

DISCOVERY TO RECOVERY

Investing in the Decade of
Brain and Behavior Research



NARSAD
The Brain and Behavior Research Fund
2009 ANNUAL REPORT

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NARSAD is the world's leading donor-supported organization dedicated to finding the causes, improved treatments, and cures for psychiatric illness. Its mission is to alleviate suffering from mental disorders by raising and distributing funds for scientific research into such conditions as schizophrenia, depression, bipolar disorder, anxiety disorders, and child and adolescent disorders, among others.

100% of all donations go directly to research programs (all NARSAD operational expenses are generously underwritten by two family foundations).

“No other organization in my experience has ever been nearly so dynamic as NARSAD. In a very short period of time, NARSAD has managed to fund more young scientists studying mental illness than all the other foundations in the field put together.”

Solomon H. Snyder, M.D., Ph.D., D.Sc.
Johns Hopkins University

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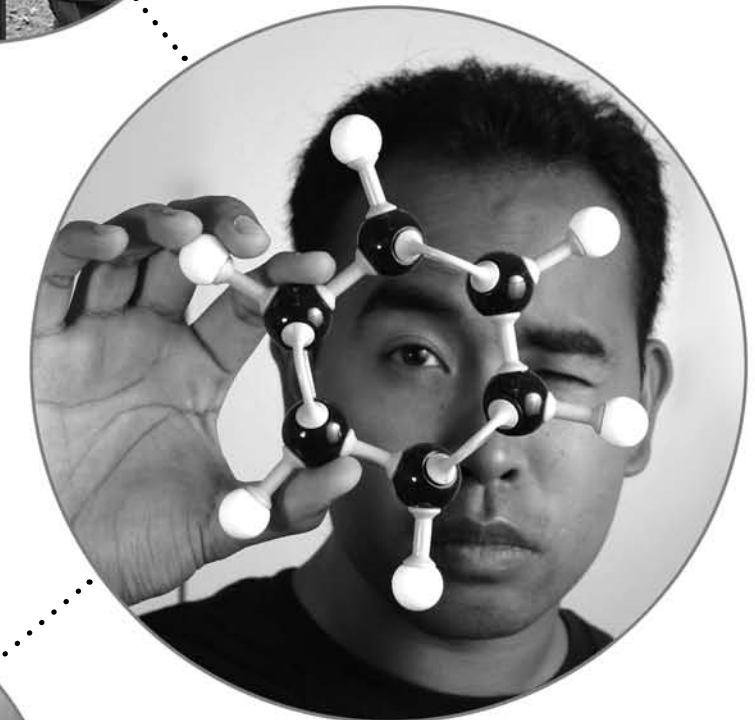
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INVESTING IN BREAKTHROUGHS — TO FIND A CURE

Since 1987, NARSAD has awarded more than \$256 million in 3,775 grants to 2,902 scientists worldwide.



“We will make enormous strides with developmental disorders like autism.”



Finding, funding, and connecting crucial lines of research...

CHAIRMAN'S REPORT



In the new decade, NARSAD will remain dedicated to continued leadership – and the goal of doubling the quarter-billion dollars in grants awarded in its first 23 years.

Exciting and promising new avenues of improvement in treatment and research were initiated by NARSAD grantees in 2009, as you'll see in this report.

This has been an extraordinary transition year for NARSAD and its mission. At the National Awards Dinner, on October 30, 2009, the Scientific Council President, Herbert Pardes, M.D., announced that in 2010, NARSAD will initiate the Decade of Brain and Behavior Research campaign.

This plan for philanthropic leadership in mental health research contrasts with the Decade of the Brain concept announced by President George H.W. Bush in 1990 and led by government institutions. Back then, NARSAD was still in its early stages of research support. In the years since, it has awarded \$256 million in grants to 2,902 scientists, making it the world's largest philanthropy dedicated to funding brain research. But there are still more than 1,000 applications each year — from innovative and promising researchers — that remain unfunded.

In the next decade, NARSAD will remain dedicated to continued leadership — and the goal of doubling the quarter-billion dollars in grants awarded in its first 23 years. We simply cannot continue to miss opportunities that could yield critical advances. The Decade of Brain and Behavior Research is focused on identifying and pursuing every opportunity.

Achievements in psychiatric research in recent years have provided extraordinary gains in recovery and the promise of productive lives for those with brain and behavior disabilities. They have led to a broad consensus by scientific thought-leaders that the understanding of genetics and of the brain's structure and systems has reached a point where major research funding is more important than ever. Psychiatry, many believe, now involves much more than diagnoses based on broad general observations of behavior; it is moving toward technology-based analyses of the causes of disabilities and the specific means to counteract and even prevent them.

The NARSAD Research Grants Program is expanding beyond the 3,775 grants awarded through 2009 and is uniquely structured for a new era of progress. Our volunteer Scientific Council has grown to 116 members from its original 24. Each member is a distinguished leader in a vital area of brain and behavior science. Working together, they review more than 1,000 grant applications each year to find the most promising new recipients.

The grant recommendations of the NARSAD Scientific Council are recognized throughout the scientific community as a unique stimulus for innovation. NARSAD has no agenda or preconceptions about what the ultimate area of scientific interest should be. It also has no bureaucratic constraints, so it is free to fund research based solely on its potential to advance meaningful treatments and pathways to cures.

The Council seeks creative, independent thinking and expert research from its grantees.

In 2009, NARSAD moved forward with its program to share with the public our efforts to find better treatments and potential cures through the research we sponsor. We planned our second national mental-health symposium series, and, building on the success of 2008's meetings, more than 40 Healthy Minds Across America events are scheduled for 2010. These forums bring NARSAD-funded science directly to families, providing understanding of patient conditions and insight into ongoing discoveries.

A new addition to our Lifetime Scientific Achievement prizes debuted at our October 2009 National Awards Dinner. Honoring achievement in rehabilitation and overcoming disabilities, the Productive Lives Award recognizes the broad spectrum of NARSAD-supported research, from the study of the basic science of the brain, to treatment modalities, to rehabilitation for productive lives, to, ultimately, recovery.

Our organization formally moved to new leadership on January 4, 2010, with the appointment of Benita Shobe to the presidency. (Our sincere thanks to NARSAD Director Joel Gurin, who served as acting President in 2009.) Prior to joining us, Benita had an impressive career in leadership roles at major national philanthropies; most recently, she led the 84 national chapters of the International Juvenile Diabetes Research Foundation. She brings new and broad experience in philanthropic leadership to NARSAD, where she is supported by an enhanced Board of Directors. Benita has already added important staff to join us in bringing NARSAD to a new decade of accomplishment.

Sincerely,

A handwritten signature in black ink that reads "Stephen A. Lieber". The signature is written in a cursive, flowing style.

Stephen A. Lieber
Chairman

SCIENTIFIC COUNCIL PRESIDENT'S REPORT

At a time when the economic fortunes of the country are uncertain and money for research is tight, NARSAD plays an even more important part in sustaining quality, high-level research into psychiatric illness.



It is noteworthy that NARSAD's impact keeps spreading. For example, the vast majority — 169 — of the 201 new Young Investigators in 2009 had never received a NARSAD grant before. The same is true of the other grant categories.

We are pleased with the ongoing spread of the NARSAD brand. By reaching more and more of the scientific community, we're tapping into a greater source of top-notch applicants, which in turn guarantees a superb pool of NARSAD grantees. This wide reach stretches around the world: NARSAD has to date provided support to nearly 3,000 scientists in 28 countries in addition to the United States.

Of course, there are challenges with which we all contend as we try to speed the process of discovery in the study of major psychiatric illness. The Diagnostic and Statistical Manual of Mental Disorders (DSM), which is undergoing its fourth revision, represents ways of systematizing communication and the collection of psychiatric illness data and is still, as everyone understands, the best approximation of the organization of psychiatric illness. Some in our field call for more intense efforts in the areas of genetics and neurocircuitry — personalized information that could be better tailored to individuals and hopefully lead to more specific treatments.

NARSAD has become such a pervasive presence in work on mental illness that it is unusual to find areas of psychiatric research that *haven't* been touched in some way by the organization.

Our hope is that as the economy improves, we will find the necessary support to continue our mission: to assist our applicants as generously as we can and foster as much psychiatric research as possible. The deliberate pace of discovery is understandably stressful for both families and scientists. It is simply a reality of medical research. Yet by assembling the largest number of outstanding minds available and providing strong support, NARSAD is urging along the expansion of our understanding of the illnesses in the hope of developing ways to clarify diagnoses and thus generate more specific, more effective treatments.

Sincerely,

Hebert Pardes, M.D.
President, NARSAD Scientific Council

PRESIDENT'S REPORT

Discovery to Recovery...
Investing in the next decade of
brain and behavior research



I am honored to have joined NARSAD at a pivotal moment in its 23 years of extraordinary accomplishments. There is a strong foundation of annual success guided by a clear mission and an aggressive vision for the future. We view science as the purveyor of hope that will lead to the causes, improved treatments, and cures for the brain illnesses that alter the lives of so many individuals and their families throughout the country — and throughout the world. We are at a stage in scientific *Discovery* and technology that offers great promise.

The theme of our 2009 Annual Report reflects that promise.

Our theme also defines our priorities for the next several years, and it is critical that we greatly accelerate our efforts. Science is the only true pathway to *Recovery*.

This journey that we share is one filled with passion and fierce determination to speed the pace of science to overcome these disorders and to restore health and balance to individual and family lives. We sincerely appreciate your partnership as investors in NARSAD's commitment to *Recovery*. You have touched the lives of so many people worldwide through your thoughtful generosity and your hopeful spirits. I am honored to join you on this journey.

Thank you for your support and confidence.

Sincerely,

Benita Shobe
President and CEO

NARSAD OFFICERS AND DIRECTORS

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CONNECTING THE PATHWAYS TO RECOVERY

Leading Scientists Share their Visions for the New Decade

As we enter the new decade — which NARSAD has introduced as its Decade of Brain and Behavior Research — our distinguished Scientific Council members provide a new vision of hope for psychiatric illness. NARSAD is spearheading the next 10 years with a campaign to support the most talented scientists in their efforts to realize the remarkable potential recently discovered in brain and behavior science. NARSAD will accelerate its success by identifying and supporting outstanding researchers in their quest for breakthrough science.

Looking ahead to our initial five-year campaign, we plan to achieve a 10% per annum increase in the number of Young Investigators funded and a 50% increase in research funding for them. Where appropriate, increases in Independent and Distinguished Investigator awards and a major addition to NARSAD's endowment are also in the works.

We have asked our Scientific Council members to give us their views on important new research possibilities for the next decade. Here is a selection of their insights.

“All psychiatric disorders are associated not just with chemical abnormalities, but with abnormalities in brain cells and circuits. Current treatments just compensate for illness. Studies under way at many sites are making progress in developing the technology to repair or regenerate disordered cells and processes in the brain. Such approaches might cure or prevent illness, not just treat it.”

*Bruce M. Cohen, M.D., Ph.D.,
Harvard University*

“The goal of achieving more targeted treatments of individuals with individual drugs — personalized medicine — is currently within reach. Earlier and more effective intervention would not only be a great benefit to the patient; it could also theoretically alter the entire course of an illness, making any currently devastating major psychiatric disorders more benign.”

*Robert M. Post, M.D.,
George Washington University*



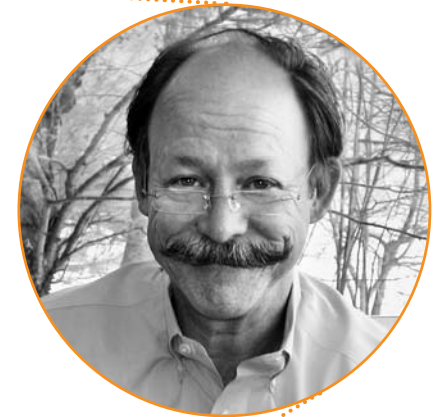
“Our new windows into the human brain, our unraveling of the genetic code, our refinement of an ever increasing pharmacology of mental illness all can be accomplished.... Remission is possible, but what about recovery? The potential is there but not completely realized. The more we can address all that is human in our patients, the better we will do.”

Samuel J. Keith, M.D., University of New Mexico



“We may someday soon have Bob Post's dream of a combination scanner and brain stimulator in which depressed patients get diagnosed and treated and cured all in a single session. I also think we will make enormous strides with the dementias and developmental disorders like autism and schizophrenia.”

Mark S. George, M.D., Medical University of South Carolina



“Advances in stem cell technology have tremendous potential for allowing molecular functions of mental illness-related genes to be dissected in ways never before possible. Such knowledge will be basic in designing the next generation of evidence-based prevention and treatment strategies for complex illnesses such as schizophrenia and mood disorders.”

Stewart Anderson, M.D., Weill Cornell Medical College



“The productive pace of these discoveries ensures that future major advances with enormous major therapeutic impact will occur within the next 10 years. In fact, the pace is accelerating, limited only by the increasing need for funding. Although the objectives of improving treatment for Alzheimer's disease, bipolar disease, schizophrenia, and Parkinson's disease are far-reaching, there are promising avenues.”

Phillip Seeman, M.D., Ph.D., University of Toronto



Pathways to Recovery



“I believe that preclinical studies aimed at normalizing early brain disturbance has the potential for developing a ‘statin’ for brain worth. The chromosomal findings provide the immediate tool for prevention (through prenatal screening) and provide information for the long-term goal of finding abnormal brain chemical pathways. Both approaches are likely to rise beyond a particular diagnosis and address a broad range of disorders, from language disabilities through psychotic and mood disorders.”

Judith L. Rappaport, M.D., National Institute of Mental Health

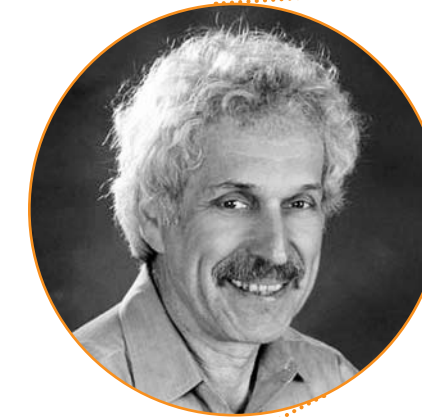
“Despite this remarkable progress only 1 to 2 percent of the genes that cause schizophrenia, manic depression, and autism have been identified. However, continuous advances in DNA technology — especially fourth-generation DNA sequencing machines — should make it possible to identify most of the remaining genes. Incredibly, it will soon be possible to sequence — at affordable cost — all 3 billion pairs of DNA of a single individual in a few days or less, and ‘personal genomics’ will be routinely available for everyone. Such an advance will identify many, if not most, of the genes predisposing to schizophrenia, bipolar illness, and autism.”

William Byerley, M.D., University of California, San Francisco



“In the next decade, methods for measuring neurocognition will continue to develop in their precision and sophistication, establishing a clear link between neurobiological circuits, neuroplasticity, and human experience.... These discoveries will establish the scientific foundation for research on pharmacologic and behavioral interventions that will be implemented prior to the onset of illness, thus stopping schizophrenia before it comes to full expression.”

Richard Keefe, Ph.D., Duke University



“By emphasizing the largely unexplored role of common micro-organisms in behavior, research into the molecular mechanisms and genetic vulnerabilities underlying sickness behavior will lead to new pathophysiological concepts and therapeutic approaches.”

Robert Schwarcz, Ph.D., University of Maryland

“Understanding these brain networks can lead to methods for ameliorating symptoms of reduced attention or perhaps even preventing the disorder from occurring in the first place.... Recent findings can guide new studies designed to determine whether improving brain attention networks can help ward off the symptoms of mental illness, reduce the severity of the disorder, or prevent it all together.”

Michael Posner, Ph.D., University of Oregon



“Understanding neuroplasticity’s underlying mechanisms to identify molecules that may be targeted to restore neuroplasticity and the ability of the brain to adapt, constitutes an untapped area for pharmaceutical therapeutic development.”

Peter W. Kalivas, Ph.D., Medical University of South Carolina



“The single most important advance in which NARSAD might invest is research involving the in-vitro study of neurons, which are derived from the study of skin cells of bipolar and schizophrenia patients who have particular genetic backgrounds.”

Wade Berrettini, M.D., Ph.D., University of Pennsylvania

NARSAD will usher in a new decade of philanthropic support for brain and behavior research — one dedicated to the conviction and passion of all who strive to create the great breakthroughs so needed by those afflicted with psychiatric disorders.

INVESTING IN BREAKTHROUGHS — TO FIND A CURE

NARSAD FUNDING BUILDS CAREERS 2009 DISTINGUISHED INVESTIGATOR

Daniele Piomelli, Ph.D.



“I will be truthful with you,” confides Dr. Daniele Piomelli, who holds the Arnold Chair in Neurosciences at the University of California, Irvine. “When I first applied for a NARSAD grant more than 20 years ago, I did so having absolutely no idea that NARSAD would shape my whole career.”

As a young man, Dr. Piomelli clearly had a great deal going for him—his skills as a chemist and thinker had already drawn the attention of Eric Kandel, the Nobel laureate at Columbia University who co-directed Piomelli’s dissertation with James Schwartz. In the years immediately following, Paul Greengard, another Nobel Prize winner, hired Piomelli to do postdoctoral research in his laboratory at New York’s Rockefeller University.

Young Daniele was fascinated by a subject “almost nobody else thought was very interesting.” It was his quest, he

says, to understand “a group of signaling molecules in the brain that are derived from phospholipids.” Without them our brains cannot function normally; signals cannot be conducted properly if lipid-based messengers are malfunctioning.

Lipid chemistry can be pretty obscure. Piomelli recalls being kidded by his famous doctoral adviser. “Daniele,” Dr. Kandel once said to him, “by the time we figure out how to pronounce the names of the molecules you’re working on, you’ll already have tenure!” His first NARSAD grant made possible a study of a lipid called arachidonic acid, derived from cell membranes. Why is that important? “When cells become activated by various stimuli, they release this lipid, which is metabolized by a variety of different enzymes,” says Piomelli. “This metabolism is very active biologically, but no one knew what it did to cells inside the brain, and I wanted to find out.”

The outcomes of this seemingly obscure interest have proved remarkably significant. Over two decades, Piomelli has been able to show that some of the products, or metabolites, of reactions that began with arachidonic acid help neurons control the release of neurotransmitters—an essential part of signaling between cells and vital for a healthy brain.

“My early work on arachidonic acid couldn’t have been done without NARSAD’s help,” Piomelli says. “But at that time it had nothing directly to do with NARSAD’s mission to help people with illnesses like schizophrenia and depression. When I was having my first successes studying lipids in the brain, I was invited to NARSAD’s annual New York Symposium. That event changed my life. Here was a group of maybe 200 or 300 people, very smart, very motivated. And all they wanted to hear about, and learn about, was how schizophrenia, depression, anxiety, and the like come about. This was extraordinary to me. For these were not scientists — we were the scientists, and they brought us to them!

“NARSAD’s New York Symposium gave me an ethical charge. I was reminded how many people are suffering, and I began to work on things that directly pertained to anxiety, depression, and schizophrenia.”

“You can measure the impact this had on me by doing an online search of my publications. I went from very basic research on molecules to work that directly pertains to anxiety, depression, schizophrenia, and other illnesses. I credit NARSAD 100 percent for that. It was those Symposia that gave me, as a 30-year-old, what I’d call an ethical charge. I was reminded how many people are suffering, and I began to reflect this in my work.”

The next phase in Piomelli’s career proved pivotal, and once again, he notes, “a NARSAD grant was involved.” In the late 1990s, he won a mid-career Independent Investigator award and used it to help finance work he was just beginning as a new faculty member at UC Irvine. He was now devoted to the study of a naturally occurring class of substances called endocannabinoids, which are chemical cousins of THC, the substance in the cannabis plant that makes marijuana psychoactive.

“Just think of the interesting range of things cannabis is known to do—it impacts mood, pain threshold, appetite, et cetera.” The body’s own cannabinoid system, it was reasonable to assume, was likely to be involved in these same areas. But no one knew how. Piomelli was especially interested in a substance called anandamide, one of the body’s natural endocannabinoids, which happens to be derived from arachidonic acid, the lipid he had been studying for years. He figured out the mechanism by which anandamide was produced in the brain, and, in 1999 at Irvine, Piomelli began research with his latest

NARSAD grant into how it was degraded in the brain. Then, using that as a basis, he determined how that process might be temporarily halted or blocked to produce potentially therapeutic effects.

“By blocking degradation and then letting anandamide accumulate at the sites in cells where it is active, we would see if it might be useful,” he explains. To his surprise and delight, compounds that Piomelli and colleagues have created over the years that act to block degradation of anandamide—and one in particular, called URB597—have demonstrated some useful properties in preclinical animal studies: the ability to reduce anxiety, the ability to elevate mood, the ability to increase the threshold for pain (i.e., it acts as an analgesic). Merck now has a version of URB597 in clinical trials.

Just as sweet, Piomelli, who since has received NARSAD’s Distinguished Investigator award, has demonstrated that activity of receptors in dopamine neurons (believed important in schizophrenia) increases levels of anandamide. By studying spinal fluid from 180 schizophrenia patients, he has discovered that those who were doing comparatively well in treatment had higher anandamide levels. “This seems to indicate that anandamide is naturally protective; that it does not cause damage in these patients but rather in some way moderates the illness.”

Piomelli expresses the hope that studies with inhibitors of anandamide degradation—a drug class now called FAAH inhibitors—will at the very least provide patients with new treatments for anxiety. With luck, he says, they may also have applications in the elevation of mood for depression, in pain relief, and perhaps in the alleviation of some symptoms of schizophrenia. It’s an astonishing agenda for a NARSAD-powered career that began with a modest interest in a neglected class of molecules with difficult-to-pronounce names.

2009 DISTINGUISHED INVESTIGATORS

“A Balanced Portfolio of Outstanding Proposals”

The 16 awardees were selected from an initial pool of approximately 150, representing full professors or the equivalent rank in institutions throughout the world.

NARSAD granted Distinguished Investigator awards to 16 outstanding neuropsychiatric researchers in 2009. The recipients of this award — widely regarded as one of the most competitive and coveted in neurobiology and psychiatry — are mostly from the United States, but scientists from Sweden, Switzerland, Scotland, and Germany have also received awards. Each application was reviewed by several members of NARSAD’s Scientific Council.

As noted by Jack D. Barchas, M.D., the Barklie McKee Henry Professor and chair of the department of psychiatry at Weill Cornell Medical College and longtime chair of the Distinguished Investigator Selection Committee of NARSAD’s Scientific Council, “A great number of the major medical research institutions, both here and abroad, now have active and excellent research that is highly relevant to NARSAD.” The awardees were selected from an initial pool of approximately 150, representing full professors or the equivalent rank in institutions throughout the world. The applicants have in common the distinction of being highly successful and funded, but each is now proposing new directions or creative ideas for which they seek seed funding.

“The outcome,” said Dr. Barchas, “is a balanced portfolio of outstanding proposals. The applications are exciting and important. They cover basic fundamental science that is essential, as well as clinical applications that could be directly relevant now or in the future.”

WADE BERRETTINI, M.D., PH.D., OF THE UNIVERSITY OF PENNSYLVANIA, will address the hypothesis that rare variants of a gene called ANK3 are predisposing for bipolar disorder. To do so, he plans to sequence 700 gene samples from bipolar patients and use novel sequencing technology to detect the suspected variants. The results will allow for estimation of a variant’s frequency in bipolar disorder and will enhance understanding of the genetic foundations of bipolar disorder, possibly leading to new research avenues and the potential for improved diagnosis and treatment.

ALEXANDER BYSTRITSKY, M.D., PH.D., OF THE UNIVERSITY OF CALIFORNIA, LOS ANGELES, will use a new technique, focused ultrasound pulse, to study brain circuits responsible for the biological mechanisms of mental illness. He hypothesizes that the low-energy focused ultrasound pulse could modulate neuronal transmission or firing without heating or disrupting the brain tissue, and that this effect could then be detectable by current imaging techniques. Preliminary findings have confirmed the feasibility of developing focused ultrasound pulse as a noninvasive research, diagnostic, and treatment tool. More research to find the best parameters of focused ultrasound pulse needs to be done.

PIETRO DE CAMILLI, M.D., OF YALE UNIVERSITY, will study the roles of phosphoinositide metabolism in the regulation of brain function and its potential dysregulation in bipolar disorders, autism, and schizophrenia. Phosphoinositides are lipid metabolites important in a variety of cell processes. Dr. De Camilli’s previous studies expanded basic understanding of phosphoinositide signaling. He now plans to study the impact of lithium and other drugs on the metabolism of phosphoinositides and explore mechanisms in the regulation of their metabolism and the potential impact on these regulatory mechanisms of drugs used to treat neuropsychiatric disorders.

MICHAEL D. EHLERS, M.D., PH.D., OF DUKE UNIVERSITY, seeks to develop a novel mouse model that will allow for direct, noninvasive, and specific activation of dopamine neurons in vivo. These neurons play a central role in disorders such as schizophrenia, drug abuse, and depression. He believes his model will help to explain the effect of direct activation of dopamine neurons on behavioral responses to therapeutic agents and drugs of abuse and whether controlled patterns of dopamine neuron activity can model schizophrenia or depression. His mouse model could also provide a unique ability to look at early developmental effects of dopamine neuron activation.

JORAM FELDON, D.PHIL., OF THE SWISS FEDERAL INSTITUTE OF TECHNOLOGY, will continue his prior investigation of early preventive strategies in preclinical animal models of schizophrenia. He will now further evaluate the potential value of preventive peri-adolescent treatment with atypical antipsychotic drugs on schizophrenia-related dysfunctions. This work will include study of the neuroanatomical effects of peri-adolescent clozapine, olanzapine, or risperidone treatment, relative to corresponding placebo treatment, in controls and in subjects predisposed to adult brain pathology by exposure to prenatal immune challenge. These investigations will be conducted in a neurodevelopmental mouse model of schizophrenia like disorder, which is based on prenatal exposure to the equivalent of a viral challenge.

TERRY E. GOLDBERG, PH.D., OF FEINSTEIN INSTITUTE FOR MEDICAL RESEARCH/NORTH SHORE-LIJ HEALTH SYSTEM, will develop a package of cognitive tools for measuring important classes of cognition in schizophrenia that are not subject to practice effects. These novel tests will increase precision in measurement of cognitive change in clinical trials and ultimately improve decision making about claims that specific compounds have positive effects on cognition. The study offers a novel conceptual opportunity to combine cognitive science-based psychometrics, clinical neuropsychological tests that are clear predictors of outcome and clinical-trials methodology in a package of tools that will be of clear utility to the field of schizophrenia research.



Distinguished Investigators

RENÉ HEN, PH.D., OF COLUMBIA UNIVERSITY, will test the hypothesis that stimulating new nerve-cell growth, or neurogenesis, in the hippocampal region of the brain produces antidepressant effects in both rodent models of depression and in human subjects. Preliminary results based on novel imaging methods indicate that cerebral blood volume (CBV) and magnetic resonance spectroscopy (MRS) may provide biomarkers for hippocampal neurogenesis in both mice and men. The project represents a significant paradigm shift in that it aims at translating basic findings regarding adult hippocampal neurogenesis from rodents to humans.

TOMAS HÖKFELT, M.D., PH.D., OF THE KAROLINSKA INSTITUTE, SWEDEN, is studying several neuropeptide receptors, including those of galanin, which represent targets for development of a new class of antidepressant drugs. Neuropeptides are the largest group of messenger molecules in the brain, almost always representing co-transmitters. A number of animal studies suggest that a molecule capable of blocking galanin could have an antidepressant effect, a theory strongly supported by the recent demonstration that small-molecule GalR3 antagonists have antidepressant and anti-anxiety effects in several rat models. The question to be addressed in this study is the extent to which the galanin system identified in rodents also exists in the human brain, and whether promising results with galanin antagonists in animal models might apply in humans.

JAMES KNOWLES, M.D., PH.D., OF THE UNIVERSITY OF SOUTHERN CALIFORNIA, seeks to determine the complete DNA sequence of one male with schizophrenia from a cohort in the geographically isolated and environmentally homogeneous Azorean islands (called the Portuguese Island Cohort). Since this project will deliver one of the first complete genome sequences of an individual with a

severe mental disorder, it has the potential to be highly significant. It will be followed by sequencing a second individual with schizophrenia from either the same family, or from another Portuguese Island Cohort family to determine which genes share pathogenic variation, and these will be studied in much larger cohorts.

STEPHEN LAWRIE, M.D., OF THE UNIVERSITY OF EDINBURGH, SCOTLAND, will extend research made possible by the famous Edinburgh High Risk Study of Schizophrenia, a 10-year study of nearly 200 subjects at high genetic risk of schizophrenia (13 percent developed schizophrenia over an average of 2.5 years). Dr. Lawrie now seeks to further this research into the timing and genetic underpinnings of brain structure abnormalities in schizophrenia through an investigation of cortical patterning in the temporal lobe, and to consider relationships between the patterns found and candidate susceptibility genes. He expects to further improve the power of neuroimaging to predict schizophrenia.

ANDREAS MEYER-LINDENBERG, M.D., PH.D., OF THE CENTRAL INSTITUTE OF MENTAL HEALTH, MANNHEIM/UNIVERSITY OF HEIDELBERG, GERMANY, will search for neural mechanisms and genetic variants mediating genetic risk for schizophrenia through an innovative multimodal imaging approach combined with chip-based genome-wide genotyping. This project has the potential not only to identify neurogenetic mechanisms linked to schizophrenia, but also to enable detection of previously unknown genetics in an exceptional sample through a neurogenomic approach, adding a further treatment-relevant dimension. The working hypothesis is that neurofunctional systems implicated in schizophrenia will be significantly associated with genetic variants mapping onto identified risk genes for the disorder, their interaction partners, as well as novel variants that will be replicated in a validation sample.

RICHARD J. MILLER, PH.D., OF NORTHWESTERN UNIVERSITY, proposes that toxoplasma infection produces an innate inflammatory response in the brain and disrupts the cytokine (chemokine) signaling that mediates the normal differentiation and migration of neural stem/progenitor cells in the adult brain. The goal is to obtain the complete inflammatory network of all chemokine and cytokine signaling pathways that are modified by parasitic insults in specific cells and brain structures. In addition, Dr. Miller's team will be able to determine which of the parasite-induced proteins may interface with candidate schizophrenia-susceptibility genes. Results from these novel studies will provide a mechanism for the parasitic hypothesis of schizophrenia and could suggest a rationale for the development of drugs and other therapeutic agents.

DANIELE PIOMELLI, PH.D., OF THE UNIVERSITY OF CALIFORNIA, IRVINE, is exploring the endocannabinoid system as a source of new anti-anxiety medicines. The endocannabinoids anandamide and 2-arachidonoylglycerol (2-AG) are key components of a brain signaling system that may contribute to the control of stress-coping and emotional responses. Emerging evidence suggests that 2-AG may also participate in the processing of affective signals. Dr. Piomelli and colleagues recently discovered the first potent drug-like inhibitor of the 2-AG-degrading enzyme MGL and have developed transgenic mice that over-express this enzyme in the forebrain. Dr. Piomelli proposes to use these new tools to explore the functions of 2-AG in the control of emotion.

JUDITH L. RAPOPORT, M.D., OF THE NATIONAL INSTITUTE OF MENTAL HEALTH, aims to study gene copy number variation in childhood psychoses. Copy number variants (CNVs) are repetitions or deletions in the genome that effectively enhance or diminish the

impact of specific genes. There is a greater presence of rare CNVs in childhood-onset schizophrenia, defined as onset by age 13, than in adult-onset schizophrenia. Working with patient samples screened by her group, Dr. Rapoport wants to test the hypothesis that the increased rate of CNVs is driven by premorbid developmental versus psychotic pattern and severity. She predicts that the rare CNV pathways will be even more frequent in the subjects without schizophrenia who do have autism spectrum disorders or developmental delays.

EMILIE F. RISSMAN, PH.D., OF THE UNIVERSITY OF VIRGINIA, will conduct gene studies she believes will lead to more effective treatment for disorders that affect women. Data from animal models suggest that both depression and anxiety are selectively regulated by the estrogen receptors ER-beta (ER β). Dr. Rissman will examine the mechanisms by which ER β affects mood and gene expression in brain areas involved in affective behavior, based on the hypothesis that estradiol activation of ER β requires histone acetylation and thus enhances transcription of genes that reduce the expression of affective disorder.

MARTHA E. SHENTON, PH.D., OF BRIGHAM AND WOMEN'S HOSPITAL/HARVARD UNIVERSITY, plans to explore neuronal activity in the brains of patients with schizophrenia utilizing diffusion-weighted functional magnetic resonance imaging (diffusion fMRI). Dr. Shenton and her team will use diffusion fMRI to investigate one of the core dysfunctions in schizophrenia — language and thought disorder — by imaging brain abnormalities in schizophrenia patients and in healthy controls. Dr. Shenton hypothesizes that diffusion fMRI may prove to be a more direct measure of neuronal activity in the brain than any method available today. Her research may lead to a significant advance in imaging the human brain in general and schizophrenia in particular.

RESEARCH PARTNERS

Making a Contribution that has Special Meaning



Luisa Francoeur is making a difference as a NARSAD Research Partner.

This was a child who never had a tantrum. A child who would stop and listen when I asked him to pay attention to what I was saying. He was just the easiest kid to bring up — smart, healthy, good-looking, athletic.” Luisa Francoeur was bravely telling a story she had told before, and she was leading to that moment when everything seemed to change, almost overnight.

“We sent him off to college in 1999. He completed his coursework for freshman year. Then he enrolled at another school. He couldn’t finish courses and had to drop them. Eventually he had to leave school.”

Things had fallen apart. Her son had suffered a psychotic episode, an event that would make it possible, albeit three agonizing years later, for doctors to make a diagnosis of schizoaffective disorder — one of the disorders of the brain within what is now sometimes called the schizophrenia spectrum.

Luisa’s son was living at home in early 2003 after his first hospitalization in the fall of 2002. “He was not accepting that there was a real problem,” his mother

recalls. He wasn’t taking the medications that had been prescribed for him — a sadly common state of affairs. “He was expressing paranoid thoughts and at that point it was as if we ceased understanding one another,” Francoeur says. “I can’t emphasize strongly enough how devastating these paranoid thoughts are — they utterly prevent people like my son from understanding their own situation. They keep them from being able to function.” Partly based on his delusions, her son attempted suicide in February 2003. He was hospitalized once more, while struggles over his compliance with medication continued.

This is the beginning of a much longer story that is, at its heart, about a parent’s love and despair leading to an important act of public generosity. Luisa Francoeur is one of NARSAD’s Research Partners, a group of donors who, as she puts it, “find themselves in the very privileged position of being able to make a special gesture.” Every NARSAD donor can take pride in funding research that makes a difference for those who suffer. A few, like Francoeur, have resources sufficient to back an entire researcher’s program for a period of time.

As a Research Partner, Francoeur was given an opportunity by NARSAD’s leadership to fund the work of an early-career Young Investigator grantee. “For me, the choice was easy,” she says. “One of the things that disturbs me most about my son’s condition is paranoia, which just doesn’t seem to go away and has been so important in his thought process since he became ill. I relied on NARSAD’s expertise. They introduced me to Dr. Angus MacDonald, a scientist in Minnesota whose work focuses on paranoia.”

“I spoke with Ms. Francoeur on the phone, and we had a nice time discussing my interests and how my work is relevant to her personal interests,” Dr. MacDonald recalls. He had come highly recommended. In 2008, he had been awarded the prestigious Sidney R. Baer, Jr., Prize in Schizophrenia Research by NARSAD on the advice of an expert panel of Scientific Council members whose leader, Dr. Irving Gottesman, observed at the time:

A PERSONAL CONNECTION BETWEEN DONORS AND RESEARCHERS.

Research Partners get to know and closely follow the researchers they support. Luisa Francoeur sponsors the line of research that has made a difference to her son. “We do this for our son’s sake,” she says, “but also thinking intently of the millions of others — the sick and their loved ones — who are going through similar experiences.”



Luisa’s elder son (on left) later became ill as a young college student.

“Dr. MacDonald is one of the early investigators to pursue the neural basis of schizophrenia using functional MRI. I am confident in placing this large bet on his future contributions.”

Dr. MacDonald is particularly interested in the neural basis of paranoia and persecution, common symptoms in schizophrenia that are also known to occur in psychoses

in bipolar disorder, Parkinson’s disease and Alzheimer’s disease. “Despite the great progress that we’ve made in neuroscience over the last decade, we still don’t understand what happens in paranoia at the level of nerve cells in the brain,” Dr. MacDonald notes. Part of the problem



Dr. Angus MacDonald

is that paranoia is a subjective state, “hard to pin down in controlled experiments.” Just as important, he says, it’s been very hard to obtain images of portions of the cortex believed to be most important in paranoia and persecution. His team at the University of Minnesota, where he is associate professor and director of the Translational Research in Cognitive and Affective Mechanisms Laboratory, has now overcome this obstacle and is proceeding with a NARSAD-funded study that uses functional MRI imaging as well as structural MRI and another imaging method called Diffusion Tensor Imaging (DTI) “to more fully understand how the brain’s function is related to its wiring, as well as people’s symptoms,” Dr. MacDonald says.

Ms. Francoeur says she is delighted to be Dr. MacDonald’s Research Partner, modestly attributing her generosity to the example set by her late parents — whose philanthropy found an outlet in the Hope Foundation, an entity that funded nonprofit charities. Luisa’s son, meanwhile, is doing reasonably well in a group home, but continues to suffer from feelings of persecution related to his illness. She is of course deeply saddened by her son’s ordeal, but takes some comfort in her role as a supporter of Dr. MacDonald’s research. “We do this for our son’s sake,” she says, “but also thinking intently of the millions of others — the sick and their loved ones — who are going through similar experiences.”

2009 RESEARCH PARTNERS UNITING DONORS AND SCIENTISTS

In NARSAD's Research Partners Program, a donor selects a scientist who has been awarded a NARSAD grant and, in turn, has the grant named in the donor's honor. Involvement continues beyond this initial stage: donors get research progress reports from the recipient(s) of their grant(s), and receive honorary mention in all published work resulting from the research they helped to fund.



SIDNEY R. BAER, JR. INVESTIGATORS

Donor: Sidney R. Baer, Jr., Foundation

Distinguished Investigator

Stephen M. Lawrie, M.D.
University of Edinburgh

Independent Investigators

Donald C. Goff, M.D.
Harvard University

Gina R. Kuperberg, M.D., Ph.D.
Harvard University

David A. Talmage, Ph.D.
Stony Brook University

Young Investigators

Abidemi A. Adegbola, M.D.
Harvard University

Brian P. Brennan, M.D.
Harvard University

Meghan C. Campbell, Ph.D.
Washington University

Yachi Chen, Ph.D.
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Donor: Foster Bam

Independent Investigator

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Yale University

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Donors: Barbara and Michael Bass

Young Investigator

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University of Illinois at Chicago

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Donor: Burdge Charitable Trust

Young Investigator

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Foundation of Biomedical Research of the Academy of Athens

DOMENICI INVESTIGATOR

Donor: NARSAD Research Fund

Young Investigator

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University of Colorado Denver

ELIZABETH ELSER DOOLITTLE INVESTIGATOR

Donor: Elizabeth Elser Doolittle Charitable Trusts

Young Investigator

Vaibhav Diwadkar, Ph.D.
Wayne State University

REBECCA EHRLICH TAKING STRIDES AGAINST MENTAL ILLNESS INVESTIGATOR

Donor: Taking Strides Against Mental Illness

Young Investigator

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University of Pittsburgh

ESSEL INVESTIGATORS

Donor: The Essel Foundation

Independent Investigators

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Royal College of Surgeons in Ireland

Hung-Teh Kao, M.D., Ph.D.
Brown University

Susan R. McGurk, Ph.D.
Dartmouth College

Debby W. Tsuang, M.D.
University of Washington

Young Investigators

Hsien-Sung Huang, Ph.D.
University of North Carolina at Chapel Hill

Mirna Kvajo, Ph.D.
Columbia University

Tatiana Melnikova, M.D., Ph.D.
Johns Hopkins University

Carsten K. Nielsen, Ph.D.
University of California, San Francisco

Ming Ren, Ph.D.
National Institute of Mental Health

Hiroki Taniguchi, Ph.D.
Cold Spring Harbor Laboratory

Anju Vasudevan, Ph.D.
Harvard University

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Donor: Luisa Francoeur

Young Investigator

Angus W. MacDonald, III, Ph.D.
University of Minnesota

DANIEL X. FREEDMAN INVESTIGATOR

Donor: NARSAD Research Fund

Young Investigator

Genevieve Konopka, Ph.D.
University of California, Los Angeles

SUZANNE AND JOHN GOLDEN INVESTIGATORS

Donors: Suzanne and John Golden

Young Investigators

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University of California, Davis

Kimberly Stark, Ph.D.
Columbia University

JOAN GRANLUND INVESTIGATOR

Donor: Joan Granlund

Young Investigator

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Independent Investigator

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Donor: The Hofmann Trust

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Goichi Miyoshi, Ph.D.
New York University

WILLIAM J. LEVY FOUNDATION INVESTIGATOR

Donor: William J. Levy Foundation

Young Investigator

Francis E. Lotrich, M.D., Ph.D.
University of Pittsburgh

2009 Research Partners Uniting Donors and Scientists

NARSAD is fortunate to have donors with intense interest in funding research in specific areas within its overall research strategies and is deeply grateful to all Research Partners for their critical support of dedicated scientists and their vital projects.

LIEBER INVESTIGATORS

Donors: Constance and Stephen Lieber

Distinguished Investigator

Judith L. Rapoport, M.D.
National Institute of Mental Health

Independent Investigators

Lars Bertram, M.D.
Max Planck Institutes

Herman Wolosker, M.D., Ph.D.
Technion-Israel Institute of Technology, Israel

Young Investigators

Erkan Karakas, Ph.D.
Cold Spring Harbor Laboratory

Vikaas S. Sohal, M.D., Ph.D.
Stanford University

Kazuhito Toyooka, Ph.D.
University of California, San Francisco

Nina B. L. Urban, M.D.
Columbia University

MALTZ INVESTIGATORS

Donor: Milton & Tamar Maltz Family Foundation

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Feinstein Institute for Medical Research

Independent Investigators

Richard Bergeron, M.D., Ph.D.
Ottawa Health Research Institute

Mary B. Genter, Ph.D.
University of Cincinnati

Jaana Suvisaari, M.D., Ph.D.
National Institute for Health and Welfare, Finland

Young Investigators

Javier Gonzalez-Maeso, Ph.D.
Mount Sinai School of Medicine

Tiffany A. Greenwood, Ph.D.
University of California, San Diego

Francois Laplante, Ph.D.
University of Montreal

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Institute of Psychiatry/ King's College, London

Daniel J. Lodge, Ph.D.
University of Pittsburgh

Steffen Moritz, Ph.D.
University Hospital of Hamburg, Germany

Zhongming Zhao, Ph.D.
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Donor: Anita F. and Robert C. Mitchell Memorial

Young Investigators

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Dartmouth College

Michael J. Ostacher, M.D., M.P.H.
Harvard University

Jonathan B. Savitz, Ph.D.
Laureate Institute for Brain Research

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Donor: NAMI Michigan

Young Investigator

Geoffrey G. Murphy, Ph.D.
University of Michigan

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Donor: NARSAD Artworks

Young Investigator

Yuri Rassevsky, Ph.D.
University of California, Los Angeles

GWILL NEWMAN INVESTIGATOR

Donor: NARSAD Research Fund

Young Investigator

M. Margarita Behrens, Ph.D.
Salk Institute for Biological Studies

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Donor: Eleanor N. Jernigan Endowment

Independent Investigator

Ayman Fanous, M.D.
Georgetown University

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Donor: Marion G. Nicholson

Distinguished Investigator

James A. Knowles, M.D., Ph.D.
University of Southern California

OXLEY FOUNDATION INVESTIGATORS

Donor: The Oxley Foundation

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Washington University

Gustavo X. Turecki, M.D., Ph.D.
McGill University, Canada

WILLIAM RISSE CHARITABLE TRUST INVESTIGATORS

Donor: William Risser Charitable Trust

Young Investigators

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Wake Forest University

Leann H. Brennaman, Ph.D.
University of North Carolina at Chapel Hill

CHRISSY ROSSI INVESTIGATORS

Donors: Linda and Mario Rossi

Independent Investigator

Philip R. Szeszko, Ph.D.
Zucker Hillside Hospital

Young Investigator

Vilma Gabbay, M.D.
New York University

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Donor: The Mortimer D. Sackler Foundation, Inc.

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Johns Hopkins University

Young Investigators

Sarojini M. Sengupta, Ph.D.
McGill University

Hanna E. Stevens, M.D., Ph.D.
Yale University

SELO INVESTIGATOR

Donor: Marylou Selo

Young Investigator

Melita L. Daley, M.D.
University of California, Los Angeles

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Donor: Toby Serrouya

Young Investigator

Benjamin R. Arenkiel, Ph.D.
Duke University

SHINE INVESTIGATOR

Donor: SHINE Initiative

Young Investigator

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Harvard University

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Donor: Test Endowment

Young Investigator

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Harvard University

EVELYN TOLL FAMILY FOUNDATION INVESTIGATOR

Donor: The Evelyn Toll Family Foundation

Young Investigator

Jan Freudenberg, M.D.
Feinstein Institute for Medical Research North Shore-Long Island Jewish Health System

VAN AMERINGEN INVESTIGATORS

Donor: van Ameringen Foundation

Independent Investigators

Stephen R. Salton, M.D., Ph.D.
Mount Sinai School of Medicine

Onno C. Meijer, Ph.D.

Leiden University, The Netherlands

Lori L. McMahon, Ph.D.

University of Alabama at Birmingham

VITAL PROJECTS FUND INC. INVESTIGATORS

Donor: Vital Projects Fund Inc.

Young Investigators

Jean-Martin Beaulieu, Ph.D.
Laval University

Andrea Danese, M.D., M.Sc.
Institute of Psychiatry/ King's College London,

Ebrahim Haroon, M.D.
Emory University

WOODY WURSTER INVESTIGATOR

Donor: Woody Wurster

Distinguished Investigator

Alexander Bystritsky, M.D., Ph.D.
University of California, Los Angeles

KLERMAN / FREEDMAN AWARDS

Exceptional Research in Basic and Clinical Science by NARSAD Young Investigators

Finding and funding talented young scientists as they start out—and then continuing to encourage and support them in new ventures and directions as their careers progress—has been central to NARSAD’s mission since it began awarding grants in 1987.

NARSAD’s commitment to provide seed money for innovative ideas has, over the years, generated meaningful achievements in basic knowledge and practical clinical applications that might otherwise have stalled or gone unrealized. The prestige that comes with receiving a highly competitive NARSAD grant and the chance to launch an independent research program have almost invariably led to further, more extended support for these researchers from funding agencies that would not or could not have risked backing them initially. **The Klerman and Freedman Awards** pay tribute to **Drs. Gerald L. Klerman and Daniel X. Freedman**, whose legacies as researchers, teachers, physicians, and administrators indelibly influenced neuropsychiatry and continue to inspire scientists who knew them as well as others just entering the field. The young scholars honored, on July 24, 2009, at an awards ceremony held at LeParker Meridien in New York City, were singled out for even greater distinction. The projects they proposed and brought to fruition were deemed by NARSAD’s Scientific Council to contribute exceptionally promising insights and potential new approaches to the treatment of mental illnesses.

2009 KLERMAN AWARDEE



for NARSAD-FUNDED 2005 RESEARCH PROJECT: **Memory Reconsolidation Interference in Post-Traumatic Stress Disorder**

ALINA SURÍS, PH.D.

Clinical Director, Mental Health Trauma Services, Veterans Administration Medical Center in Dallas; Associate Professor of Psychiatry, University of Texas Southwestern Medical Center

Upon receiving the award Dr. Surís said, “this was my second NARSAD Young Investigator Award, and more than any of the other research projects I have been involved with, this grant has helped me hone in and focus on my goals related to treating post-traumatic stress disorder (PTSD).

“Because of this grant, I have begun thinking of novel ways of adapting the traditional treatments for PTSD, which are often difficult for both patients and therapists to implement.

“I have also begun doing true translational work, with animal studies directly informing not only the choice of medication for testing, but also the methodology being used in the human studies. Whether augmenting the extinction of, or interfering with, reconsolidation of traumatic memories, the pairing of these mechanisms with ‘traditional’ evidence-based talk-therapy has great potential.

“This NARSAD project was the foundation of this new line of thinking and has provided the pilot data for three new grants exploring novel ways to treat PTSD.”

2009 FREEDMAN AWARDEE



for NARSAD-FUNDED 2005 RESEARCH PROJECT: **The Effects of BDNF Deletions on Measures of Emotion**

KERRY J. RESSLER, M.D., PH.D.

Associate Professor, Psychiatry and Behavioral Sciences, Emory University School of Medicine and Center for Behavioral Neuroscience; Howard Hughes Medical Institute Investigator

In his acceptance speech, Dr. Ressler explained, “Understanding at a more detailed level the role of BDNF in particular brain circuits mediating depressive-like phenotypes will advance our understanding of the role of neurotrophic factors in the pathophysiology of affective disorders.

“Additionally, our results suggest that treatments that target the extinction of aversive emotion may serve as novel approaches to treating depression and other stress-related disorders. **“NARSAD funding has allowed us to develop promising new avenues of research related to synaptic plasticity, emotional learning and recovery from stress-related disorders.”**

2009 FREEDMAN AWARD HONORABLE MENTIONS

for NARSAD-FUNDED 2005 RESEARCH PROJECT: **The Role of Npas2 in Depression and Anxiety Disorders**



COLLEEN A. McCLUNG, PH.D.

Assistant Professor, Department of Psychiatry, Center for Basic Neuroscience, University of Texas Southwestern Medical Center at Dallas

for NARSAD-FUNDED 2005 RESEARCH PROJECT: **Akt/GSK3 Signaling Cascade and Action of Dopamine**



JEAN-MARTIN BEAULIEU, PH.D.

Assistant Professor, Canada Research Chair in Molecular Psychiatry, Department of Psychiatry and Neuroscience of the Faculty of Medicine, Laval University

22ND NATIONAL AWARDS DINNER

Lifetime Achievement Prizes
Productive Lives Award



Senator Pete Domenici

LIEBER PRIZE AWARDEES

NARSAD's 2009 **Lieber Prize for Outstanding Achievement in Schizophrenia Research** was awarded to two co-recipients, the husband-and-wife team of **Raquel Gur, M.D., Ph.D., and Ruben Gur, Ph.D.**, who together lead neuropsychiatric studies at the University of Pennsylvania, and the Philadelphia Veterans Administration Medical Center. The Gurs apply a range of expertise that includes genetics, brain imaging, and studies of gender differences to their explorations of brain function and mental illness, particularly schizophrenia.

On October 30, 2009, NARSAD held its 22nd Annual Awards Dinner at The Pierre in New York City. The evening was a celebration of another outstanding year in neuropsychiatric research. An important new award — The Productive Lives Award — was presented to J. Randolph Lewis of Walgreen Co. Under his leadership, Walgreen Co. developed major distribution centers intending to employ large numbers of people with disabilities, often utilizing special adaptive equipment. The award was presented by Senator Domenici. During his 36 years as United States Senator from New Mexico, Pete Domenici has been a leader in issues relating to mental illness. The landmark Mental Health Parity Act of 1996 was signed into law as a result of his introducing the first ever Congressional legislation requiring insurance companies to provide parity between mental health benefits and medical and surgical benefits. Senator Domenici received NARSAD's Humanitarian Award in 1995 and the first NARSAD Paul Wellstone Leadership Award in 2005 for his tireless efforts on behalf of people suffering from mental illness, their family and friends.

FALCONE PRIZE AWARDEES

The **Falcone Prize for Outstanding Achievement in Mood Disorder Research** was also awarded to two co-recipients, representing both the East and West coasts: **Eric J. Nestler, M.D., Ph.D.**, of Mount Sinai School of Medicine, a world renowned neuroscientist, molecular biologist, and psychiatrist whose studies of the ways in which the brain responds and adapts to experiences such as depression, stress, and addiction have transformed understanding of the areas in the brain involved in reward and motivation; and **Lewis L. Judd, M.D., D.Sc. (Hon.)**, of the University of California, San Diego, who heads a broad program of clinical and basic research. Dr. Judd operates centers in mood disorders, late-onset psychoses, neurobehavioral aspects of HIV infection and child and adolescent services, among other programs.

RUANE PRIZE AWARDEES

The **Ruane Prize for Outstanding Achievement in Child and Adolescent Psychiatric Research** was presented to one other husband-and-wife team of researchers, **Adrian Angold, M.D., and E. Jane Costello, Ph.D.**, who co-direct the Center for Developmental Epidemiology at the Duke University Medical Center. At this center, researchers from different disciplines are working to advance understanding of the origins, course and prevention of mental illness across the life span. Drs. Angold and Costello conducted the Great Smoky Mountains Study — a long-term assessment of psychiatric care, substance abuse disorders and access to mental health care in young Americans living in the southeastern United States.



The Prize winners l-r: Drs. Raquel Gur, Daniel Wolf, Eric Nestler, Lewis Judd, Brenda Milner, Ruben Gur, E. Jane Costello and Adrian Angold.

GOLDMAN-RAKIC PRIZE AWARDEE

The **Goldman-Rakic Prize for Outstanding Achievement in Cognitive Neuroscience** was presented to **Brenda Milner, C.C., Ph.D.**, of McGill University, who has been breaking new ground in the study of cognitive functioning for more than 60 years, studying the brain mechanisms involved with thinking, reasoning, learning and remembering. Still active at the age of 91, Dr. Milner leads the Montreal Neurological Institute's Cognitive Neuroscience Unit in explorations of the anatomical basis of cognition. NARSAD Scientific Council member and Nobel Laureate Eric Kandel described her work as having created the field of cognitive neuroscience by merging neurology and psychology.

THE SIDNEY R. BAER, JR. PRIZE AWARDEE

The **Sidney R. Baer, Jr. Prize** is traditionally selected by the year's Lieber Prize recipients — who select an early-career scientist conducting promising research on the genetic and neural causes of schizophrenia. The 2009 recipient of the prize was **Daniel H. Wolf, M.D., Ph.D.**, of the University of Pennsylvania, whose interest focuses on the functional changes within the brain that effect the so-called negative symptoms — the social and emotional deficits — as well as the cognitive deficits experienced by people with schizophrenia.

NARSAD and PRODUCTIVE LIVES

As the science rapidly progresses, there is an increasing conviction, in the words of Dr. Alan Green of the Dartmouth Medical College, that “most of our psychiatric disorders are neurodevelopmental, not degenerative, like, for instance, Alzheimer’s, and that you should be able to intervene early and change the trajectory of these disorders...”

For 23 years, NARSAD has centered its effort on the central goals of “Better Treatments and Cures for Severe Mental Illnesses.” The research grants awarded to nearly 3,800 scientists during this period have covered every

known aspect of the impacts of brain and behavior disorders in denying normal, healthy, productive lives. Despite breakthrough after breakthrough in brain science, new insights into behavioral challenges, and an enlightened understanding of human development, society has still not met the challenge of providing productive lives for many afflicted with mental disabilities.

The horizons are widening, from innovative pharmacological products to cognitive behavioral therapy, and from neurodevelopmental disability analysis to occupational therapies. Increasing rehabilitative employment opportunities are changing the trajectory of lives that have been restricted by mental disabilities. Effective coordination between the multiple aspects of brain and behavior research will greatly enhance prospects for productive employment.

PRODUCTIVE LIVES AWARDEE

To honor those who are creating new workplace opportunities for people with brain and behavioral disorders, NARSAD inaugurated a Productive Lives Award. We were very pleased to present the first to J. Randolph Lewis, Senior Vice President of Supply Chain and Logistics for Walgreens, who has made that company a world leader in providing new opportunities for people with these illnesses.

Walgreens is a winner when it comes to Productive Lives. This major U.S. retailer of pharmacy, healthcare, and well-being supplies has taken great steps to succeed in creating an inclusive environment that embraces workers of varying abilities to lead productive lives. They have developed distribution center facilities where more than 30 percent of the workforce is made up of people with disabilities.

These include not only mental disorders, but a range of physical, cognitive, and developmental problems, from autism and mental retardation to hearing and physical impairments.

Walgreens employees with disabilities have been trained to work side-by-side with other team members: They have the same productivity goals and earn the same pay. The impact is transformative.



J. Randolph Lewis

“For many, this is their first full-time job. For a parent to finally see their son or daughter experience what it’s like to hold a job, be responsible, and actually look forward, can fulfill a lifelong dream.”



Proud Walgreens’ staff with company flag

2009 SYMPOSIA

Palm Beach | Boston | New York



Dr. Lieberman

NARSAD’S 6TH ANNUAL PALM BEACH MENTAL HEALTH RESEARCH SYMPOSIUM

Saturday, March 7, 2009

Palm Beach County Convention Center in West Palm Beach, Florida

Jeffrey A. Lieberman, M.D., moderated the event. Helen Blair Simpson, M.D., Ph.D., presented new treatment options for Obsessive-Compulsive Disorder; Helen S. Mayberg, M.D., presented an update on Deep Brain Stimulation for Treatment-Resistant Depression; Fred R. Volkmar, M.D., spoke about the Changing Face of Autism; and Jeffrey A. Lieberman, M.D., presented on current research and future directions in the treatment of schizophrenia.

NARSAD’S 4TH ANNUAL BOSTON MENTAL HEALTH RESEARCH SYMPOSIUM

Sponsored in association with the Sidney R. Baer, Jr. Foundation

Saturday, September 12, 2009

The Boston Harbor Hotel

Scott L. Rauch, M.D., moderated the event at which four Harvard-affiliated and NARSAD-supported investigators working on the frontiers of neuroscience presented their research. Heather C. Brenhouse, Ph.D., presented the effects of early-life stress on psychiatric disorders; Brian P. Brennan, M.D., spoke about the use of Riluzole in the treatment of bipolar depression; Miles Cunningham, M.D., Ph.D., presented findings on the strategic engraftment of neural stem cells within the corticolimbic system; and Gina R. Kuperberg, M.D., Ph.D., spoke about the cognitive neuroscience of language and thought in schizophrenia.



Dr. Rauch



Dr. Hirschfeld

NARSAD’S 21ST ANNUAL NYC MENTAL HEALTH RESEARCH SYMPOSIUM

Friday, October 30, 2009

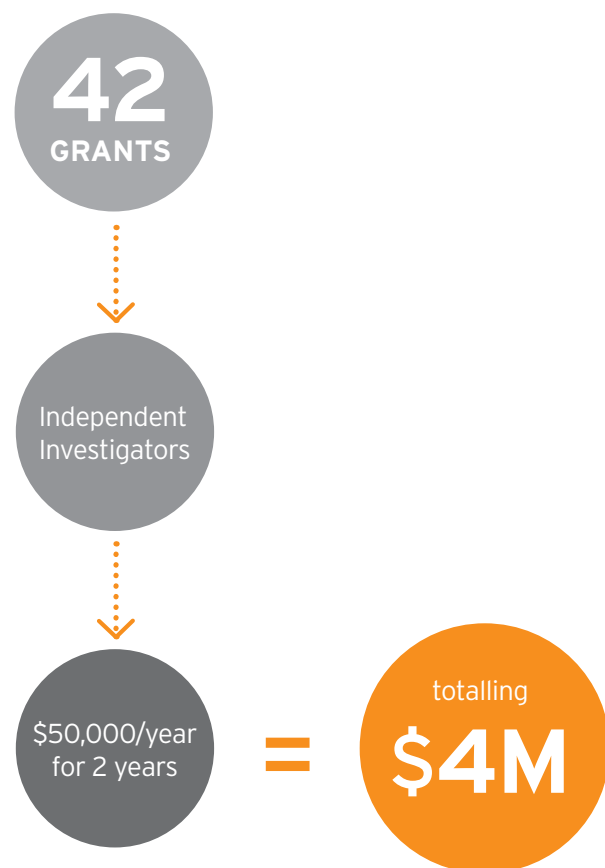
The Times Center in New York City

Robert M. A. Hirschfeld, M.D., organized and moderated the event as he has done every year since its inception. The morning session was devoted to presentations by the recipients of NARSAD’s 2009 awards for outstanding achievements in research on schizophrenia, mood disorders, child and adolescent psychiatry and cognitive neuroscience. Their prizes, which are highlighted in this report, are among the most prestigious honors in the field. The afternoon session was devoted to presentations by NARSAD-funded Young Investigators, grantees chosen from among hundreds of applicants each year who show promise of

becoming the scientific leaders of the future. The six singled out to speak at the symposium have initiated novel and innovative projects aimed at understanding, treating and preventing a range of mental-health disorders.

2009 INDEPENDENT INVESTIGATORS

The recipients of NARSAD's prestigious Independent Investigator grant awards seek to produce experimental results that will put them in position to initiate major research programs and seek major governmental grants. Receiving up to \$100,000 over two years, they lead research programs of clinical and basic science investigations into the causes, mechanisms, and treatments for serious psychiatric disorders. They are selected by a committee of NARSAD's Scientific Council, chaired by Robert M. Post, M.D., Head of the Bipolar Collaborative Network and Professor of Psychiatry at George Washington University School of Medicine.



Proven Investigators at the leading edge of discovery within neuroscience and psychiatry

ANXIETY DISORDERS

General

Integrative Meditation for the Treatment of Anxiety Disorders Among Heroin-Dependent Patients: A Randomized Controlled Study to Establish Feasibility and Efficacy

Kevin W. Chen, Ph.D., M.P.H.

University of Maryland School of Medicine

Post-Traumatic Stress Disorder

CPEB Mediated Local Translation at Synapses

Gary J. Bassell, Ph.D.

Emory University

D-cycloserine Adjunctive Treatment for PTSD

Michael S. Scheeringa, M.D., M.P.H.

Tulane University

BIPOLAR DISORDER

Epigenetic Signatures of Prenatal Exposure to Mood-Stabilizing and Antipsychotic Medications in the Children of Women with Bipolar Disorder

Joseph F. Cubells, M.D., Ph.D.

Emory University School of Medicine

Glutamatergic mGlu5 Receptor Imaging in Major Depressive Disorder

Gregor Hasler, M.D.

University of Zurich, Switzerland

Functional and Effective Connectivity in Bipolar Affective Disorder

Jiri Horacek, M.D., Ph.D.

Prague Psychiatric Center/Charles University, Czech Republic

High Throughput Sequence Analysis in Early-Onset Bipolar Disorder

Stephane Jamain, Ph.D.

INSERM Universite Paris VI, France

A Neurobiological Profile of Juvenile Bipolar Disorder

Jim Lagopoulos, Ph.D.

University of Sydney, Australia

A Double-Blind, Placebo-Controlled Trial of Combined Cytidine and Creatine in the Treatment of Bipolar Depression: A Magnetic Resonance Spectroscopy Study

In Kyoon Lyoo, M.D., Ph.D.

Seoul National University Hospital, South Korea

White Matter Microstructural Impairment As A Bipolar Disorder Endophenotype: A Diffusion Tensor Tractography Study

Colm McDonald, M.D.

National University of Ireland, Galway

Children of Women with Bipolar Disorder: Perinatal Events and the Vertical Transmission of Vulnerability

Donald J. Newport, M.D.

Emory University

White Matter Endophenotypes in Bipolar Disorder

Philip R. Szeszko, Ph.D.

Zucker Hillside Hospital

CHILDHOOD DISORDERS

Neurodevelopmental Outcomes Following Prenatal Exposure to Atypical Antipsychotics

Patricia Brennan, Ph.D.

Emory University

Autism

Role of Microglial Activation in Serotonergic and Neuroimmune Disturbances Underlying Autism

Nori Takei, M.D., Ph.D.

Hamamatsu University School of Medicine, Japan

DEPRESSION

Presynaptic Mechanisms of Postnatal SRIs to Increase Depression-Related Behavior

Anne Milasincic Andrews, Ph.D.

University of California, Los Angeles

Inflammation-Induced Depression: Contribution of Hippocampal Neurogenesis

Vera Chesnokova, Ph.D.

University of California, Los Angeles

Identifying a Molecular Link Between Stress, Depression and Neurogenesis

Bronwen J. Connor, Ph.D.

University of Auckland, New Zealand

Adjunctive IV Ketamine in Treatment-Resistant Depression: A 4-Week Randomized, Double-Blind, Placebo-Controlled Trial

Sanjay J. Mathew, M.D.

Baylor College of Medicine

Understanding the Molecular Mechanism of Action of Electroconvulsive Therapy In Vivo Using Positron Emission Tomography

Ramin V. Parsey, M.D., Ph.D.

Columbia University

Cognitive Remediation to Improve Functional Outcomes Following Depression Treatment

Joan Prudic, M.D.

Columbia University

A Limbic Circuit Analysis of Deep Brain Stimulation for Depression

Donald G. Rainnie, Ph.D.

Emory University

Maternal Depression and Vulnerability to Allergic Disorders in the Offspring: A Longitudinal, Prospective Study

Claudio N. Soares, M.D., Ph.D.

McMaster University, Canada

Depression and Problematic Computer/ Internet Use in Children and Adolescents

Ping Wu, Ph.D.

Columbia University

Gene Environment Interactions in the Development and Manifestation of Depression

Xiaoxi Zhuang, Ph.D.

University of Chicago

SCHIZOPHRENIA / PSYCHOTIC DISORDERS

Reprogrammed Human Skin Cells (iPS) as a Tool to Study Neurodevelopmental Abnormalities in Schizophrenia

Dorit Ben-Shachar, Ph.D.

University of Haifa, Israel

Brain Glutamate, Psychosis and Plasticity

Richard Bergeron, M.D., Ph.D.

Ottawa Health Research Institute, Canada

Deep Resequencing of Schizophrenia Loci Using Next Generation Technologies

Lars Bertram, M.D.

Max Planck Institute for Molecular Genetics, Germany

Independent Investigators

“These young people are our best hope for the future ...”

Robert M. Post, M.D.

Effects of Transcranial Magnetic Stimulation (TMS) on Auditory Processing Deficits and Psychopathology in Schizophrenia

Anke Brockhaus-Dumke, M.D.

University of Cologne, Germany

Receptive Language Function in Adolescents with Subclinical Psychotic Symptoms: An Electrophysiological Study

Mary Cannon, M.D., Ph.D.

Royal College of Surgeons, Ireland

Dendrite and Spine Development in the Prefrontal Cortex of Heterozygous Reeler Mice

Gabriella D’Arcangelo, Ph.D.

Rutgers University

The Biology of Transition to Post-Partum Psychosis: Neuroimaging and Hormonal Markers

Paola Dazzan, M.D.

Institute of Psychiatry/King’s College London/University of London

A Placebo-Controlled Trial of D-cycloserine Augmentation of Cognitive Remediation in Schizophrenia

Donald C. Goff, M.D.

Massachusetts General Hospital / Harvard University

Role of Abnormal Aging in Schizophrenia

Hung-Teh Kao, M.D., Ph.D.

Brown University

A Proton Magnetic Resonance Spectroscopy Investigation of Glutamate and Glutamine in Adolescents with Schizophrenia and Genetic High-Risk Individuals

Sanjiv Kumra, M.D.

University of Minnesota

Spatiotemporal Imaging of Non-Verbal Semantic Processing in Schizophrenia

Gina R. Kuperberg, M.D., Ph.D.

Massachusetts General Hospital/ Harvard University

Targeting the Insula to Reduce Smoking in Schizophrenia

Bernard Le Foll, M.D., Ph.D.

Centre for Addiction and Mental Health University of Toronto, Canada

Adapted Supported Employment for Older Persons with Severe Mental Illness

Susan R. McGurk, Ph.D.

Dartmouth Medical School

The Role of Disrupted in Schizophrenia 1 (Disc1) in the Development of Cortical Interneurons: Implications for Major Psychiatric Disorders

Oscar Marin Parra, Ph.D.

Instituto de Neurociencias de Alicante, Spain

NRG1 Signaling and Schizophrenia: Effect of a Transmembrane Domain Variant

David A. Talmage, Ph.D.

Stony Brook University

Deep Sequencing in Schizophrenia

Debby W. Tsuang, M.D.

University of Washington

In Vitro and In Vivo PKC Activation Induces D3 and D1 Dopamine Receptor Heteromers

Val J. Watts, Ph.D.

Purdue University

Regulation of D-serine Production by Glutamate Receptors: Implications for Schizophrenia

Herman Wolosker, M.D., Ph.D.

Technion-Israel Institute of Technology, Israel

2009 YOUNG INVESTIGATORS

The sophistication of their science... is truly astonishing compared to the science of only a decade ago.

The research projects proposed by the 2009 Young Investigator grantees, the top 201 selected by NARSAD’s Scientific Council from more than 800 applicants worldwide, represent a new generation “ready and able to make major advances in the understanding and treatment of mental illness,” says Herbert Y. Meltzer, M.D., chairman of the council’s Young Investigator Selection Committee. “The sophistication of their science – in basic and clinical research, at the molecular and cellular levels, in genetics and brain imaging, in characterizing the course of illnesses from the prenatal stage across the lifespan – is truly astonishing compared to the science of only a decade ago.” Dr. Meltzer is the Bixler/ May/Johnson Professor of Psychiatry and Professor of Pharmacology at Vanderbilt University. He is a Founding Member of NARSAD’s Scientific Council.



ANXIETY DISORDERS

Eating Disorders

Impulsivity: A Common Substrate for Eating and Substance Use Disorders?

Robyn J. Sysko, Ph.D.

Columbia University

General Anxiety

Neural Markers of Treatment Response in Late-Life Generalized Anxiety Disorder

Carmen Andreescu, M.D.

University of Pittsburgh

Novel Treatment Strategy in Adolescent Anxiety: Implications for Depression

Jennifer C. Britton, Ph.D.

National Institute of Mental Health

The Role of Amygdala GABAergic Transmission on Fear and Anxiety

Scott A. Heldt, Ph.D.

Emory University

Dendritic Trafficking of BDNF mRNA:

Role of Trax Sumoylation

Zhi Li, Ph.D.

Johns Hopkins University

Psychological Role of Amyloid B Peptide in Anxiety Modulation of B2 Adrenergic/AMPA Receptors

Dayong Wang, Ph.D.

University of Illinois, Urbana-Champaign

Obsessive-Compulsive Disorder (OCD)

Pilot Study of a Potent NMDA Receptor Antagonist in the Treatment of Obsessive-Compulsive Disorder

Michael H. Bloch, M.D.

Yale University

Neural Predictors of Antidepressant Efficacy in Obsessive-Compulsive Disorder

Chiang-Shan R. Li, M.D., Ph.D.

Yale University

Pilot Study of the Glutamate Modulator Minocycline in Adults with Obsessive-Compulsive Disorder

Carolyn I. Rodriguez, M.D., Ph.D.

Columbia University

Young Investigators

Contribution of Slitrk5 to Pathogenesis of Obsessive-Compulsive Disorders

Sergey V. Shmelkov, M.D.

Cornell University

Emotion Regulation in Obsessive-Compulsive Disorder

Odile A. van den Heuvel, M.D., Ph.D.

VU University Amsterdam

Post-traumatic Stress Disorder (PTSD)

Extinction and Reconsolidation as Treatment Targets for Acquired Anxiety Disorders: Preclinical Studies

Jacqueline J. Blundell, Ph.D.

Memorial University of Newfoundland, Canada

Synaptic Mechanisms of Fear Memory in the Amygdala

Ingrid Ehrlich, Ph.D.

University of Tuebingen

Age-dependent Effect of CRF Overexpression on Vulnerability to PTSD-like Behavioral and Hippocampal Pathology

Jodi Gresack, Ph.D.

University of California, San Diego

Aberrant Myelination in PTSD - Mechanism and Function

Daniela Kaufer, Ph.D.

University of California, Berkeley

BIPOLAR DISORDER

Genetic Dissection of Dopamine Signaling in Bipolar Disorder

Benjamin R. Arenkiel, Ph.D.

Duke University

Genome-Wide Transcriptional Profiling for the Identification of Genes Influencing Bipolar I Disorder

Melanie A. Carless, Ph.D.

Southwest Foundation for Biomedical Research

Role of Nucleus Accumbens Extracellular Signal-Regulated Kinase (ERK) in Mood Regulation in Rats

Elena H. Chartoff, Ph.D.

Harvard University

Molecular Mechanisms Underlying Antidepressant Actions of Ketamine

Xiangdong Chen, M.D., Ph.D.

University of Virginia

Inter-Hemispheric Connectivity and Rapid Cycling in Bipolar Disorder

Lara G. Chepenik, M.D., Ph.D.

Yale University

Genetic Influences on Impulsivity Pathways Central to Bipolar Disorder

Thomas W. Frazier, Ph.D.

Cleveland Clinic Foundation

Modulation of Wnt-GSK-3/ β -Catenin Signaling as a Target in the Treatment of Bipolar Disorder

Rakesh Karmacharya, M.D., Ph.D.

Harvard University

Oral Administration of Uridine for Treatment of Bipolar Depression in Adolescents: A Magnetic Resonance Spectroscopy Study

Douglas G. Kondo, M.D.

University of Utah

Effects of Chronic Exposure to Stress on Brain and Blood DNA Methylation

Richard S. Lee, Ph.D.

Johns Hopkins University

A Study of White Matter Pathology in Bipolar Disorder Using High Angular Resolution Diffusion MR Imaging (HARDI)

Alex D. Leow, M.D., Ph.D.

University of Illinois at Chicago

Integrated Genetic Analyses of Bipolar Disorder

Jun Z. Li, Ph.D.

University of Michigan

Deficits in Sleep-Dependent Procedural Learning in Bipolar I Disorder: A Potential Mechanism for Cognitive Impairment

Michael J. Ostacher, M.D.

Harvard University

Identifying Neural Markers of Bipolarity in Recurrent Major Depression

Daniel J. Smith, M.D.

Cardiff University, United Kingdom / Wales

Genetic Screen for the Target of Bipolar Disorder Treatments

Suzumi M. Tokuoka, Ph.D.

University of Tokyo, Japan

Toward Identification of Neural Markers of Risk for Bipolar Disorder Using Novel Brain Structural Connectivity Measures

Amelia Versace, M.D.

University of Pittsburgh

Differentiating Cognitive Impairment Secondary to Depression from Cognitive Impairment Co-morbid with Depression

Lihong Wang, Ph.D.

Duke University

Lithium Magnetic Resonance Brain Imaging for Bipolar Disorder

Heidi A. Ward Emerson, Ph.D.

Mayo Clinic, Rochester

Cellular Circadian Clocks in Mood Disorders

David K. Welsh, M.D., Ph.D.

University of California, San Diego

CHILDHOOD DISORDERS

Attention-Deficit Hyperactivity Disorder (ADHD)

CCK-Positive Large Basket Neurons as a Source of Cortical Activation in ADHD

Allan T. Gullledge, Ph.D.

Dartmouth Medical School

Contribution of Cortical GABA Tone to Attention and Locomotor Activity: Implications for ADHD

Tracie Ann Paine, Ph.D.

Oberlin College

Autism

Impact of an Autism Associated Mutation in DACT1 on Brain Development and Behavior

Saul Kivimae, Ph.D.

University of California, San Francisco

Neural Correlates of Social Perception in Autism

James C. McPartland, Ph.D.

Yale University

Learning in Autism Spectrum Disorders

Marjorie Solomon, Ph.D.

University of California, Davis

Fetal Alcohol Spectrum Disorder (FASD) Fetal Alcohol Syndrome, Adult Neurogenesis and Depression

Paul W. Frankland, Ph.D.

University of Toronto, Canada

DEPRESSION

Prefrontal MAO-A Binding in Recovered Depressed Patients With Comorbid Cigarette Smoking: Relationship to Intoxication and Abstinence States

Ingrid Bacher, Ph.D.

University of Toronto, Canada

Implication of Glial Changes in the Development of Depressive-like Behaviors

Mounira Banasr, Ph.D.

Yale University

Impact of Depression Over the Life-Course on Risk of Dementia

Deborah E. Barnes, Ph.D., M.P.H.

University of California, San Francisco

Partial loss of Function Mutation in Tryptophan Hydroxylase 2 (tph2): A Predictive Factor for Augmentation Therapies

Jean-Martin Beaulieu, Ph.D.

Laval University, Canada

Dysregulation of Glutamate Function in Prefrontal Cortex as a Model of Depressive Illness

Anita Jean Bechtholt, Ph.D.

Harvard University

Role of FoxO6 in Cognitive Function and Mood Regulation During Aging

Anne Brunet, Ph.D.

Stanford University

Depression and Cognitive Dysfunction in Major Depressive Disorder: Role of Stress-Sensitive Endocrine and Immune Processes

Heather Burke, Ph.D.

University of California, San Francisco

Understanding the Role of Inflammation in Predicting Depression in Patients with Heart Disease

Livia A. Carvalho, Ph.D.

Institute of Psychiatry / King's College London

Antidepressant Actions of HDAC Inhibitors

Herbert E. Covington, Ph.D.

Mount Sinai School of Medicine

Young Investigators

Connectivity of Fronto-limbic Networks
in Adolescents with Major Depressive Disorder

Kathryn R. Cullen, M.D.

University of Minnesota

Childhood Trauma, Inflammation and Depression:
A Test of the Biological Embedding Hypothesis

Andrea Danese, M.D., M.Sc.

Institute of Psychiatry / King's College London

Comparative Risks for Insulin Resistance and Metabolic
Syndrome (MS) Among Hospitalized Patients With Major
Depressive Disorder With or Without Psychotic Features

Elizabeth A. Davis, M.D.

Harvard University

Toward a Functional Dissection of Anhedonia in Major
Depression: Dissociating Decision-Making Deficits From
Reward Insensitivity

Daniel G. Dillon, Ph.D.

Harvard University

GABA in Adolescent Depression

Vilma Gabbay, M.D.

New York University

Deep Brain Stimulation in an Animal Model of Depression

Clement Hamani, M.D., Ph.D.

University of Toronto, Canada

The Effect of Citalopram on Inflammation-Induced
Depressive Symptoms

Jonas P. Hannestad, M.D., Ph.D.

Yale University

Quinolic Acid Induced Striata Toxicity as an Etiological
Factor in Cytokine-Induced Depression

Ebrahim Haroon, M.D.

Emory University

The Role of CART in a Social Model of Depression

Richard G. Hunter, Ph.D.

Rockefeller University

Imaging the Nucleus Accumbens in Major
Depressed Patients Treated With Pramipexole

Jennifer Keller, Ph.D.

Stanford University

Effects of Electroconvulsive Therapy on Serotonin-1A
Receptor Binding in Major Depression Investigated by
Positron Emission Tomography Functional (PET)

Rupert Lanzenberger, M.D.

Medical University of Vienna, Austria

Neural Responses to Simulated Social Exchanges in
Depressed Adolescents

Jennifer Lau, Ph.D.

University of Oxford, England

Resistance to Antidepressant Action: Role of the
5-HT1A Autoreceptor

Eduardo David Leonardo, M.D., Ph.D.

Columbia University

Proton MRS Study of SSRI-Zolpidem Interactions: Implications
for Treatment of Co-Morbid Depression and Insomnia

Stephanie C. Licata, Ph.D.

Harvard University

Changes in Serotonin Transporter Binding During
Interferon-alpha Treatment: Use of PET

Francis E. Lotrich, M.D., Ph.D.

University of Pittsburgh

GASP-Mediated D2 Dopamine Receptor Down-Regulation
During Chronic Stress in the VTA

Anuradha Madhavan, Ph.D.

University of California, San Francisco

Functional Neuroimaging of Autobiographical
Memory Retrieval in Depression

Margaret C. McKinnon, Ph.D.

McMaster University, Canada

A Functional Magnetic Resonance Imaging Investigation
of Ketamine in Treatment-Resistant Major Depression

James W. Murrough, M.D.

Mount Sinai School of Medicine

Rumination, Attention and Arousal in Major
Depressive Disorder (MDD): An fMRI/EEG Study

Frida E. Polli, Ph.D.

Massachusetts Institute of Technology

Changes in Anterior Cingulate Cortex Activity Measured by
Functional Brain Imaging Electroencephalography During
the Early Phase of Antidepressant Treatment as a Treatment
Response Predictor

Johannes Rentzsch, M.D.

Charité-Universitäts-mediz, Berlin

Functional Neuroanatomy Changes During ECT
vs. MST in Geriatric Depression

Stefan B. Rowny, M.D.

Columbia University

Functional Connectivity of Emotion Regulation Circuits in
Young Children with Extreme Temper Outbursts

Amy K. Roy, Ph.D.

New York University

The Neural Bases of Expectancy Effects
in the Treatment of Depression

Bret R. Rutherford, M.D.

Columbia University

Using Novel Genetically-Engineered Synaptic Tracers
to Evaluate Stress-Induced Synaptic Plasticity in the
Mesolimbic Projection

Maysa Sarhan, Ph.D.

Yale University

Amygdala Response to Masked Sad and Happy Faces in
Major Depressive Disorder and Their First-Degree Relatives:
A Genetically-Driven Subliminal Processing Bias?

Jonathan B. Savitz, Ph.D.

Laureate Institute for Brain Research

The Role of Adult Neurogenesis on Postpartum Depression

Robert J. Schloesser, M.D.

National Institute of Mental Health

Deep Brain Stimulation for the Treatment of Major
Depression Disorder: Studies of Serotonergic and
Dopaminergic Neurotransmission

Salomao Segal, M.D.

Columbia University

Interaction between the Glutamatergic and Serotonergic
Systems in Suicide in Mood Disorders

Adolfo Sequeira, Ph.D.

University of California, Irvine

fMRI of Reward-Related Decision-Making in Adolescents at
High Risk for Major Depressive Disorder

Carla Sharp, Ph.D.

University of Houston

Major Depression and Stress-Induced
MAO-A Binding in the Prefrontal Cortex

Alexandra Soliman, Ph.D.

University of Toronto, Canada

Prodromal Molecular Foundations of Mood Disorders

Gregg D. Stanwood, Ph.D.

Vanderbilt University

The Regulation of Synaptic Function by
TNF-alpha During Depression

David Stellwagen, Ph.D.

McGill University, Canada

Mechanism of Action of Deep Brain Stimulation
in Neuropsychiatric Conditions: Neural Circuitry,
Neurotransmission and Synaptic Plasticity

Susannah J. Tye, Ph.D.

Deakin University, Australia

Neurobiological Correlates of Relapse and Recovery
in Major Depressive Disorder

Heather L. Urry, Ph.D.

Tufts University

Endocrine Risk Factors for Early Identification/
High Risk Postpartum Depression

Ilona S. Yim, Ph.D.

University of California, Irvine

SCHIZOPHRENIA

Genomewide Exploration of Epigenetic
Factors in Schizophrenia

Abidemi A. Adegbola, M.D.

Harvard University

GABA-Dopamine Interactions, Psychosis and Cognition

Kyung Heup Ahn, M.D., M.S.

Yale University

Young Investigators

Dopamine's Role in Ca²⁺ Homeostasis

Srdjan D. Antic, M.D., M.S.

University of Connecticut

Role of ABC Transporter in Resistance to Antipsychotic Therapy and Cannabinoid-Antipsychotic Drug Interactions

Jonathan Arnold, Ph.D.

University of Sydney, Australia

Establishing Novel Targets for Treatment and Early/Differential Diagnostic Markers of Schizophrenia and Other Psychiatric Disorders

Nicoletta Baloyianni, Ph.D.

Academy of Athens, Greece

Cannabis and Cortical Oscillations in First-Episode Schizophrenia

Srihari S. Bangalore, M.D.

University of Pittsburgh

Are CB1 Antagonists the Answer to Reducing Cognitive Deficits in Schizophrenia

Emma J. Barkus, Ph.D.

University of Wollongong, Australia

The Genetic Basis of Cortical Thickness and Gyrfication within the Northern Finland 1966 Birth Cohort

Anna P. Barnes, Ph.D.

University of Cambridge, England

Genome Wide Association Study of Brain Structure in Northern Finland

Jennifer H. Barnett, Ph.D.

University of Cambridge, England

Redox Regulation of NMDA Receptors in Parvalbumin-expressing Fast-Spiking Interneurons: A Possible Mechanism Behind the Enduring Dysfunction Caused by Exposure to NMDA Receptor Antagonists

M. Margarita Behrens, Ph.D.

Salk Institute for Biological Studies

Neuronal Functions and Biochemical Pathways of SynCAM-mediated Synapse Organization

Thomas Biederer, Ph.D.

Yale University

Methylation as an Epigenetic Cause of Schizophrenia

Marco P. M. Boks, M.D., Ph.D.

Utrecht University, The Netherlands

A 12 Month Prospective Study on Polypharmacy and Cannabis Use in First Episode Psychosis With Obesity and Metabolic Dysregulation

Stefania Bonaccorso, M.D., Ph.D.

Institute of Psychiatry / King's College London

Regulation of GABAergic Interneuron Development by EphrinA-induced NCAM Cleavage

Leann H. Brennaman, Ph.D.

University of North Carolina, Chapel Hill

Neurodevelopmental Model of Schizophrenia-associated Changes in Gene Silencing

Murray J. Cairns, Ph.D.

University of Newcastle, Australia

Lhx6 Regulation of Cortical Interneuron Development

Jasmine Chen, Ph.D.

University of California, San Francisco

Basal Ganglia Volumes in Prodromal Psychosis in Adolescence

Melita L. Daley, M.D.

University of California, Los Angeles

Distinguishing Associative Processes for Isolating Psychiatric Deficits

Nathaniel D. Daw, Ph.D.

New York University

Role of LRRTM Proteins in Synapse Development and Schizophrenia Susceptibility

Joris De Wit, Ph.D.

University of California, San Diego

Astrocyte-regulation of Synaptic NMDA Receptors

Qiudong Deng, Ph.D.

Tufts University

Genome-wide Epigenetic Study of Schizophrenia

Zemin Deng, Ph.D.

University of Southern California

Regulation of Expression of RGS4 Splice Variants in Schizophrenia

Lan Ding, Ph.D.

University of North Carolina at Chapel Hill

Who Did What: The Neurocognitive Basis of Simulating Real-World Action in Schizophrenia

Tali Ditman, Ph.D.

Harvard University

Altered Fronto-hippocampal Plasticity During Learning in Schizophrenia: fMRI/MRS Studies and Relevance to Glutamatergic and Dopaminergic Neurotransmission

Vaibhav A. Diwadkar, Ph.D.

Wayne State University

Identifying Biobehavioral Markers for Schizophrenia by Using a Novel Learned Irrelevance Paradigm in Conjunction with Electrophysiological and Functional Neuroimaging Techniques

Franc C.L. Donkers, Ph.D.

University of North Carolina at Chapel Hill

Analysis of Synaptic Deficits in the Hippocampus of DISC1 Deficient Mice: A Genetic Mouse Model of Schizophrenia

Liam J. Drew, Ph.D.

Columbia University

D2 Regulation of Syntaxin1A / Dopamine Transporter Association Modulates Non-vesicular Dopamine Release

Kevin Erreger, Ph.D.

Vanderbilt University

Assessing Potential Benefits of Telmisartan on Metabolic Disturbances, Cognition and Psychopathology in Clozapine- or Olanzapine-Treated Patients with Schizophrenia

Xiaoduo Fan, M.D.

Harvard University

Molecular Markers of Aging in Psychosis

Emilio Fernandez-Egea, M.D.

University of Cambridge, England

Simultaneous Recording of the Activity of Hundreds of Individual Neurons in an Awake and Behaving Mouse Model of Schizophrenia

David J. Foster, Ph.D.

Johns Hopkins University

Development of a Novel PET Radioligand for In Vivo Imaging of Nicotinic Acetylcholine Receptors

Yongjun Gao, Ph.D.

Johns Hopkins University

Planning Action Sequences Based on Immediate and Final Reward

Timothy M. Gersch, Ph.D.

Columbia University

Subregional Analysis of Hippocampal-Dependent Memory in Schizophrenia

Todd A. Girard, Ph.D.

Ryerson University, Canada

Functional Evaluation of DRD2 Variants Conferring Risk for Schizophrenia

Stephen J. Glatt, Ph.D.

State University of New York, Upstate Medical University

Metabotropic Glutamate Receptors on Prefrontal Cortical Synaptic Plasticity

Yukiori Goto, Ph.D.

McGill University, Canada

Internet-Based CBT for Schizophrenia: A Pilot RCT Computer-Based Program for Auditory Hallucinations

Jennifer D. Gottlieb, Ph.D.

Dartmouth Medical School

Mechanism of Activity-dependent NMDA Receptor Subunit Switching

John A. Gray, M.D., Ph.D.

University of California, San Francisco

Identification of Gene Moderating Affective (Mood) Dimensions in Schizophrenia and Schizoaffective Disorder

Elizabeth Hare, Ph.D.

University of Texas Health Science Center at San Antonio

Dual Nuclear Magnetic Resonance Spectroscopy in Schizophrenia

David G. Harper, Ph.D.

Harvard University

Cilia and Cerebral Cortical Development: Relevance to Mental Disorders

Holden R. Higginbotham, Ph.D.

University of North Carolina at Chapel Hill

Combination of THC and Clonidine for Marijuana Dependence

Kevin P. Hill, M.D.

Harvard University

Young Investigators

The Maternal Infection Model of Schizophrenia and Cognitive Flexibility

John G. Howland, Ph.D.

University of Saskatchewan, Canada

Postnatal Regulation of Genomic Imprinting: Implications for Schizophrenia

Hsien-Sung Huang, Ph.D.

University of North Carolina at Chapel Hill

Convergent DISC1 and Neuregulin-1 Receptor ErbB4 Signaling Pathways Contribute to the Pathophysiology of Schizophrenia

Atsushi Kamiya, M.D., Ph.D.

Johns Hopkins University

Sensorimotor Gating and Modulation of M-type Potassium Channel Activity by PP2A/GSK3beta Signaling

David J. Kapfhamer, Ph.D.

University of California, San Francisco

Structural Insights into the Allosteric Modulation of N-methyl-D-aspartate Receptor by the Amino Terminal Domain

Erkan Karakas, Ph.D.

Cold Spring Harbor Laboratory

The Role of Cannabis in Animals Genetically Predisposed to Schizophrenia

Tim Karl, Ph.D.

Prince of Wales Medical Research Institute, Australia

Antipsychotic Effects on Attention Systems in First Episode Psychosis

Sarah K. Keedy, Ph.D.

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Our Newest Members

The NARSAD Scientific Council recruited and admitted seven new members in 2009. The Council continues to grow in numbers, expertise and range of interest, as psychiatric research and related sciences expand across many new frontiers of basic investigation and treatment. Now numbering 116 members, the NARSAD Scientific Council is widely recognized as a premier group of research administrative leaders covering a broad spectrum of brain and behavioral science.

STEWART A. ANDERSON, M.D.

Associate Professor of Psychiatry in Neuroscience | Weill Cornell Medical Center



Dr. Anderson focuses on molecular and cellular mechanisms governing development of the mammalian forebrain. He is particularly interested in understanding processes that determine the fate of cells that produce the inhibitory neurotransmitter GABA, implicated in the neuropathology of schizophrenia. His lab is also engaged in a collaboration to generate cerebral cortical interneurons from mouse and human stem cells, work which may help in the development of therapies for currently untreatable seizures. Dr. Anderson received NARSAD's Freedman Award in 1999 and NARSAD Young Investigator Awards in 1995 and 2002.

JACQUELINE CRAWLEY, PH.D.

Chief, Laboratory of Behavioral Neuroscience | Intramural Research Program | National Institute of Mental Health

Dr. Crawley's laboratory is developing mouse models of autism spectrum disorders to test hypotheses about how the illness develops and to evaluate potential drug treatments. Her team is specifically studying three manifestations of autism. The "core" deficit in reciprocal

social interactions is being modeled with tasks including juvenile play, automated social approach and reciprocal social interaction. Deficits in communication are being approached with measures of the emission, detection and responses to olfactory cues and ultrasonic vocalizations. Deficits involving motor functions are being analyzed by measuring stereotyped motor behaviors, repetitive self-grooming, and restricted exploration of complex environments.



FRED H. GAGE, PH.D.

Adler Professor, Laboratory of Genetics | The Salk Institute | Adjunct Professor | University of California, San Diego

Dr. Gage concentrates on the adult central nervous system, specifically on its unexpected plasticity and adaptability to environmental stimulation. His lab has demonstrated that human beings are capable of growing new nerve cells throughout life, something that was not believed possible as recently as 10-15 years ago. Small populations of immature nerve cells are found in the adult mammalian brain; the lab is working to understand how these can be induced to become mature, functioning nerve cells in the adult brain and spinal cord. Dr. Gage and colleagues have separately found that environmental enrichment and physical exercise can enhance nerve cell growth, and are studying mechanisms that may be harnessed to repair the aged and damaged brain and spinal cord.



JOHN R. KELSOE, M.D.

Professor of Psychiatry | Director, Laboratory of Psychiatric Genomics | University of California, San Diego

Dr. Kelsoe has used a variety of molecular genetic methods to identify genes that predispose to bipolar disorder (BPD), including GRK3, a candidate gene on chromosome 22. He directs the Bipolar Genome Study (BiGS), a 13-site consortium focused on identifying genes for BPD and their relationship to clinical symptoms. He also co-directs the Psychiatric Genome-Wide Association Studies Consortium for Bipolar Disorder (PGC-BD), an international collaborative effort to identify genes in over 10,000 patients.

MARY-CLAIRE KING, PH.D.

American Cancer Society Professor | Departments of Medicine (Medical Genetics) and Genome Sciences | University of Washington School of Medicine

Dr. King, who received a NARSAD Distinguished Investigator Award in 2006, is currently studying the genetics of mental illnesses, including autism and schizophrenia. She was the first to prove that breast cancer is inherited in some families as the result of mutations in the gene that she named BRCA1. Her wide-ranging research interests include the genetics of hearing loss, human genetic diversity and evolution. Her Ph.D. dissertation in 1973 demonstrated that humans and chimpanzees are 99 percent genetically identical. Dr. King pioneered the use of DNA sequencing for human rights investigations, developing the approach of sequencing mitochondrial DNA preserved in human remains. The method has served in several international human rights investigations.

KERRY J. RESSLER, M.D., PH.D.

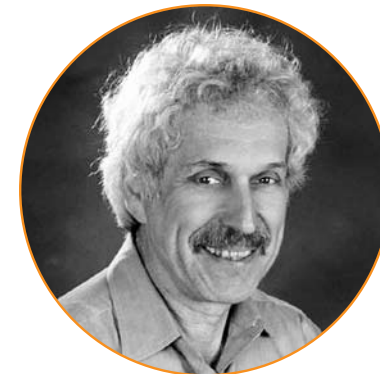
Investigator, Howard Hughes Medical Institute | Associate Professor, Department of Psychiatry and Behavioral Sciences | Co-Director, Emory M.D./Ph.D. Training Program Center for Behavioral Neuroscience | Yerkes Research Center | Emory University

Dr. Ressler's research bridges basic studies of the mechanisms of fear in animal models of psychiatric illness with clinical research on the genetics that underlie human fear and anxiety disorders, particularly post-traumatic stress disorder (PTSD). His preclinical laboratory is examining the molecular neurobiology of brain systems that mediate fear and emotion in animals, concentrating on the amygdala. A 2002 and 2005 NARSAD Young Investigator, Dr. Ressler received NARSAD's 2009 Freedman Award.

ROBERT SCHWARCZ, PH.D.

Professor of Psychiatry, Pharmacology and Pediatrics | Director, Neuroscience Program | Maryland Psychiatric Research Center | University of Maryland

Dr. Schwarcz's early research focused on molecular and cellular mechanisms underlying neurodegenerative and seizure disorders. He identified a critical role played by naturally occurring neurotoxic agents related to the neurotransmitter glutamate, and pioneered the idea that treatments aimed at blocking glutamate can prevent nerve-cell death. Such neuroprotective strategies have the potential to combat catastrophic brain diseases such as Huntington's disease, Alzheimer's disease and stroke. More recently, he turned his attention to biological psychiatry, showing that several metabolites of the amino acid tryptophan are important factors in the causation of serious psychiatric illnesses. He received a NARSAD Distinguished Investigator Award in 2002.



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Matt Levenson
Eva Levin Dalkoff
Fievel Paul Levine
Jordan Levine
Michael Levine
Anna Levy
Joanne Levy
Chin Fei Liang
Shihwei Liao
Laura Liebman
Nathaniel Liebman
Jonathan Bart Lindenberg
Hans Lindgren
Rochelle S. Lindsey
Cory Linn
Dustin Locke
Michael Lojo
Adam Lorusso
Victor G. Lottmann
Arthur Louis
Lyussiena Loutcheva
Louis Lowenstein
William C. Lund
Helene Lundak
Gabriel Lupini
June Lutticken
Barbara Lyons
Jeannine Mabanta
Noel Machado
Franklin MacLeod
Jerome Mactye
Karen Maizlish
Sargon Malik
David E. Malloy
Donna Malone
Marlene Maluth
Merrill Manning
Thom Manno
Mark Marcum
Rose Marder
Alan G. Marer
Mary Ellen Mark
Bruce Marlowe
Trevor Martin
Craig Martin
Dolores Massey-Healy
Joy Matusiewicz
Edward Maucere
Nancy May
Jean-Paul Maynard
David Mayo
Timothy P. McBride
Richard W. McCaffrey
Dave McClelland
Robert McDonald Freeman
Mark McGilvray
Francine A. McGonigle
Edward McGowan
Andrew McGowan
Deborah McKane
Dick McKinley
Jenny McPhee
Kevin A. Meade
Michael Mendola
Christopher Merkl
Steven Messer

Joshua K. Messier
Nicholas Meyers
Mel H. Michaels
Ronald Michelich
Apphia Michelich
Ronnie W. Middelburg
Inis Milburn
Lynette S. Miller
William A. Millett
Daniel Millman
Stuart Mindheim
John Mitchell
David Mitchell
Neil Molberger
Henry Molinaro
Daniel G. Molyneux
Margaret G. Moore
Eugene Moore
Duff Morgan
Margaret Morris
Louis Oliver Morton
Hughes Gregory Morton
Richard D. Moszkowski
David Motlagh
Ben F. Moy
Donna Murphy
Theresa Murphy
Tina M. Musso
John F. Nangle
Eva G. Navarro
Robert Navarro
Shirley Needle
Jennifer Newlin
Ian D. Nicklas
Anton L. Nielsene
Steve M. Noack
Mark Nugent
Hubert Nutt
Mark Oberman
Edna O'Connor
Bea O'Donnell
Nancy Olandese
Theresa M. Oliver
Melissa Ortiz
Todd Orton
Gladys B. Osborne
Clyde R. Oser
Erik Osthus
Jane A. Palisca
Adrian Palm
Robert Paradise
Krishnalal Parikh
Josiah E. Parker
Barbara Parnin
Harry T. Parrish
Joseph Pashan Mateen
Patricia
Julius Paul
Ralph L. Pearsey
Keith F. Pease
Elizabeth Peetz
Rick Perry
Richard D. Perry
Charles A. Peterson
Brad Petznik
Lynn Phillips

Sybil Pierce
Michael I. Pollack-Rehmar
Hugh Pollard
Charles Port
William R. Powers
A.W. Powers
Nancy Pratch
Andrew Premo
Nancy Prentzel
Oliver Priceman
Annie L. Prince
Be Przybylak
Gordon Pscheidt
Romion and Anne Pulinski
Leonard Pullman
John Puma
Levi Quandahl
Luis Quezada
Florence Quinn
Ramez Qureshi
David A. Racher
Michelle Rachmaninoff
Jeffrey Rasimas
Charles Rauch
Anand W. Rayapati
Roger D. Rea
John Reason
Ralph Reichel
Robert Rein
Son of Barbara Reitmeyer
Marci Reller
Harold Reuban Stake
Kenneth Rice
Thomas J. Richards
Ruth D. Richman
Frances Richman
Michael Ripley Hudner
Rob Simons' Brother-in-Law
Laurence Robbins
Tom Robison
Richard Roman
George Rorick
Brian Rorick
Ethel Roseman
Matthew Rosen
Mitchell S. Ross
Christina Rossi
Florence Roswell
Edward J. Roth
Matt S. Rothman
Donna Rowett
S. Alexander Royden
Barry Rubil
Chris Rudder
Patricia J. Ruocchio
Alvin W. Rutledge
John Ryder
Steven Salcedo
Michelle Salinas
Agis Salpukas
Elaine Samson
Mary Santariello
Arthur Santos
Sun Sappington
Robert Sarr
Marge Schag
Robert Scharf
David Schembs
Ronald Schloss
Chuck Schmitt

Robert Schmitt
Susan Schnitman
June Schorin
David A. Schreiber
Troy Schuetze
Angie Schulze
Ruth Schwartz
Ida Schwartz
Werner A. Selo
Ted Seltzer
Marty Setto
Herbert Shapiro
Diane Loree Sharkey-Smith
Joan A. Shatkin
Harry C. Shellworth
Eugene Sherman
Alice Sherr
Marjorie Shields
Coleman Shuler
Lucy Shum
Rosalind Siegel
Jerome I. Siegrist
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Dennis N. Simon
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Louise Skrip
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C.J. Smith
Steven Smith
Edmund Smith
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Richard Srour
Aaron St. John
Katherine D. Stackhouse
Joseph Stambolian
Gerard Stampfel
Alfred Steiner
Marge Steinman
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Crystal Stokes
Jess and Lillian Stone
Regina Stoneking
Kenneth E. Stutzman
Sharon Suer
Doris P. Sugarman
Martha J. Sullivan
Pearl Susskind
Marjorie Sussman
Charles Sutton
Stephen Sutton
Andrew Taddy
Gerald Tchir
Karl Teigler
Timothy Teigler
The Parents of Sue Turinsky
Ricky Thevenot
Rosella Thompson
Zerelda Thompson
Zee Thompson
Carol Thorman

Jillian Threlkeld
Ethel Toepel
Frances S. Trager
Morris Trager
Betty Trainor
Marianne N. Traygis
Samuel P. Trice
Richard Trommer
Joan D. Turner
Thomas H. Turner
John Uhlmann
Nilda Vazquez
Eleanor Vekovins
John Voelker
Donald L. Vogtritter
Steven Volmer
Sawsun Choopani Vu
Edna Wachendorf
Jerry Wackrow
Rani Wagner
Frederick J. Wagner
David A. Weidner
Florence M. Weiler
Arnold Weinstein
Thomas J. Wendt
Heidi A. Westhoven
John Westlake
Clifton White
Kaye White
Carolyn M. White
Aaron J. Wieczorek
John A. Wiederkehr
Emanuel Willdorf
Mark Williams
James and Dorothy Wilson
Peter B. Wilson
Fred Wiseman
James G. Withers
Steven D. Witt
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Sylvia I. Woods
Linda Wordell
G.R. Worrell
Marvin Yoblin
Charlott Young
Marilyn Zalokar
Leah Zanoni
Peter W. Zartman
Barry L. Zimmerman
Elizabeth B. Zuniga

NARSAD NATIONAL LEADERSHIP COUNCIL

The NARSAD National Leadership Council is a volunteer group bringing the message of new hope through research to communities throughout the United States in private and public gatherings.

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“We simply cannot continue to miss opportunities that could yield critical advances...”

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Stuart J. Winston
Kathy and James N. Zartman

NARSAD Combined Statement of Financial Position

December 31,	2009	2008
Assets		
Cash and cash equivalents	\$5,729,569	\$10,080,824
Investments, at market or fair value	11,628,603	10,199,709
Due from broker	763,621	62,834
Contributions receivable	1,005,609	3,711,010
Other receivable	9,441	32,403
Pledges receivable, net	6,732,833	3,243,393
Prepaid expenses	13,971	8,885
Assets held in charitable remainder trusts	1,129,349	990,074
Furniture, fixtures, equipment, leasehold improvements and proprietary information systems, net	182,888	97,762
Security deposits	36,753	36,753
	\$27,232,637	\$28,463,647
Liabilities and Net Assets		
Liabilities:		
Accounts payable and accrued expenses	\$135,961	\$131,155
Grants payable	21,639,986	22,101,942
Accrued compensation	94,804	143,049
Line of credit payable	2,000,000	2,000,000
Annuities payable	881,106	784,764
Charitable gift annuities payable	337,727	392,899
Total liabilities	25,089,584	25,553,809
Net Assets:		
Unrestricted	(12,154,939)	(19,321,696)
Unrestricted - board designated endowment	4,509,262	12,509,262
Temporarily restricted	3,065,230	2,998,772
Permanently restricted	6,723,500	6,723,500
Total net assets	2,143,053	2,909,838
	\$27,232,637	\$28,463,647

NARSAD 2009 HIGHLIGHTS: Financial Capital for Intellectual Capital

We are pleased to report on key elements of NARSAD's financial results and on our focused efforts in maintaining our program levels, given the financial challenges which pressured so many philanthropies in 2009.

Contributions for 2009 totaled \$17.2 million, similar to the 2008 total of \$17.1 million, reflecting the strong commitment of our leadership and donors. Bequests continued to provide major support in 2009 at

\$2.2 million for which we are deeply appreciative and grateful to the individuals and their families. Investment income provided approximately \$700,000 and the market valuations of our investment holdings improved compared to 2008, helping our overall support.

Research grants in 2009 totaled \$16.7 million, compared with \$18.3 million in 2008, as we experienced greater relinquishments from grantees and prudent reductions

NARSAD Combined Statement of Activities

Year Ended December 31,	2009	2008
Support and revenue:		
Contributions	\$17,220,457	\$17,119,810
Contribution of services	946,328	897,380
Bequests	2,213,083	4,486,106
Net realized and unrealized gains (losses) on investments	766,051	(6,600,489)
Net appreciation (depreciation) of assets held in charitable remainder trusts	139,275	(486,388)
Dividend and interest income	667,017	1,275,047
Annuities due	(129,992)	320,453
Total support and revenue	21,822,219	17,011,919
Expenses:		
Program services:		
Research grants and awards	16,687,894	18,293,984
Scientific advancement	1,412,433	1,270,256
Program support	1,892,366	4,080,652
Total program services	19,992,693	23,644,892
Supporting services:		
Fundraising*	898,136	717,780
Administration*	1,698,175	1,543,372
Total supporting services	2,596,311	2,261,152
Total expenses	22,589,004	25,906,044
Change in net assets	(766,785)	(8,894,125)
Net assets, beginning of year	2,909,838	11,803,963
Net assets, end of year	\$2,143,053	\$2,909,838

*All administration and fundraising expenses are funded by specially designated grants.

in research grants awarded. Other program services combined were \$3.3 million, compared with \$5.3 million for 2008, with decreases related to events not held in 2009. Supporting services were \$2.6 million, compared with \$2.3 million for 2008, related to our strategic staffing decisions. Once again, all supporting services were paid for by separate grants from two family foundations.

The financial highlights shown herein have been summarized from our 2009 audited financial statements. NARSAD's complete audited financial statements and our most recent IRS Form 990 are available at www.narsad.org or please contact the NARSAD office at 800.829.8289 to request the material.

CONNECTING COMMUNITIES TO CURES

CHRISSY'S WISH

The Third Annual Chrissy's Wish Golf Outing took place at the Rock Hill Golf and Country Club in Manorville, NY on August 26, 2009. The event benefits the Chrissy's Wish Memorial Fund, a foundation established by Linda and Mario Rossi in honor of their daughter, Christina, who passed away at age 26, suffering from depression and bipolar disorder. Discussing her decision to join forces with NARSAD in the battle against mental illness, Linda Rossi notes, **"that day was the day our focus changed from victim to survivor to fighter."**



TAKING STRIDES AGAINST MENTAL ILLNESS

The second Taking Strides Against Mental Illness Walkathon took place on Sunday, May 17, 2009 in Ridgewood, NJ. Founded by the Ehrlich family of Wayne, Taking Strides Against Mental Illness is a 501(c)3 nonprofit organization, determined to raise funds to benefit NARSAD and to bring the topic of mental illness to the forefront of people's consciousness. Harryet, Stuart and Rebecca Ehrlich started the fund after Rebecca was diagnosed with bipolar disorder at the age of 21. Today, Rebecca is 36 and the spokesperson for the annual event.

"My mom and I both know from personal experience that facing mental illness straight on can be stigmatizing and frightening. NARSAD's breakthroughs inspire hope."



INVEST IN OUR CAMPAIGN...

from Discovery to Recovery... Invest in a Breakthrough...

Please contact the Development Office at 516.829.0091 to have a confidential conversation about the many ways to help NARSAD fund better treatments, therapies and, one day, a cure for the ravages of mental illness. Remember, 100% of all donations go directly to research. Any size gift will make a difference.

Online

Please visit www.narsad.org to make a secure gift with your credit card.

Check

Include your check made payable to NARSAD, along with a short note that includes your name, address, and phone number. Mail your check and note to:

NARSAD
60 Cutter Mill Road
Suite 404
Great Neck, New York 11021

Via Phone-Credit Card

Please call: (516) 829-0091.

Matching Gifts

Many companies offer matching gift programs to encourage employees and their families to give to NARSAD. Your Human Resources office can help you determine if your company participates.

Make a Gift of Stock, Real Estate, Life Insurance or Establish a Trust

Tax-wise giving is an easy, effective and secure way to ensure your legacy and the financial security of your loved ones. Contact the office of Planned Giving to learn more: (516) 829-0091.

Charitable Gift Annuities

A lifetime of guaranteed payments plus a sizeable charitable income tax deduction and the avoidance of capital gains are just a few of the benefits of a NARSAD funded Charitable Gift Annuity. Contact the office of Planned Giving to learn more: (516) 829-0091.

Donor Recognition

All gifts of \$1,000 and above will be acknowledged in our annual publications.

NARSAD Research Partners

Join hundreds of donors who have become NARSAD Research Partners. Participation in this unique program brings you and the scientist together by offering an opportunity to designate your major or planned gift to NARSAD research in a particular area of mental illness. Call the Research Partners program at (516) 829-0091.

THANK YOU!

DISCOVERY TO RECOVERY

Invest in the Decade of Brain
and Behavior Research

NARSAD

The Brain and Behavior Research Fund