BIOGRAPHICAL SKETCH

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NAME	POSITION TITLE
Ana Solodkin	Associate Professor
eRA COMMONS USER NAME (credential, e.g., agency login) SOLODKIN	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	MM/YY	FIELD OF STUDY
Anahuac University, Mexico	B.S.	1978	Psychophysiology
Center for Research and Advanced Studies	M.S.	1982	Physiology & Biophysics
National Polytechnic Institute Mexico	Ph.D.	1991	Physiology & Biophysics

A. Personal Statement

The present application has two goals: 1) To build the Virtual Brain: a large-scale model of the human brain's anatomy and physiology that embodies major principles of brain network function; 2) To use the Virtual Brain to integrate different sources of data from individual patients into classification metrics that will allow us to better understand, predict, and guide recovery of function. My research interest has been centered from the beginning, around networs associated with brain plasticity. During my Ph.D. I did studies in the area of presynaptic inhibition and long term plasticity in the spinal cord. These studies were continued at NIH where I completed some studies on plastic changes during development. Later on at the University of Iowa I joined the Cognitive Neurology group (Dr. Antonio Damasio) training with Dr. Gary van Hoesen in the area of human neuroanatomy, especially in reference to limbic lobe anatomy. During these years, I published a number of papers in prominent Journals on the pathological alterations in limbic structures in Alzheimer's disease. One important result dealt with the changes in the reciprocal connectivity between limbic structures in AD results in a de-afferentation and de-efferentation of the hippocampus from the cortex. This work introduced me to human cortical neuroanatomy in one hand and applied science, in particular, in the area of Cognitive Neurology. Finally I decided to complete my scientific approach by adding functional Magnetic Resonance Imaging (fMRI). From 1996, I started working with fMRI in the context of vascular disease, especially ischemic stroke. My aim with this work has been to discover anatomical and physiological substrates of disease that have a reasonable likelihood of leading to therapeutic interventions. My present interest on recovery after focal ischemic damage builds on past work by integrating previous areas of investigation, including CNS plasticity, network analysis, and human neuroanatomy, into a coherent program of clinically relevant basic scientific study. These efforts are targeting plastic changes to promote motor recovery after stroke.
This past experience then provides me with unique expertise to complement the NRG group in three areas: Brain plasticity in the context of ischemic stroke, human neuronatomy and neurophysiology and network analysis.

B. Positions and Honors

Positions:

2010-present	Associate Professor, Department of Neurology. The University of Chicago. Chicago, IL.
1999-2010	Research Associate (Assistant Professor), Department of Neurology, The University of Chicago, Chicago, IL
1996-1999	Research Associate, Department of Anatomy, School of Medicine, University of Maryland at Baltimore, Baltimore, MD

1991-1996	Postdoctoral Associate of Anatomy & Neurology, The University of Iowa, Iowa City, IA
1988-1990	Part-time employee, Pain Clinic NAB, NIDR, NIH Bethesda, MD
1987-1990	Guest Researcher, NAB, NIDR, NIH, Bethesda, MD
1982-1985	Neurophysiology Lab Coordinator, Universidad Anahuac, Mexico D.F.
1981-1986	Teaching Assistant, Cinvestav, Mexico D.F.
1981-1985	Instructor in Neurophysiology, Universidad Anahuac, Mexico D.F.
1981-1985	Instructor in Physiology of Memory, Universidad Anahuac, Mexico D.F.
1981-1982	Instructor in Physiology, Universidad Anahuac, Mexico D.F.
1978-1980	Instructor in Neuroanatomy, Universidad Anahuac, Mexico D.F.

Professional Membership:

Sociedad Mexicana de Ciencias Fisologicas
Society for Neuroscience
International Brain Research Organization
American Association for the Advancement of Science

C. Selected Peer-reviewed Publications

Publications:

Most relevant to the current application

Walsh RR, Small SL, Chen EE and Solodkin, A (2008). Network activation during bimanual movements in humans. Neuroimage. 15; 43(3):540-53. PMCID: PMC2655207

Solodkin, A, Hassan, U, Suiszgate, R, Chen, EE, Kotter, R and Small SL (2010). Virtual brain transplantation (VBT): A method for accurate image registration and parcellation in large cortical stroke. Arch. Ital. Biol. In Press.

Solodkin, A; Peri E, Chen EE, Ben-Jacob E and Gomez CM (2010) Cerebellar networks in spinocerebellar ataxia 1 as biomarkers of disease severity and duration. The cerebellum. In Press.

Small SL, Hlustik P, Genovese C, Noll DC and Solodkin A (2002) Cerebellar hemispheric activation ipsilateral to the paretic hand correlates with functional recovery after stroke Brain 125: 1544-57.

Ertlelt D, Small S, Solodkin A, Dettmers C, McNamara A, Binkofski F and Buccino G (2007) Action observation has a positive impact on rehabilitation of motor deficits after stroke. Neuroimage. 36 Suppl 2:T164-73.

Additional recent publications of importance to the field (in chronological order)

Solodkin, A; Hlustik, P; Noll DC and Small SL (2001) Lateralization of Motor Circuits and Handedness during Finger Movements Neurology Eur J Neurol 8: 425-34

Hlustik P; Solodkin, A; Gullapalli R; Knoll DC and Small SL (2001) Somatotopy in human primary motor and somatosensory hand representations revisited. Cerebral Cortex 11: 312-21

Hlustik P; Solodkin, A; Knoll DC and Small SL (2002) Functional Lateralization of the human premotor cortex during sequential movements. Brain and Cognition 49(1): 54-62.

Solodkin A, Hlustik P, Chen EE and Small SL (2004) Fine Modulation in Network Activation during Motor Execution and Motor Imagery. Cerebral Cortex. 14: 1246-55.

Milton J, Small SL and Solodkin A (2004) On the road to automatic: Dyamic aspects of skill acquisition. J Clin. Neurophysiol. J Clin. Neurophysiol. 21(3), 134-43.

Bhimani AA, Hlustik P, Small SL, Solodkin A (2006) Complex motor function in humans: validating and extending the postulates of Alexandr R. Luria. Cogn Behav Neurol 19:11-20.

Buccino G, Solodkin A, Small SL (2006) Functions of the mirror neuron system: implications for neurorehabilitation. Cogn Behav Neurol 19:55-63.

Milton J, Solodkin A, Hlustik P, Small SL (2007) The mind of expert motor performance is cool and focused. Neuroimage 35: 804-13.

Milton J, Small SL and Solodkin A (2008) Imaging motor imagery: methodological issues related to expertise. Methods. 45(4): 336-41.
Small SL, Buccino, G and Solodkin, A (2010) The Mirror Neuron System and Treatment of Stroke. Developmental Neurobiology. In Press.

D. Research Support

Ongoing Research Support

1 RO1 054942-02 (Solodkin) **07/01/07-06/30/2011**
NIH/NINDS
Mirror imitation therapy for motor recovery after stroke
The goal of this project is to assess the efficacy of a novel motor imitation therapy for the recovery of fine skill hand movement in chronic stroke.
The objective of this grant is to assess the efficacy of an experimental therapy based on principles from the mirror system physiology, to improve fine hand motor control after stroke.
Role: PI

James S McDonnell Foundation (McIntosh) **08/01/2005-07/31/2010**
Network mechanisms underlying cognition and recovery of function in the human brain
The goal of this grant is to determine of plastic changes in brain networks after motor stroke and during stroke recovery.
The objective of this grant is to develop novel network analysis techniques to describe neurological damage and subsequent recovery.
Role: Co-PI

Center for Integrative Neuroscience and Neuroengineering Research (Solodkin) **09/01/07-08/30/10**
Detection of Neuropathological changes in Spinocerebellar ataxias by Diffusion Tensor Imaging
The goal of this proposal is to develop an MRI tool that will allow us to detect the progression of changes taking place in the brains of patients diagnosed with spinocerebellar ataxia 2 and spinocerebellar ataxia 6.
Role: PI

University of Chicago Institute of Translational Medicine – Collaborative **4/15/10 – 4/14/11**
Translational Study Award (CTSA) with NorthShore University Health Systems (Mastrianni)
"Validation of a cognitive screening assessment combined with functional brain imaging to predict Alzheimer's disease in African Americans",
Role: Co-PI

5 R01 DC007488-04 (Small) **04/01/2005 - 03/31/2010**
NIH/NIDCD
Neurophysiological Measurement in Aphasia Treatment
The goal of the project is to facilitate the use of neurophysiological (functional imaging) measures in patients with aphasia.
The objective of the present grant is to determine the efficacy of some language therapies which are based on neurobiological principles.
Role: Co-PI

4 R33 DC008638-03 (Small) ` **09/01/2008-08/31/2011**
NIH/NIDCD
Bioinformatics Infrastructure for Large Scale Studies of Aphasia Recovery
This project proposes to build computational infrastructure to facilitate the prospective investigation of aphasia recovery in a large group of patients (R21 phase) and then to execute such a study (R33 phase).
Role: Co-PI

5 R01 DC03378-11A2 (Small) **09/30/1996-08/31/2013**
NIH/NIDCD
Functional Neuroanatomy of Normal and Impaired Language
The major goals of this project are to determine the functional neuroanatomy of normal language processing, primarily at the lexical and sentential levels, and in ecological context.
Role: Co-PI

Completed Research Support

1RO1 MH65134-01A1 (Robinson) **07/01/2002 - 06/30/2007**
NIH/NIMH (University of Iowa)
"Prevention of post-stroke depression-treatment strategy"
The specific role of this project is to determine the efficacy of pharmacological treatment in the prevention of depression after stroke.
Role: Subcontract (PI)