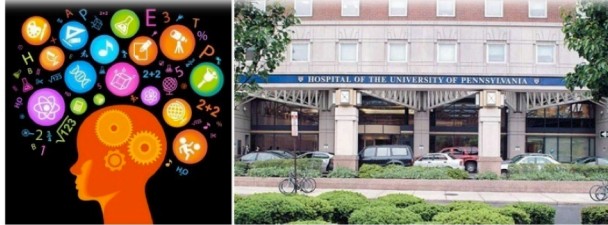


THE BRAIN

THE BEHAVIORAL RESEARCH AND IMAGING NEWSLETTER







THE BRAIN BEHAVIOR LABORATORY: WHO WE ARE

The Schizophrenia Research Center and the Brain Behavior Laboratory (BBL) are devoted to the study of brain and behavior in health and disease. Our methods combine clinical assessment with neurobehavioral measures, neuroimaging, electrophysiology, and genomics. Through our research, we aim to advance the understanding and treatment of complex brain disorders such as schizophrenia. We are especially interested in factors contributing to a person’s vulnerability to psychosis as well as those that promote resilience in young people. Our laboratory emphasizes early identification and prevention of these disorders.

ISSUE 2, DECEMBER 2014

FEATURED IN THIS ISSUE:

- 
UPCOMING EVENTS
 Learn about the new acting workshop being offered to past participants of our studies. 2
- 
PUBLICATIONS & AWARDS
 An update of publications and recent awards from the investigators in our lab. 3
- 
SPOTLIGHT ISSUES
 What is Prodromal? Our lab is focusing a number of new studies on this exciting concept. Learn more about what this means. 4
- 
OUR STAFF
 Learn more about a featured staff member of the BBL team. 6

BRIDGING CLINICAL CARE & RESEARCH AN INTERVIEW WITH DR. CHRISTIAN KOHLER



Dr. Christian Kohler is the Clinical Director of Neuropsychiatry at the BBL. He joined the department in 1997 after completing a neuropsychiatry fellowship at the University of Pennsylvania. He specializes in evaluation and treatment of

young people with first onset of mental illness. His research has focused on emotion processing in healthy people and those with brain disorders. In the following interview, he addresses questions relevant to his role both as a physician and a researcher.

There are ethical concerns regarding the lines drawn between clinical care and participation in research. As a clinician who holds a prominent role in this lab, how do you assure that your patients know the difference between clinical care and participation in research?

CK: Keeping clinical treatment and research separate is a very important issue that needs to be kept in mind. It is important for patients to know that getting care here does not, by itself, produce a commitment on their behalf to participate in research. That being said, we encourage

INTERVIEW CONTINUED ON PAGE 5

CURRENT PROJECTS AND RECRUITMENT

[Brain-Behavior and Genetic Studies of the 22q11DS](#)

This collaborative project with Children's Hospital of Philadelphia (CHOP) aims to examine the chromosome 22q11.2DS, which is associated with a high risk for psychosis.

[Developmental Trajectories of Negative Symptoms in Schizophrenia](#)

This project investigates the brain and behavior as it relates to development and genetics in men and women ages 10 - 30 years old.

[Neuroimaging of Dimensional Reward Dysfunction in Adolescence](#)

This project investigates how the brain functions in relation to the decision-making process during adolescence and young adulthood.

[Olfactory Neuroimaging Markers of Heightened Developmental Risk for Schizophrenia](#)

This project examines how brain function and development relates to an individual's sense of smell.



[A Neurobehavioral Study of Effort](#)

This project examines how the reward and motivation centers of the brain are affected by schizophrenia in men and women ages 18-45.

TO LEARN MORE ABOUT A PARTICULAR PROJECT, OR TO DETERMINE IF YOU ARE ELIGIBLE FOR PARTICIPATION IN ONE OF OUR RESEARCH STUDIES PLEASE CALL 1-888-635-7780 OR EMAIL US AT VOLUNTEER@MAIL.MED.UPENN.EDU.

UPCOMING EVENTS:

BRAIN AND BEHAVIOR LAB ACTING WORKSHOP!

The BBL is proud to announce a new program that takes the form of an introductory acting class taught by a professional theater director. You may be eligible if you are 18-25 years old, have participated in one of our prior research studies, and are able to attend all 18 meetings.

At our weekly meetings you will:

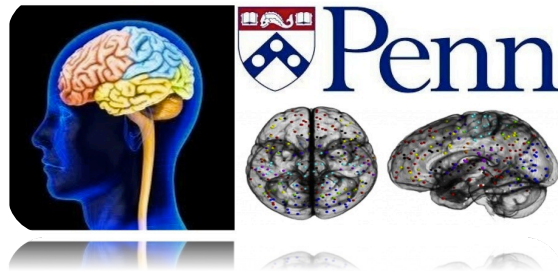
- **Learn & Develop physical, vocal, and acting skills**
- **Create original characters, dialogue, and scenes**
- **Create and perform an original play!**

You will earn \$20 at the end of each meeting, plus an additional \$50 at the program's conclusion. Reimbursements for travel expenses. Food and drink at each class meeting.

Contact Kevin Sealaus for additional information
Phone: 267-515-3349 Email: ksealaus@upenn.edu

****No Experience Necessary****





RECENT PUBLICATIONS & AWARDS

IMPACT OF PSYCHIATRIC COMORBIDITY AND COGNITIVE DEFICIT ON FUNCTION IN 22q11.2 DELETION SYNDROME

YI, JJ *ET AL.*

JOURNAL OF CLINICAL PSYCHIATRY, IN PRESS

The 22q11.2 deletion syndrome is a multisystem genomic disorder commonly associated with congenital heart disease, intellectual disability, and psychiatric illness that may affect long-term functioning. This study found that approximately 50% of individuals with 22q11.2 deletion syndrome had ≥ 2 psychiatric disorders and reduced overall functioning was associated with higher psychiatric comorbidities. Additionally, verbal-memory and spatial-processing performances on the Penn Computerized Neurocognitive Battery were associated with overall functioning, suggesting the cognitive remediations in these domains may lead to higher overall functioning.



Dr. Yi is a child and adolescent psychiatrist, currently investigating the interaction of various risk factors in the emergence of psychosis as a NIH T32 Post-Doctoral Fellow at the BBL. He is interested in the effects of various environmental risk factors including psychosocial stressors and immune dysfunction in mediating the psychosis risk, and hopes to develop early intervention strategies for children and adolescents with 22q11.2 deletion.

RESEARCH DEVELOPMENT AWARD

Dr. Roalf is a Research Associate at the BBL. He is the recipient of the NIH Career Development Award. The purpose of the NIH Mentored Research Scientist Development Award (K01) is to provide support for an intensive, supervised career development experience in the biomedical, behavioral, or clinical sciences leading to research independence.



Dr. Roalf's research efforts are focused on identifying how changes in behavior in conditions like schizophrenia are associated with alterations in brain structure and brain chemistry. Over the past decade, he has built skills in cognitive and behavioral neuroscience methods, including neurocognitive testing, structural and functional magnetic resonance imaging (fMRI), and diffusion tensor imaging—all of which are useful for evaluating brain-behavior associations.

His current project involves three parts. The first part is aimed at measuring how consistently individuals perform on a variety of cognitive tests (e.g. memory, attention, etc.). The second part involves imaging the structure of brain. Finally, the third part of the study involves measuring the levels of glutamate, a neurotransmitter response for neural activation, in the brain. These images will allow investigators to determine which parts of the brain are associated with inconsistent performance, and whether there are alterations in the chemical signals in the brain that underlie these performance deficits.

MENTAL HEALTH RESOURCES:

Please contact these resources for additional information regarding the understanding and treatment of complex brain disorders:

THE PENN PSYCHOSIS EVALUATION AND RECOVERY CENTER (PENN PERC)

- Penn's PERC center is dedicated to helping individuals experiencing risk symptoms of early psychosis by providing customized diagnostic evaluation, comprehensive treatment, and follow up for patients in adolescence and young adulthood and their families. For a comprehensive list of services and procedures, please visit our website at <http://www.med.upenn.edu/perc>.

THE SILVIO O. CONTE CENTER

Funded by the NIH/NIMH, The University of Pennsylvania's Conte Center opened in 2004. The Conte Center is devoted to neuroscience research relevant to mental health and mental illness, specifically focusing on the tripartite synapse. <http://www.med.upenn.edu/synapse/>

CHILDREN'S HOSPITAL OF PHILADELPHIA (CHOP)

- CHOP is a world-renowned institution that uses a collaborative approach and innovative research to ensure quality care for its patients and their families. The BBL Center has worked collaboratively on various projects with several CHOP departments. <http://www.chop.edu>

There are a variety of mental health professionals available for care and treatment. Here are just a few of the types of professionals one may encounter within the realm of clinical care:

Child and Adolescent Psychiatrist

A child and adolescent psychiatrist is a licensed physician who is a fully trained psychiatrist and has two additional years of advanced training beyond general psychiatry with children, adolescents and families. Child and adolescent psychiatrists provide medical/psychiatric evaluation and a full range of treatment interventions for emotional and behavioral problems and psychiatric disorders. Child and adolescent psychiatrists can prescribe and monitor medications.

Psychiatrist

A psychiatrist is a physician, a medical doctor, whose education includes a medical degree and at least four additional years of study and training. Psychiatrists provide medical/psychiatric evaluation and treatment for emotional and behavioral problems and psychiatric disorders. Psychiatrists can prescribe and monitor medications.

Psychologist

Some psychologists possess a master's degree in psychology while others have a doctoral degree in clinical, educational, counseling, developmental or research psychology. Psychologists can provide psychological testing, assessments, evaluation and treatment for emotional and behavioral problems and disorders.

Social Worker

Some social workers have a bachelor's degree, however most social workers have earned a master's degree. In most states social workers can take an examination to be licensed as clinical social workers. Social workers provide different forms of psychotherapy.

WHAT IS PRODROMAL?



New studies into the development of brain disorders have begun to focus on the concept of the "prodromal" phase of illness. What does this mean?

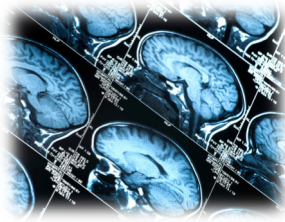
Prodromal is a term that identifies symptoms of an illness that are considered "softer" or less severe but which may be red flags or possible indicators of future illness. As with any illness, finding these early signs allows for earlier treatments. The transition from adolescence to adulthood carries a heightened risk for emerging psychiatric symptoms and behavioral difficulties that affect functioning and development. There is overwhelming research to suggest greater symptom reduction and enhanced functional outcomes the earlier psychosis is treated. Thus, early intervention is crucial to the success of the recovery process.

Our program is now focusing on similar symptoms, which might indicate a "clinical risk" or "high risk" status of developing a brain disorder such as schizophrenia. This work is being done in the hopes of improving our ability to identify and intervene in brain disorders at early stages, in hopes of improved outcomes.

To participate in these studies visit our website at www.med.upenn.edu/bbl/

Interview (Continued from page 1)

patients seeking clinical care to also participate in research. Their participation provides further information to guide future clinical care; therefore,



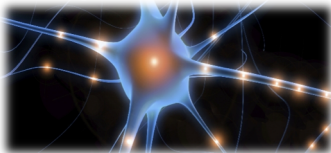
treatment itself becomes part of the whole research process because it feeds people into research. Likewise, if people do research studies, we are happy to have them undergo clinical care

because that ensures that they are more likely to follow up with studies as well as come to their appointments in the future.

Research provides an additional element to the care patients receive, thus making it a more personalized approach. However, the distinction that we make is pretty clear. I may ask someone to participate in research who is in my clinical care, but I will not consent them to do the research. I explain the structure of the lab to them and at that point I introduce them to one of the lab's research coordinators so as not to confuse my role. Nevertheless, if patients say I just want clinical care and I do not want to participate in research, then I do not pressure them to do it.

What are the challenges of disclosing/withholding information about research results from participants who are also your patients? To what degree are you able to utilize research test results for patient care?

CK: I think some of the results/findings we get from research have value in clinical care and are of importance for patients to know. For instance, people are interested in having a diagnosis and being told that they will be given a consensus diagnosis based on research diagnostic criteria. In essence, the research diagnostic criteria are the same as clinical diagnostic criteria; however, in a



research-based interview, symptoms are quantified and assessed in a different way than in a clinical

interview. In research, we look at findings in a more holistic or global manner, and determine how they fit within the clinical picture. Research and clinical diagnoses usually match, but multiple people determine a consensus diagnosis - it is like getting a second opinion.

Commonly, if participants undergo an MRI, they want to know what the results show. Frequently, the MRI is normal, but in a clinical setting they can actually look at the MRI findings and I can explain to them what the results mean. Furthermore, younger people, especially those in school, are sensitive about the issue of cognitive functioning, attention, and memory, and that is what the computerized neurocognitive test results provide. I am an advocate for full disclosure, meaning that information is made available to people, but presented in terms that patients can understand.

How have research findings from this lab contributed to the care you provide as a clinician and the treatment goals of clinics like the PERC (Psychosis Evaluation and Recovery Center)?

CK: There are a couple of areas where the research conducted here has contributed to clinical practice and care. First, we understand that during the first episode of schizophrenia, people already have cognitive difficulties similar to those with more advanced illness. These cognitive difficulties may not get better with standard treatment. This is something to factor in with cognitive remediation and augmentation of medications when treating someone with stable schizophrenia.

“Research provides an additional element to the care patients receive making it a more personalized approach”

Secondly, our imaging data has shown us that people at first onset of illness can have a decline in brain volume over a couple of years. By limiting (or regulating) the active disease to the shortest period of time, the chances of these patients doing better and recovering seems to increase.

Finally, there is research that looks at cognitive emotion functioning of people who are at risk for psychosis. We are trying to deliver clinical care to people who have risk symptoms without established illness including feeling emotionally empty, having some kind of wayward disorganized thinking, or having some overvalued ideas by and large different from psychosis. In doing so, we can identify these symptoms and target them for stabilization and improvement. The majority of these people will not progress to psychosis, so the treatment involves a lot more behavioral treatment rather than medication.

BBL SPOTLIGHT



Iman Martin, Ph.D, M.Sc., M.P.H.

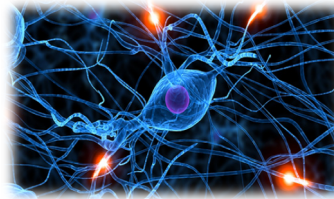
Dr. Iman Martin was a Post-doctoral Fellow at the BBL. She received her Ph.D. in epidemiology in May 2012 from the University of Illinois at Chicago School of Public Health. In addition, she holds two masters degrees, including a M.Sc. in

Epidemiologic Sciences from the University of Michigan (2008). As Rotary Ambassadorial Scholar to District 9100 in West Africa, she earned an MPH (2004) in Epidemiology and Biostatistics from the University of Ghana.

Her research focuses on the contribution of genetic and socio-structural determinants to observed disparities in mental health and wellness. Her current work utilizes the data collected during a study on predictors of neurobehavioral health in youth, based at the University of Pennsylvania (UPENN) in partnership with the Children's

Hospital of Philadelphia (CHOP) supported by a National Institute of Mental Health (NIMH) grant.

She recently completed a Fogarty International Center Global Health Post-doctoral Fellowship focused on surveillance of cancers in Sub-Saharan Africa. She has received numerous grants and awards including a U.S. Department of



Defense, Prostate Cancer Research Program Health Disparity Award, an NIH R25T pre-doctoral Cancer Education and Career

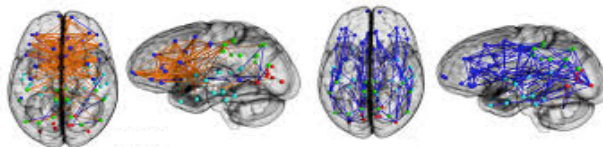
Development traineeship, and a Penn Mental Health AIDS Research Center (PMHARC) Developmental Award Program pilot grant. After her NRSA fellowship, she will continue to contribute to the literature on mental health disparities and join the United States Public Health Service as a Senior Assistant Scientist Officer for the Centers for Disease control and Prevention, Epidemiologic Intelligence Service.

A LETTER FROM THE DIRECTOR



Thank you for reading *The Brain!* Through this quarterly newsletter we hope to keep you informed on all of the exciting new studies occurring within the Schizophrenia Research Center and the Brain and Behavior Laboratory as well as to share the knowledge we gain through your participation. Without our participants our research would not be possible, and we greatly appreciate you devoting your time and support to our endeavors!

Raquel E. Gur
Raquel E. Gur



BRAIN BEHAVIOR LAB

NEUROPSYCHIATRY SECTION
HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA
3400 SPRUCE STREET
10TH FLOOR, GATES BLDG.
PHILADELPHIA, PA 19104-4283