

Psychiatry

Adult Psychiatry | Child & Adolescent Psychiatry

832

FACULTY MEMBERS

93

RESIDENTS &
FELLOWS

162,000 +

OUTPATIENT VISITS

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Dear Colleagues and Friends:

NYU Langone's Departments of Psychiatry and Child and Adolescent Psychiatry share a heritage of innovation and excellence that dates back more than a century, to the birth of modern psychiatric medicine. Today, we continue to build on that heritage with trailblazing research, state-of-the-art care, and residency and specialty training programs that are consistently rated among the top 10 in the nation.

We have just concluded a year of rapid expansion. Our merger with Lutheran Medical Center—now NYU Lutheran—enables us to share our extraordinary resources with an unprecedented number of New Yorkers. Our new Treatment Resistant Depression Program and Anxiety and Complicated Grief Program bring the count of NYU Langone's outpatient specialty clinics to 13. We've recruited an array of outstanding faculty members in autism, schizophrenia, anxiety and mood disorders, eating disorders, military trauma, and women's reproductive psychiatry.

In 2016, our researchers published landmark studies on the connections between sleep quality and the risk of Alzheimer's disease, on the neural circuitry behind the infant-caregiver attachment, and on a novel medication that produced prolonged reductions in anxiety and depression symptoms in cancer patients. We also made progress in decoding the neurobiology of attentional disorders and post-traumatic stress disorder—research that supports the development of personalized, genomically informed treatments for these debilitating conditions.

As always, improving access to care remains a central part of our mission. We are one of only two academic medical centers with a department dedicated to child mental health. We provide integrated, team-based treatment to patients whose situations may be made more complex by factors such as substance abuse, poverty, or homelessness. Our research extends to the social determinants of health and disparities in care, and we cultivate collaboration with local and global policymakers, social service agencies, and other partners.

Ultimately, our vision is that families and communities everywhere have the resources they need to support the mental health of all their members.



A handwritten signature in black ink, reading "Charles R. Marmar".

CHARLES R. MARMAR, MD

Lucius N. Littauer Professor of Psychiatry
Chair, Department of Psychiatry
Director, Cohen Veterans Center



A handwritten signature in black ink, reading "Helen L. Egger".

HELEN L. EGGER, MD

Arnold Simon Professor of Child and Adolescent Psychiatry
Chair, Department of Child and Adolescent Psychiatry
Director, Child Study Center

Adult, Child & Adolescent Psychiatry

Patient Volume

162,000 +

OUTPATIENT VISITS ANNUALLY*

8,184

CONSULTATION-LIAISON
CONSULTS*

1,745

INPATIENT DISCHARGES*

*Includes NYU Lutheran

Accolades

**BIRTHPLACE
OF AMERICAN
PSYCHIATRY**

NYU School of Medicine is home to two of the largest and most respected mental health departments in the country—the Department of Psychiatry and the Department of Child and Adolescent Psychiatry—and is widely considered to be the birthplace of American psychiatry

Faculty, Residents & Fellows

TOP 10

IN THE COUNTRY

on Doximity's residency rankings

832

FACULTY MEMBERS*

93

RESIDENTS & FELLOWS

*includes voluntary faculty

Education

#3

IN RESEARCH CONTRIBUTIONS

from psychiatry residency graduates (last 11 years)

#9

IN REPUTATION FOR QUALITY

of clinical training in psychiatry residency

2,200 +

COMMUNITY MEMBERS
EDUCATED

through Child Study Center
workshops and webinars

Research & Funding

398

SCIENTIFIC PUBLICATIONS

\$ 32.7M

TOTAL RESEARCH
FUNDING IN FY16

\$ 19.8M

IN FY16 NIH GRANTS

#13 IN THE U.S.

IN NIH FUNDING TO PSYCHIATRY PROGRAMS*

*Source, Blue Ridge Institute For Medical Research (FY15)



NYU Langone Medical Center



#10

**IN THE NATION
BEST HOSPITALS**

and nationally ranked in 12 specialties, including top 10 rankings in Orthopaedics, Geriatrics, Neurology & Neurosurgery, Rheumatology, Rehabilitation, Cardiology & Heart Surgery, and Urology. Nationally ranked in Cancer, Diabetes & Endocrinology, Ear, Nose & Throat, Gastroenterology & GI Surgery, and Pulmonology



#11

**IN THE NATION
BEST MEDICAL SCHOOLS
FOR RESEARCH**

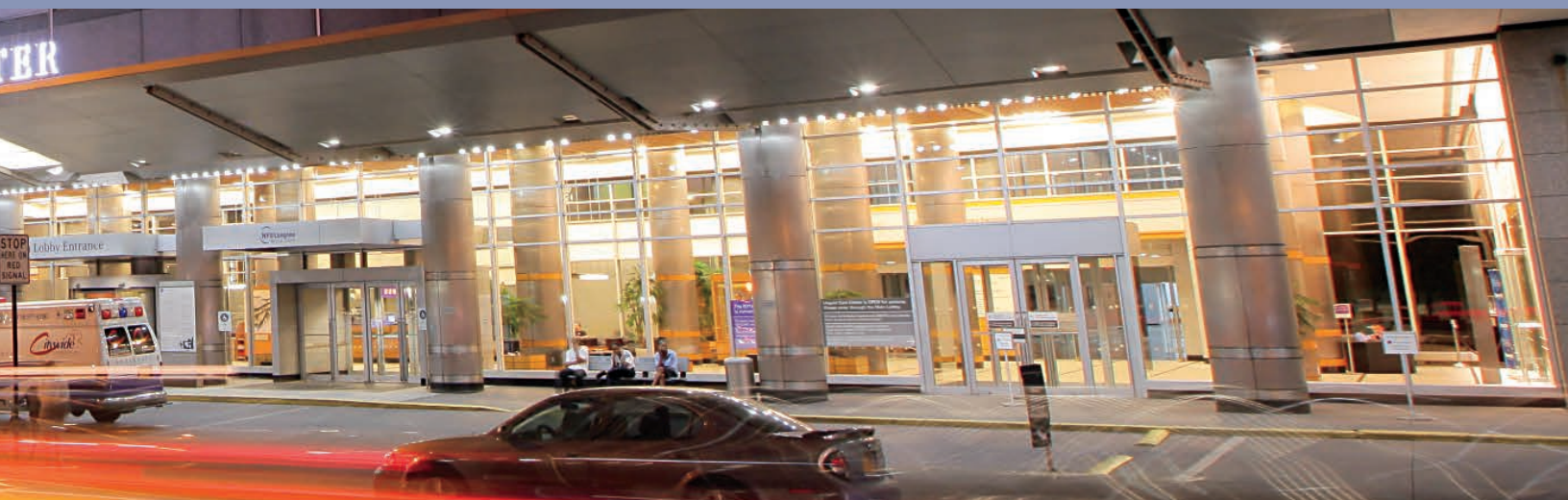
and a leader in innovation in medical education, including accelerated pathways to the MD degree



LEADER

**IN QUALITY CARE AND
PATIENT SAFETY**

and recognized for superior performance as measured by Vizient's nationwide 2016 Quality and Accountability Study



Growth, Collaboration, and Innovation

In 2016, NYU Langone recruited four renowned psychiatrists to leadership roles, bringing new energy and vision to expanding areas of patient care and research.

New Recruits

HELEN L. EGGER, MD, was named chair of the Department of Child and Adolescent Psychiatry and director of the Child Study Center. Known for her seminal research in preschool mental health and developmental epidemiology, Dr. Egger comes to NYU Langone from Duke University Medical Center, where she served as chief of the Division of Child and Family Mental Health and Developmental Neuroscience and vice chair for Integrated Pediatric Mental Health in the Department of Psychiatry and Behavioral Sciences. In addition, Dr. Egger was co-founder and co-director of the Duke Information and Child Mental Health Initiative, and she held appointments in the Departments of Pediatrics and Psychology

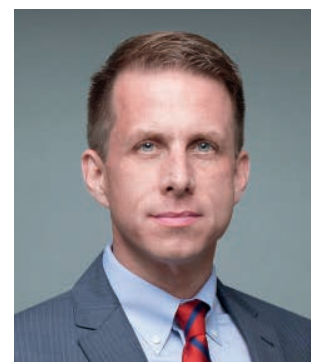
and Neurosciences. As a research scientist, she has focused on the developmental epidemiology and developmental neuroscience of anxiety and mood disorders in children ages two to five. Among her many contributions to the field of childhood mental health, Dr. Egger is recognized for creating the Preschool Age Psychiatric Assessment, the first comprehensive, parent-report diagnostic interview to assess the mental health of preschool-age children—internationally recognized as the gold standard for psychiatric assessment of this age group. She also developed the Autism & Beyond app, built on Apple's ResearchKit framework.



↑ Helen L. Egger, MD

W. GORDON FRANKLE, MD, MBA, was named chief of the Psychiatric Service at NYU Lutheran, the NYU Langone Health System's central hub in Brooklyn, and vice chair of the Department of Psychiatry at NYU Langone. A leading expert on schizophrenia, Dr. Frankle served for six years as chief of Psychiatry at Rutland Regional Medical Center in Vermont, while maintaining an academic appointment as adjunct professor of psychiatry at the University of Pittsburgh. Previously, he was research director of the Comprehensive Recovery Service and director of the Psychiatric Molecular Imaging Group at the University of Pittsburgh Medical Center.

Dr. Frankle helped lead the fight to expand mental health and addiction services in Vermont following the closing of Vermont State Hospital. Under his direction, Rutland Regional opened a new, six-bed psychiatric unit and expanded outpatient treatment services for opioid-addicted pregnant women and patients requiring methadone treatment. Dr. Frankle's recent research has focused on investigating abnormalities in inhibitory neurotransmission in people with schizophrenia, identifying alterations in GABA transmission early in the course of the illness. He is the author or coauthor of more than 40 peer-reviewed articles.



↑ W. Gordon Frankle, MD, MBA

NAOMI MICHELE SIMON, MD, MSc, was named director of NYU Langone's new Anxiety and Complicated Grief Program and will join the NYU Langone faculty in July 2017. Under her stewardship, the program will investigate and treat anxiety disorders, including panic disorder, social anxiety, generalized anxiety disorder, and complicated grief. An internationally recognized expert on these conditions, Dr. Simon has served as professor of psychiatry at Harvard Medical School and as director of the Center for Anxiety and Traumatic Stress Disorders and of the Complicated Grief Program at Massachusetts General Hospital (MGH). Dr. Simon also helped establish MGH's Home Base Program, a novel clinical care and training institute to address the needs of post-9/11 veterans and families affected by post-traumatic stress disorder, traumatic

brain injury, and deployment-related stress. With her expertise, she will strengthen and deepen the scope of the Cohen Veterans Center and the Steven A. Cohen Military Family Clinic at NYU Langone, which share a similar mission with Home Base. Dr. Simon is the author or coauthor of more than 170 research manuscripts and book chapters and a coeditor of two books in her field. Her work has been published in top peer-reviewed medical and psychiatric journals, including the *Journal of the American Medical Association (JAMA)*, *Biological Psychiatry*, and the *American Journal of Psychiatry*. In addition, Dr. Simon is associate editor for the journal *Depression and Anxiety*, chair of the Scientific Council of the Anxiety and Depression Association of America, and a scientific advisor to the American Foundation for Suicide Prevention.



↑ Naomi Michele Simon, MD, MSc

DAN V. IOSIFESCU, MD, MMSc, was named associate professor of psychiatry at NYU Langone and director of Clinical Research at the Nathan S. Kline Institute for Psychiatric Research. Dr. Iosifescu, who will join the Department of Psychiatry in March 2017, previously served as associate professor of psychiatry and neuroscience at the Icahn School of Medicine at Mount Sinai and as director of Adult Psychopharmacology for the Mount Sinai Behavioral Health System. Prior to joining Mount Sinai, he was associate professor of psychiatry at Harvard Medical School, as well as director of Translational Neuroscience in the Depression Clinical and Research Program and site director of the Bipolar Trials Network, both at

Massachusetts General Hospital. An internationally recognized expert on mood disorders, Dr. Iosifescu focuses on novel therapeutics, such as ketamine and transcranial magnetic stimulation, using neuroimaging and neurophysiological techniques to investigate brain abnormalities and their effect on treatment outcomes. He has written more than 100 articles published in peer-reviewed medical journals, nine book chapters, and more than 100 abstracts. His honors include the NARSAD Young Investigator Award, the Kaplen Award and the Livingston Award from Harvard Medical School, the American Psychiatric Association Young Investigator Award, and a National Institutes of Health K23 Career Development Award.



↑ Dan V. Iosifescu, MD, MMSc

Expansion

MERGER WITH NYU LUTHERAN EXPANDS AND ENHANCES CARE

In 2016, NYU Langone completed its merger with Lutheran Medical Center, creating a clinically integrated healthcare provider network for the New York metropolitan area. Based in Brooklyn, the newly named NYU Lutheran operates a 450-bed teaching hospital as well as a network of ambulatory practices in all four boroughs of the city. Mental health facilities and services include a 35-bed acute care psychiatric inpatient unit; a 24/7 psychiatric and behavioral health emergency department; a continuum of psychiatric, counseling, and substance abuse services at NYU Lutheran Family Health Centers Sunset Park; and family counseling services at schools and shelters.

NYU Lutheran's ambulatory psychiatric services receive 115,000 visits a year, compared with 15,000 at Tisch Hospital and 64,500 at Bellevue Hospital Center. "The merger significantly expands the patient population that can benefit from NYU Langone's extraordinary skills and

resources, while providing a larger and more diverse recruitment base for clinical research," says W. Gordon Frankle, MD, MBA, chief of the Psychiatric Service at NYU Lutheran and vice chair of the Department of Psychiatry at NYU Langone.

Planning is under way for a new psychiatric inpatient unit at NYU Lutheran, as well as for a telepsychiatry service for school-based mental health programs throughout Brooklyn, eliminating the need for families to travel to the center in Sunset Park for routine consultations.

In addition, NYU Lutheran is participating in several projects with New York State's Delivery System Reform Incentive Payment (DSRIP) Program, aimed at reducing unnecessary emergency department visits and readmissions. Strategies include improving follow-up on psychiatric inpatients after discharge, providing more robust monitoring of psychiatric patients for medical issues such

as hypertension and hypercholesterolemia, and ensuring rapid screening and intervention for alcohol and drug dependence among emergency department patients.

"Our goal is not just to improve the care we deliver to our patients," Dr. Frankle explains, "but to find innovative solutions that can serve as models for other healthcare networks across the country."

NYU Lutheran has the
busiest mental health clinic in NYC

115,000 +
VISITS ANNUALLY

NYU LANGONE AFFILIATION WITH WINTHROP-UNIVERSITY HOSPITAL BRINGS EXPANDED AND ENHANCED HEALTHCARE NETWORKS TO LONG ISLAND

NYU Langone and Winthrop-University Hospital on Long Island have reached an agreement to affiliate the institutions' extensive healthcare networks. NYU Langone, with more than 150 ambulatory sites throughout the region, will complement Winthrop-University Hospital's main campus, multiple ambulatory sites, and network of 66 faculty and community-based practices in more than 140 locations

extending from eastern Long Island to Upper Manhattan.

The affiliation will further expand NYU Langone's presence on Long Island, while enhancing Winthrop's inpatient and outpatient services with improved access to NYU Langone's wide range of medical and surgical specialties.

"This agreement publicly confirms our confidence that an affiliation will allow our

institutions to collaborate and share best practices with each other to better meet the healthcare needs of the communities we serve," says Robert I. Grossman, MD, the Saul J. Farber Dean and CEO of NYU Langone. Pending regulatory approval, the institutions are aiming to complete their affiliation in spring 2017.

Community Engagement

PROGRAM ENCOURAGES INCLUSION FOR STUDENTS WITH DISABILITIES

In 2016, the New York City Department of Education and the Cerebral Palsy Foundation (CPF) engaged the NYU Langone Child Study Center to spearhead the development of a campaign that fosters an inclusive culture in city schools. Announced last May, the *Just Say Hi* campaign answers the question, “How do you start a conversation with someone who has a disability?” with a suggestion: “Just say ‘Hi.’” The campaign employs public service announcements by celebrities and provides guidance to students and school staff about how to build on those initial exchanges.

To augment the program, experts from the Child Study Center—Sarah Kuriakose,

PhD, clinical assistant professor of child and adolescent psychiatry and clinical director of the Autism Spectrum Disorders Service, Katherine A. Sullivan, PhD, clinical assistant professor of child and adolescent psychiatry, and Ered Massie, LCSW, ACSW, clinical assistant professor of child and adolescent psychiatry—developed a supplement to the Department of Education’s social studies curriculum that helps teachers incorporate inclusion-related themes. Customized for age groups from K-12, the supplement provides background information, guiding questions, sample objectives, planning notes, and suggested activities.

The project relies on a social model of disability, developed in recent years by people with disabilities and their advocates. “This model distinguishes between impairments and disabilities,” Dr. Kuriakose explains. “It suggests that a disability emerges from society’s response to an impairment and can often be eliminated by altering that response.”

The *Just Say Hi* campaign was introduced at eight select New York City schools in September 2016. Implementation throughout the school system is scheduled to begin fall 2017, and plans for adoption of the program by other cities are in progress.



↑ New York City Department of Education student learns about the *Just Say Hi* program



↑ Michael P. Bogenschutz, MD, Helena Hansen, MD, PhD, and Crystal Fuller Lewis, PhD

Awards & Recognition

→ **Mary Jane Alexander, PhD**, research associate professor of psychiatry, received the National Alliance on Mental Illness of New York State Award for Excellence in Research. Dr. Alexander also became Mental Health Section Program Chair of the American Public Health Association.

→ **Carol A. Bernstein, MD**, associate professor of psychiatry and neurology and director of the Department of Psychiatry's Residency Training Program, was elected treasurer of The American College of Psychiatrists. Dr. Bernstein was also named co-chair of the Accreditation Council for Graduate Medical Education Task Force on Physician Well-Being.

→ **Francisco Xavier Castellanos, MD**, the Brooke and Daniel Neidich Professor of Child and Adolescent Psychiatry, professor of radiology and neuroscience and

physiology, and director of the Center for Neurodevelopmental Disorders at NYU Langone's Child Study Center, was awarded the Ruane Prize for Outstanding Achievement in Child and Adolescent Psychiatry Research by the Brain & Behavior Research Foundation.

→ **Lara Cox, MD**, fellow in child and adolescent psychiatry, was awarded a Rapoport Fellowship by the American Academy of Psychiatry and the Law.

→ **Ruth S. Gerson, MD**, assistant professor of child and adolescent psychiatry and director of the Children's Comprehensive Psychiatric Emergency Program, won the British Medical Association 2015 Best Psychiatric Book Award for *Helping Kids in Crisis: Managing Psychiatric Emergencies in Children and Adolescents*.

→ **Rachel L. Goldman, PhD**, clinical assistant professor of psychiatry, was recognized by the American Psychiatric Association's *Monitor on Psychology* in an article titled "A Bariatric Psychologist."

→ **Michael M. Halassa, MD, PhD**, assistant professor of psychiatry and neuroscience and physiology and director of the Residency Research Track in Psychiatry, received the Brain & Behavior Research Foundation's Freedman Prize for Exceptional Basic Research.

→ **Helena Hansen, MD, PhD**, assistant professor of psychiatry and anthropology, was appointed vice chair of the American Psychiatric Association's Council on Minority Mental Health and Health Disparities.

→ **Jennifer Havens, MD**, professor of psychiatry and child and adolescent psychiatry, vice chair for Public Psychiatry in the Department of Child and Adolescent Psychiatry, and director and chief of service of Child and Adolescent Psychiatry at Bellevue Hospital Center, was appointed a member of the Governor's Behavioral Health Services Advisory Council for the Office of Mental Health and Office of Alcoholism and Substance Abuse Services. Dr. Havens was also appointed to the New York State Department of Health Children's Health Subcommittee/Value-Based Payment Clinical Advisory Group.

→ **Kimberly E. Hoagwood, PhD**, vice chair for research and the Cathy and Stephen Graham Professor of Child and Adolescent Psychiatry, was awarded the Carl A. Taube Award from the Mental Health Section of the American Public Health Association.

→ **Pamela Butler Kahn, PhD**, associate professor of psychiatry, was appointed to the editorial board of *Schizophrenia Bulletin*.

→ **Ron-Li Liaw, MD**, clinical associate professor of child and adolescent psychiatry and co-director of the Pediatric Consultation Liaison Service, and **Eric Lewandowski, PhD**, clinical assistant professor of child and adolescent psychiatry, received a \$150,000 grant from the Cystic Fibrosis Foundation, entitled "Implementation of the Depression and Anxiety Guidelines."

→ **Dayu Lin, PhD**, assistant professor of psychiatry and neuroscience and physiology, received the Irma T. Hirschl Career Scientist Award.

→ **Christopher P. Lucas, MD**, associate professor of child and adolescent psychiatry, was named a member of the National Institutes of Health study section Risk, Prevention and Health Behavior Integrated Review Group.

→ **Joseph Lux, MD**, clinical associate professor of psychiatry, was named a Distinguished Fellow of the American Psychiatric Association.

→ **Richa Maheshwari, MD**, resident in child and adolescent psychiatry, received an American Academy of Child and Adolescent Psychiatry (AACAP) Educational Outreach Program Award. Dr. Maheshwari also received the Resident Recognition Award for Excellence in Family Oriented Care from the Association of Family Psychiatrists.

→ **Lianne Morris Smith, MD**, clinical assistant professor of psychiatry, was promoted to medical director of the Outpatient Clinic at the Manhattan Psychiatric Center.

→ **Owen Muir, MD**, fellow in child and adolescent psychiatry, was awarded an AACAP NY Travel Grant.

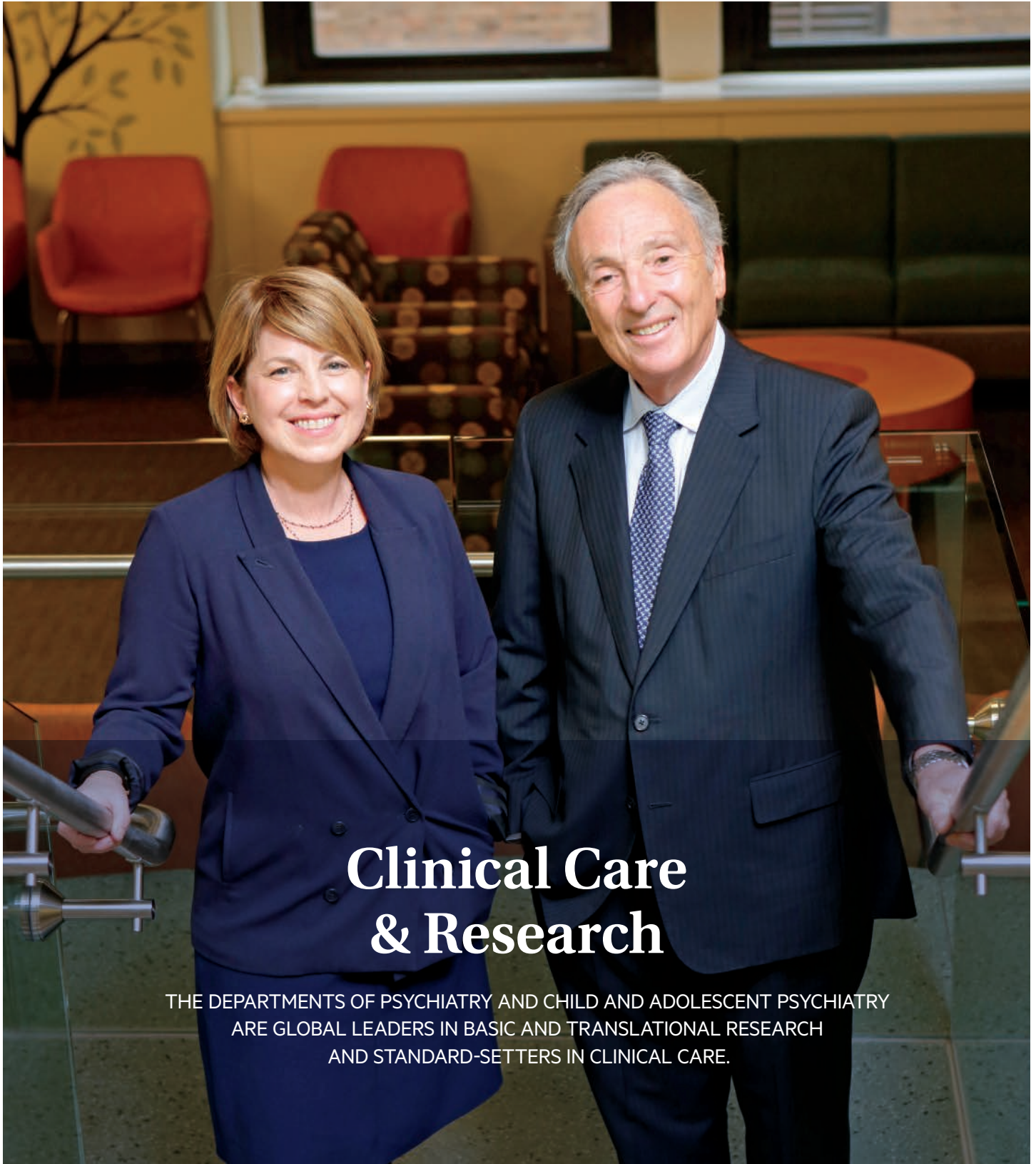
→ **Dennis M. Popeo, MD**, clinical associate professor of psychiatry and unit chief of psychiatry at Bellevue Hospital Center, received the Scholarly Publication Award from the Association of Directors of Medical Student Education in Psychiatry.

→ **Arieh Y. Shalev, MD**, the Barbara Wilson Professor of Psychiatry, was appointed to the National Institute of Mental Health Special Emphasis Panel: ZMH1 ERB-D (09) Early Phase Clinical Trials.

→ **Amanda M. Spray, PhD**, clinical assistant professor of psychiatry and assistant director of the Steven A. Cohen Military Family Clinic, received the Sydney A. (Bud) Orgel Memorial Award and the Early Career Psychologist Leadership Award from the New York State Psychological Association.

→ **Zebulon C. Taintor, MD**, adjunct professor of psychiatry, was appointed to a six-year term on the Appeals Panel of the Accreditation Council for Graduate Medical Education.

→ **Yuliya Yoncheva, PhD**, research scientist, **Philip T. Reiss, PhD**, associate professor of child and adolescent psychiatry and population health, **A.M. Clare Kelly, PhD**, adjunct assistant professor of child and adolescent psychiatry, **Adriana Di Martino, MD**, associate professor of child and adolescent psychiatry and research director of the Autism Spectrum Clinical and Research Program at the Child Study Center, and **Francisco Xavier Castellanos, MD** (see preceding page), received the AACAP High Honors Award for their article "Mode of Anisotropy Reveals Global Diffusion Alterations in Attention-Deficit/Hyperactivity Disorder," in the February 2016 issue of the *Journal of the American Academy of Child & Adolescent Psychiatry*.



Clinical Care & Research

THE DEPARTMENTS OF PSYCHIATRY AND CHILD AND ADOLESCENT PSYCHIATRY
ARE GLOBAL LEADERS IN BASIC AND TRANSLATIONAL RESEARCH
AND STANDARD-SETTERS IN CLINICAL CARE.

↑ Helen L. Egger, MD, and Charles R. Marmar, MD

Hallucinogen Offers Breakthrough for Cancer-Related Distress

Clinically significant symptoms of anxiety and depression are common in cancer patients and are associated with poor outcomes, such as medication nonadherence, increased pain and disability, higher suicide rates, and decreased survivability from the cancer itself.

Existing antidepressants show little efficacy for cancer patients compared to placebo, and benzodiazepine anxiolytics are not recommended for long-term use because of their potential for addiction and other negative effects. But research at NYU Langone suggests that a single dose of a mind-altering compound contained in psychedelic mushrooms, administered under carefully controlled conditions, may offer a safe and effective alternative.

PSILOCYBIN THERAPY EASES ANXIETY AND DEPRESSION

In a study published in December 2016 in the *Journal of Psychopharmacology*, Stephen Ross, MD, associate professor of psychiatry and child and adolescent psychiatry and director of Substance Abuse Services, and his team reported that one-time treatment with the hallucinogen psilocybin—classified as a banned substance and requiring federal waivers for study use—brought quick, robust relief from anxiety and depression in cancer patients. Moreover, in 60 percent to 80 percent of the 29 study participants, the benefits lasted as long as eight months. The NYU Langone study was published alongside a similar study from Johns Hopkins, and both were endorsed in 11 accompanying editorials from leading experts in psychiatry, addiction, and palliative care.

“Our results represent the strongest evidence to date of a clinical benefit from psilocybin therapy,” says Dr. Ross. “If larger clinical trials prove successful, this

treatment has the potential to transform care for patients with cancer-related psychological distress.”

Psilocybin, an active compound found in many species of mushrooms, was registered with other hallucinogens as a Schedule 1 drug (that is, deemed to have no medical value and a high potential for abuse) under the Comprehensive Drug Abuse Prevention and Control Act of 1970. However, from the 1950s to the early 1970s, more than 1,000 clinical and research articles were published on hallucinogens, reflecting studies involving 40,000 patients. “In early studies, LSD (a compound similar to psilocybin) showed striking promise for alleviating psychological distress in cancer patients,” notes study co-investigator Jeffrey R. Guss, MD, clinical assistant professor of psychiatry. Recently, regulatory strictures have eased enough for researchers to fund and launch new trials.

“Our results represent the strongest evidence to date of a clinical benefit from psilocybin therapy.”

—Stephen Ross, MD

IMPLEMENTATION OF PSILOCYBIN STUDY

All participants in the double-blind NYU Langone study had potentially life-threatening forms of cancer and had been diagnosed with clinically significant psychological symptoms related to their conditions. Exclusion criteria included epilepsy, cardiovascular disease, or a personal or family history of a serious psychiatric disorder, such as schizophrenia or bipolar disorder. Participants received tailored psychotherapy throughout the trial period. Medication was administered in a tranquil setting, and patients were given eye masks to block out visual stimuli and headphones that played preselected music.

Half the participants were randomly assigned to receive a dose of psilocybin; the rest received a placebo known to produce a “rush” that mimics the onset of a hallucinogen. Seven weeks later, all participants switched treatments. After receiving psilocybin, the majority reported rapid and sustained reductions in anxiety and depression, as well as decreased feelings

of demoralization and hopelessness, improved spiritual well-being, and increased quality of life. There were no serious adverse events.

POTENTIAL APPLICATION FOR OTHER CONDITIONS

Although the neurological benefits of psilocybin are not completely understood, the drug has been proven to activate parts of the brain affected by the signaling chemical serotonin, which is known to control mood and anxiety. Psilocybin’s therapeutic effects also appear to be mediated by the mystical state—characterized by loss of ego, visionary insights, and emotional catharsis—that it induces in patients.

“Our study showed that this medication drove reductions in psychological distress,” says co-investigator Anthony P. Bossis, PhD, clinical assistant professor of psychiatry. “And if that’s true for cancer care, it could apply to other stressful medical conditions as well.”



↑ Anthony P. Bossis, PhD, Stephen Ross, MD, and Jeffrey R. Guss, MD

Decoding the Misconceptions Behind Adult ADHD

Not long ago, many clinicians thought attention deficit hyperactivity disorder occurred almost exclusively in children and adolescents.

That misconception has dissolved over the past decade, thanks in part to Lenard A. Adler, MD, professor of psychiatry and child and adolescent psychiatry and director of the Adult ADHD Program at NYU Langone. In the early 2000s, Dr. Adler helped develop the World Health Organization ADHD Self-Report Scale-V1.1 (ASRS-V1.1)—the first screening tool to evaluate individuals at risk for adult ADHD and still the tool most widely used.

Since then, Dr. Adler has remained at the forefront of adult ADHD research. He was among the first to identify the differences in symptom presentation and resulting impairment for adults, determining, for example, that physical restlessness tends to be less evident in adults with the disorder, while executive function deficits are often more prominent.

NEUROBIOLOGY OF ADULT ADHD

Dr. Adler is also a leader in investigating the neurobiology of adult ADHD and how the disorder is affected by various types of medication. In a study published in the *Journal of Child and Adolescent Psychopharmacology*, Dr. Adler and his team used functional magnetic resonance imaging (fMRI) to chart the effect of stimulant medication on neural connections throughout the brain in adult ADHD patients. The researchers found that after three weeks of the amphetamine administration, functional connectivity had decreased between the left dorsolateral prefrontal cortex (a key cognitive control region) and the medial prefrontal cortex (central to a circuit most active when the brain is not performing a particular task), with altered patterns radiating into other regions

as well. There had already been similar findings in studies in children, but this was the first such study of adult patients.

IMPROVEMENTS IN EXECUTIVE FUNCTION

In another study, published in the *Journal of Attention Disorders*, Dr. Adler's team found that treatment with the norepinephrine reuptake inhibitor atomoxetine significantly improved executive functioning in adults with ADHD. Strikingly, patients with moderate improvements maintained those gains six months after the medication was discontinued, suggesting possible long-term changes in neurocircuitry. However, patients with greater improvements were more likely to show declines in executive function after discontinuing the drug. Dr. Adler notes that further research will help elucidate the mechanisms behind these responses. "Ultimately," he says, "the goal of our research is to reveal how ADHD works in different individuals, enabling clinicians to design tailored treatment regimens for adults with this disorder."

4.4 %

OF U.S. ADULTS HAVE ADHD

according to the most recent National Comorbidity Study, cowritten by Lenard A. Adler, MD



↑ Michael M. Halassa, MD, PhD

FINDING A GENETIC COMMON DENOMINATOR IN ATTENTION DISORDERS

Although neurodevelopmental disorders such as ADHD, autism, and schizophrenia differ symptomatically, people with these disorders have a key trait in common: difficulty screening out extraneous sensory information. Recent research by Michael M. Halassa, MD, PhD, assistant professor of psychiatry and neuroscience and physiology and director of the Residency Research Track in Psychiatry, suggests that the thalamic reticular nucleus (TRN) may be the epicenter of this vulnerability to sensory overload. In a study published in March 2016 in *Nature*, Dr. Halassa and colleagues revealed a mechanism that can spur such filtering problems.

The TRN, a sheath of neurons on the surface of the thalamus, is a midbrain structure that has long been thought to direct the flow of sensory input to the cerebral cortex. Dr. Halassa's earlier work showed that the TRN acts as a "switchboard," blocking some inputs and letting others through. In the latest study, a collaboration with MIT neuroscientist Guoping Feng, PhD, Dr. Halassa and his team investigated how a gene called *PTCHD1* (patched domain containing 1) affects TRN function. It had previously been established that patients with a mutated or deleted *PTCHD1* gene show a constellation of symptoms, including autism, ADHD, sleep disruption, aggression, low muscle tone, and intellectual disability. However, the connection between the genetic defect and its behavioral manifestations was poorly understood.

Dr. Halassa's team bred mice lacking the *PTCHD1* gene, either totally or only in the TRN. Both groups

of mice exhibited attention deficits, hyperactivity, and sleep disruption—indicating that those symptoms are rooted in the TRN—and the symptoms of those completely lacking the gene resembled symptoms of humans with *PTCHD1* deletion. In a test in which the animals were bombarded with varying flashes of light—one of which meant a food reward—the *PTCHD1* knockout mice made three times as many errors as normal mice and their TRN cells were found to dampen 25 percent fewer sensory inputs. The knockout mice also had fewer "sleep spindles," patterns on electroencephalogram tests, that correlate with increased TRN cell-firing to suppress sensory input during sleep.

The researchers concluded that a key consequence of *PTCHD1* deletion is disruption of potassium channels in TRN neurons. They were able to partially restore TRN signaling—and reverse related symptoms—with an experimental drug that boosts the activity of those channels. Although the medication is not a candidate for human treatment, it demonstrated that future drugs might be able to treat attention deficits by targeting similar pathways.

Dr. Halassa, who describes the filtering dysfunction of *PTCHD1* deletion as a "leaky thalamus," suspects it is at play in a wide range of attention-related disorders. "We believe that this work defines a new disease category based on common biological signatures," he says, "and the field may need to rethink disease definitions to yield more precise treatments."

Diagnosing Early Childhood Neurodevelopmental Disorders

For nearly two decades, the pioneering research of Helen L. Egger, MD, has deepened the specialty's understanding of the epidemiology of early childhood mental illness.

ESTABLISHING A CLINICAL ASSESSMENT

Early in her career, Dr. Egger, who last September was named chair of the Department of Child and Adolescent Psychiatry and director of the Child Study Center, created the Preschool Age Psychiatric Assessment (PAPA), the first comprehensive, parent-report diagnostic interview to assess the mental health of preschool-age children. Dr. Egger's studies found that the incidence of impairing psychiatric disorders among children ages two to five, approximately one in nine, is similar to the incidence among older children. Further, her National Institutes of Health-funded research revealed that 85 percent of young children with impairing disorders go untreated. Remediating that situation thus became a central focus of her work.

One major obstacle to treating mental health disorders in young children is the scarcity of clinicians capable of assessing them. "You cannot interview preschoolers as you do adolescents," Dr. Egger explains. "Standard observational approaches require extensive training, as well as laboratories equipped with video equipment, and in much of the world, access to these resources is limited."

HARNESSING SMARTPHONE TECHNOLOGY TO DIAGNOSE AUTISM

To help solve this problem, Dr. Egger is leveraging the power of smartphone technology. Her first foray was an app called Autism & Beyond, developed with a team of mental health researchers and engineers at Duke University Medical Center. Built on the Apple ResearchKit framework, the app combines questionnaires and short videos to gather information about children aged one to six. While seated on a parent's lap, the child watches images on an iPhone screen—bunnies or bubbles, for

example—and is recorded by the device's self-facing camera. Analytical software then marks key landmarks on the child's face and uses them to assess the child's emotional responses, attention, and physiological measures, such as blinking.

More than 2,500 families across the country have used the app, Autism & Beyond, since being released in October 2015.

EXPANDING GLOBAL SCREENING

Dr. Egger's ultimate goal is to make mental health apps available around the world—as screening tools to identify children with clinically significant emotional behaviors and as interactive tools for parents struggling to understand their child's behaviors. To home in on other conditions and behaviors, Dr. Egger is developing a new app, Picky Eating & Beyond, in collaboration with teams at NYU Langone and Duke. A tantrum and anxiety app is also planned. To develop international versions of these tools, she and her colleagues have established partnerships with researchers in South Africa, Singapore, Turkey, and Argentina. They are planning to establish partnerships in other regions as well.

In addition to aiding mental health assessment at home and in underserved regions, the project may lead to the development of technologies that can be used to quantify young children's emotions and behaviors more effectively—and for a broader range of ages and ethnicities—than technologies now available, with potentially far-reaching scientific applications. "This work will expand our ability to comprehend the inner life of children," says Dr. Eggers, "and to help families around the globe."

BRAIN IMAGING DATABASE OUTLINES AUTISM'S NEURAL ARCHITECTURE

The complexity and heterogeneity of autism spectrum disorder (ASD) represent a daunting challenge for psychiatry and neuroscience. Although neuroimaging has enhanced the specialties' understanding of ASD-associated brain anomalies, unknowns remain, including whether an imaging phenotype that describes the entire autism spectrum can be established, how the various subtypes of ASD differ in the brain, and how the disorder is linked to commonly co-occurring conditions, such as anxiety, attention deficit hyperactivity disorder (ADHD), and epilepsy. Adriana Di Martino, MD, associate professor of child and adolescent psychiatry and research director of the Autism Spectrum Clinical and Research Program at NYU Langone's Child Study Center, is leading the quest to solve these complex puzzles.

A pioneer in the use of innovative imaging approaches for ASD, Dr. Di Martino employs the techniques of resting-state functional magnetic resonance imaging (R-fMRI) and diffusion tensor imaging (DTI) to discover the mechanisms underlying autism and co-occurring neurodevelopmental disorders. Over the past decade, her widely influential studies using these methods have helped uncover previously undetected commonalities between ASD and ADHD, reveal fine differences in connectivity between brain areas involved in social cognition (pregenual anterior cingulate cortex) and internal sensations (also referred to as interoception; posterior insula) correlate with the severity of autistic traits, and identify excessive connectivity within striato-cortical circuits as a marker of ASD.

WORLD'S LARGEST BRAIN SCAN DATABASE

Dr. Di Martino is also the driving force behind the Autism Brain Imaging Data Exchange (ABIDE), the world's largest database of brain scans from individuals with autism. A collaboration between NYU Langone and 17 international research institutions and academic medical centers launched ABIDE I, which began in 2012 with scans from 1,112 people. In June 2016, with a \$275,000 grant from the National Institute of Mental Health, the initiative released ABIDE II, adding 1,044 new scans from eight



↑ Adriana Di Martino, MD, and Melissa A. Nishawala, MD

additional sites, and opportunities for enhanced levels of structural imaging and clinical detail.

The database was inspired by similar efforts in genetics, where large-scale datasets are enabling researchers to find patterns that would be invisible in smaller samples. Approximately half the imaging data are from individuals who have been diagnosed with autism; the rest are from typically developing controls between the ages of 5 and 64 years. For each individual, the imaging data are accompanied by key diagnostic and clinical information, enabling a range of investigations. Major focuses of research using the ABIDE resource have been the identification of novel brain markers and the advancement of neuroscientific models of brain connectivity in ASD. Since its founding, ABIDE has generated nearly 60 peer-reviewed articles, an average of one per month.

"The advances emerging from these efforts could not have been obtained at this pace without this expanding, openly shared platform," Dr. Di Martino says. "With it, we are gaining unprecedented insight into how the miswired connectome gives rise to autism and its comorbidities."

Unique Service Provides Psychosocial Support for Gender-Variant Youth

Although public awareness of gender variance has increased markedly in recent years, scientific data on the psychiatric needs of these young people remain sparse.

Aron C. Janssen, MD, clinical assistant professor of child and adolescent psychiatry, is spearheading efforts to improve mental health care for transgender and gender-nonconforming children and adolescents. Dr. Janssen's research and clinical work are focused on understanding the psychiatric needs of these young people and on challenging the assumptions that have led to the pathologizing of gender-variant behavior itself.

Dr. Janssen is director of the NYU Langone Child Study Center Gender and Sexuality Service, which he founded in 2011 after completing his fellowship in child and adolescent psychiatry. The service, one of the country's first, provides therapeutic support for children and families struggling with issues of gender and sexual identity. "This is a population that faces a great deal of discrimination and stigma and consequently that has high rates of depression, anxiety, and suicide attempts," says Dr. Janssen. "Our mission is to provide affirmative, patient-focused treatment, while educating clinicians, parents, and teachers on how to help these children lead happy, fulfilling lives."

Therapy is aimed at supporting these children in their exploration of their identity and addressing issues of self-esteem, school stress, friendships, and family relationships, with an emphasis on building adaptive

strategies and coping skills. The Gender and Sexuality Service also offers assessments for puberty suppression and cross-sex hormone treatments and addresses the psychosocial aspects of disorders of sex development, also known as intersex conditions. In addition, the service helps clinicians to improve their professional skills in treating gender-variant and transgender patients—an area that typically receives little attention in medical education.

Through his role with the service, Dr. Janssen also works to enhance awareness of the impact of gender and sexual identity issues on children's health, and he has presented on the subject at numerous conferences. He also conducts research on the prevalence, demographics, and co-occurring conditions of gender-variant behaviors. A study of his, published in the February 2016 issue of *Transgender Health*, showed a highly significant correlation between autism spectrum disorder (ASD) and gender variance. In their analysis of behavioral checklists submitted by parents of 492 children and adolescents previously diagnosed with ASD, Dr. Janssen and colleagues found that 5.1 percent of the subjects often wished to be the opposite sex—a rate 7.76 times higher than that of a non-autistic control group.

"This study suggests that clinicians should be aware of both potential gender identity issues when treating children with autism and potential autism spectrum issues when treating gender-variant children," Dr. Janssen observes. "More broadly, it suggests that children with autism may be less bound by public perceptions of what is allowable for a particular gender. If we take the time to listen to these children, there's a great deal we can learn from their experiences."

"Clinicians should be aware of both potential gender identity issues when treating children with autism and potential autism spectrum issues when treating gender-variant children."

—Aron C. Janssen, MD

SLEEP QUALITY MAY BE KEY LINK TO ALZHEIMER'S

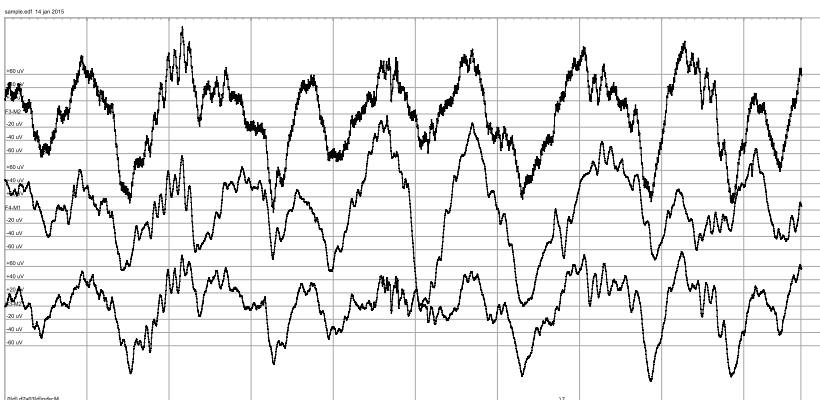
In laboratory experiments, mice bred to develop amyloid plaques (the brain lesions thought to underlie the disease) did so more rapidly when they were sleep deprived. And in clinical trials, Dr. Osorio's team found elevated biomarkers for Alzheimer's in the cerebrospinal fluid of elderly people diagnosed with obstructive sleep apnea—a condition in which frequent arousals throughout the night are common.

In a study published in the November 2016 issue of the journal *SLEEP*, Dr. Osorio and colleagues set out to learn

The results were striking. Levels of amyloid beta showed an inverse correlation with the duration of the deepest stage of slumber, known as slow-wave sleep (SWS). Dr. Osorio points to two possible explanations. First, amyloid beta is believed to be a waste product of neuronal activity, which is at its lowest during SWS. Second, recent research indicates that such metabolites are cleared from the brain during SWS by a previously undetected intracellular drainage system. "We think there's a decrease in amyloid beta production as well as an increase in clearance during this sleep stage," he explains. "Slow wave sleep appears to be crucial for the brain's housecleaning process."

Unfortunately, the duration of SWS tends to decline with age, which Dr. Osorio hypothesizes could spur a negative feedback cycle in vulnerable individuals. Insufficient SWS may then lead to amyloid buildup, causing neuronal damage that further disrupts sleep patterns. Eventually, Alzheimer's symptoms arise, worsening with time.

Although conventional sleep medications do not improve SWS, other drugs—such as the antiepileptic tiagabine and the discontinued sedative gaboxadol—are known to do so, and more are in development. Such SWS enhancers might someday be used, Dr. Osorio suggests, to decrease amyloid beta levels and keep



↑ Slow-wave sleep EEG polysomnographic reading from the study

NEW ALZHEIMER'S CARE INITIATIVES RECEIVE \$9.7 MILLION IN FUNDING

In July 2016, NYU Langone received funding from the New York State Department of Health (DOH) for two initiatives that will connect patients with Alzheimer's disease and dementia and their families with the most comprehensive care and support services available in the New York City area.

The Alzheimer's Disease and Related Dementias Family Support Program at NYU Langone received a five-year, \$7.5 million grant, awarded by Governor Andrew M. Cuomo through the state's Alzheimer's Caregiver Support Initiative, to enroll 600 caregivers and family members of people with dementia in a model caregiver support program at no cost to the participants. Enrollees will receive ongoing care

consultation, evidence-based services, referrals, and support aimed at reducing the stressors associated with caregiving.

Separately, NYU Langone's Center for Cognitive Neurology was awarded a \$2.2 million grant from the DOH to establish a Center of Excellence for Alzheimer's Disease as part of the state's long-term care for Alzheimer's disease program. The center will serve as a region-wide resource and referral source for individuals affected by Alzheimer's and dementia. The center's goals are to provide integrative, comprehensive, and coordinated medical services, to strengthen support for home and community-based living, to delay institutionalization, and to maintain the best possible quality of life for these patients.

dementia at bay. "The average age of Alzheimer's onset has risen in recent years, as we've gotten better at controlling risk factors such as cardiovascular disease and diabetes," he notes. "Sleep is another factor that could have a huge impact."

RESEARCH IDENTIFIES ODOR AS BIOMARKER FOR ALZHEIMER'S

Donald A. Wilson, PhD, professor of child and adolescent psychiatry and neuroscience and physiology, leads research examining how the mammalian brain processes and remembers odors. Recently, Dr. Wilson took his research in a related, but reverse, direction—toward the odors animals produce. In the process, he and his team took the first step toward developing a potential laboratory test for early-stage Alzheimer's disease.

Several studies have shown that dogs can "sniff out" some human illnesses, such as diabetes and certain cancers, although the volatile compounds that enable such detection have not yet been identified. Laboratory animals are also known to avoid cage mates whose odor indicates that they are ill. All these phenomena led Dr. Wilson to wonder whether a change in a patient's odor might serve as a biomarker for Alzheimer's.

STUDY TESTS ODOR SIGNATURE IN URINE

In a study published in January 2016 in the online journal *Scientific Reports*, Dr. Wilson and colleagues investigated that question using three models of amyloid precursor protein (APP) mice, bred to develop Alzheimer's-like brain pathology. First, the researchers exposed normal mice to vials of urine collected from

other normal mice. Once these "sensor" mice became habituated to this odor, the team brought in vials of urine from different strains of APP mice. The sensor mice showed strong interest in each APP vial, indicating that they detected a significant difference. Strikingly, Dr. Wilson noted, "this response occurred even with urine from APP mice whose brains did not yet show a buildup of amyloid plaques, characteristic of Alzheimer's disease."

The researchers then used gas chromatography-mass spectrometry to analyze differences in volatile compounds between urine samples from normal mice and urine samples from the three APP strains. They found that one compound, phenylacetone, was higher in the urine of all APP mice than in their normal counterparts, while other compounds occurred at various levels according to the APP strain.

Dr. Wilson's study suggests that Alzheimer's disease could have an odor signature in human urine. Further research could lead to a simple, noninvasive test to identify patients with preclinical Alzheimer's disease, who have not yet developed symptoms. Advanced imaging and spinal taps are the only available detection techniques at this time. Although no currently available treatment can reverse or significantly slow progression of this brain degenerative disorder, early detection may someday help clinicians administer preventive medication.

"The odors in urine and other body fluids have been used to diagnose diseases for at least a thousand years," Dr. Wilson observes. "If we can find an odor signature for Alzheimer's and isolate the chemicals involved, we may be able to catch the disease before neurological damage occurs."

Raising the Standard of Care for Treating Complex Patients

The Comprehensive Psychiatric Emergency Program is a crucial component in triaging, evaluating, and admitting patients with a high degree of mental illness and comorbidity.

ADVANCING ADULT EMERGENCY PSYCHIATRIC CARE

NYU Langone's Comprehensive Psychiatric Emergency Program (CPEP), located at Bellevue Hospital Center, is one of the nation's busiest psychiatric emergency services, with more than 13,000 annual patient visits. The CPEP is the main entry point for Bellevue's 285-bed inpatient psychiatric service—the largest public sector psychiatric inpatient program in New York City—and most patients are brought in by ambulance or by the police, in the aftermath of threatening or harmful behaviors.

The program is a key training site for NYU School of Medicine students, psychology interns, and psychiatry residents, who are exposed to a wide array of emergent mental states driven by psychiatric and substance-related illness, and who receive dedicated training by a multidisciplinary staff. The CPEP offers a core psychiatric emergency service, extended (72-hour) observation beds, an interim crisis clinic, and a mobile crisis team that can conduct emergency psychiatric assessments in the community, exposing clinicians-in-training to the interacting mental health and social services systems.

CARE FOR COMPLEX PROBLEMS

"We are known for our expertise in treating the most complicated psychiatric emergency cases," says director Amit Rajparia, MD, clinical associate professor of psychiatry. "Our program provides a safety net for people with serious and persistent mental illness in acute crisis, who usually grapple with difficult psychosocial situations: homelessness, history of severe trauma, and involvement with the criminal justice system."

As an example, the CPEP has been at the epicenter of the recent rise in the use of synthetic cannabinoids, or K2, in New York City—and the drug's accompanying psychiatric manifestations. To understand the

phenomenon, a team including Dr. Rajparia, Crystal Fuller Lewis, PhD associate professor of psychiatry and Marc W. Manseau, MD, adjunct assistant professor of psychiatry, undertook the first known systematic clinical characterization study of suspected synthetic cannabinoid users treated in a public psychiatric emergency setting. The results, which indicate that synthetic cannabinoid use among the homeless and the mentally ill is a growing public health concern, were published in the November 2016 edition of the *American Journal of Drug and Alcohol Abuse*.

SHARED INSIGHTS EQUIP PRACTITIONERS

In the past year, CPEP staff have collaborated with several new and innovative New York City-sponsored mental health programs to extend the reach of their expertise. These include new intensive mobile treatment teams, along with NYC SAFE, a program to address mental illness and violence in city shelters; a homeless outreach program that provides housing for frequent emergency department visitors; and the Enhanced Pre-Arrest Screening Unit (EPASU) at Manhattan Central Booking.

In addition, in 2016, 26 NYU Langone psychiatrists and psychologists shared their insights in *A Case-Based Approach to Emergency Psychiatry*, edited by Katherine F. Maloy, MD, clinical assistant professor of psychiatry and CPEP director. The volume draws on complex cases to illustrate basic principles of assessment, diagnosis, and treatment, covering topics including psychosis, mood disorders, personality disorders, substance abuse, and forensic issues. "The people we see are often highly decompensated and intoxicated with a wide variety of substances," notes Dr. Rajparia. "We provide them with a level of care found at few other psychiatric EDs, and we are proud to share our expertise."

COMPASSIONATE INPATIENT CARE FOR THE INCARCERATED

The Forensic Psychiatry Service at Bellevue Hospital Center is the only acute inpatient psychiatric service for men incarcerated at Riker's Island, New York City's main jail complex. The 68-bed facility is staffed by NYU Langone forensic psychiatrists, psychologists and fellows, and a full complement of psychiatric social workers and other clinicians.

Inmates commonly arrive with symptoms such as hallucinations, delusions, suicidal ideation, and difficulty communicating verbally. "The experience of being arrested and sent to jail is traumatic in itself," observes Mary Anne Badaracco, MD, professor and vice chair of psychiatry at NYU Langone and director and chief of psychiatry at Bellevue. "For inmates with psychiatric disorders and co-occurring substance use disorders or trauma histories, the risk of violence is greatly heightened."

Inmates are admitted to the inpatient unit if their psychiatric condition requires diagnostic clarification for treatment—especially if the condition makes them a danger to themselves or others—or if they need assessment of their fitness to stand trial. Each patient undergoes an individualized physical and mental assessment before a diagnosis is determined. Clinicians also try to identify potential triggers for violence and interventions that might make such behavior less likely. In addition to receiving psychiatric medication,



patients meet daily with psychiatrists, psychologists, and nurses and participate in group therapy and recreational therapies.

Combined with other protocols, such measures can significantly reduce assaults on patients and staff, enabling most inmates to return to Riker's after three or four weeks with fewer psychotic symptoms. Forensic Psychiatry Service clinicians frequently share their unique assessment and treatment approaches with other acute hospitals in New York City through expert consultations, and they also present at national conferences.

"Our experience demonstrates that humane, evidence-based treatment of inmates with psychiatric illness can relieve the suffering of inmates with psychiatric illness, just as it can for patients in a non-forensic setting," Dr. Badaracco says.

SUDDEN PSYCHOSIS LEADS TO RARE FINDING*

A female patient, with no known history of substance abuse or psychiatric illness, arrived at the Comprehensive Psychiatric Emergency Program (CPEP) at Bellevue Hospital Center, after she spontaneously attacked a security guard at work. Upon arrival, she was screaming incoherently, her heart rate and blood pressure were sharply elevated, and she was diaphoretic. After her agitation was managed with injections of haloperidol and lorazepam, she was found to have a fever of 101.2°F. The clinicians suspected acute intoxication or withdrawal, but lab tests for alcohol and drugs were negative, and a CT scan of her head was normal.

Overnight, the patient remained confused and paranoid, and then she had a seizure, a clue that her psychosis was organic in origin. A spinal tap found no abnormalities in her cerebrospinal fluid, but an MRI of her brain

showed bright spots in both temporal lobes. This finding pointed toward limbic encephalitis (LE), a rare inflammatory disorder of the limbic system. Blood tests confirmed LE, triggered by an autoimmune reaction to a tumor. Further CT scans revealed a small mass in the woman's ovary, and the benign growth—an ovarian teratoma—was later surgically removed.

The CPEP's multispecialty team in close collaboration with the emergency department and the Neurology Service helped to identify the teratoma before it could do further harm, which greatly improved the patient's chance for a full recovery.

*Case excerpted from *A Case-Based Approach to Emergency Psychiatry*, written and edited by NYU School of Medicine Faculty

Linking Scientific Research with Public Service

Leading-edge investigations into psychiatric disorders help to fulfill NYU Langone's long-standing mission to improve the health and well-being of patients.

THE NATHAN S. KLINE INSTITUTE

At the Nathan S. Kline Institute for Psychiatric Research (NKI), a facility of the New York State Office of Mental Health, a broad range of research studies are making pioneering contributions to psychiatry, particularly translational research in schizophrenia and Alzheimer's disease.

Located on the grounds of the Rockland Psychiatric Center in Orangeburg, New York, NKI has had a strong academic affiliation with NYU Langone since its founding in 1952. "In addition to deepening our understanding of psychiatric disorders, NKI acts as a link between academic researchers and state government," says director Donald C. Goff, MD, the Marvin Stern Professor of Psychiatry and vice chair for research in NYU Langone's Department of Psychiatry. "The knowledge gained here and the expertise of our scientists enhance the delivery of mental health services in New York State, providing models for public programs elsewhere."

NYU Langone researchers at NKI are advancing that mission in a variety of ways, among them:

- New strategies under development to improve Medicaid program design, spearheaded by Crystal Fuller Lewis, PhD, associate professor of psychiatry and director of NKI's new Division of Social Solutions and Services Research
- Groundbreaking translational studies of the molecular and cellular basis of Alzheimer's disease and other neurodegenerative states, directed by Ralph A. Nixon, MD, PhD, professor of psychiatry and cell biology, at NKI's Center for Dementia Research

- Research at The Emotional Brain Institute (EBI) examining the genetic roots, molecular foundations, and memory mechanisms that underlie normal fear and susceptibility to anxiety disorders, especially in children, directed by Joseph E. LeDoux, PhD, the Henry and Lucy Moses Professor of Science, professor of neural science and psychology, professor of psychiatry and child and adolescent psychiatry, and a world-renowned expert on the brain mechanisms of emotion

At the EBI, Dr. LeDoux is joined by senior researchers Donald A. Wilson, PhD, and Regina M. Sullivan, PhD—both professors of child and adolescent psychiatry at NYU Langone and leaders in their respective fields. Dr. Wilson concentrates on perceptual and hedonic learning, particularly in the mammalian olfactory system; Dr. Sullivan's focus is on the impact of early fear conditioning in animal models and human subjects.

Together, these EBI researchers are seeking to identify ways to retrain the brain to inhibit negative emotions and reduce anxiety-driven impairment of memory, attention, decision making, and social behavior. They are working to develop, test, and implement large-scale prevention strategies in collaboration with colleagues throughout NKI, clinical investigators at the NYU Langone Child Study Center, researchers in the Department of Child and Adolescent Psychiatry, and educators and policymakers throughout New York City and New York State.

Researchers Map the Roots of Premeditated Rage in Animal Brains

Scientists believe that aggression, an essential social behavior across the animal kingdom, including in humans, is hardwired in the brain.

Since the 1920s, animal studies have shown that the hypothalamus plays an important role in mediating aggression. However, the particular anatomical and functional details have remained unclear. Dayu Lin, PhD, assistant professor of psychiatry and neuroscience and physiology, is a leader in the mission to identify the neural circuits that are involved in aggression and how they are controlled. Dr. Lin, who helped identify a subnucleus called the ventromedial hypothalamus (VMHvl), has devoted herself to investigating the VMHvl's interplay with other parts of the brain's complex aggression circuit.

EXAMINING THE PUSH AND PULL OF AGGRESSION TRIGGERS

In 2016, Dr. Lin published two studies that shed new light on the interactions of the VMHvl with the aggression circuit. The first, in *Current Biology*, focuses on the lateral septum (LS), a structure that projects into and receives signals from the hypothalamus. Damage to the LS has long been associated with a syndrome known as septal rage, which spurs mice to commit random

violence against cage mates. By stimulating groups of cells in this structure with light from a surgically inserted probe, Dr. Lin and colleagues found they could start and stop aggressive behavior in the study mice.

The researchers also learned that when excited, LS cells increase the activity of a set of cells in the VMHvl that are normally least active during mouse attacks, while suppressing the activity of another set of cells that are normally most active during attacks. "Our findings are the first to show how the LS works with other key brain regions to regulate aggression," says Dr. Lin, "simultaneously pushing down the brake and lifting the foot off the accelerator of violent behavior."

UNCOVERING THE CHEMISTRY OF PREMEDITATION

The second study, in *Nature Neuroscience*, examined whether VMHvl cells associated with aggressive behavior in male mice are also involved in planning aggression—and was the first to link a specific brain region to premeditated behaviors that precede violence. Dr. Lin and postdoctoral fellow Annegret Falkner, PhD, adapted a behavioral test in which a mouse learns to poke its nose into a hole to secure a reward. The trained mouse quickly pounces on the reward. In the researchers' adapted version of the test, when an intruder mouse was presented in a protective cage or was larger than the male being tested, the subject lost interest in the intruder—revealing that the trained mouse had sought a fight, rather than companionship. Dr. Lin measured the activity of VMHvl cells while the trained mice were preparing to fight and found that the cellular circuit active during an attack is also active during the planning stage. Inhibiting these cells made mice less likely to seek out a victim. Dr. Lin hopes her research will eventually contribute to the development of medications capable of controlling violent behavior in psychiatric patients, without compromising social and cognitive functions.



↑ Dayu Lin, PhD

Enhancing the Delivery of Community Mental Health Services

The Center for the Implementation-Dissemination of Evidence-Based Practices Among States (IDEAS) develops and tests implementation strategies and tools that can serve as models to enhance evidence-based child mental health services nationwide.

IDEAS is funded by the National Institute of Mental Health and the New York State Office of Mental Health (OMH) and based at NYU Langone's Department of Child and Adolescent Psychiatry.

Through IDEAS key laboratory, the OMH-funded Community Technical Assistance Center (CTAC), researchers provide clinics in New York State with technical assistance and training tools that promote evidence-based care and efficient practices. "CTAC provides a platform for IDEAS researchers to launch research and evaluation studies," says Kimberly E. Hoagwood, PhD, the Cathy and Stephen Graham Professor of Child and Adolescent Psychiatry, vice chair for Research in the child and adolescent psychiatry department, and director of both IDEAS and CTAC. "In turn, IDEAS provides CTAC with implementation data that can then be shared with other states."

A SIMULATED PATIENT APPROACH

Two studies released in 2016 exemplify the partnership between IDEAS and CTAC. The first, published in the *Journal of the American Academy of Child and Adolescent Psychiatry*, investigated variations in wait times at New York State mental health facilities for youth seeking treatment for depression. This study used a simulated patient approach, in which researchers followed a standardized real-world protocol to assess wait times under routine conditions for parents seeking care for their child—a potentially transformative methodological tool to help states measure treatment accessibility. Findings showed the ability to schedule an intake appointment did not differ by type of clinic, region of the state, or insurance status, although seasonality and workforce distribution across the state did play a role.

MAP SYSTEM REDUCES DROPOUT RATE

The second study, presented at the annual conference of the Association for Behavioral and Cognitive Therapies, examined the effects of an intervention designed by IDEAS and CTAC to reduce attrition among clinicians enrolled in a state-sponsored training program called Managing and Adapting Practice (MAP). MAP is a system derived from hundreds of clinical trials of psychotherapies for child and adolescent mental health issues. MAP uses a common elements approach to psychotherapy coupled with clinicians' use of a data monitoring and feedback system to track progress. Approximately 150 clinicians are trained on MAP each year throughout New York State. The intervention developed by IDEAS and CTAC to reduce dropouts involved systematic training of clinicians in the use of information technology. This intervention successfully cut the dropout rate from 51 percent to 12 percent.



↑ Regina A. Sullivan, PhD, and Kimberly E. Hoagwood, PhD

Probing the Neurobiological Mechanisms of Infant Attachment

In typical caregiver-infant bonding, the mere presence of the mother can lower an infant's stress hormones and regulate heart rate and respiration—a process known as social buffering.

However, in a study of infant rats, a team led by Regina M. Sullivan, PhD, professor of child and adolescent psychiatry, found that when stress or abuse is a factor, social buffering is impaired. Yet those infants will continue to bond with such caregivers, pursuing contact and seeking out sensory stimuli associated with them. As adolescents, animals raised under abusive conditions show behaviors analogous to depression. As adults, they exhibit excessive aggression and poor maternal protection of pups. They also show preference for trauma cues, much like abused children who grow up to choose abusive mates.

Over the past two decades, Dr. Sullivan, an internationally recognized expert on the neurobiology of infant attachment to the caregiver, has generated important insights into how the infant brain functions differently from its adult counterpart and the critical role of the caregiver in modifying how the young brain responds to trauma. Dr. Sullivan's most recent research uses advanced brain imaging and biochemical analysis to trace the mechanisms behind such response behaviors.

STUDY TESTS MATERNAL ODOR

In a groundbreaking study published in *Social Neuroscience*, Dr. Sullivan's team investigated how infant rats respond to their mother's odor at different developmental stages. In newborn pups, maternal odor activated a circuit involving the medial prefrontal cortex (mPFC) and the anterior cingulate cortex (ACC). At 14 days, the odor no longer affected those regions; instead, it blocked activity in the hypothalamus. By 23 weeks, the mPFC, the ACC, and the bilateral amygdala were all involved. These changes coincided

with the pups' evolving behavioral responses to maternal odor: from early infancy, when it prompted nipple attachment, to middle infancy, when it also triggered buffering, to weaning age, when it induced less buffering and it no longer controlled nursing.

A crucial question raised by such behaviors is whether they are instinctive responses to a pheromone or learned responses to an odor associated with reward. In another study, published in June 2016 in the *Journal of Neuroscience*, Dr. Sullivan and her team found evidence supporting reward association. When the researchers changed the mother's diet, the pups' neurobehavioral responses were significantly muted, suggesting that her odor—and its effect—was not genetically determined. Pups' responses to the odor of an adult male also proved to be manipulable. Infant rats normally halt movement and cease vocalizing in the presence of adult male odor, perhaps because grown males often kill alien pups. When Dr. Sullivan's team reared pups alongside an adult male, however, the odor of an unfamiliar male triggered behavioral and neurological responses comparable to those produced by the odor of a female.

Dr. Sullivan suggests that these results have a clear overlap with human bonding. "There's a bias in our society that assumes maternal behavior is innate and that fathers lack a parenting instinct," she observes. "But my work shows that attachment requires learning on the part of parents and offspring alike."

Finding Better Ways to Treat Childhood Trauma

In addition to providing state-of-the-art patient care, NYU Langone's Department of Child and Adolescent Psychiatry is dedicated to developing improved treatments and disseminating them widely.

DEDICATED, EMERGENT TREATMENT FOR CHILDREN IN CRISIS

Most young people who present for emergency psychiatric care are seen in general medical or adult psychiatric emergency departments (EDs). However, the experience of just being in such a facility can be frightening for children and their families, and few EDs have staff trained to work with acute pediatric mental illness. As the only dedicated and licensed children's psychiatric ED in New York City, NYU Langone's Children's Comprehensive Psychiatric Emergency Program (C-CPEP), which opened at Bellevue Hospital Center in 2011, is a leader in the delivery of such care.

The state-of-the-art, 3,500-square-foot C-CPEP facility receives approximately 3,000 patient visits per year, including 400 to 500 transfers from hospitals throughout the metropolitan area that lack psychiatric beds for children and adolescents. "Providing children in psychiatric crisis with thorough, effective emergency evaluation and connection to care can put them on a path to recovery," says C-CPEP director Ruth S. Gerson, MD, assistant professor of child and adolescent psychiatry.

Led by a specialist child psychiatrist, the C-CPEP team provides a comprehensive, multidisciplinary evaluation to any child who needs it, regardless of time of day or insurance status. The facility has a secure unit with six extended observation beds for up to 72 hours of evaluation and intervention, to help stabilize children and adolescents in psychiatric crisis. Follow-up care may include immediate access to outpatient treatment at the Interim Crisis Clinic in the C-CPEP, referral to short-term Home-Based Crisis Intervention Program services or Partial Hospitalization Program Services, referral for ongoing outpatient care or inpatient treatment.

PIONEERS IN PEDIATRIC PSYCHIATRIC EMERGENCIES

Approaches pioneered in the C-CPEP have been adopted by pediatric psychiatric emergency facilities nationwide. Dr. Gerson and her colleagues are leaders in setting the standard of clinical care and education in emergency child psychiatry. They frequently give lectures and grand rounds at other institutions, and lead NYU Langone's annual CME course, "Managing Psychiatric Emergencies in Children and Adolescents," which draws attendees from across the country. "With suicide as the second-leading cause of death among U.S. teenagers, improving the capacity of our psychiatric emergency response system is a public health imperative," says Dr. Gerson.

**WINNER OF THE 2015
BRITISH MEDICAL ASSOCIATION AWARD**

Best Book in Psychiatry

Helping Kids in Crisis: Managing Psychiatric Emergencies in Children and Adolescents, authored by Fadi Haddad, MD, and Ruth S. Gerson, MD, is an internationally renowned resource for those working with youth in psychiatric crisis



ADDRESSING TRAUMA FOR JUVENILES IN SECURE DETENTION

On any given day, New York City's two secure juvenile detention centers—Crossroads, in Brooklyn, and Horizon, in the Bronx—detain as many as 100 youth who have been arrested and deemed to require detention; the average age of these young people is 15. Many of these children are released after a day or two; others may spend weeks in the centers awaiting trial or sentencing. Among children in secure detention, approximately 90 percent have experienced trauma—ranging from physical and sexual abuse to witnessing violence in their families and communities—a much higher percentage than in the general population. Since 2014, NYU Langone has worked with the city's Administration for Children's Services (ACS) to provide trauma screening and care for these children.

TRAUMA INFORMED CARE PROJECT

Funded by a grant from the federal Substance Abuse and Mental Health Services Administration (SAMHSA), the Trauma Informed Care Project was developed in 2012 to train frontline residential staff to deal effectively with traumatized children. "These children are often angry and depressed and challenging to deal with," says Jennifer Havens, MD, professor of child and adolescent psychiatry, vice chair for public psychiatry in the Department of Child and Adolescent Psychiatry, and director and chief of service of Child and Adolescent Psychiatry at Bellevue Hospital Center. "Addressing issues of trauma is central to both helping young people understand their behavior and improve their coping skills, and helping staff work more effectively and safely with detained youth."

In 2016, the Trauma Informed Care Project, a partnership between the Crossroads and Horizon juvenile detention centers and the first of its kind in a U.S. juvenile justice system, received renewed funding of \$2 million over the next five years to continue its services. To date, the project has established the trauma-informed mental health screening at the Crossroads and Horizon facilities, developed evidence-based skills groups to reduce trauma-related problems among youth in detention, trained staff on the effects of trauma and

how to mitigate them in a juvenile justice population, and built collaborative relationships in the child-serving systems associated with juvenile detention, to increase trauma responsiveness in those systems.

“Many inmates in the adult prison population, as well as homeless people living on the streets, began as traumatized children who did not receive proper care,” Dr. Havens notes. “Anything we can do to put these young people on a better trajectory can have a huge payoff.”



↑ Aron C. Janssen, MD, and Ron-Li Liaw, MD

Supporting the Mental Health of Hospitalized Children And Their Families

Over the past three years, NYU Langone's child and adolescent Psychiatry Consultation-Liaison (CL) Service has experienced a 200 percent increase in the number of unique patients served and a 300 percent increase in total inpatient consult visits.

"As demand for our service rises, we are focusing efforts on partnering with patients, families, and providers to design and implement novel approaches to integrated care throughout the hospital," says Ron-Li Liaw, MD, clinical associate professor of child

"Our goal is to identify potential problems proactively and to provide truly integrated care."

—Ron-Li Liaw, MD

and adolescent psychiatry, director of The Center for Child and Family Resilience of the Sala Institute for Child and Family Centered Care, and who co-directs the CL Service with Aron Janssen, MD, clinical assistant professor of child and adolescent psychiatry. The CL Service is devoted to ensuring that the mental health needs of children and their loved ones are met during inpatient and outpatient visits, regardless of whether the patient has been diagnosed with a psychiatric illness.

The pediatric CL Service operates in a framework of pediatric care that is child- and family-centered, psychosocial, preventive, and integrated. In 2016, the CL Service added two psychologists to its Integrated Behavioral Health Program at the Fink Children's Ambulatory Care Center, part of Hassenfeld Children's Hospital of New York at NYU Langone, which provides outpatient cardiology, endocrinology, gastroenterology, pulmonology, and other specialized services.

EVALUATING THE PSYCHOSOCIAL NEEDS OF PATIENTS AND THEIR FAMILIES

The experts from the pediatric CL Service provide universal screening and family support programs for the children being treated at NYU Langone, as well as their families, who may need support to cope with the stresses of the patient's medical condition and hospitalization. For children and families with clinical or complex mental health conditions—such as major depression, suicidality, or delirium—the pediatric CL Service provides direct consultation, intervention, and follow-up with patients, family, and medical caregivers.

At the Hassenfeld Children's Hospital, a new co-designed screening tool—the family stress thermometer—was introduced in 2016 to assess parents' stress levels and guide interventions, from massage therapy to help with transportation logistics or domestic violence issues. Another initiative is a clinical study of children with chronic illness—in this case, irritable bowel syndrome and cystic fibrosis—now in the recruitment stage, in which patients will be screened for comorbid depression and anxiety and treated according to protocols tailored to their disease.

"Medical outcomes are often significantly influenced by mental health factors affecting patients and their families. Our goal is to identify potential problems proactively and provide truly integrated care," explains Dr. Liaw.

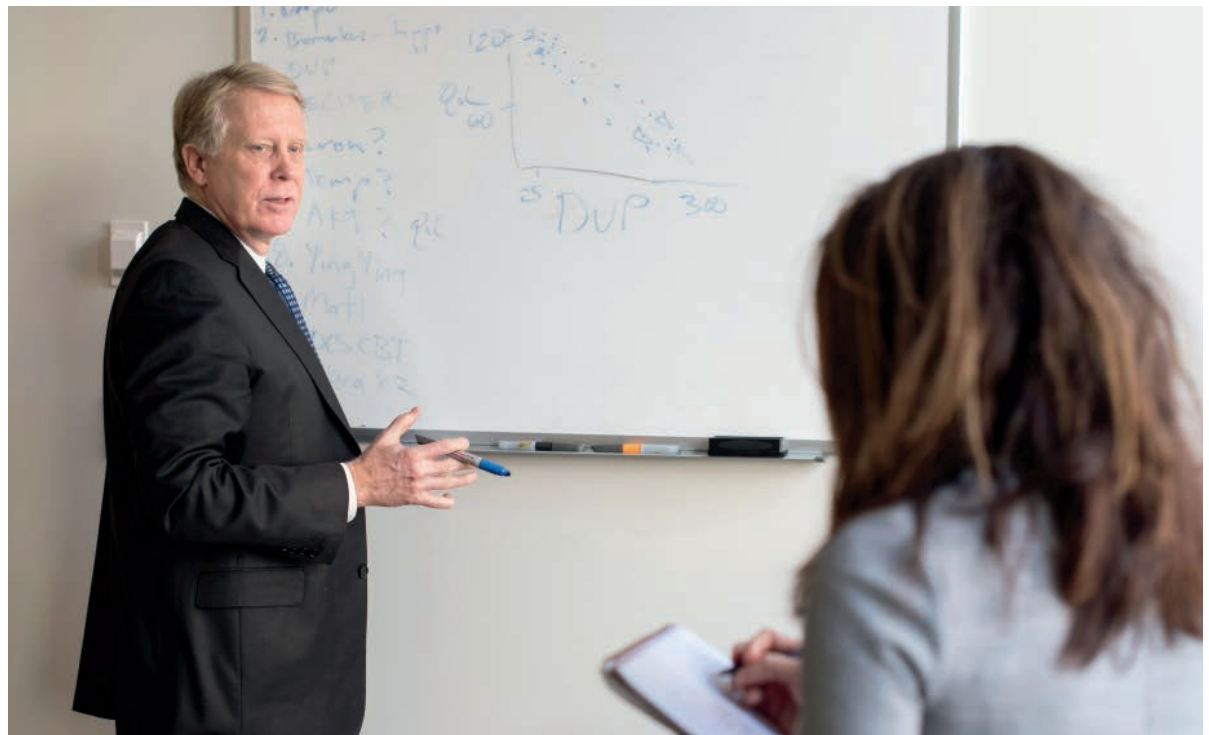
The Biochemistry of Schizophrenia

The exact cause of schizophrenia, a condition characterized by abnormal social behavior and failure to understand what is real, is unknown, but scientists believe a combination of genetics and environmental factors may play a role.

Current schizophrenia research has three key goals: (1) to understand the biology behind the disease's onset and early progression, (2) to identify biomarkers that can be used for diagnosis and staging and for designing personalized therapeutic regimens, and (3) to develop treatments that can control the illness more effectively, with fewer adverse effects than existing therapies. Donald C. Goff, MD, the Marvin Stern Professor of Psychiatry and vice chair for Research in the Department

of Psychiatry, is leading concurrent research designed to address each of these quests.

A translational clinical researcher who has spent 25 years in the field, Dr. Goff pioneered the development of glutamatergic agents and folate supplementation for individuals with schizophrenia. His current work, with three studies funded by the National Institute of Mental Health, explores the areas of early intervention and the treatment of refractory symptoms using strategies to



↑ Donald C. Goff, MD

enhance neuroprotection and neuroplasticity. “A single type of treatment might not be right for everyone,” Dr. Goff explains. “By examining biochemical, genetic, structural, and functional changes in the brain, we hope to find clues to guide us toward the best approach for each patient.”

TRACKING BRAIN CHANGES THROUGH TREATMENT

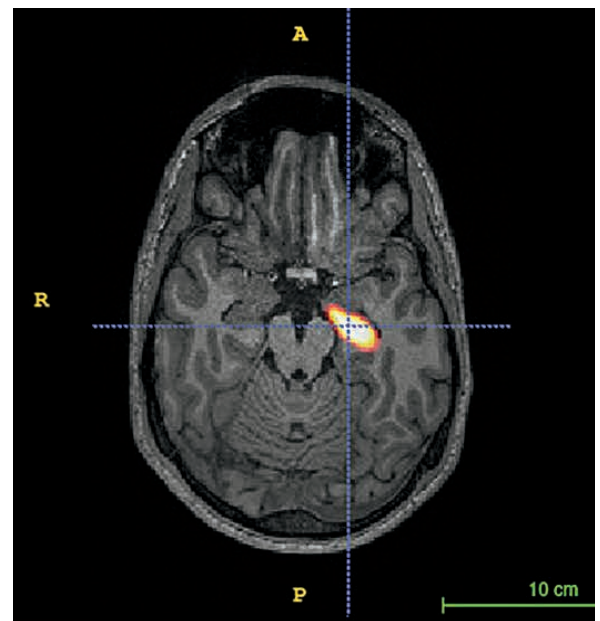
In a recently completed study, Dr. Goff’s team used advanced neuroimaging, genetic and blood biomarkers, and clinical testing to examine brain structure and function in 70 medication-naïve individuals during their first psychotic episode and 70 healthy controls. For a subgroup of the patients and controls, these tests were repeated after eight weeks, during which the patients were treated with antipsychotic medications. In the study, published in April 2016 in the journal *Schizophrenia Research*, he and his colleagues compared impairments in white matter integrity in patients before and after treatment. About half exhibited structural and clinical improvement after treatment, while the remainder continued to suffer losses in white matter integrity. Although Dr. Goff considers it likely that the medication had a neuroprotective effect in the improved group, further research is needed to determine the mechanisms involved and the reasons the antipsychotics failed to help the group that did not improve—or perhaps even added to their impairment.

Dr. Goff’s team is also analyzing brain volume and functional connectivity findings in relation to other biomarkers in the same group of medication-naïve patients and healthy controls. In addition, on the basis of a prior finding that linked brain-derived neurotrophic factor (BDNF) to brain volume loss in schizophrenia, Dr. Goff’s team conducted a large, multicenter trial examining changes associated with the antidepressant citalopram in individuals with first-episode psychosis. In their analysis of the study results, the team will examine whether citalopram, which enhances BDNF release, protects against brain volume loss and improves the course of illness.

ANTIBIOTIC MAY INCREASE NEUROPLASTICITY, ENHANCE COGNITIVE BEHAVIORAL THERAPY

Dr. Goff is also investigating novel treatments for patients whose symptoms do not respond to commonly prescribed medications. One promising possibility is D-cycloserine (DCS), an antibiotic once used to treat tuberculosis, which has been shown to enhance memory and neuroplasticity in animal and human studies. In a pilot study, Dr. Goff and colleagues found that patients with treatment-resistant delusions showed significant improvement when low doses of DCS were administered before sessions of cognitive behavioral therapy.

“Medications that make the brain more flexible and enhance learning may boost the efficacy of non-drug treatments,” Dr. Goff suggests. He is leading a two-center trial of this technique, again employing neuroimaging and genetic assays to find potentially useful biomarkers, with results expected later this year.



↑ Left hippocampus identified on a structural MRI scan using an automated analysis developed by Babak A. Ardekani, PhD

Healing the Invisible Wounds of War

Since 2012, the Steven A. Cohen Military Family Clinic at NYU Langone has provided psychiatric and psychological treatment to more than 1,100 veterans and family members, free of charge.

EXPANSION OF CLINIC MODEL SETS NATIONAL STANDARD FOR VETERANS' MENTAL HEALTH

Until recently, NYU Langone's Cohen Veterans Center was the only facility in the United States addressing the needs of veterans (regardless of discharge status) who are ineligible for or unwilling to seek care administered by the Department of Veterans Affairs. But in April 2016, investor and philanthropist Steven A. Cohen committed \$275 million to form a national network of clinics based on the model pioneered by NYU Langone. The Cohen Veterans Network, opened four new clinics in the past year and plans to open 20 more by 2020. "Our mission has always been to remove barriers to care for veterans and their families," says the Military Family Clinic's founder, Charles R. Marmar, MD, the Lucius N. Littauer Professor of Psychiatry, chair of the Department of Psychiatry, and director of the Cohen Veterans Center. "We are delighted that the approach we have developed will now be replicated nationwide."

REMOTE TREATMENT REMOVES BARRIERS TO CARE

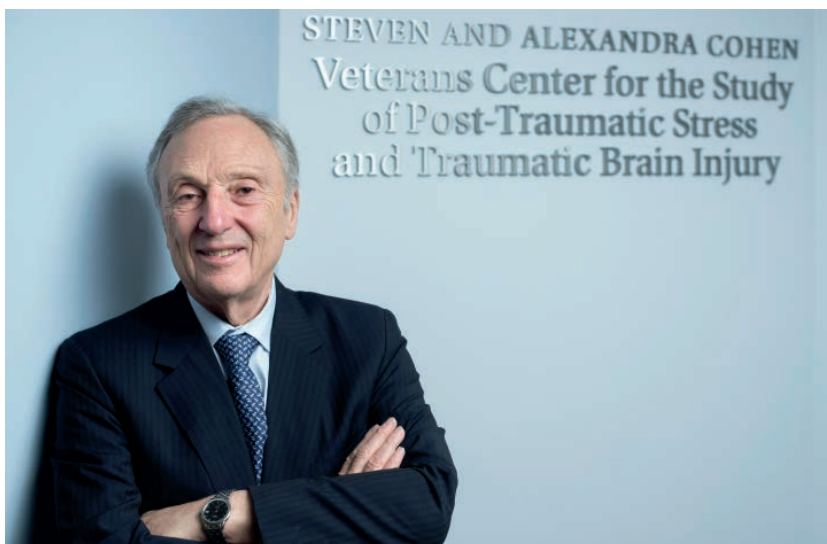
For many veterans, a significant barrier to mental health care is the need to visit an office for regular appointments. Some veterans have physical disabilities that make travel difficult; for others, psychiatric disorders, such as agoraphobia or post-traumatic stress disorder (PTSD), make it difficult for them to ride on the subway or sit in a waiting room. Still others have work or school schedules that do not allow time for traveling to therapy sessions. To overcome such obstacles, the Steven A. Cohen Military Family Clinic launched a groundbreaking telemental health initiative in 2016.

Funded by a three-year, \$1.5 million grant from The Home Depot Foundation, the program offers a full array of technology-enabled psychiatric and

psychotherapeutic services to veterans and their families throughout the New York metropolitan area, at no cost to patients. After a face-to-face intake session, patients consult with psychiatrists and psychologists remotely via streaming video, using their computers or tablets, in the comfort of their homes.

"A growing body of literature shows that the telemodality is appropriate for almost any form of treatment," notes Paraskevi Noulas, PsyD, clinical assistant professor of psychiatry and director of the Military Family Clinic telemental health program in collaboration with NYU Langone's information technology and electronic medical records teams. The program's treatment modalities include psychopharmacology, cognitive remediation therapy, and evidence-based therapies, such as exposure therapy and dual diagnosis therapies. As program staffing expands in the coming year, couples therapy and family therapy will also become available.

Although not the only institution providing telemental health services for veterans, the NYU Langone program offers an unparalleled range of therapeutic options and is the first to offer treatment to both child and adult family members. "We are leading the way by expanding our free care model and taking mental health care directly to veterans and families," says clinical assistant professor Amanda M. Spray, PhD, clinical assistant professor of psychiatry and assistant director of the Military Family Clinic. "For many, this may be their only opportunity to access high-quality mental health care. NYU Langone is helping to fill a void in communities where services are scarce or nonexistent and removing burdens that prevent patients from receiving consistent treatment, which is critical in the mental health care setting."



EXPANDING TELEPSYCHIATRY TO UNDERSERVED VETERANS

Mental health practices can be found throughout New York City and a number of other areas, but in many regions of the country, the situation is vastly different. “There are areas where one could travel hundreds of miles and not be able to find a single psychiatrist,” observes Adam Wolkin, MD, associate professor of psychiatry and vice chair of the Department of Psychiatry. For veterans with mental health needs, that can mean little to no access to much-needed care, depending on where they live.

In October 2016, NYU Langone affiliate Veterans Affairs New York Harbor Healthcare System (VA NYHHS) began an initiative to relieve the shortage of providers for veterans in far-flung locales. Aided by a three-year, \$2.7 million per year grant from the U.S. Department of Veterans Affairs, the project will create a significant telemental health hub—a concentrated base of providers remotely serving veterans across America. “It’s a way of leveling out regional disparities in access to care,” explains Dr. Wolkin, who also serves as associate chief of staff for Mental Health for VA NYHHS.

VA NYHHS has been providing telepsychiatry for several years, with more than 1,000 patient visits in 2016 alone. The new project will greatly expand the number of clinicians providing remote care and enable them to consult via high-quality videoconferencing technology with patients at medical centers and clinics, regardless of their distance. VA NYHHS is already partnering with facilities in upstate New York, Pennsylvania, and Texas, with plans for other sites and expanded services under way.

SELF-EFFICACY MAY BE KEY FOR VETERANS WITH PTSD

For veterans with PTSD, memories of distressing events can interfere with problem-solving and with planning for the future. Many patients benefit from exposure therapy, which uses controlled recall to strip traumatic memories of their power—but it does not work for everyone. In a study published in August 2016 in the journal *Psychiatry Research*, researchers led by Adam D. Brown, PhD, adjunct assistant professor of psychiatry, pioneered a promising new approach: harnessing positive memories to recalibrate the patient’s sense of possibility.

Dr. Brown and his colleagues hypothesized that impairments in autobiographical memory retrieval—commonly seen in individuals with PTSD—make it difficult to envision future solutions and successes. This might explain why PTSD is often associated with low self-efficacy. Perhaps, the researchers reasoned, patients’ self-efficacy, along with their ability to function effectively, could be boosted by cuing relevant positive memories.

To test this idea, Dr. Brown’s team recruited 62 veterans of the wars in Iraq and Afghanistan, 25 of whom had PTSD. About half the participants were asked to recall three autobiographical memories of success from any points in their lives, and to think about how those events reflected their strengths. The other half, the control group, were asked only to recall “any significant life event.” Participants were then presented with five positive and five negative word cues, preceded by the sentence, “Try to imagine an event in the future when you will feel...” Next, they were asked to provide solutions to a series of hypothetical interpersonal problems.

Participants with PTSD in the experimental group generated significantly more self-efficacy content when imagining the future than their counterparts in the control group. (Participants without PTSD scored similarly in both groups.) In addition, participants with or without PTSD in the experimental group showed enhanced problem-solving ability.

Says Dr. Brown, “This study suggests that perceptions of self-efficacy can be increased by drawing on memories of one’s own successes. Further research may lead to a novel strategy to promote well-being in the wake of traumatic events.”



Cultivating Exceptional Researchers & Clinicians

THE CENTERS AND PROGRAMS OF THE DEPARTMENTS
OF PSYCHIATRY AND CHILD AND ADOLESCENT PSYCHIATRY
PROVIDE A DIVERSE INSTRUCTIONAL ENVIRONMENT
FOR THE NEXT GENERATION OF MENTAL HEALTH LEADERS.

↑ Jess P. Shatkin, MD, MPH, and Carol A. Bernstein, MD

Bringing a New Generation into the Field

NYU Langone is committed to training the next generation of leaders in research, clinical care, education, and administration.

RESIDENCY ADDRESSES THE INTERSECTION OF PSYCHIATRY AND NEUROLOGY

NYU School of Medicine is one of only four institutions in the United States that offer a combined residency in psychiatry and neurology. “Many disorders can not be neatly categorized as psychiatric or neurological and may benefit from a dual approach,” observes Siddhartha S. Nadkarni, MD, assistant professor of neurology and psychiatry, who graduated from the residency program in 2003 and is now its director. Such disorders include neurological conditions with psychiatric sequelae (such as epilepsy, Parkinson’s disease, and Tourette’s syndrome), dementias, traumatic brain injury, neuropsychiatric illnesses such as autoimmune encephalitis, and

movement disorders associated with antipsychotic medication.

Co-chaired by Charles R. Marmar, MD, the Lucius N. Littauer Professor of Psychiatry and chair of the Department of Psychiatry, and Steven L. Galetta, MD, the Philip K. Moskowitz, MD Professor and Chair of Neurology and professor of ophthalmology and neurology, the residency program meets the special requirements for board certification as designated by the American Board of Psychiatry and Neurology. Its enrolls one to two residents each year, who move through six years of coordinated training in psychiatry and neurology at

NYU Langone’s Tisch Hospital and Hospital for Joint Diseases, Bellevue Hospital Center, Manhattan Psychiatric Center, Rockland Psychiatric Center, and the VA NY Harbor Health Care System. Trainees gain experience in the prevention, detection, and treatment of acute and chronic psychiatric and neurological illnesses in inpatient and ambulatory settings, as well as in the ethical care of patients, the socioeconomics of illness, and the team approach to providing patient care.

“The ability to see the patient from two angles gives a clinician the equivalent of stereoscopic vision,” says Dr. Nadkarni.

GLOBAL MENTAL HEALTH ELECTIVE RAISES INTEREST IN PSYCHIATRY THROUGH EDUCATION

Like many developing countries, the West African nation of Ghana faces a severe shortage of mental health professionals. Fewer than 20 practicing psychiatrists there serve a population of 25 million. The NYU Langone Global Mental Health Elective aims to expand the availability of practitioners in Ghana, while providing valuable experience to psychiatry residents with an interest in global mental health and underserved populations.

Now in its third year, the elective brings selected residents to Accra, Ghana, for up to four weeks. Participants spend half their time teaching medical students, residents,

and rotating house officers at the University of Ghana School of Medicine and Dentistry (UGSMD) and the other half in clinical observation at two psychiatric hospitals. On their return, visiting residents present their work at NYU Langone and document the experience in blog posts or scholarly papers.

In their teaching capacity in Ghana, the NYU Langone residents work to supplement existing psychiatric education at UGSMD and to elevate Ghanaian medical students’ perception of psychiatry as a potential career choice. “Our ultimate goal is to bolster the pipeline of future trainees, with the hope that more will choose careers in

psychiatry,” says Carol A. Bernstein, MD, associate professor of psychiatry and neurology and director of the NYU Langone Psychiatry Residency Training Program, who has also traveled to Ghana with residents.

Dr. Bernstein developed the elective in collaboration with the chair of psychiatry at UGSMD and two NYU Langone residents who, in 2014, became the elective’s first participants. Since that time, a dozen residents and fellows have gone through the program, teaching more than 300 Ghanaian medical students and house officers.

UNIQUE RESIDENCY PROGRAM TRAINS PRACTITIONERS IN CHILD AND ADOLESCENT PSYCHIATRY

NYU Langone's Residency in Child and Adolescent Psychiatry is one of the largest of its kind in the United States. The Accreditation Council for Graduate Medical Education-accredited two-year program, which accepts 10 new residents annually, prepares child and adolescent psychiatrists to translate cutting-edge research into outstanding clinical care. "Our residents work with patients from a broad range of socioeconomic and cultural backgrounds, who present with every variety of medical, neurological, and psychiatric pathology," says program director Rahil R. Jummani, MD, clinical assistant professor of psychiatry and child and adolescent psychiatry.

Supervised by faculty from NYU Langone's child and adolescent psychiatry program, residents gain clinical experience at Bellevue Hospital Center in child and adolescent inpatient services, the Child Comprehensive Pediatric Psychiatric Emergency Program (the only pediatric psychiatric emergency department in New York City), and the Pediatric Neurology/Neurodevelopment Clinic, among other rotations. In addition, there are varied clinical opportunities at Tisch Hospital,

Rusk Rehabilitation, the Stephen D. Hassenfeld Children's Center for Cancer and Blood Disorders, the Child Study Center, and the Rockland Children's Psychiatric Center, where residents learn to treat some of the most troubled and disruptive children in New York State.

The program offers residents a wide range of electives in partnership with New York City's juvenile justice system, a school-based telepsychiatry program,

NYU Langone's affiliated research institutions, and a global psychiatry training program in Ghana.

"At NYU Langone, we recognize the potential role of child and adolescent psychiatrists as agents of social change," Dr. Jummani explains. "Besides training residents to serve as clinicians, we prepare them to function as educators, consultants, administrators, and community leaders."



↑ Rahil R. Jummani, MD, Helen L. Egger, MD, and Sarah Kuriakose, PhD

TRAINING FOR ASPIRING PSYCHOLOGISTS ENCOMPASSES THE YOUNGEST PATIENTS

The Psychology Training Program at NYU Langone's Child Study Center is staffed by more than 40 child and adolescent psychologists, neuropsychologists, and psychiatrists. The program—one of the most competitive in the United States—teaches trainees to draw from a wide range of therapeutic modalities. "Besides the quality of our nationally recognized faculty members, our breadth of training draws aspiring psychologists here," says Lori K. Evans, PhD, clinical assistant professor of child and adolescent psychiatry

and director of Psychology Training at the Child Study Center. Trainees experience an extensive didactic program and have constant exposure to active research. In their third year, trainees participate in externships at one of the Child Study Center's three locations (New York City, Long Island, or New Jersey), where they gain practical experience in outpatient cognitive behavioral therapies.

The American Psychological Association accredited internship program accepts four applicants annually. For the 2016–2017

academic year, more than 120 candidates applied. Serving on the clinical staff of the Child Study Center and Bellevue Hospital Center, the psychology interns gain diverse inpatient and outpatient clinical experience and have opportunities to specialize in research-based treatment modalities and assessment techniques. In addition, the Child Study Center's postdoctoral psychology fellowships provide intensive training in a concentrated area of interest. More than 400 candidates applied for this year's 14 slots.

CLINICAL STUDY SHOWS SIGNIFICANT IMPROVEMENTS IN STUDENTS' SLEEP

New York University's undergraduate minor in Child and Adolescent Mental Health Studies (CAMS) was established in 2006 by Jess P. Shatkin, MD, MPH, professor of child and adolescent psychiatry and pediatrics and vice chair of Education. The popular program, which was the nation's first undergraduate minor in child and adolescent psychiatry, now has 44 courses and an annual enrollment of 4,000, encourages students to pursue careers in the area of child and adolescent mental health, while increasing their general awareness of mental health—including their own.

For college students, restless nights are all too common. Up to 70 percent report insufficient sleep, 50 percent report daytime sleepiness, and more than 30 percent report severe sleep difficulties—percentages that have risen steadily over the past two decades. The potential consequences are alarming. Inadequate sleep negatively affects cognitive, physical, and psychological health and has been associated with poor academic achievement, motor vehicle accidents, substance abuse, and obesity.

Encompassing a wide array of subjects taught by NYU Langone clinicians and researchers, the CAMS curriculum covers sleep through a semester-long course entitled "While You Were Sleeping." The course has been the subject of a clinical study of 145 students, which has been submitted for publication. Research led by Dr. Shatkin and Argelinda Baroni, MD, assistant professor of child and adolescent

psychiatry, investigated the course's effect on students' sleep, mood, and level of anxiety. Students who took the course reported significant improvements in sleep hygiene, perceived sleep latency, depression, anxiety, and circadian sleep phase compared to a control group. They also increased total sleep time by an average of 15 to 20 minutes. Positive results persisted two months after the course ended.

Encouraged by these findings, Dr. Shatkin and Dr. Baroni developed the Rapid Education in Sleep Training (REST) program—a stand-alone, four-hour workshop on sleep improvement techniques—launched in November 2016 for students who have not taken other coursework in sleep. As part of a new study, REST participants will use wearable devices to track their sleep patterns and will complete written logs and questionnaires. If the workshops prove successful, they may be expanded and offered on a continuing basis and they may also be incorporated into a smartphone app. "The prevalence of poor and insufficient sleep among college students is a serious public health problem for which effective interventions are urgently needed," Dr. Shatkin says. "We're working to develop a model that can be used on campuses everywhere."

PSYCHIATRY FELLOWSHIPS

Offering highly focused postdoctoral training in key subspecialties:

- Addiction Psychiatry
- Forensic Psychiatry
- Geriatric Psychiatry
- Psychosomatic Medicine
- Reproductive Psychiatry/Women's Mental Health
- Public Psychiatry
- Child and Adolescent Psychiatry

CHILD AND ADOLESCENT PSYCHIATRY FELLOWSHIP

NYU Langone's Child and Adolescent Psychiatry Fellowship program is one of the nation's oldest, accepting 10 candidates per year.

PSYCHOLOGY POSTDOCTORAL FELLOWSHIPS IN CHILD AND ADOLESCENT PSYCHIATRY

- Autism Spectrum Disorder
- Pediatric Neuropsychology
- Anxiety and Mood Disorders
- Empirically Derived Assessment and Treatment

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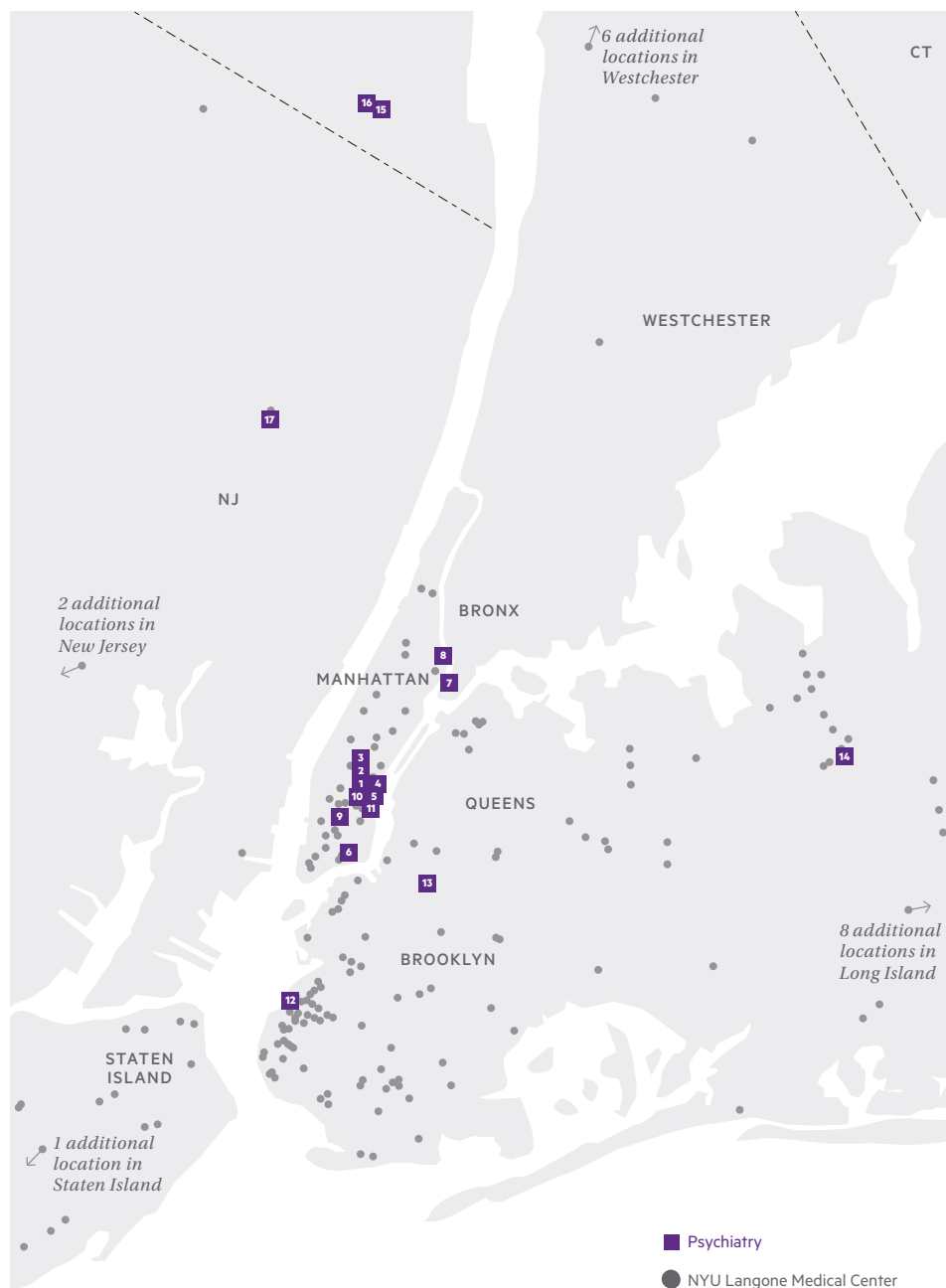
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- 2**
Child Study Center at NYU Langone
One Park Avenue
New York, NY
- 3**
Steven A. Cohen Military Family Clinic
One Park Avenue
New York, NY
- 4**
NYU Langone Medical Center Tisch Hospital
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New York, NY
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New York, NY
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1,519 Beds	100 Operating Rooms	145,907 Emergency Room Visits	68,602 Patient Discharges	3,850,000 Outpatient Faculty Practice Visits	9,649 Births	
3,584 Physicians	4,899 Nurses	574 MD Candidates	80 MD/PhD Candidates	233 PhD Candidates	397 Postdoctoral Fellows	1,472 Residents and Fellows
4,381 Original Research Papers**	550,500 Square Feet of Research Space	\$334M NIH Funding	\$328M Total Grant Revenue			

*Numbers represent FY16 (Sept 2015–Aug 2016) and include NYU Lutheran
**Calendar year 2015

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