

Curriculum Vitae

Earl K. Miller

Picower Professor of Neuroscience
Associate Director, The Picower Institute for Learning and Memory
The Picower Institute for Learning and Memory and
Department of Brain and Cognitive Sciences at the
Massachusetts Institute of Technology

Contact information

Massachusetts Institute of Technology
77 Massachusetts Avenue
Cambridge, MA 02139
voice: 617-252-1584 fax: 617-258-7978 secretary: 617-252-1790
ekmiller@mit.edu www.ekmiller.org

Date of Birth

30 November 1962, Columbus, OH USA

Education

1990 Ph.D. in Psychology and Neuroscience, Princeton University
1987 M.A. in Psychology and Neuroscience, Princeton University
1985 B.A. with honors in Psychology, Kent State University

Current Positions

2003-present Picower Professor of Neuroscience, The Picower Institute for Learning and Memory and
Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology
2001-present Associate Director, The Picower Institute for Learning and Memory, Massachusetts
Institute of Technology
2009-present Co-Director, Center of Excellence for Learning in Education, Science, and Technology,
National Science Foundation Science of Learning Center
2008-present Director of Graduate Studies in Brain and Cognitive Sciences, Massachusetts Institute of
Technology

Past Positions

2002-2009 Director (Thrust 5), Center of Excellence for Learning in Education, Science, and
Technology, National Science Foundation Science of Learning Center
1999-2008 Investigator, RIKEN-MIT Neuroscience Research Center
2002-2003 Professor of Neuroscience, The Picower Center for Learning and Memory and
Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology
1999-2002 Associate Professor of Neuroscience, Department of Brain and Cognitive Sciences,
Massachusetts Institute of Technology
2000-2006 Director of Graduate Studies in Brain and Cognitive Sciences, Massachusetts Institute of
Technology
1996-1999 Associate Member, Center for Learning and Memory, Massachusetts Institute of
Technology
1995-1999 Assistant Professor of Neuroscience, Department of Brain and Cognitive Sciences,
Massachusetts Institute of Technology
1990-1995 Intramural Research Fellow, Laboratory of Neuropsychology, National Institute of Mental
Health
1989-1990 Lecturer, Princeton University
1985-1990 Research Assistant, Princeton University

1985-1989 Assistant in Instruction, Princeton University
1983-1985 Research Assistant, Kent State University

Awards and Honors

2009 Engineering Distinguished Lecturer, National Science Foundation
2008 "An Integrative Theory of Prefrontal Cortex Function" (Miller and Cohen, 2001) designated a *Current Classic* by Thomson Scientific as among the most cited papers in the field of Neuroscience and Behavior
2007 Mathilde Solowey Award in the Neurosciences
2007 Jeffrey Lecture in Cognitive Neuroscience, UCLA
2006 Elected to the International Neuropsychological Symposium
2006 Grass Lecture, University of Illinois
2005 Fellow, American Association for the Advancement of Science
2003 Picower Professorship (endowed chair)
2002 Elected to the International Society for Behavioral Neuroscience
2000 Society for Neuroscience Young Investigator Award
2000 National Academy of Sciences Troland Research Award
1999 Class of 1956 Career Development Professorship (endowed chair)
1998 John Merck Scholar Award
1996 Pew Scholar Award
1996 McKnight Scholar Award
1996 Whitehall Foundation Fellowship
1996 Alfred P. Sloan Research Fellow
1987 National Research Service Award Predoctoral Fellowship
1986 National Institutes of Health Predoctoral Training Fellowship
1985 Graduate *summa cum laude* with honors, Kent State University
1985 Phi Beta Kappa

Editorships and Editorial Boards

2010 Editorial Board, *Neuroscience Research*
2009 Co-Editor, *Experimental Brain Research*
2008 Reviewing Editor, *Frontiers in Systems Neuroscience*
2006 Senior Editor, *Journal of Neuroscience*
2005 Reviewing Editor, *Journal of Neuroscience*
2004 Associate Editor, *New Encyclopedia of Neuroscience*
2003 Action Editor, *Journal of Cognitive Neuroscience*
2002 Editorial Board, Cognitive Sciences, MIT Press
2002 Editorial Board, *Journal of Neurophysiology*
2001 Consulting Editor, *Behavioral Neuroscience*
2000 Editorial Board, *Neuron*
2000 Editorial Board, *Cognitive, Affective, and Behavioral Neuroscience*

Committees and Advisory Boards

2009 Advisory Board, National Institutes of Health Program Project, Yale University
2008 National Institute of Neurological Disorders and Stroke Advisory Panel for Basic Research
2006 Scientific Advisory Board, NeuroFocus, Inc.
2006 Scientific Advisory Board, Polimetrix, Inc
2005 National Institutes of Health Cognitive Neuroscience study section
2005 National Institute of Mental Health Workshop on Social Neuroscience
2004 College of Reviewers for Canada Research Chairs
2003 Working Group on Interspecific Chimeric Brains, Phoebe R. Berman Bioethics Institute, Johns Hopkins University
2003 Advisory Council, Department of Psychology, Princeton University

2002	Advisory Board, International Centre for Research on the Biology of Memory, Norwegian Research Council
1999	Advisory Council of the International Association for the Study of Attention and Performance
1997	Steering Committee, Boston Area Neuroscience Group

Publications

1. Seger, C.A. and Miller, E.K. "Category Learning in the Brain" Annual Review of Neuroscience, Vol. 33, in press.
2. Siegel, M., Warden, M.R., and Miller, E.K. "Phase-dependent neuronal coding of objects in short-term memory." *Proceedings of the National Academy of Sciences*, in press.
3. Histed, M.H., Pasupathy, A., and Miller, E.K. "Learning substrates in the primate prefrontal cortex and striatum: sustained activity related to successful actions." *Neuron*, 63: 244-253, 2009.
4. Buschman, T.J. and Miller, E.K. "Serial, covert, shifts of attention during visual search are reflected by the frontal eye fields and correlated with population oscillations." *Neuron*, 63: 386-396, 2009.
5. Miller, E.K. and Wallis, J.D. "Executive function and higher-order cognition: Definitions and neural substrates." In: *The Encyclopedia of Neuroscience*, Volume 4, Squire LR (Ed.), pp 99-104. Oxford: Academic Press, 2009.
6. Miller, E.K. and Wilson, M.A. "All my circuits: Using multiple-electrodes to understand functioning neural networks." *Neuron*, 60: 483-488, 2008.
7. Meyers, E.M., Freedman, D.J., Kreiman, G., Miller, E.K., and Poggio, T. "Dynamic population coding of category information in the inferior temporal cortex and prefrontal cortex" *Journal of Neurophysiology*, 100: 1407-1419, 2008.
8. Loh, M., Pasupathy, A., Miller, E.K., and Deco, G. "Neurodynamics of the prefrontal cortex during conditional visuomotor associations." *Journal of Cognitive Neuroscience*, 20: 421-431, 2008.
9. Freedman, D.J. And Miller, E.K. "Neural mechanisms of visual categorization: Insights from neurophysiology" *Neuroscience and Biobehavioral Reviews*, 32(2):311-29, 2008.
10. Buschman, T.J. and Miller, E.K. "Top-down versus bottom-up control of attention in the prefrontal and posterior parietal cortices." *Science*, 315: 1860-1862, 2007.
11. Miller, E.K. and Wallis, J.D. "The prefrontal cortex and executive brain functions". *Fundamental Neuroscience*, 3rd edition, 2008.
12. Warden, M.R. and Miller, E.K. "The representation of multiple objects in prefrontal neuronal delay activity." *Cerebral Cortex*, 17: i41-i50, 2007.
13. Fusi, S., Asaad, W.F., Miller, E.K., and Wang, X.J. "A neural circuit model of flexible sensori-motor mapping: Learning and forgetting on multiple timescales." *Neuron*, 54: 319-333, 2007.
14. Miller, E.K. and Buschman, T.J. "Rules through recursion: How interactions between the frontal cortex and basal ganglia may build abstract, complex, rules from concrete, simple, ones" S. Bunge & J. Wallis (Eds.), *The Neuroscience of Rule-Guided Behavior*, Oxford University Press, 2007.
15. Miller, E.K. "The prefrontal cortex: categories, concepts, and cognitive control" In: *Memories: Molecules and Circuits, Research and Perspectives in Neurosciences*, Bontempi B., Silva A.J.,

Christen Y. (eds), Heidelberg: Springer, 2007.

16. Miller, E.K. and Buschman, T.J. "Bootstrapping your brain: How interactions between the frontal cortex and basal ganglia may produce organized actions and lofty thoughts" In: *Neurobiology of Learning and Memory* (2nd Edition), Kesner, R.P. and Martinez, J.L. (Eds), Elsevier, 2007.
17. Cacioppo, J.T., Amaral, D.G., Blanchard, J.J., Cameron, J.L., Sue C.C., Crews, D., Fiske, S., Heatherton, T., Johnson, M.K., Kozak, M.J., Levenson, R.W., Lord, C., Miller, E.K., Ochsner, K., Raichle, M.E., Tracie S.M., Taylor, S.E., Young, L.J., and Quinn, K.J. "Social Neuroscience: Progress and Implications for Mental Health" *Perspectives on Psychological Science* 2: 99-123, 2007.
18. Histed, M.H. and Miller, E.K. "Microstimulation of frontal cortex can reorder a remembered spatial sequence" *Public Library of Science Biology*, Vol. 4, No. 5, 2006.
19. Freedman, D.J., Riesenhuber, M., Poggio, T., and Miller, E.K. "Experience dependent sharpening of visual shape selectivity in inferior temporal cortex" *Cerebral Cortex*. 16: 1631-1644, 2006.
20. Muhammad, R., Wallis, J.D., and Miller, E.K. "A comparison of abstract rules in the prefrontal cortex, premotor cortex, the inferior temporal cortex and the striatum." *Journal of Cognitive Neuroscience*, 18, 974-989, 2006.
21. Greene, M., Schill, K., Takahasi, S., Bateman-House, A., Beauchamp, T., Bok, H., Cheney, D., Coyle, J., Deacon, T., Dennett, D., Donovan, P., Flanagan, O., Goldman, S., Greely, H., Martin, L., Miller, E., Mueller, D., Siegel, A., Solter, D., Gearhart, J., McKhann, G., and Faden, R. "Moral issues of human-non-human primate neural grafting" *Science*, 309, 385-386, 2005.
22. Pasupathy, A. and Miller, E.K. "Different time courses for learning-related activity in the prefrontal cortex and striatum." *Nature*, 433, 873-876, 2005.
23. Nieder A. and Miller E.K. "Neural correlates of numerical cognition in the neocortex of non-human primates" In: S. Dehaene, J. R. Duhamel, M. Hauser & G. Rizzolatti (eds.), *From monkey brain to human brain*. Cambridge, Massachusetts: MIT Press, 2005.
24. Nieder, A. and Miller, E.K. "Analog numerical representations in rhesus monkeys: Evidence for parallel processing" *Journal of Cognitive Neuroscience*, 16, 889-901, 2004.
25. Nieder, A. and Miller, E.K. "A parieto-frontal network for visual numerical information in the monkey" *Proceedings of the National Academy of Sciences*, 101(19), 7457-7462, 2004.
26. Miller, E.K. and Wallis, J.D. "Volition and the prefrontal cortex" In: *The Visual Neurosciences*, Chalupa, L.M. and Werner, J.S. (eds.), MIT Press, pp 1546-1560, 2004.
27. Freedman, D.J., Riesenhuber, M., Poggio, T., and Miller, E.K. "A comparison of primate prefrontal and inferior temporal cortices during visual categorization." *Journal of Neuroscience*, 23(12):5235-5246, 2003.
28. Nieder, A. and Miller, E.K. "Coding of cognitive magnitude: Compressed scaling of numerical information in the primate prefrontal cortex." *Neuron*, 37, 149-157, 2003.
29. Wallis, J.D. and Miller, E.K. "From rule to response: neuronal processes in the premotor and prefrontal cortex." *Journal of Neurophysiology*, 90, 1790-1806, 2003.
30. Sharma, J., Dragoi, V., Tenenbaum, J.B., Miller, E.K., and Sur, M. "V1 neurons signal acquisition of an internal representation of stimulus location." *Science*, 300, 1758-1763, 2003.

31. Wallis, J.D. and Miller, E.K. "Neuronal activity in the primate dorsolateral and orbital prefrontal cortex during performance of a reward preference task." *European Journal of Neuroscience*, 18, 2069-2081, 2003.
32. Bunge, S.A., Kahn, I. Wallis, J.D., Miller, E.K., and Wagner, A.D. "Neural circuits subserving the retrieval and maintenance of abstract rules." *Journal of Neurophysiology*, 90, 3419-3428, 2003.
33. Miller, E.K., Freedman, D.J., and Wallis, J.D. "The prefrontal cortex: categories, concepts, and cognition." In: *The Physiology of Cognitive Processes*, Parker, A., Derrington, A., Blakemore, C. (eds.). Oxford University Press, pp 252-273., 2003.
34. Miller, E.K. and Wallis, J.D. "The prefrontal cortex and executive brain functions" *Fundamental Neuroscience 2nd Edition*, Squire, L.R., Bloom, F.E., Roberts, J.L., Zigmond, M.J., McConnell, S.K., Spitzer, N.C. (eds.), Academic Press, pp. 1353-1376, 2003.
35. Miller, E.K., Nieder, A., Freedman, D.J, and Wallis, J.D. "Neural correlates of categories and concepts" *Current Opinion in Neurobiology*, 13:2:198-203, 2003.
36. Nieder, A., Freedman, D.J., and Miller, E.K. "Representation of the quantity of visual items in the primate prefrontal cortex." *Science*, 297, 1708-1711, 2002.
37. Rainer, G. and Miller, E.K. "Timecourse of object-related activity in the primate prefrontal cortex during a short-term memory task." *European Journal of Neuroscience*, 15, 1244-1254, 2002.
38. Freedman, D.J., Riesenhuber, M., Poggio, T., and Miller, E.K. "Visual categorization and the primate prefrontal cortex: Neurophysiology and behavior." *Journal of Neurophysiology*, 88, 914-928, 2002.
39. Dragoi, V., Sharma, J., Miller, E.K., and Sur, M. "Dynamics of neural sensitivity in primate V1 underlying local feature discrimination." *Nature Neuroscience*, 2002.
40. Miller, E.K., Freedman, D.J., and Wallis, J.D. "The prefrontal cortex: categories, concepts, and cognition" *Philosophical Transactions: Biological Sciences*, 357, 1123-1136, 2002.
41. Duncan, J. and Miller, E.K. "Cognitive focusing through adaptive neural coding in the primate prefrontal cortex" *Principles of Frontal Lobe Function*, Stuss, D. and Knight, R.T. (eds.) Oxford University Press, Oxford, pp 278-291, 2002.
42. Miller, E.K. and Asaad, W.F. "The prefrontal cortex: conjunction and cognition." In: *Handbook of Neuropsychology*, Vol. 7: *The Frontal Lobes*, Grafman, J. (Ed.). Elsevier, 2002.
43. Freedman, D.J., Riesenhuber, M., Poggio, T., and Miller, E.K. "Categorical representation of visual stimuli in the primate prefrontal cortex" *Science*, 291, 312-316, 2001.
44. Chelazzi, L., Miller, E.K., Duncan, J., and Desimone, R. "Responses of neurons in macaque area V4 during memory-guided visual search." *Cerebral Cortex*, 11, 761-772, 2001.
45. Wallis, J.D., Anderson, K.C., and Miller, E.K. "Single neurons in the prefrontal cortex encode abstract rules." *Nature*, 411, 953-956, 2001.
46. Miller, E.K. and Cohen, J.D. "An integrative theory of prefrontal cortex function" *Annual Review of Neuroscience*, 24:167-202, 2001. - Designated a *Current Classic* as among the most cited papers in *Neuroscience and Behavior*
47. Rainer G. and Miller, E.K. "Neural ensemble states in prefrontal cortex identified using a hidden markov model with a modified EM algorithm." *Neurocomputing*, 32-33, 961-966, 2000.

48. Asaad, W.F., Rainer, G., and Miller, E.K. "Task-specific neural activity in the primate prefrontal cortex." *Journal of Neurophysiology*, 84, 451-459, 2000.
49. Rainer, G. and Miller, E.K. "Effects of visual experience on the representation of objects in the prefrontal cortex." *Neuron*, 27, 179-189, 2000.
50. Miller, E.K. "The prefrontal cortex and cognitive control", *Nature Reviews Neuroscience*, 1, 59-65, 2000.
51. Miller, E.K. "The prefrontal cortex: no simple matter" (Commentary), *Neuroimage*, 11:447-450, 2000.
52. Miller, E.K. "Organization through experience" (News and Views), *Nature Neuroscience*, 3:1066-1068, 2000.
53. Miller, E.K. "The neural basis of the top-down control of visual attention in the prefrontal cortex," In: *Control of Cognitive Processes: Attention and Performance 18* Monsell, S. and Driver, J. (eds.) pp 511-534, MIT Press, Cambridge, 2000.
54. Miller, E.K. "The prefrontal cortex: Complex neural properties for complex behavior." *Neuron* 22, 15-17, 1999.
55. Rainer, G., Rao, S.C., and Miller, E.K. "Prospective coding for objects in the primate prefrontal cortex." *Journal of Neuroscience* 19, 5493-5505, 1999.
56. Miller, E.K. "Prefrontal cortex and the neural basis of executive functions," *Attention, space, and action: Studies in cognitive neuroscience*, Humphreys, G.W, Duncan, J., and Treisman, A.M. (eds.) Oxford University Press, Oxford, 1999.
57. Miller, E.K. "Straight from the top" (News and Views). *Nature*, 401, 650-651, 1999.
58. Rainer, G., Asaad, W.F., and Miller, E.K. "Selective representation of relevant information by neurons in the primate prefrontal cortex," *Nature* 393, 577-579, 1998.
59. Rainer, G., Asaad, W.F., and Miller, E.K. "Memory fields of neurons in the primate prefrontal cortex," *Proceedings of the National Academy of Sciences* 95, 15008-15013, 1998.
60. Asaad, W.F., Rainer, G. and Miller, E.K. "Neural activity in the primate prefrontal cortex during associative learning," *Neuron* 21, 1399-1407, 1998.
61. Chelazzi, L., Duncan, J., Miller, E.K., and Desimone, R. "Responses of neurons in inferior temporal cortex during memory-guided visual search." *Journal of Neurophysiology* 80, 2918-2940, 1998.
62. Rao, S.C., Rainer, G., and Miller, E.K. "Integration of what and where in the primate prefrontal cortex," *Science* 276, 821-824, 1997.
63. Suzuki, W.A., Miller, E.K. and Desimone R. "Object and place memory in the macaque entorhinal cortex," *Journal of Neurophysiology* 78, 1062-1081, 1997.
64. Miller, E.K., Erickson, C.A., and Desimone, R. "Neural mechanisms of visual working memory in prefrontal cortex of the macaque," *Journal of Neuroscience* 16, 5154-5167, 1996.
65. Miller, E.K. "Neocortical mechanisms for visual memory". *Scale in Conscious Experience: Is the brain too important to be left to biologists to study?*, Pribram, K. and King, J. (eds.) Lawrence Erlbaum, London, 105-115, 1995

66. Desimone, R., Miller, E.K., Chelazzi, L., and Lueschow, A. "Multiple memory systems in the visual cortex." *The Cognitive Neurosciences*, Gazzaniga, M. (ed.) MIT Press, Cambridge, MA, 475-486, 1995
67. Desimone, R., Chelazzi, L., Miller, E.K., and Duncan, J. (1995) "Neuronal mechanisms of visual attention." *Linking Psychophysics, Neurophysiology, and Computational Vision*, Papathomas, T.V., Chubb, C., Gorea, A., and Kowler, E. (eds.) MIT Press, Cambridge, MA, 219-226, 1995
68. Miller, E.K. and Desimone, R. "Parallel neuronal mechanisms for short-term memory," *Science* 263, 520-522, 1994.
69. Lueschow, A., Miller, E.K., and Desimone, R. "Inferior temporal mechanisms for invariant object recognition," *Cerebral Cortex* 5, 523-531, 1994.
70. Miller, E.K. "Neocortical memory traces." A commentary on "Two functional components of the hippocampal memory system" by Eichenbaum, Otto, and Cohen. *Behavioral Brain Sciences* 17, 488-489, 1994
71. Desimone, R., Chelazzi, L., Miller, E.K., and Duncan, J. "Neural mechanisms for memory-guided visual search," *Structural and Functional Organization of the Neocortex*, Albowitz, A., Albus, A., Kuhnt, U., Nothdurft, H.C., and Wahle, P. (eds.) Springer-Verlag, Berlin, 279-285, 1994.
72. Desimone, R., Miller, E.K., and Chelazzi, L. "The interaction of neural systems for attention and memory," *Large-Scale Theories of the Brain*, Koch, C. and Davis, J.L. (eds.) MIT Press, Cambridge, MA, 75-91, 1994.
73. Chelazzi, L., Miller, E.K., Duncan, J., and Desimone, R. "A neural basis for visual search in inferior temporal (IT) cortex," *Nature* 363, 345-347, 1993.
74. Miller, E.K. and Desimone, R. "Scopolamine affects short-term memory but not inferior temporal neurons," *NeuroReport* 4, 81-84, 1993.
75. Miller, E.K., Li, L., and Desimone, R. "Activity of neurons in anterior inferior temporal cortex during a short-term memory task," *Journal of Neuroscience* 13, 1460-1478, 1993.
76. Li, L., Miller, E.K., and Desimone, R. "The representation of stimulus familiarity in anterior inferior temporal cortex," *Journal of Neurophysiology* 69, 1918-1929, 1993.
77. Miller, E.K., Gochin, P.M., and Gross, C.G. "Suppression of visual responses of neurons in inferior temporal cortex of the awake macaque by addition of a second stimulus," *Brain Research* 616, 25-29, 1993.
78. Miller, E.K., Li, L., and Desimone, R. "A neural mechanism for working and recognition memory in inferior temporal cortex," *Science* 254, 1377-1379, 1991.
79. Miller, E.K., Gochin, P.M., and Gross, C.G. "A habituation-like decrease in the responses of neurons in inferior temporal cortex of the macaque," *Visual Neuroscience* 7, 357-362, 1991.
80. Gochin, P.M., Miller, E.K., Gross, C.G., and Gerstein, G.L. "Functional interactions among neurons in inferior temporal cortex of the awake macaque," *Experimental Brain Research* 84, 505-516, 1991.

Invited Lectures

2010

Symposium at the annual meeting of the American Psychiatric Association, New Orleans

Plenary Lecture, International Conference on Cognitive and Neural Systems, Boston University
Homewood Brain and Cognition Lecture Series, Johns Hopkins University
The Frontal Lobes 2010, Toronto, Canada
Adler Symposium, Salk Institute for Biological Studies

2009

Carlson Lecture, University of Chicago
Keynote Speaker, Meeting of the Comparative Cognition Society
Engineering Distinguished Lecture, National Science Foundation, Washington, DC
Ernst Strungmann Forum on Dynamic Coordination in the Brain, Frankfurt, Germany
Neuroscience Seminar, University of California at San Diego
Banbury Workshop: "Searching for principles underlying memory in biological systems", Cold Spring Harbor
Invited address, Computational and Systems Neuroscience meeting, Salt Lake City, Utah
University of Minnesota Department of Neuroscience seminar
Charles River Association for Memory seminar, Cambridge, MA

2008

Conference on Memory and Neural Networks, Longyearbyen, Svalbard, Norway
Netherlands Neuroscience Institute Conference on Perceptual Learning, Motor Learning, and Automaticity, Amsterdam, Netherlands
Keynote Speaker, Yale University Science Day
Shire Biopharmaceuticals Advisory Board Meeting – Guanfacine Mechanism of Action in ADHD, New York City
Seminar, Merck & Co., Inc., Philadelphia
Neuroscience Seminar, Brown University
Cognitive Neuroscience Seminar Series, Columbia University
Seminar, Princeton University
"Emotions, Memories, Consciousness, and Attention: Biological Approaches to Cognitive Problems", Columbia University
Symposium in honor of Brenda Milner, Montreal Neurological Institute
Cognitive, Computational and Systems Neuroscience Seminar, Washington University, St. Louis
BrainMap Seminar, Martinos Center, Massachusetts General Hospital

2007

Mathilde Solowey Lecture in the Neurosciences, National Institutes of Health
Plenary Lecture, Japanese Society for Neuroscience Meeting, Yokohama, Japan
Jeffrey Lecture in Cognitive Neuroscience, UCLA
Cambridge Neuroscience Symposium, Cambridge, UK
Meeting on Executive Functions, Leiden, Netherlands
Neuroscience Seminar, University of California at Irvine
Wisconsin Symposium on Emotion, University of Wisconsin
"Neurons, brains and models: crossing levels of analysis in cognitive brain research", University of Michigan
"The cognitive science of semantics", Tufts University
Neuroscience Seminar, University of Maryland

2006

"Memories: Molecules and Circuits", IPSEN Foundation, Paris, France
Invited Address, Annual Meeting, American Psychological Society, New York City
Symposium on "Prefrontal cortex, Working Memory, Flexible behavior", Yale University
Learning Sciences Institute seminar, Vanderbilt University
Grass Lecture, University of Illinois at Urbana-Champaign
Neuroscience Seminar Series, University of California at Berkeley
Neuroscience Colloquium, Boston University School of Medicine
"New Frontiers in Brain Science: from molecules to mind", Massachusetts Institute of Technology

2005

Keynote Address, Human Brain Mapping Meeting, Toronto, Canada
International Conference on Cognitive Neuroscience, Havana, Cuba

Fudan University Institute of Neurobiology Seminar, Shanghai, China
International Neuropsychology Symposium, Sardinia, Italy
Helmholtz Lecture Series, Helmholtz Research Institute, Universities of Utrecht, Amsterdam, and Rotterdam, The Netherlands
Colloquium, Max Planck Institute, Berlin, Germany
Symposium on Executive Functions and the Frontal Lobe, Tuebingen, Germany
Keynote Address, Motivational Neuronal Network meeting, Clearwater, Florida
Computational Neuroscience Seminar Series, University of Chicago
Neuroscience Seminar, University of California at San Diego
Mind and Brain Colloquium, University of California at Davis
Psychology Seminar, Stanford University
Seminar, California Institute of Technology
Seminar, Harvard Mind, Brain, and Behavior Initiative, Harvard University
Course on the Biology of Memory, Cold Spring Harbor
Workshop on Schizophrenia, Cold Spring Harbor

2004

Munich Encounters in Cognition and Action Symposium, Max Planck Institute, Munich, Germany
International Congress of Psychology, Beijing, China
American College of Neuropsychopharmacology Meeting, Puerto Rico
Neurons and Memory, a satellite meeting of the Society for Neuroscience Annual Meeting, San Diego
Neural Control of Behavior Meeting, University of California, Los Angeles
Center for Visual Science Symposium, University of Rochester
Neuroscience Symposium, University of Western Ontario
Mind, Brain and Behavior Distinguished Lecture, Duke University
Symposium, Cognitive Neuroscience Meeting, San Francisco
Course on Brain Science for Knight Science Journalism Fellows, M.I.T.
Working Group on Interspecific Chimeric Brains, Phoebe R. Berman Bioethics Institute, Johns Hopkins University
Interdisciplinary Program in Neuroscience Seminar, Georgetown University
Seminar, University of Texas Medical School
Seminar, Harvard Medical School
Seminar, Johns Hopkins University
Summer Institute in Cognitive Neuroscience, Dartmouth College
Fred Attneave Lecture, Department of Psychology, University of Oregon

2003

Fyssen Colloquium, St Germain en Laye, France
Department of Psychology Colloquium, Cornell University
Center for Neural Science Seminar, New York University
International Joint Conference on Neural Networks, Portland, Oregon
Symposium at the Cognitive Neuroscience Society Meeting, New York
Department of Neuroscience Seminar, University of Connecticut Health Center
NIDA Workshop on Developing Behavioral Treatments for Cognitively Impaired Drug Abusers, Bethesda
NIH Workshop on Executive Functions, New York City
Roche Pharmaceuticals, Palo Alto
RIKEN Brain Sciences Institute Retreat, Shinrin-Koen, Japan
John Merck Summer Course in Cognitive Neuroscience, Princeton University
Cognitive Science Seminar, University of Quebec in Montreal
Neuroscience Seminar Series, Mount Sinai School of Medicine, New York
Neuroscience Formal Seminar Series, University of California, San Francisco
Neuroscience Retreat, University of Pittsburgh
Department of Psychology Seminar, Stanford University
Seminar, Columbia University

2002

UCLA Neuroscience Seminar Series

F.C. Donners Lecture, University of Nijmegen, The Netherlands
Swammerdam Lecture, Vrije Universiteit and University of Amsterdam, The Netherlands
Symposium at the European Conference on Visual Perception, Glasgow, Scotland
Seminar, Honda Research and Development Co., Wako-shi, Japan
Meeting of the American Association for the Advancement of Science (symposium organizer), Boston
University of Illinois Neuroscience Seminar Series
Emory University Neuroscience Colloquium
Institute for Cognitive Science Colloquium Series, University of Colorado at Boulder
Helmholtz Club, University of California at Irvine
Sloan Seminar, California Institute of Technology
Neurobiology and Behavior Seminar Series, Columbia University
Cognitive Neuroscience Seminar, National Institutes of Health
Department of Psychology Seminar, University of Pennsylvania
Neuroscience Seminar, Wake Forest University School of Medicine

2001

Society for Research in Child Development, Minneapolis
Winter Conference on Neural Plasticity, Antigua, West Indies
Gordon Research Conference on Neural Plasticity, Newport, Rhode Island
International Society for Behavioral Neuroscience, Marrakech, Morocco
Royal Society Meeting, London, UK
Association for the Study of Consciousness Meeting, Duke University
Rotman Research Institute Seminar, Toronto, Canada
University of Rochester Colloquium Series
Cold Spring Harbor Summer Course
Kennedy Shriver Center Colloquium Series, Waltham, MA
Memory Research and Disorders Society Meeting, Boston
Department of Psychology Colloquium, Harvard University

2000

The Frontal Lobes: In the Forefront of the Millennium, Rotman Research Institute, Toronto Canada
Symposium on the Cognitive Neuroscience of Attention and Awareness, London, UK
Neuroscience Seminar, Washington University
RIKEN Brain Institute Summer Program, Japan
Workshop on Executive Functions of Attention, New York University
University of Minnesota Center for Cognitive Sciences Colloquium
Mini-Symposium on Visual Working Memory, ARVO Meeting
Neuroscience Colloquium, Massachusetts General Hospital
Towards Animal Models of Attention and Consciousness, Cold Spring Harbor
Harvard Psychology Seminar
Boston University Psychology Seminar
Baylor University Neuroscience Seminar
Department of Physiology Seminar, University of Montreal
Neuroscience Seminar Series, National Institutes of Health

1999

Department of Psychology Seminar, Princeton University
Neuroscience Seminar Series, Boston University
Attentional Processes in Selective Perception and Working Memory, Satellite Symposium of the
Cognitive Neuroscience Society Meeting, Washington, DC
Department of Psychiatry, Harvard Medical School
Neuroscience Seminar, University of California at Berkeley
Summer Institute in Cognitive Neuroscience, Dartmouth College
RIKEN Brain Institute Summer Program, Japan
Brain and Machines Lecture Series, MIT
Stanford Neurosciences Program Annual Retreat, Monterey, CA
Department of Psychology Seminar, University of Iowa
Conference in Cognitive Science, Vancouver, Canada

Brandeis Summer Lecture Series in Neuroscience

1998

Workshop on Visuospatial Working Memory, Executive Control and The Frontal Lobes, Delmenhorst, Germany

International Symposium on Learning and Memory, University of Otago, New Zealand

Attention and Performance 18, The Great Park, Windsor, England

Symposium at the Annual Society for Neuroscience Meeting: Neural Basis of Working Memory

RIKEN Symposium, Tokyo, Japan

Cognitive Neuroscience Society Meeting, San Francisco

McKnight Foundation Meeting, Aspen

Neuroscience Seminar Series, Princeton University

Winter Conference on Brain Research, Snowbird, Utah

Winter Conference on Neural Plasticity, St. Lucia, West Indies

Institute for Research in Cognitive Science Seminar, University of Pennsylvania

Neuroscience Seminar Series, Rockefeller University

Zanvyl Krieger Mind/Brain Institute Seminar Series, Johns Hopkins University

Developmental Neuroscience Seminar, Eunice Kennedy Shriver Center, Waltham

Neuroscience Seminar Series, Center for Neuroscience, Rutgers University

Department of Neuroanatomy Seminar, Boston University

Second International Conference on Cognitive and Neural Systems, Boston University

Center for Neuroscience Seminar, University of California at Davis

Laboratory of Neuropsychology Symposium, National Institute of Mental Health

1997

Novartis Foundation Meeting on Functions of the Prefrontal Cortex, London, UK

Colloquium Series, MRC Applied Psychology Unit, Cambridge, UK

ONR Workshop on Cognitive Neuroscience, Marine Biology Lab, Woods Hole

Department of Psychology Colloquium, Carnegie Mellon University

Neuroscience Colloquium Series, Brown University

Bowman Gray Medical School Neuroscience Colloquium Series

Neurocomputation Seminar, Brandeis University

Pew Scholars Annual Meeting, San Jose, Costa Rica

Department of Neurobiology Seminar, Harvard University

Department of Psychology Seminar, Boston University

Department of Neuroanatomy Seminar, Boston University

Imaging Center Seminar, Massachusetts General Hospital

Brain and Cognitive Sciences Colloquium Series, MIT

1996

Department of Neurobiology Seminar, Weizmann Institute of Science, Israel

Department of Psychology Seminar, University of Connecticut

1995

Winter Conference on the Neurobiology of Learning and Memory, Park City

The Helmholtz Club, University of California, Irvine

Vision Center Laboratory Seminar, The Salk Institute for Biological Studies

Harvard Undergraduate Neuroscience Society

1994

Cooperation Forum for Multi-Disciplinary Researches, Hiroshima, Japan

Department of Neurobiology Seminar, Harvard Medical School

Third Appalachian Conference on Behavioral Neurodynamics, Center for Brain Research and Informational Sciences, Radford University

Neural Systems, Memory, and Aging Seminar, University of Arizona

Third Workshop on Neural Networks, Elba International Physics Center, Italy

Department of Psychology Seminar, Carnegie Mellon University

Joint Vision Laboratory - Cognitive Brain and Behavior Seminar, Harvard University

Department of Brain and Cognitive Sciences Seminar, Massachusetts Institute of Technology

Department of Neurobiology Seminar, Emory University

Department of Physiology and Biophysics Seminar, University of Washington

1992

Section on Neurobiology Seminar, Yale University

Vision Center Laboratory Seminar, The Salk Institute for Biological Studies

Neural Systems Seminar, National Institute of Neurological Disorders and Stroke

Teaching (MIT):

9.02 Brain and Behavior Laboratory (Laboratory course required for undergraduate majors. Primary Instructor, designed the course and student laboratories.)

9.012 Brain and Cognitive Sciences II (Core course taken by all BCS graduate students. Course organizer and one of several primary lecturers)

9.011 Brain and Cognitive Sciences I (Core course taken by all BCS graduate students. Course organizer)

9.011J Principles of Neuroscience (Several lectures)

9.401 Survey of Cognitive Science (Several lectures)

9.10 Cognitive Neuroscience (Several lectures)

9.30/7.98 Neural Plasticity (Several lectures)

MIT Committees and Service:

Animal Care and Use Committee (1998 -2005): MIT's Animal Care and Use Committee oversees all animal research affiliated with MIT.

Graduate Committee (1998 - present): We oversee all policy decisions regarding the graduate program in Brain and Cognitive Sciences at MIT. I also oversee admissions to our graduate program in Systems Neuroscience program and supervise the qualifying exam taken by second year graduate students in Systems Neuroscience.

Director of the Graduate Studies in Brain and Cognitive Sciences at MIT (1999 - 2006): I was director of our department's graduate program.

Supervisor, Electronics Shop, Department of Brain and Cognitive Sciences (1996 - 2004): I supervised the work of the electronics shop staff.

Organizer, Brain and Cognitive Sciences Faculty Seminar Series (1998 - 2001)

Thesis Committees: I have been on the thesis committees of many students in the Department of Brain and Cognitive Sciences and in Health Sciences and Technology

Education Committee (1999 - 2000): The Education Committee oversees the curricula of the Department of Brain and Cognitive Sciences.

Lecture at launch of MIT's capital campaign, Spring 2000.

Lecture to MIT alumni for "MIT On the Road" program, Palm Beach, Florida, January 2001

Organizer, Plastic Lunch Seminar Series for MIT's Center for Learning and Memory (1999 - 2003)

Committee on an Interdepartmental Program in Neuroscience (2000): We were charged with constructing a new interdepartmental graduate training program in neuroscience at MIT.

Director Advisory Committee for the McGovern Institute for Brain Research, 2000

Lecture at MIT's Technology Day, June, 2001

Associate Director, The Picower Center for Learning and Memory, 2001 –

Lecture at MIT's Alumni Summer Course in Neuroscience, June 2003

Advisory Committee on the Appointment of the Next Director of the McGovern Institute for Brain Research, 2003

Neuroscience Advisory Council, 2006-2008