

Neuroimaging in the Study of Neural Recovery and Rehabilitation		
Friday, June 1		
Time	Topic	Facilitator
9:00 - 10:15	Methods for Assessing Structural Connectivity: DTI	Jeannie Newton, Ruediger Seitz
	How well validated is DTI as a measure of structural connectivity?	
	To what degree do DTI-based measures of connectivity correlate with behavioral performance?	
	How fine grained are the data provided by DTI (i.e., relationships between specific fiber tracts and specific cognitive or motor abilities)?	
10:15 - 10:30	Break	
10:30 - 12:15	Methods for Assessing Functional Connectivity: TMS, ERP, MEG, Statistical Analyses	Leonardo Cohen, Steven Small
	What are the pros and cons of these methods for assessing functional connectivity?	
	How sensitive are these methods to learning-based changes in connectivity?	
12:15 - 1:00	Lunch	
1:00 - 2:45	Imaging Pharmacologic Modulation of Neural Activity in Diffuse Brain Injury (w/emphasis on frontal systems): BOLD & Perfusion MRI, ERP, MEG	Francois Chollet, John Whyte
	What are the pros and cons of these methods in distinguishing between cognitive/motor effects of drugs vs. direct vasoactive effects?	
	How do drug-induced changes in activation relate to drug-induced performance changes?	
	Can baseline imaging results serve as predictors of drug response?	
	Can imaging markers of drug response serve as surrogate outcomes in screening for clinically useful drugs?	
2:45 - 3:15	Break	
3:15 - 5:00	Clarifying Attentional Mechanisms and Studying Neurologic Attention Deficits	Branch Coslett, Ayelet Sapir
	What experimental tasks and paradigms are most useful for understanding neural control of attention?	
	How well do imaging tasks capture ecologically important phenomena such as sustained performance, performance in unstructured settings, etc.?	
	Can modulation of sensory or motor systems be useful in measuring attentional phenomena?	
	What are the implications of individual and group differences in task difficulty, skill level, and effort, in understanding attentional systems?	
5:00 - 5:30	Break	
	Group Dinner	

Neuroimaging in the Study of Neural Recovery and Rehabilitation		
Saturday, June 2		
Time	Topic	Facilitator
9:00 - 10:30	Functional neuroimaging within hours and days after stroke or brain injury.	Argye Hillis, Randolph Marshall
	Can fMRI, TMS, NIRS, etc complement the assessment of diffusion-perfusion MR imaging, DTI or spectroscopy for viable tissue that may be available to subserve later recovery? What limitations and opportunities are posed by neural, metabolic, and blood flow/volume factors? What would be a set of standard activation paradigms to test for this possibility?	
10:30--11:00	break	
11:00 - 12:30	Serial neuroimaging over time	John Detre, Richard Wise
	For motor activation paradigms, what are the better techniques to employ: e.g., how should we interpret a change in TMS excitability, BOLD magnitude or volume, and ROI and remote distribution of activity over time after stroke?	
	Can we establish standards for reproducibility in longitudinal studies? How should we account for changes in performance, effort, and experience on an acutely evoked signal at the moment of testing given the ongoing neurobiological changes of the brain over weeks and months? What are the best movement (kinematics, force, directionality, speed, normalcy of the action, etc.) and statistical methods to guide the interpretation of these changes over time within and across subjects and between a single subject and a large control group?	
12:30 - 1:30	lunch	
1:30 - 3:00	Neuroimaging as a physiological marker to guide a strategy for rehabilitation	Steven Cramer, Bruce Dobkin
	Can a therapy for aphasia, paresis, neglect etc. be chosen based on how it alters a short-term TMS, fMRI or the response to other techniques, i.e., the intervention appears to engage or fails to alter the expected regions of interest? Can these techniques help define the optimal intensity and duration of a therapy using repeated measures over the time of treatment? What intervention, if any, should serve as the control condition for a training paradigm plus neuroimaging study executed over weeks or months? What set of longitudinal data are needed to make reliable brain-behavior correlations as training proceeds?	
3:00-3:30	break	
3:30 - 5:00	General discussion	Myrna Schwartz, Nick Ward
6:30	Dinner (on your own)	