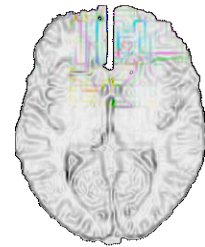


UNIVERSITY OF PENNSYLVANIA  
CENTER FOR COGNITIVE NEUROSCIENCE (CCN)



## PATIENTS HELP UNDERSTANDING OF BRAIN- BEHAVIOR RELATIONSHIPS

### DR. LESLEY FELLOWS

Participants have helped with studies examining how the brain generates emotions and responds to mood swings. These findings are advancing our understanding of basic processes that may be important in depression, and may help explain the mood and personality changes that can sometimes follow brain injury.

Other studies have looked at which parts of the brain are involved when we make (and correct) mistakes, and how injury to the frontal lobes can affect decision-making. Many of these studies have provided unexpected findings that are changing the way scientists think about the frontal lobes of the brain. Thanks to everyone who has so generously given their time and effort to participate in these projects!

### DR. SHARON THOMPSON-SCHILL

This year we will begin work on a new project funded by the National Institute of Mental Health. The grant, titled "Neural Bases of Visual Knowledge" will support our studies of long-term memory for common objects. Some of our patients experience difficulties remembering certain attributes of otherwise familiar objects (e.g., what color a banana usually is). We are interested in what these deficits can teach us about the way we store and retrieve memories.

We are continuing work on another project funded by NIMH, entitled "Linguistic and nonlinguistic functions of frontal cortex." Over a dozen patients from the Center for Cognitive Neuroscience Patient Database have been kind enough to participate in this project. As this project enters its third year, we are beginning to publish the results of these studies in a variety of journals and book chapters. I am joined in this endeavor by collaborators at the nearby Moss Rehabilitation Research Institute, in addition to an excellent team of neurologists, psychologists, and students at Penn.

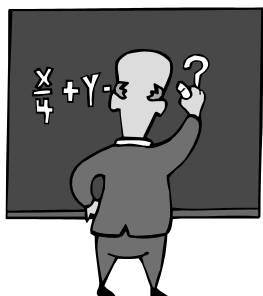
### DR. ANJAN CHATTERJEE

Dr. Anjan Chatterjee along with collaborators published a paper called "Visuo-motor links in awareness: Evidence from extinction" in the journal *Neuroreport*. This investigation of 5 patients with stroke examines the ways in which sensations and movement interact to produce awareness. Dr. Chatterjee also presented these data in a symposium he organized at the International Neuropsychological Society meeting in Dublin, Ireland in June 2005.

Dr. Anjan Chatterjee has reported ways in which brain damage in artists can sometimes change their artwork, sometimes in surprisingly appealing ways. He presented this work in a talk titled "The neuropsychology of visual art" at a special symposium on the Neurology of Painting sponsored by the Medical Society of London in May 2005.

## WELCOME NEW RESEARCHERS!

### Dr. Cris Hamilton



I recently finished my Ph.D. at Rice University in Houston, Texas and moved to Penn to work with Dr. Branch Coslett at the CCN. While I was at Rice, I worked with patients that had suffered brain damage in order to test theories about the organization of short-term memory and language in the brain. I've continued to pursue these interests at Penn, as well as beginning new experiments examining the perception of time.

Patients volunteering in research are one of the most valuable resources available to scientists in our field. Even today, studies of individuals who have suffered brain damage provide some of the most important insights as to how memory and language are represented in the brain.

### Dr. Sabrina Smith

Kids have strokes, too! While much less common than stroke in adults, 1 in every 4,000 babies will have a stroke near the time of birth, and older children occasionally have strokes. Although children often compensate for the brain injury caused by the stroke, some children continue to have problems with movement, language and other kinds of learning. Several neurologists at The Children's Hospital of Philadelphia have started a database for children who had a stroke as a baby or during childhood. This fall I will begin a study of spatial neglect and language in children following stroke. I hope that this will help us understand how children develop language and visuo-spatial skills, and what parts of the brain are necessary for these abilities.

## ONGOING RESEARCH

### Prin Amorapanth

#### *Looking for ARTISTS*

I am an MD/PhD candidate in Dr. Anjan Chatterjee's lab. The main project I'm working on is looking at which brain areas are necessary for processing spatial concepts, ranging from the type that we use to understand terms like "above" and "below" to those that support our ability to mentally rotate things. A side research interest is how various neurological conditions affect artistic efforts; there is a growing body of literature that suggests that artistic output often changes in interesting ways following various types of brain injury. If any of you reading this knows of, or is an artist, who has had their artistic output changed as a result of a neurological condition, I would be interested in hearing from you.

### Elaine Wencil

#### *Upcoming Studies*

Thanks to all who have participated in the experiment in which you made judgments about the timing and size of circles. Looking at the data that you provided us so far, we are beginning to believe that judgments about different types of magnitudes (e.g., how far away your friend is standing or how long a song lasted) are processed independently in the brain. We'll be recruiting more subjects soon, so I look forward to meeting many more of you!

## PRESENTATIONS AND PUBLICATIONS

### LK Fellows & MJ Farah

Damage to ventromedial prefrontal cortex impairs simple preference judgments in humans.

*Society for Neuroscience meeting, October 2004, San Diego.*

### LK Fellows

Ventromedial frontal lobe damage affects the pattern of information acquisition in multi-attribute decision-making.

*Cognitive Neuroscience Society meeting, April 2005, New York.*

### AA Padon, AS Heberlein, SJ Gillihan, MJ Farah, & LK Fellows

Dissociation between emotion recognition and subjective emotional experience in subjects with frontal lobe damage.

*Cognitive Neuroscience Society meeting, April 2005, New York.*

### SJ Gillihan, MJ Farah, AA Padon, AS Heberlein & LK Fellows

Mood reactivity and recovery in patients with lesions of dorsolateral and ventromedial prefrontal cortex.

*Cognitive Neuroscience Society meeting, April 2005, New York.*

### EZ Wheeler, W Schneider, & LK Fellows

The ventromedial prefrontal cortex and social knowledge.

*Cognitive Neuroscience Society meeting, April 2005, New York.*

### LK Fellows & AA Padon

What role does human anterior cingulate cortex play in error monitoring?

*Society for Neuroscience meeting, November, 2005.*



In the past year, over a dozen publications have appeared in journals or edited books reporting the results of research projects conducted in **Dr. Sharon Thompson-Schill's** lab. In one of these papers, entitled "The frontal lobes and the regulation of mental activity," Dr. Thompson-Schill and her collaborators discuss some of the research conducted at Penn with the generous involvement of many participants in the Center for Cognitive Neuroscience Patient Database. The title of this article pays homage to one of the great neuropsychologists of the last century, Aleksandr Luria, whose careful observations of patients with brain damage (largely as a result of war injuries), remain influential and informative to many brain scientists today. Their article, which describes trends in research on frontal lobe function that reflect some of Luria's ideas, appeared in *Current Opinion in Neurobiology* in Spring, 2005.

**Dr. Thompson-Schill** also edited a special issue of the journal *Cognitive, Affective, & Behavioral Neuroscience* devoted to research on individual differences in brain-behavior relationships. The fifteen contributions to that publication feature brain imaging work from around the country that explores how people (and their brains!) vary with regard to cognition, perception, emotion, and personality.



*Names of CCN members are printed in boldface.*

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#### FACULTY DIRECTORS

Anjan Chatterjee, M.D.

H. Branch Coslett, M.D.

Martha Farah, Ph.D.

Sharon L. Thompson-Schill, Ph.D.

## LANGUAGE AND THE FRONTAL LOBES

In April 2005, Dr. Sharon Thompson-Schill co-chaired a symposium at the annual meeting of the Cognitive Neuroscience Society in New York. The symposium featured four internationally renowned scientists who have investigated the important role that the frontal lobes of the brain play in language production and comprehension. Dr. Thompson-Schill gave the closing remarks, in which she discussed some of the data collected from patients we have seen at Penn. Dr. Thompson-Schill also gave an invited address at the annual meeting of the American Psychological Society in Los Angeles in May 2005 on this topic, as well as lectures at Columbia University, the University of St. Andrews, the University of Wales at Bangor, University College London, and the Medical Research Council in Cambridge England. Next month Dr. Thompson-Schill will travel with some of her students to a conference in Cuba where they will be discussing some of their newly collected data on language impairments.



### CONGRATULATIONS, DR. KAN!

Irene Kan, who received her PhD in Psychology this summer, received a Dissertation Award from the American Psychological Association. Dr. Kan also received the Albert Bandura award from the American Psychological Society, in recognition of an outstanding research paper that will be published later this year.



### WE NEED VOLUNTEERS!

Non brain-injured subjects are needed for our research studies. These individuals are often the spouses and caregivers of our patients. Subjects receive the same tests as our patients, and they help to establish a baseline for how non brain-injured individuals perform on the same tasks. Payment for participation is \$15 per hour plus mileage and parking.

Contact us at [215-615-3649](tel:215-615-3649) for more information.



### YOUNG STROKE SUPPORT GROUP

Penn's Young Stroke Support Group provides a chance for stroke patients to meet and talk with others facing similar challenges. The group is positive and upbeat, and there is usually a guest-speaker who is invited to address issues relevant to younger adults.

Meetings:

3<sup>rd</sup> Thursday of the month

6:30 p.m.

Ravdin-6 Conference Room, HUP (34<sup>th</sup> & Spruce Streets)

For more information, contact Jeanie Luciano, MSN, CRNP (Stroke) at [215-614-0175](tel:215-614-0175) or [jluciano@mail.med.upenn.edu](mailto:jluciano@mail.med.upenn.edu).

For More Information:

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215-615-3649