

CURRICULUM VITAE
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DEGREES AND POSITIONS

2001- Assistant Professor, Dept. of Psychology, Princeton University.
1998-2001 Research Staff, Princeton University.
1996-1998 Post-Doctoral Fellow, Princeton University.
1996 PhD in Neuroscience, Princeton University.
1991-1996 Graduate student, Dept. of Psychology, Princeton University.
1989-1991 Graduate student, Dept. of Brain and Cognitive Sciences, MIT.
1989 BA, Princeton University.

GRANTS

2004 N.I.H. R01 grant NS046407-01A1.
1999 Burroughs-Wellcome Career Development grant.
1995 McDonnell-Pew Grant for Post-Doctoral Research.
1993 NASA Graduate Student Researchers Fellowship.

RECENT INVITED LECTURES

2006 Neuroscience Colloquium Series, Columbia College, NY
2005 Neural Control of Movement, Florida
2004 Neuroscience Colloquium Series, Baylor College, Houston TX
2004 Neuroscience Colloquium Series, Max Plank Inst., Tübingen Germany
2004 Idiomotor Apraxia Conference, Bethesda VA
2004 Society for Neuroscience Mini-Symposium
2004 Neuroscience Colloquium Series, Stanford CA
2004 Neuroscience Colloquium Series, Birmingham Alabama
2004 Cognitive Neuroscience Society Symposium, San Francisco
2004 Neuroscience Colloquium Series, Northwestern
2003 Neuroscience Colloquium Series, NYU
2003 Neuroscience Colloquium Series, Penn State
2003 Progress in Motor Control IV, Caen, France

- 2002 Neuroscience Colloquium Series, Brandeis, MA
- 2002 Attention in Action symposium, Birmingham, England
- 2002 Neuroscience Colloquium Series, Columbia University, New York, NY.
- 2002 Conference on Gain Fields, Munich Germany
- 2002 AAAS symposium, Movement Control, Boston
- 2002 Conference on Body Representation, London
- 2001 Colloquium series, Johns Hopkins
- 2001 Conference on Neuromorphic Engineering, Telluride Co
- 2001 Sloan Speaker Series, Caltech
- 2001 Colloquium Series, Salk Institute

DATA PAPERS

Aflalo TN and Graziano MSA (2006) Possible origins of the complex topographic organization of motor cortex: reduction of a multidimensional space onto a 2-dimensional array. *Journal of Neuroscience*, 26: 6288-6297.

Aflalo T. and Graziano MSA (2006) Partial tuning of motor cortex neurons to final posture in a free-moving paradigm. *Proceedings of the National Academy of Sciences*, 103: 2909-2914.

Graziano MSA, Aflalo T, and Cooke DF (2005) Arm movements evoked by electrical stimulation in the motor cortex of monkeys. *Journal of Neurophysiology*, 94: 4209-4223.

Cooke DF and Graziano MSA (2004) Super-flinchers and nerves of steel: Defensive movements altered by chemical manipulation of a cortical motor area. *Neuron*, 43: 585-593.

Graziano MSA, Patel KT, and Taylor CSR (2004) Mapping from motor cortex to biceps and triceps altered by elbow angle. *Journal of Neurophysiology*, 92: 395-407.

Cooke DF and Graziano MSA (2004) Sensorimotor integration in the precentral gyrus: Polysensory neurons and defensive movements. *Journal of Neurophysiology*, 91: 1648-1660.

Graziano MSA, Cooke DF, Taylor CSR, and Moore T (2004) Distribution of hand location in monkeys during spontaneous behavior. *Experimental Brain Research*, 155: 30-36.

Cooke DF and Graziano MSA (2003) Defensive Movements Evoked by Air Puff in Monkeys. *Journal of Neurophysiology*, 90: 3317-3329.

Cooke DF, Taylor CSR, Moore T, and Graziano MSA (2003) Complex movements evoked by microstimulation of Area VIP. *Proceedings of the National Academy of Sciences*, 100: 6163-6168.

Graziano MSA, Alisharan SA, Hu X, and Gross CG (2002) The clothing effect: Tactile neurons in the precentral gyrus do not respond to the touch of the familiar primate chair. *Proceedings of the National Academy of Sciences*, 99: 11930-11933.

Graziano MSA, Taylor CSR, and Moore T (2002) Complex movements evoked by microstimulation of precentral cortex. *Neuron*, 34: 841-851.

Graziano MSA, Cooke DF, and Taylor CSR (2000) Coding the location of the arm by sight. *Science*, 290: 1782-1786.

Graziano MSA and Gandhi S (2000) Location of the polysensory zone in the precentral gyrus of anesthetized monkeys. *Experimental Brain Research*, 135: 259-266.

Graziano MSA (1999) Where is my arm? The relative role of vision and proprioception in the neuronal representation of limb position. *Proceedings of the National Academy of Sciences*, 96: 10418-10421.

Gould E, Reeves AJ, Graziano MSA, and Gross CG (1999) Neurogenesis in the neocortex of adult primates. *Science*, 286: 548-552.

Graziano MSA, Reiss LAJ, and Gross CG (1999) A neuronal representation of the location of nearby sounds. *Nature*, 397: 428-430.

Nakamura K, Chung HH, Graziano MSA, and Gross CG (1999) A dynamic representation of eye position in the parieto-occipital sulcus. *Journal of Neurophysiology*, 81: 2374-2385.

Graziano MSA and Gross CG (1998) Visual responses with and without fixation: Neurons in premotor cortex encode spatial locations independently of eye position. *Experimental Brain Research*, 118: 373-380.

Graziano MSA, Hu XT, and Gross CG (1997) Coding the locations of objects in the dark. *Science*, 277: 239-241.

Graziano MSA, Hu XT, and Gross CG (1997) Visuo-spatial properties of ventral premotor cortex. *Journal of Neurophysiology*, 77: 2268-2292.

Graziano MSA, Yap GS, and Gross CG (1994) Coding of visual space by pre-motor neurons. *Science*, 266: 1054-1057.

Graziano MSA, Andersen RA, and Snowden R (1994) Tuning of MST neurons to spiral stimuli. *Journal of Neuroscience*, 14: 54-67.

Colombo M and Graziano MSA (1994) The effects of auditory and visual interference on auditory-visual delayed matching-to-sample in monkeys. *Behavioral Neurosciences*, 108: 636-639.

Graziano MSA and Gross CG (1993) A bimodal map of space: somatosensory receptive fields in the macaque putamen with corresponding visual receptive fields. *Experimental Brain Research*, 97: 96-109.

REVIEW PAPERS

Graziano MSA (2006) The organization of behavioral repertoire in motor cortex. *Annual Review of Neuroscience*, 29: 105-134.

Graziano MSA (2006) Progress in understanding spatial coordinate systems in the primate brain. *Neuron*, 51: 7-9.

Graziano MSA and Cooke DF (2006) Parieto-frontal interactions, personal space, and defensive behavior. *Neuropsychologia*. 44: 845-859.

Graziano MSA, Taylor CSR, Moore T, and Cooke DF (2002) The cortical control of movement revisited. *Neuron*, 36: 349-362.

Graziano MSA, Taylor CSR, and Moore T (2002) Probing cortical function with electrical stimulation. *Nature Neuroscience*, 5: 921.

Graziano MSA (2001) Is reaching eye-centered, body-centered, hand-centered, or a combination? *Reviews in the Neurosciences*, 12: 175-186.

Graziano MSA (2001) A system of multimodal areas in the primate brain. *Neuron*, 29: 4-6.

Graziano MSA (2001) An awareness of space. *Nature*, 411: 903-904.

Graziano MSA and Gross CG (1998) Spatial maps for the control of movement. *Current Opinion in Neurobiology*, 8: 195 -201.

Graziano MSA, Hu XT, and Gross CG (1997) Visuo-spatial properties of ventral premotor cortex. *Journal of Neurophysiology*, 77: 2268-2292.

Gross CG and Graziano MSA (1995) Multiple representations of space in the brain. *The Neuroscientist*, 1: 43-50.

Graziano MSA and Gross CG (1994) Mapping space with neurons. *Current Directions in Psychological Sciences*, 3: 164-167.

Graziano MSA and Gross CG (1992) Somatotopically organized maps of near visual space exist. *Behavioral Brain Sciences*, 15: 750.

BOOK CHAPTERS

Graziano MSA (2006) Feedback remapping and the cortical control of movement. In: Latash (Ed.) *Motor Control and Learning*. Springer, NY.

Graziano MSA, Taylor CSR, Cooke DF, and Moore T (2004a) A map of complex movements in motor cortex of primates. In Humphries and Riddoch (Eds.) *Action In Attention*. Psychology Press, Hove, pp. 211-232.

Graziano MSA, Gross CG, Taylor CSR, and Moore T (2004b) A system of multimodal areas in the primate brain. In: *Crossmodal Space and Crossmodal Attention*. Spence and Driver, Eds, Oxford University Press, pp. 51-67.

Graziano MSA, Gross CG, Taylor CSR, and Moore T (2004c) Multisensory neurons for the control of defensive movements. In: *The Handbook of Multisensory Processes*. Gemma Calvert, Charles Spence and Barry Stein Eds. MIT Press, pp. 443-452.

Graziano MSA and Botvinick MM (2002) How the brain represents the body: insights from neurophysiology and psychology. In: *Common Mechanisms in Perception and Action: Attention and Performance XIX*. Eds. W. Prinz and B. Hommel. Oxford University Press, Oxford England, pp. 136-157.

Graziano MSA, Wheeler ME, and Gross CG (2000) From vision to action: How the primate brain encodes and remembers visuomotor space. In: JJ Bolhuis (Ed) *Brain, Perception, Memory: Advances in Cognitive Neuroscience*. Oxford University Press, Oxford, pp. 7-15.

Graziano MSA and Gross CG (1997) Vision, Movement, and The Monkey Brain. In: *The Association Cortex: Structure and Function*. H. Sakata, A. Mikami, and J. Fuster, Eds. (Harwood Academic Publishers, Amsterdam): pp. 219-232.

Graziano MSA and Gross CG (1996) Multiple pathways for processing visual space. In *Attention and Performance XVI*. Edited by T. Inui and J.L. McClelland. MIT Press, Cambridge MA, pp.181-207.

Graziano MSA and Gross CG (1995) From vision to action. In: *Scale in Conscious Experience: Is the Brain too Important to be Left to Specialists to Study?* J. King and K.H. Pribram, Eds. (Laurence Erlbaum Associates, Mahwah, N.J.): pp. 117-129.

Graziano MSA and Gross CG (1994) The representation of extrapersonal space: A possible role for bimodal, visual-tactile neurons, in *The Cognitive Neurosciences*, M.S. Gazzaniga, Ed. (MIT Press, Cambridge): pp. 1021 -1034.

Andersen RA, Treue S, Graziano MSA, Snowden RJ, and Quin N (1992) From direction of motion to patterns of motion: Hierarchies of motion analysis in the visual cortex. In: *Brain Mechanism of Perception and Memory: From Neuron to Behavior*. Ono and Taketoshi, Eds. (Oxford University Press, New York).

Andersen RA, Snowden RJ, Treue S, Graziano MSA (1990) Hierarchical Processing of Motion in the Visual Cortex of Monkey. *Cold Spring Harbor Symposium on Quantitative Biology*, Vol. LV, pp 741-748.

ABSTRACTS (Society for Neuroscience)

Aflalo TNS and Graziano MSA (2006) Possible origins of the complex topographic organization of motor cortex: reduction of a multidimensional space onto a 2-dimensional array. *Society for Neuroscience Abstracts*, 32.

Graziano MSA and Aflalo TNS (2006) Activity of motor cortex neurons during naturalistic arm movements in monkeys. *Society for Neuroscience Abstracts*, 32.

Graziano MSA, Aflalo TNS, and Cooke DF (2005) Properties of arm movements evoked by electrical stimulation of monkey motor cortex. *Society for Neuroscience Abstracts*, 31.

Aflalo TNS, Graziano MSA, and Cooke DF (2005) The relationship between unconstrained arm movements and single neuron firing in the macaque motor cortex. *Society for Neuroscience Abstracts*, 31.

Cooke DF and Graziano MSA (2004) Superflinchers and nerves of steel: Defensive movements altered by chemical activation or inactivation of a polysensory zone in motor cortex of monkeys. *Society for Neuroscience Abstracts*, 30.

Cooke DF and Graziano MSA (2003) Defensive movements evoked by air puff in monkeys resemble movements evoked by electrical stimulation in areas VIP and PZ. *Society for Neuroscience Abstracts*, 29.

Taylor CSR, Cooke DF, and Graziano MSA (2003) The EMG signature of complex movement is evoked within 20 ms by microstimulation of motor cortex. Society for Neuroscience Abstracts, 29.

Cooke DF, Taylor CSR, Moore T, and Graziano MSA (2002) Electrical microstimulation in monkey area VIP evokes defensive movements. Society for Neuroscience Abstracts, 28.

Taylor CSR, Cooke DF, and Graziano MSA (2002) Complex mapping from precentral cortex to muscles. Society for Neuroscience Abstracts, 28.

Graziano MSA and Cooke DF (2002) A manual fovea: distribution of monkey hand use in different regions of space. Society for Neuroscience Abstracts, 28.

Cooke DF and Graziano MSA (2001) Neurons in monkey area 5 are modulated by the position of the eyes, the head and both arms. Society for Neuroscience Abstracts, 27.

Taylor CSR, Moore T, and Graziano MSA (2001) Complex movements evoked by electrical stimulation of motor cortex in monkeys. Society for Neuroscience Abstracts, 27.

Graziano MSA, Taylor CSR, and Moore T (2001) Electrical stimulation of the bimodal, visual-tactile zone in the precentral gyrus evokes defensive movements. Society for Neuroscience Abstracts, 27.

Cooke DF, Taylor CSR and Graziano MSA (2000) Neurons in the monkey parietal lobe code arm position by integrating visual and somatosensory inputs. Society for Neuroscience Abstracts, 26: 666.

Wheeler ME, Sabb FW, Graziano MSA, and Cohen JD (1999) Imagined movement of real objects in space near the body differentially activates frontal and parietal cortex. Society for Neuroscience Abstracts, 25.

Hu X, Graziano MSA, and Gross CG (1998) Spatial coding in area 7b of the macaque. Society for Neuroscience Abstracts, 24: 1140.

Graziano MSA, Yin LA, and Gross CG (1997) Trimodal, visual-tactile-auditory neurons in a subregion of ventral premotor cortex of the monkey brain. Society for Neuroscience Abstracts, 23: 2066.

Nakamura K, Chung HH, Graziano MSA, and Gross CG (1996) The representation of eye position in the parieto-occipital sulcus in the monkey. Society for Neuroscience Abstracts, 22: 1620.

Graziano MSA, Fernandez T, and Gross CG (1996) A comparison of bimodal, visual-tactile neurons in parietal area 7b and ventral premotor cortex of the monkey brain. Society for Neuroscience Abstracts, 22: 398.

Graziano MSA and Gross CG (1995) Effect of attention on visual responses in macaque premotor cortex. Society for Neuroscience Abstracts, 21: 666.

Graziano MSA and Gross CG (1994) Mapping visual space around the arm with bimodal, visual-tactile neurons. Society for Neuroscience Abstracts, 20: 1278.

Graziano MSA and Gross CG (1992) Coding of extrapersonal visual space in body-part centered coordinates. Society for Neuroscience Abstracts, 18: 593.

Gross CG and Graziano MSA (1990) Bimodal visual-tactile responses in the macaque putamen. Society for Neuroscience Abstracts, 16: 110.

Graziano MSA, Andersen RA, and Snowden R (1990) Stimulus selectivity of neurons in Macaque MST. Society for Neuroscience Abstracts, 16: 7.

Andersen RA, Graziano MSA, and Snowden R (1990) Translational invariance and attentional modulation of MST cells. Society for Neuroscience Abstracts, 16: 7.