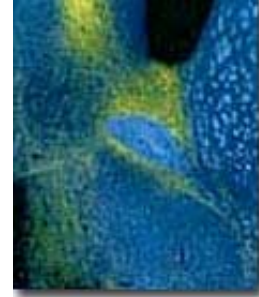




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Research Interests

Movements, sensations, and emotions exist as organized electrical signals in the brain. As a neurosurgeon, I record this electrical activity during and following brain surgery while human patients perform motor and cognitive tasks. Through quantitative analysis of such recordings, my major research focus is to uncover relationships between cognitive functions and the activity of individual or groups of neurons. We use PET and fMRI imaging data to non-invasively identify regions of the brain which may be suitable for intra-operative study. Recently, by recording from subthalamic nucleus and thalamus during surgery for Parkinson, disease or tremor, we have been able to extract information sufficient to predict upper extremity movements. The ability to translate between the language of neurons and the actions of humans is prerequisite to the development of neuroprosthetic devices such as robotic limbs. During surgery, we also study the effects of electrical stimulation on the brain. As our understanding increases, we hope to develop novel brain-stimulation therapies to treat such diverse conditions as depression, ataxia, and pain.

Selected References

P. G. Patil and J. N. Campbell (2005), Peripheral and Central Nervous System Surgery for Pain. S. B. McMahon and M. Koltzenburg (ed) Wall and Melzack, Textbook of Pain, 5th Edition. London: Elsevier Ltd.

P. G. Patil and D. A. Turner (2004), Surgical Treatment of Movement Disorders: DBS, Gene Therapy, and Beyond., D.A. Turner (ed) Modern Neurosurgery: Clinical Translation of Neuroscience Advances. New York: CRC Press.

P. G. Patil, J. M. Carmena, M. A. L. Nicolelis, and D. A. Turner (2004), Ensemble



Recordings of Human Subcortical Neurons as a Source of Motor Control Signals for a Brain-Machine Interface, *Neurosurgery* 55: 27-35.

J. M. Carmena M. A. Lebedev, R. E. Crist, J. E. O'Doherty, D. M. Santucci, D. F. Dimitrov, P. G. Patil, C. S. Henriquez, and M. A. L. Nicolelis (2003), Learning to control a brain-machine interface for reaching and grasping by primates., *PloS Biology* 1:193-208.

P. G. Patil, D. L. Brody, and D. T. Yue (1998, Preferential Closed-State Inactivation of Neuronal Calcium Channels., *Neuron* 20: 1027-1038.

D. L. Brody, P. G. Patil, J. G. Mulle, T. P. Snutch, and D. T. Yue (1997). , Bursts of Action Potential Waveforms Relieve G-protein Inhibition of Recombinant P/Q-type Ca²⁺ Channels in HEK 293 Cells., *J. Physiol. (Lond.)* 499: 637-644.

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