Biographical Information

Marco Iacoboni, M.D., Ph.D., received his medical degree and his doctoral degree in neuroscience from the University “La Sapienza” of Rome, Italy. He is now Director of the Transcranial Magnetic Stimulation Lab at the Ahmanson-Lovelace Brain Mapping Center of the David Geffen School of Medicine at UCLA. Iacoboni investigates the neural basis of sensory-motor integration, imitation and social cognition in humans with functional magnetic resonance imaging and transcranial magnetic stimulation (TMS). In particular, his group investigates the human mirror neuron system and its role in social behavior and its disorders. Iacoboni’s work, funded by NIH and NSF, has been published in journals such as Science and Nature Neuroscience. His research has also been covered by the New York Times (front page), Los Angeles Times, Wall Street Journal, Newsweek, Time, The Economist, and major TV networks. Dr. Iacoboni recently completed a book on mirror neurons, entitled Mirroring People, that will be published by Farrar, Straus, & Giroux in May 2008.

Presentation Abstracts
The Problem of Other Minds: Intersubjectivity and mirror neurons (4 pm)

Intersubjectivity, the sharing of meaning between people, has traditionally been perceived as a problem, hence the name the problem of other minds. Simply put: if I have access only to my own mind, which is a very private entity that only I can access directly, how can I possibly understand the minds of other people? One classic solution to this problem is the argument from analogy. However, this argument has been heavily criticized on the grounds that it requires complex reasoning about the mental states of other people, and assumes that people have deep self-knowledge. A different solution to this problem may be provided by mirror neurons, cells that fire when we perform actions and when we see other people performing the same or complementary actions. Without resorting to any magic trick, our brains may be capable of accessing other minds by using neural mechanisms of mirroring. Mirror neurons have often been associated with the concept of simulation. However, simulation implies some level of conscious effort, whereas a great deal of mirror neuron activity most likely reflects an experience-based, pre-reflective, and automatic form of understanding other minds. I will discuss data on mirror neurons that suggest that their role in intersubjectivity may be more accurately described as allowing interdependence. This interdependence shapes the social interactions between people, where the concrete encounter between self and other becomes the shared existential meaning that connects them deeply.

The Mirror Neuron Hypothesis of Autism (6 pm)

Mirror neurons fire when we perform an action and when we see somebody else performing the same action. This neural system provides a relatively simple way of understanding the intentions and feelings of other people and seems a key neural system for imitation and for facilitating social interactions. Brain imaging data have demonstrated that human brain areas with mirror properties are more active in empathic individuals, when they observe the actions of other people. Furthermore, brain imaging has also shown reduced activity in mirror neuron areas of subjects with autism, a reduced activity that also correlates with the severity of disease. The mirror neuron hypothesis of autism suggests that reduced mirror neuron activity may be a central feature of autism. One of the appealing aspects of the hypothesis is that it may potentially explain the motor disorders, the language disorders, and the social disorders of autism. Mirror neurons are cells concerned with motor behavior, are considered neural precursors of neural systems concerned with language, and facilitate social interactions. An even more appealing aspect of the mirror neuron hypothesis of autism is that it has inspired novel and relatively simple treatment strategies of autism that are based on imitation. Preliminary results on the effects of these imitation-based treatment strategies on patients with autism seem encouraging.