSCIENCE*
Kim, C. K., Adhikari, A., Deisseroth, K.
2017; 18 (4): 222-235
- **Cognitive neuroscience: In search of lost time.** *Nature*
Young, N. P., Deisseroth, K.
2017; 542 (7640): 173-174
- **Gamma oscillations organize top-down signalling to hypothalamus and enable food seeking** *NATURE*
Carus-Cadavieco, M., Gorbati, M., Ye, L., Bender, F., van der Veldt, S., Kosse, C., Borgers, C., Lee, S. Y., Ramakrishnan, C., Hu, Y., Denisova, N., Ramm, F., Volitaki, et al
2017; 542 (7640): 232-236

- **Pathways to clinical CLARITY: volumetric analysis of irregular, soft, and heterogeneous tissues in development and disease.** *Scientific reports*
Hsueh, B. n., Burns, V. M., Pauerstein, P. n., Holzem, K. n., Ye, L. n., Engberg, K. n., Wang, A. C., Gu, X. n., Chakravarthy, H. n., Arda, H. E., Charville, G. n., Vogel, H. n., Efimov, et al
2017; 7 (1): 5899
- **The form and function of channelrhodopsin.** *Science (New York, N.Y.)*
Deisseroth, K., Hegemann, P.
2017; 357 (6356)
- **Modulation of prefrontal cortex excitation/inhibition balance rescues social behavior in CNTNAP2-deficient mice.** *Science translational medicine*
Selimbeyoglu, A. n., Kim, C. K., Inoue, M. n., Lee, S. Y., Hong, A. S., Kauvar, I. n., Ramakrishnan, C. n., Fenno, L. E., Davidson, T. J., Wright, M. n., Deisseroth, K. n.
2017; 9 (401)
- **Ancestral Circuits for the Coordinated Modulation of Brain State.** *Cell*
Lovett-Barron, M. n., Andalman, A. S., Allen, W. E., Vesuna, S. n., Kauvar, I. n., Burns, V. M., Deisseroth, K. n.
2017; 171 (6): 1411–23.e17
- **Thirst-associated preoptic neurons encode an aversive motivational drive.** *Science (New York, N.Y.)*
Allen, W. E., DeNardo, L. A., Chen, M. Z., Liu, C. D., Loh, K. M., Fenno, L. E., Ramakrishnan, C. n., Deisseroth, K. n., Luo, L. n.
2017; 357 (6356): 1149–55
- **Molecular and Circuit-Dynamical Identification of Top-Down Neural Mechanisms for Restraint of Reward Seeking.** *Cell*
Kim, C. K., Ye, L. n., Jennings, J. H., Pichamoorthy, N. n., Tang, D. D., Yoo, A. W., Ramakrishnan, C. n., Deisseroth, K. n.
2017; 170 (5): 1013–27.e14
- **Rabies screen reveals GPe control of cocaine-triggered plasticity.** *Nature*
Beier, K. T., Kim, C. K., Hoerbelt, P. n., Hung, L. W., Heifets, B. D., DeLoach, K. E., Mosca, T. J., Neuner, S. n., Deisseroth, K. n., Luo, L. n., Malenka, R. C.
2017
- **A LOOK INSIDE THE BRAIN** *SCIENTIFIC AMERICAN*
Deisseroth, K.
2016; 315 (4): 31-37
- **Wiring and Molecular Features of Prefrontal Ensembles Representing Distinct Experiences** *CELL*
Ye, L., Allen, W. E., Thompson, K. R., Tian, Q., Hsueh, B., Ramakrishnan, C., Wang, A., Jennings, J. H., Adhikari, A., Halpern, C. H., Witten, I. B., Barth, A. L., Luo, et al
2016; 165 (7): 1776-1788
- **Targeting Neural Circuits** *CELL*
Rajasekharan, P., Ferenczi, E., Deisseroth, K.
2016; 165 (3): 524-534
- **Simultaneous fast measurement of circuit dynamics at multiple sites across the mammalian brain.** *Nature methods*
Kim, C. K., Yang, S. J., Pichamoorthy, N., Young, N. P., Kauvar, I., Jennings, J. H., Lerner, T. N., Berndt, A., Lee, S. Y., Ramakrishnan, C., Davidson, T. J., Inoue, M., Bito, et al
2016; 13 (4): 325-328
- **Hypothalamic control of male aggression-seeking behavior** *NATURE NEUROSCIENCE*
Falkner, A. L., Grosenick, L., Davidson, T. J., Deisseroth, K., Lin, D.
2016; 19 (4): 596-?
- **Nucleus accumbens D2R cells signal prior outcomes and control risky decision-making** *NATURE*
Zalocusky, K. A., Ramakrishnan, C., Lerner, T. N., Davidson, T. J., Knutson, B., Deisseroth, K.
2016; 531 (7596): 642-?
- **Communication in Neural Circuits: Tools, Opportunities, and Challenges** *CELL*
Lerner, T. N., Ye, L., Deisseroth, K.

2016; 164 (6): 1136-1150

- **Illuminating next-generation brain therapies.** *Nature neuroscience*
Ferenczi, E., Deisseroth, K.
2016; 19 (3): 414-6
- **Multiplexed Intact-Tissue Transcriptional Analysis at Cellular Resolution** *CELL*
Sylwestrak, E. L., Rajasethupathy, P., Wright, M. A., Jaffe, A., Deisseroth, K.
2016; 164 (4): 792-804
- **Structural foundations of optogenetics: Determinants of channelrhodopsin ion selectivity** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Berndt, A., Lee, S. Y., Wietek, J., Ramakrishnan, C., Steinberg, E. E., Rashid, A. J., Kim, H., Park, S., Santoro, A., Frankland, P. W., Iyer, S. M., Pak, S., Ahrlund-Richter, et al
2016; 113 (4): 822-829
- **NEURAL CIRCUITS Prefrontal cortical regulation of brainwide circuit dynamics and reward-related behavior** *SCIENCE*
Ferenczi, E. A., Zalocusky, K. A., Liston, C., Grosenick, L., Warden, M. R., Amatya, D., Katovich, K., Mehta, H., Patenaude, B., Ramakrishnan, C., Kalanithi, P., Etkin, A., Knutson, et al
2016; 351 (6268): 41-U59
- **Optogenetic approaches addressing extracellular modulation of neural excitability.** *Scientific reports*
Ferenczi, E. A., Vierock, J., Atsuta-Tsunoda, K., Tsunoda, S. P., Ramakrishnan, C., Gorini, C., Thompson, K., Lee, S. Y., Berndt, A., Perry, C., Minniberger, S., Vogt, A., Mattis, et al
2016; 6: 23947-?
- **SPED Light Sheet Microscopy: Fast Mapping of Biological System Structure and Function** *CELL*
Tomer, R., Lovett-Barron, M., Kauvar, I., Andalman, A., Burns, V. M., Sankaran, S., Grosenick, L., Broxton, M., Yang, S., Deisseroth, K.
2015; 163 (7): 1796-1806
- **Extended field-of-view and increased-signal 3D holographic illumination with time-division multiplexing** *OPTICS EXPRESS*
Yang, S. J., Allen, W. E., Kauvar, I., Andalman, A. S., Young, N. P., Kim, C. K., Marshel, J. H., Wetzstein, G., Deisseroth, K.
2015; 23 (25): 32573-32581
- **Basomedial amygdala mediates top-down control of anxiety and fear.** *Nature*
Adhikari, A., Lerner, T. N., Finkelstein, J., Pak, S., Jennings, J. H., Davidson, T. J., Ferenczi, E., Gunaydin, L. A., Mirzabekov, J. J., Ye, L., Kim, S., Lei, A., Deisseroth, et al
2015; 527 (7577): 179-185
- **Projections from neocortex mediate top-down control of memory retrieval.** *Nature*
Rajasethupathy, P., Sankaran, S., Marshel, J. H., Kim, C. K., Ferenczi, E., Lee, S. Y., Berndt, A., Ramakrishnan, C., Jaffe, A., Lo, M., Liston, C., Deisseroth, K.
2015; 526 (7575): 653-659
- **Thalamic control of sensory selection in divided attention** *NATURE*
Wimmer, R. D., Schmitt, L. I., Davidson, T. J., Nakajima, M., Deisseroth, K., Halassa, M. M.
2015; 526 (7575): 705-709
- **Optogenetics: 10 years of microbial opsins in neuroscience** *NATURE NEUROSCIENCE*
Deisseroth, K.
2015; 18 (9): 1213-1225
- **OPTOGENETICS. Expanding the optogenetics toolkit.** *Science*
Berndt, A., Deisseroth, K.
2015; 349 (6248): 590-591
- **Intact-Brain Analyses Reveal Distinct Information Carried by SNc Dopamine Subcircuits** *CELL*
Lerner, T. N., Shilyansky, C., Davidson, T. J., Evans, K. E., Beier, K. T., Zalocusky, K. A., Crow, A. K., Malenka, R. C., Luo, L., Tomer, R., Deisseroth, K.
2015; 162 (3): 635-647

- **Optogenetics and the circuit dynamics of psychiatric disease.** *JAMA*
Deisseroth, K., Etkin, A., Malenka, R. C.
2015; 313 (20): 2019-2020
- **The BRAIN Initiative: developing technology to catalyze neuroscience discovery** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES*
Jorgenson, L. A., Newsome, W. T., Anderson, D. J., Bargmann, C. I., Brown, E. N., Deisseroth, K., Donoghue, J. P., Hudson, K. L., Ling, G. S., MacLeish, P. R., Marder, E., Normann, R. A., Sanes, et al
2015; 370 (1668): 8-19
- **Closed-Loop and Activity-Guided Optogenetic Control** *NEURON*
Grosenick, L., Marshel, J. H., Deisseroth, K.
2015; 86 (1): 106-139
- **Simultaneous cellular-resolution optical perturbation and imaging of place cell firing fields** *NATURE NEUROSCIENCE*
Rickgauer, J. P., Deisseroth, K., Tank, D. W.
2014; 17 (12): 1816-1824
- **Advanced CLARITY for rapid and high-resolution imaging of intact tissues** *NATURE PROTOCOLS*
Tomer, R., Ye, L., Hsueh, B., Deisseroth, K.
2014; 9 (7): 1682-1697
- **Targeting cells with single vectors using multiple-feature Boolean logic.** *Nature methods*
Fenno, L. E., Mattis, J., Ramakrishnan, C., Hyun, M., Lee, S. Y., He, M., Tucciarone, J., Selimbeyoglu, A., Berndt, A., Grosenick, L., Zalocusky, K. A., Bernstein, H., Swanson, et al
2014; 11 (7): 763-772
- **Natural neural projection dynamics underlying social behavior.** *Cell*
Gunaydin, L. A., Grosenick, L., Finkelstein, J. C., Kauvar, I. V., Fenno, L. E., Adhikari, A., Lammel, S., Mirzabekov, J. J., Airan, R. D., Zalocusky, K. A., Tye, K. M., Anikeeva, P., Malenka, et al
2014; 157 (7): 1535-1551
- **Structure-guided transformation of channelrhodopsin into a light-activated chloride channel.** *Science (New York, N.Y.)*
Berndt, A., Lee, S. Y., Ramakrishnan, C., Deisseroth, K.
2014; 344 (6182): 420-4
- **Circuit dynamics of adaptive and maladaptive behaviour** *NATURE*
Deisseroth, K.
2014; 505 (7483): 309-317
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