Stanford

William Newsome

Harman Family Provostial Professor, Vincent V. C. Woo Director of the Stanford Neurosciences Institute, and Professor of Neurobiology and, by courtesy, of Psychology

Curriculum Vitae available Online

CONTACT INFORMATION

- **Alternate Contact**

  Susan Matthews - Administrative Assistant

  Email susanmat@stanford.edu

  Tel 650-723-7109

Bio

ACADEMIC APPOINTMENTS

- Professor, Neurobiology
- Professor (By courtesy), Psychology
- Member, Bio-X
- Member, Stanford Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Correspondent, Committee on Human Rights, National Academy of Sciences, (2001- present)
- Scientific Advisory Board, Riken Brain Sciences Institute, Tokyo, (2003- present)
- McKnight Scholars Awards Selection Committee, McKnight Endowment Fund for Neuroscience, (2007- present)
- Scientific Advisory Board, Max Planck Institute for Biological Cybernetics, (2009- present)
- Committee on Committees, Society for Neuroscience, (2010- present)
- Co-Chairman, NIH BRAIN Advisory Committee, (2013-2014)

HONORS AND AWARDS

- Henry J. Kaiser Award for Excellence in Teaching, Students of the Stanford University School of Medicine (1991, 1997)
- Golden Brain Award, Minerva Foundation (1992)
- The Rank Prize in Optoelectronics, The Rank Prize Funds, London (1992)
- MERIT Award, National Eye Institute (1993)
- W. Alden Spencer Award for highly original contributions to research in neurobiology, Columbia University (1994)
- Fogarty International Senior Research Fellowship, Fogarty International Center, NIH (1995)
- Guggenheim Fellowship, Guggenheim Foundation (1995)
- Investigator, Howard Hughes Medical Institute (1997)
- Elected to membership, National Academy of Sciences, USA (2000)

- Distinguished Scientific Contribution Award, American Psychological Association (2002)
- Award for Outstanding Service to Graduate Students, Students, Stanford University School of Medicine (2003)
- Dan David Prize, Dan David Foundation and Tel Aviv University (2004)
- Karl Spencer Lashley Award, American Philosophical Society (2010)
- Champalimaud Vision Award, Champalimaud Foundation, Lisbon (2010)
- Elected to Membership, The American Philosophical Society (2011)
- Honorary Doctor of Science Degree, State University of New York, School of Optometry (2012)
- Pepose Award for the Study of Vision, Brandeis University (2015)

PROFESSIONAL EDUCATION

- Ph.D., California Inst. of Technology , Neurobiology (1980)

LINKS

- http://monkeybiz.stanford.edu/: http://monkeybiz.stanford.edu/
- Personal Web site: http://monkeybiz.stanford.edu/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The long-term goal of our research is to understand the neuronal processes that mediate visual perception and visually guided behavior. To this end we are conducting parallel behavioral and physiological experiments in animals that are trained to perform selected perceptual or eye movement tasks. By recording the activity of cortical neurons during performance of such tasks, we gain initial insights into the relationship of neuronal activity to the animal's behavioral capacities. Hypotheses concerning this relationship are tested by modifying neural activity within local cortical circuits to determine whether behavior is affected in a predictable manner. Computer modelling techniques are then used to develop more refined hypotheses concerning the relationship of brain to behavior that are both rigorous and testable. This combination of behavioral, electrophysiological and computational techniques provides a realistic basis for neurophysiological investigation of cognitive functions such as perception, memory and motor planning.

Teaching

COURSES

2017-18

- Social and Ethical Issues in the Neurosciences: NBIO 101, NBIO 201 (Spr)
- Understanding Techniques in Neuroscience: NBIO 227 (Aut)

2016-17

- Social and Ethical Issues in the Neurosciences: NBIO 101, NBIO 201 (Spr)
- Understanding Techniques in Neuroscience: NBIO 227 (Aut)

2015-16

- Understanding Techniques in Neuroscience: NBIO 227 (Aut)

2014-15

- Social and Ethical Issues in the Neurosciences: NBIO 101, NBIO 201 (Spr)
- Understanding Techniques in Neuroscience: NBIO 227 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

William Allen, Jesse Gomez, Lane McIntosh

Postdoctoral Faculty Sponsor

Diogo Manuel B Magalh Da Rocha Peixoto

Postdoctoral Research Mentor

Diogo Manuel B Magalh Da Rocha Peixoto

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Neurosciences (Phd Program)

Publications

PUBLICATIONS

- **The BRAIN Initiative: developing technology to catalyse 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

- **Natural Grouping of Neural Responses Reveals Spatially Segregated Clusters in Prearcuate Cortex** *NEURON*
  Kiani, R., Cueva, C. J., Reppas, J. B., Peixoto, D., Ryu, S. I., Newsome, W. T.
  2015; 85 (6): 1359-1373

- **Effects of Cortical Microstimulation on Confidence in a Perceptual Decision** *NEURON*
  Fetsch, C. R., Kiani, R., Newsome, W. T., Shadlen, M. N.
  2014; 83 (4): 797-804

- **Dynamics of Neural Population Responses in Prefrontal Cortex Indicate Changes of Mind on Single Trials** *CURRENT BIOLOGY*
  Kiani, R., Cueva, C. J., Reppas, J. B., Newsome, W. T.
  2014; 24 (13): 1542-1547

- **Dynamics of neural population responses in prefrontal cortex indicate changes of mind on single trials.** *Current biology*
  Kiani, R., Cueva, C. J., Reppas, J. B., Newsome, W. T.
  2014; 24 (13): 1542-1547

- **The Brain Research Through Advancing Innovative Neurotechnologies (BRAIN) initiative and neurology.** *JAMA neurology*
  Bargmann, C. I., Newsome, W. T.
  2014; 71 (6): 675-676

- **Context-dependent computation by recurrent dynamics in prefrontal cortex.** *Nature*
  Mante, V., Sussillo, D., Shenoy, K. V., Newsome, W. T.
  2013; 503 (7474): 78-84

- **Context-dependent computation by recurrent dynamics in prefrontal cortex** *NATURE*
  Mante, V., Sussillo, D., Shenoy, K. V., Newsome, W. T.
  2013; 503 (7474): 78-?

- **Tracking the eye non-invasively: simultaneous comparison of the scleral search coil and optical tracking techniques in the macaque monkey** *FRONTIERS IN BEHAVIORAL NEUROSCIENCE*
  Kimmel, D. L., Mammo, D., Newsome, W. T.
  2012; 6

- **Dissociation of Neuronal and Psychophysical Responses to Local and Global Motion** *CURRENT BIOLOGY*

Hedges, J. H., Gartshteyn, Y., Kohn, A., Rust, N. C., Shadlen, M. N., Newsome, W. T., Movshon, J. A.
2011; 21 (23): 2023-2028

- **Integration of Sensory and Reward Information during Perceptual Decision-Making in Lateral Intraparietal Cortex (LIP) of the Macaque Monkey** *PLOS ONE*
  Rorie, A. E., Gao, J., McClelland, J. L., Newsome, W. T.
  2010; 5 (2)
- **Estimates of the Contribution of Single Neurons to Perception Depend on Timescale and Noise Correlation** *JOURNAL OF NEUROSCIENCE*
  Cohen, M. R., Newsome, W. T.
  2009; 29 (20): 6635-6648
- **Can Monkeys Choose Optimally When Faced with Noisy Stimuli and Unequal Rewards?** *PLOS COMPUTATIONAL BIOLOGY*
  Feng, S., Holmes, P., Rorie, A., Newsome, W. T.
  2009; 5 (2)
- **Context-Dependent Changes in Functional Circuitry in Visual Area MT** *NEURON*
  Cohen, M. R., Newsome, W. T.
  2008; 60 (1): 162-173
- **The temporal precision of reward prediction in dopamine neurons.** *Nature neuroscience*
  2008
- **Local field potential in cortical area MT: Stimulus tuning and behavioral correlations** *JOURNAL OF NEUROSCIENCE*
  Liu, J., Newsome, W. T.
  2006; 26 (30): 7779-7790
- **Choosing the greater of two goods: Neural currencies for valuation and decision making** *NATURE REVIEWS NEUROSCIENCE*
  Sugrue, L. P., Corrado, G. S., Newsome, W. T.
  2005; 6 (5): 363-375
- **Choosing the greater of two goods: neural currencies for valuation and decision making** *Nature Reviews Neuroscience*
  LP Sugrue, GS Corrado, WT Newsome
  2005; 6: 363-375
- **Linear-Nonlinear-Poisson models of primate choice dynamics** *Journal of the Experimental Analysis of Behavior*
  GS Corrado, LP Sugrue, WT Newsome
  2005; 84: 581-617
- **Perceptual "read-out" of conjoined direction and disparity maps in extrastriate area MT** *PLOS Biology*
  DeAngelis, G., WT Newsome
  2004; 2: 394-404
- **Matching behavior and the encoding of value in parietal cortex** *Science*
  Sugrue, L., GS Corrado, WT Newsome
  2004; 304: 1782-1787
- **Neural basis of a perceptual decision in the parietal cortex (area LIP) of the rhesus monkey** *JOURNAL OF NEUROPHYSIOLOGY*
  Shadlen, M. N., Newsome, W. T.
  2001; 86 (4): 1916-1936
- **Separate signals for target selection and movement specification in the superior colliculus** *SCIENCE*
  Horwitz, G. D., Newsome, W. T.
  1999; 284 (5417): 1158-1161
- **Cortical area MT and the perception of stereoscopic depth** *NATURE*
  DeAngelis, G. C., Cumming, B. G., Newsome, W. T.
  1998; 394 (6694): 677-680
- **Motion perception: Seeing and deciding** *Colloquium on Vision - From Photon to Perception*
  Shadlen, M. N., Newsome, W. T.

NATL ACAD SCIENCES.1996: 628–33

- **On neural codes and perception** *J. Cogn. Neurosci.*
  Newsome, W.
  1995; 7: 95-100