



Parents of children with autism are among the families who could benefit from taking part in new research studies funded by Recovery Act grants to Vanderbilt Kennedy Center researchers.

Disabilities Targeted by ARRA Grants BY JAN ROSEMERGY

Parents of children with disabilities are being employed to teach stress management techniques to other parents whose children have disabilities in a comparative study that is being funded by the American Recovery and Reinvestment Act (ARRA). This is but one example of innovative ARRA-funded research grants awarded to VKC investigators that directly or indirectly will benefit individuals with disabilities and their families.

“The competition nationally for the Recovery Act funds available through the National Institutes of Health was fierce,” said Elisabeth Dykens, Ph.D., VKC director. “That the Vanderbilt Kennedy Center and Vanderbilt overall received so many ARRA grants is indicative of our creative research approaches and the exceptional quality of our faculty and research infrastructure.”

ARRA funding awarded during Spring-Summer 2009 totals 36 grants to 27 VKC researchers. Topics ranged from studies of genetic mechanisms, to projects to develop innovative research methods, to studies of interventions for children or parents.

Genetics of Autism

The National Institute of Mental Health made five awards, totaling approximately \$8 million in fiscal year 2009, for a 2-year collaborative project to use deep genomic sequencing to study the genetic architecture of autism. The project is a partnership between two large-scale gene sequencing centers at Baylor College of Medicine and the Broad Institute and a network of research labs focused on the genetics of autism brought together by the Autism Genome Project and the Autism Consortium. VKC investigator **James Sutcliffe**, Ph.D., associate professor of molecular physiology and biophysics, received one of these grants.

“This grant gives us the first real opportunity to survey a large number of genes that function within biological pathways or cellular processes implicated in autism,” Sutcliffe said. “While several large studies have surveyed for *common* gene variants and asked whether they predispose for risk, this study permits us to pursue the hypothesis that individually *rare* gene variants, or mutations, confer susceptibility for autism. There are likely to be many genes involved and different gene variants in different individuals. Therefore, only a very large-scale project such as this will make substantial progress in this area in such a short time period.”

The genetics of autism also is the focus of an ARRA Challenge Grant to **Randy Blakely**, Ph.D., Allan D. Bass Professor of Pharmacology, and **Jeremy Veenstra-VanderWeele**, M.D.,

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Speeding Discovery Through BioVU BY JAN ROSEMERGY

“**B**ioVU is an enormously powerful tool for discovery science—and now this DNA databank is expanding to include children,” announced Louis Muglia, M.D., Ph.D., vice chair for research affairs in the Department of Pediatrics, Vanderbilt School of Medicine, and VKC associate director.

Various groups of people have different chances of getting a disease or disorder, and this is sometimes due to genetic make-up. Instead of discarding blood left over from medical tests, DNA can be extracted and linked with anonymous medical information of patients to learn why some groups of people are affected while others are not.

“A significant portion of children with Down syndrome have heart disease, for example, but a significant portion do not,” said Muglia. “Why is that? If a researcher identified an important genetic variation in the population that may place a child at risk for heart disease, it would be possible to look for that genetic variation in the DNA of children with”

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Director’s Message Working Together



Elisabeth Dykens

Among the most important lessons I have learned as the new Director of the Vanderbilt Kennedy Center (VKC) is that the Center is strong because talented and diverse people work together. Although “working together” seems trite or clichéd, it represents

what VKC faculty, staff, trainees, families, and community partners do each day.

While no secret formulas exist for successfully working together, there may be some key ingredients. A first involves a *jointly held mission*. Simply put, the mission of the Vanderbilt Kennedy Center is to facilitate innovative discoveries and programs that make positive differences in the lives of persons with developmental disabilities and their families. As important today as when the VKC was founded 44 years ago, this mission takes on added urgency when we appreciate that, according to the latest figures, fully 1 in

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DISABILITIES TARGETED *from page 1*

assistant professor of psychiatry. Rare, functional gene variants that lead to hyperfunction of the serotonin transporter (SERT) have been associated with a specific subset of autism spectrum traits: rigid-compulsive behaviors and sensory aversion. The Blakely and Veenstra-VanderWeele labs are working with a novel, transgenic mouse model expressing the most common of these SERT variants.

“This award focuses on a new mouse model of autism traits derived from the discovery of rare coding variants in the serotonin transporter,” said Blakely, “work originally pursued in collaboration between Jim Sutcliffe’s and my lab.”

Based on exciting preliminary evidence that mice expressing Ala56 SERT exhibit multiple behavioral and biochemical phenotypes, this 2-year project will allow the research team to extend their studies and dissect the impact of SERT hyperfunction.

Lower Urinary Tract Genetics

Understanding the genetic pathways that control development of innervation in the lower urinary tract during fetal and postnatal development is essential for preventing and treating conditions such as bladder dysfunction seen in neural tube defects or pelvic neural damage arising from other causes.

Michelle Southard-Smith, Ph.D., associate professor of medicine, received a Challenge grant to search for genes that control nerve development in the lower urinary tract, which includes all parts of the urinary system other than the kidneys.

“Our studies will generate a comprehensive resource of gene expression patterns that can be mined by investigators interested in innervation of the urogenital tract during development or in disease situations,” Southard-Smith said. The research is aimed at advancing biomedical research that seeks to restore bladder innervation across a range of clinical settings, including children with spina bifida.

Sleep-Related Measures

Difficulty falling or staying asleep affects 1-6% of children generally and up to 50-75% of children with neurodevelopmental or psychiatric disorders, and it is a common reason why parents seek medical intervention. Effective treatments, whether pharmacologic, behavioral, or both, are an opportunity to improve not only sleep but also daytime functioning of the child and family. While polysomnography is the “gold standard” for measuring sleep, it is cumbersome, laboratory-based, high-cost, and not well tolerated by all children, especially those with tactile sensitivities or anxiety.

Beth Malow, M.D., M.S., professor of neurology and medical director of the Vanderbilt Sleep Disorders Center, has been investigating sleep disorders in autism and the use of melatonin as an intervention. Malow received an ARRA supplement to Vanderbilt’s Institute for Clinical and Translational Research to develop wireless, comfortable, home-based, and low-cost tools that can be used as outcome measures of sleep patterns in

pediatric studies, specifically in this grant with children with autism spectrum disorders (ASD), ages 4-10, and with age-matched peers. This is a multisite study with the Kennedy Krieger Institute in Maryland and the University of Colorado, which, like Vanderbilt, are members of the Autism Treatment Network.

Malow also has received an ARRA-funded supplement for a project already in progress to study the use of melatonin as a treatment in children with ASD with sleep disorders. She is partnering with Dr. Dave Hachey and colleagues in Vanderbilt’s Mass Spectrometry Core to measure levels of melatonin and related precursors and metabolites, such as serotonin, in children with ASD. Once developed, these mass spectrometry assays would be applicable to a wide range of neurodevelopmental disorders.



COURTESY OF VKC PSYCHOPHYSIOLOGY LAB

Brain imaging methods like those illustrated here will be used in a study investigating sensory integration treatment.

Autism Interventions

The National Institutes of Health awarded more than 50 ARRA-supported autism research grants, one of which was received by **Stephen Camarata**, Ph.D., and **Mark Wallace**, Ph.D., professors of hearing and speech sciences. They are evaluating the effects of sensory integration treatment on communication and social skills in children with ASD. Sensory integration treatment is a widely used but little studied treatment for sensory integration deficit, a controversial but widely used diagnostic classification within the autism spectrum.

The project involves a comparison of two interventions, sensory integration or pivotal response training. The researchers will use behavioral and neuroimaging measures of multisensory processing before and following the interventions to determine whether changes in multisensory processing are associated with the interventions. Multisensory processing refers to how the brain combines information from vision, hearing, and touch.

“Autism is a challenging disability, and it is vitally important that each child’s valuable learning time is used efficiently and effectively,” Camarata said. “This research will investigate whether sensory integration treatment improves core symptoms of autism and whether it has an impact on multisensory processing, which is also often disrupted in autism.”

Parent-Focused Interventions

As many as 20% of U.S. families are raising children with developmental disabilities.

“There are decades and decades of work describing remarkably high levels of stress, anxiety, and depression in parents of children with disabilities,” said **Elisabeth Dykens**, Ph.D., professor of psychology and VKC director, “yet there are no evidence-based interventions to help these at-risk parents. I was itching to do something about it, instead of just continuing to describe it.”

Dykens received a 2-year Challenge Grant to compare two methods of stress reduction in parents of children with developmental disabilities, a Positive Parent Support model and the other a technique called Mindfulness-Based Stress Reduction. The study will involve 400 parents randomly assigned to one of the two stress reduction interventions, which will be led by parents of children with disabilities hired and trained to conduct this research. Data on parental health, positive and negative psychological states, and biomarker indices of stress will be collected before, midpoint, and following stress reduction training.

Treating parents of children with emotional or behavioral problems is the focus of the Challenge Grant received by **Judy Garber**, Ph.D., professor of psychology. Mental health disorders in parents (e.g., depression) significantly increase the risk of psychiatric problems in children, yet most parents of children receiving mental health services do not get treatment for their own problems. The aim of this project is to increase adherence to recommendations for treatment for parents experiencing psychiatric problems.

In this study, 200 parents of children (7-17 years old) receiving psychiatric treatment in community mental health centers will be randomly assigned to either an Enhanced Motivation Intervention or an information-only comparison group. In addition to monitoring compliance with treatment recommendations, evaluations before and several months after the intervention will assess changes in parents’ and children’s mental health.

“Our goal is for more parents in need of mental health services to follow the recommendation to seek and complete treatment, which then hopefully will positively benefit their children as well,” Garber said.

Summarizing the benefits of Recovery Act grants at Vanderbilt, Chancellor Nicholas Zeppos wrote in a *Tennessean* editorial that “these research investments are an important part of our economic recovery that will pave the way for future scientific breakthroughs as well as the next generation of researchers who will make them.”

“The Vanderbilt Kennedy Center is proud to play a part in our nation’s investment in research that will benefit individuals with disabilities and their families,” said VKC Director Dykens. ■



SPEEDING DISCOVERY *from page 1*



MARY DONALDSON

Kyle Brothers, M.D., third from left, talks with a family about taking part in the BioVU DNA databank, which has been expanded to include children treated at Vanderbilt.

Down syndrome, a group that is at high risk. If we have in the BioVU database a reasonable collection of DNA for this group, genetic studies could be done without having to recruit research participants, which might take several years to do in adequate numbers. The BioVU DNA database can speed the rate of discovery, in turn accelerating our ability to prevent or treat disorders.”

Adult DNA Databank

Planning for BioVU in Vanderbilt’s adult patients began in 2004, and samples have been collected since 2007. The effort was led by Dan Roden, M.D., assistant vice chancellor for personalized medicine and director of the Institute of Experimental Therapeutics, Daniel Masys, M.D., professor and chair of biomedical informatics, and Jill Pulley, director of research support services.

The databank takes the small amount of blood left over from regular laboratory test samples, pulls out the DNA, and stores it in a genetic library. A patient’s medical records are de-identified, “cleaned” of identifying information, but the description of medical events is retained and linked with the DNA by an anonymous code. Each person’s privacy is protected.

An adult treated at Vanderbilt may choose not to take part in the DNA databank. All patients sign a Consent to Treatment form. Adults who do not want their blood used may indicate on that form that they do not want to participate. Doctors and nurses do not know if a patient has opted out, and patients receive the same treatment regardless of their decision. Once an adult opts out, the records system retains this preference and prevents that patient’s blood samples from being used for research.

Children’s DNA Databank

When BioVU was launched in 2007, the decision was made to begin with adults, to assure that the

system worked well and to provide additional time to explore the ethical issues of collecting children’s DNA in the databank and the views of families and the community. With the help of Ellen Wright Clayton, M.D., J.D., director of the Vanderbilt Center for Biomedical Ethics and Society, and others, public opinion about adding children to the BioVU database was carefully surveyed, and findings were positive. Initial pilot testing began in Children’s Hospital in late 2009.

Parents of children treated there may choose not to

participate by indicating so on the Consent for Treatment form.

“The diversity of individuals represented in the database is terrific,” Muglia said. “It allows us to ask scientific questions about typically developing children, atypically developing children, children with well-defined syndromes, or even children whom we may realize later, through research, fall into a syndrome as yet unidentified.”

The potential is great, Muglia emphasized. “With genetic samples linked to pediatric patient records, we can begin to do studies, for example, that integrate neuroimaging information with genetic variation. We will progress more rapidly, especially in discovering genetic contributors to common and uncommon conditions. Because the database will be so large, even relatively rare disorders will be well-represented.”

To date, the BioVU adult accrual of DNA samples has reached over 72,000, which makes it one of the largest biobanks in North America, Muglia said. The anticipated capacity is 300,000 samples, of which about 50,000 will be from children. The children’s DNA databank is expected to grow at a rate of about 15,000 samples per year.

Other biobank programs at medical centers and children’s hospitals have collected samples related to specific diseases or disorders, e.g., certain types of cancer, diabetes, or autism. By contrast, Vanderbilt’s model allows a wealth of research questions to be explored.

“Typically in genetic research, we compare individuals with condition X and a control group of individuals without that condition and look at genetic variation. That’s looking at one disorder at a time,” Muglia explained. “Using BioVU, if we identify a gene variant that we think may play a role in a certain condition, we can look at all the samples in the database and ask what conditions seem to be associated with that variation. With this approach, we can be

investigating multiple disorders simultaneously.”

The National Institutes of Health has funded a Shared Instrumentation Grant to purchase the equipment needed to extract DNA from small pediatric samples.

“This funding is indicative of the importance of this approach as well as its application to the pediatric population,” said Muglia.

The genetics of autism is among the areas of Vanderbilt expertise that can be investigated with this technology and the BioVU DNA pediatric databank.

Muglia expressed appreciation for “the incredible institutional investment” involved in envisioning and implementing BioVU, including the crucial contributions of bioinformatics, genetics, translational science, and biomedical ethics. ■

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Project of VKC UCEDD and

Tennessee Council on

Developmental Disabilities



Award-Winning Hispanic Outreach Program Expands Services BY COURTNEY TAYLOR

The VKC Hispanic Outreach Program was honored by the Association of University Centers on Disabilities (AUCD) with its *Multicultural Award for Leadership in Diversity*. The Award was presented at the Association's 2009 Annual Meeting in Washington, D.C., in November, in recognition of the development, collaboration, and expansion of *Camino Seguro* and *Camino Seguro West*, a database of Tennessee's disability and social service agencies who have Spanish-speaking staff. The project has made services more accessible to Spanish-speaking families and serves as a model for other states. The award also recognized the University of Tennessee Boling Center for Developmental Disabilities for its efforts to catalogue services in West Tennessee. The development of *Camino Seguro East* is well underway.

Elise McMillan, J.D., VKC UCEDD co-director, accepted the award for the Vanderbilt Kennedy Center, and Dr. Fred Palmer, M.D., Boling Center director, accepted the award for the Boling Center. The Tennessee Council on Developmental Disabilities is a partner in the Hispanic Outreach Project.

Spanish Radio

Agencies listed in *Camino Seguro* are showcased weekly on three local Hispanic radio stations: *La Sabrosita*, *La Ley*, and *La Nueva Activa*. Each week, for an hour, a Spanish-speaking representative from one of the agencies informs listeners about the services offered by their agency.

"The appearances on the radio station programs are very good ways to let the Spanish-speaking families in Nashville know about what is out there and available," said Cecilia Melo-Romie, Statewide



The VKC Hispanic Outreach Program received the AUCD Multicultural Award for Leadership in Diversity. Left to right: Michael Gamel-McCormick (AUCD), Carolina Meyerson (VKC), Claudia Avila-Lopez (VKC), Luisa Ramirez de Lynch (UT Boling), Tamar Heller (AUCD)

Hispanic Outreach Coordinator of DIDS (Tennessee Division of Intellectual Disabilities Services). "We have reached people we could not have reached, and so many of those families are in great need of services and just have not known how to begin, or have been scared to begin because they are not confident in their use of the English language."

Parent Support Group

The Hispanic Outreach team coordinates a support group for Spanish-speaking parents of children with disabilities. Each week, approximately 50 members come together to share experiences, joys, and challenges, and to receive information through presentations. Past presenters have included representatives from STEP (Support and Training for Exceptional Parents), the Metro Police Department, and Outlook Nashville. The support

group has grown and evolved and activities are extending beyond the traditional support group setting and into the community.

"Last year all of the families attended the opening ceremony of Special Olympics Tennessee together," said Carolina Meyerson, Hispanic Outreach Specialist. "We also held a Christmas Party where we had over 150 people! We had a raffle and lots of food and drink. Santa was there so the kids could have their pictures taken. It has been really nice to see the group bonding and participating in social activities in the community together."

Spanish-speaking families also are beginning to feel more comfortable participating in other Vanderbilt Kennedy Center programs. The Ann and Monroe Carell Jr. Families First Program, a monthly workshop series for parents of young children diagnosed with an autism spectrum disorder, has begun to

include an interpreter so that Spanish-speaking families can benefit from the trainings. Spanish-speaking siblings also are beginning to participate in SibSaturdays, a program for siblings who have a brother or a sister with a disability.

"I think it is great that these families are feeling more comfortable and seeing the Vanderbilt Kennedy Center as a safe and welcoming place," said Melo-Romie. "It is difficult when you don't know the language very well to feel a sense of belonging. The support group and all of the efforts we are putting forth that let them know that their needs are important are paying off. They know we are here to help and that is a very important role for us to play."

For information on the activities of the Hispanic Outreach Program, Tennessee Disability Pathfinder, contact (615) 479-9568, cecilia.melo-romie@vanderbilt.edu. ■

Trained Advocates Support Parents BY MEGHAN BURKE

Navigating the special education process can be a difficult, tedious, and emotionally charged process for many families of children with disabilities. Attending a school meeting to discuss needed services for their children, parents of children with disabilities often encounter difficulty retaining appropriate educational supports. Special education regulations are constantly changing at the national, state, and local levels. Trying to keep up with such changes and, furthermore, understanding how such changes affect actual service delivery can be a full-time challenge. In addition to understanding policy changes, the emotional involvement of advocating for one's child adds more difficulty to securing services.

The Volunteer Advocacy Project trains volunteer advocates to help support parents of



Lori Swatzell, Elizabeth Sims, and Lisa Thomas, Volunteer Advocacy graduates from Johnson City

children who need special education services. The role of the advocate is to provide instrumental support to parents by helping them understand the special education system and their rights, providing affective support, and building emotional strength.

In October, 28 graduates of the Volunteer Advocacy Project joined the 28 past graduates, for a total of 56 trained special education advocates across Tennessee. This was the largest training group to date, with 3 graduates in Johnson City, 5 in Jackson, 6 in Memphis, and 14 in Nashville.

For the Fall 2009 session, the participants attended five Friday and five Saturday sessions to learn about special education policy and advocacy skills. Speakers from various agencies included Vanderbilt faculty, and representatives of the Disability Law and Advocacy Center of Tennessee, The Arc of Tennessee, and The Arc of Davidson County.

Training topics included research-based interventions, extended school year services, eligibility and individualized education plans (IEPs), disability categories and testing, and non-adversarial advocacy techniques. *Continued on page 5*



On-Line Training for Early Autism Screening Launched BY JAN ROSEMERGY



A wide variety of professionals can now become certified for independent use of the STAT™ (Screening Tool for Autism in Toddlers & Young Children) through successful completion of a new web-based STAT Training Tutorial.

The STAT is an empirically derived, interactive measure developed to screen for autism spectrum disorders (ASD) in children between 24 and 36 months of age. It consists of 12 activities that assess the areas of play, communication, and imitation,

and takes about 20 minutes to administer.

The STAT was designed for use by community professionals—including psychologists, pediatricians, speech-language pathologists, preschool teachers, and early intervention specialists—who work with young children in assessment or intervention settings. It has been used nationally and internationally in clinical and research programs attempting to identify the earliest signs of autism.

In Tennessee, the instrument has been incorporated into pediatrician trainings, dubbed “STAT-MD” trainings, aimed at reducing waits for autism identification in young children. While early diagnosis and intervention are thought to be crucial for children with ASD, it is not uncommon for parents to wait months to receive an appropriate diagnosis. To address this service gap, a team of Vanderbilt researchers have partnered with the Tennessee Chapter of the American Academy of Pediatrics to incorporate the STAT into community pediatric practices across the state.

The STAT Test Kit includes the User’s Manual,

Test Materials, Test Protocols and Scoring Sheets, and the web-based Training Tutorial. The STAT Tutorial provides thorough instruction on item administration and scoring, using numerous video examples and offering multiple opportunities for practice and feedback. Information about interpreting STAT results and explaining results to parents is also provided.

Successful completion of the Tutorial Post-Test earns certification for independent use of the STAT as well as Continuing Education Credits for psychologists and physicians.

The STAT was developed by Wendy Stone, Ph.D., professor of pediatrics and TRIAD director, and by Opal Ousley, Ph.D., assistant professor of psychiatry and behavioral sciences at Emory University School of Medicine.

One-day STAT Training Workshops also are available at Vanderbilt University.

For more information or to order a STAT Test Kit, visit TRIAD.vanderbilt.edu/STAT, call (615) 322-6533, or email: STAT@vanderbilt.edu. ■

TRAINED ADVOCATES *from page 4*

The training was held at the Vanderbilt Kennedy Center with distance sites at East Tennessee State University (Johnson City), the University of Tennessee Boling Center (Memphis), and West Tennessee Healthcare (Jackson). Using video-conferencing technology, it is now possible to train advocates across the state to provide instrumental and affective support for families of students with disabilities.

With the help of The Arc of the Mid-South, The Arc of Davidson County, and STEP (Support and Training for Exceptional Parents), the new graduates will shadow advocates at an IEP meeting. By shadowing a seasoned advocate, the graduate should better learn the role of the advocate in supporting families of students with disabilities. Subsequently, each graduate will be linked with four families of students with disabilities. The graduates will work (for free) with these families to ensure that their children receive a free, appropriate public education. Depending upon the site, STEP or a local chapter of The Arc will link the graduate with four families.

The first 2010 Volunteer Advocacy training session began in January and continues through the end of March. The training takes place at the Vanderbilt Kennedy Center, with distance sites at East Tennessee State University (Johnson City), West Tennessee Healthcare (Jackson), and the Chattanooga Area Resource and Education.

For information, please contact Meghan Burke, Coordinator, at (615) 585-1420 or meghan.m.burke@vanderbilt.edu. ■

Evaluating Medication for Use in Fragile X Syndrome and Autism BY JAN ROSEMERGY



Vanderbilt University is taking part in clinical trials of a new medication for use in fragile X syndrome and autism spectrum disorders (ASD).

Fragile X is the most common cause of inherited intellectual disability and is the most common known genetic cause of autism spectrum disorder. People with both conditions sometimes have difficulty managing their moods and behavior.

The purpose of these clinical trials is to evaluate a new medication for use in fragile X syndrome and ASD to determine

whether it is helpful in treating moodiness, irritability, tantrums, aggression, or other symptoms. These trials also will assess whether the medication is safe for and tolerated by people with fragile X syndrome or ASD.

Taking part in the studies will involve 6 to 8 visits to the doctor’s office over a 14-week period. A blood draw is taken during some of the visits.

“These studies are exciting because they translate laboratory findings into the clinic,” said Jeremy

Veenstra-VanderWeele, M.D., assistant professor of psychiatry and pediatrics and principal investigator for the Vanderbilt site. “Arbaclofen shows significant effects in the mouse model of fragile X syndrome. These studies will test whether these effects are also seen in children and adults with fragile X syndrome or autism spectrum disorders.”

Individuals or families can learn more about this study, sponsored by Seaside Therapeutics, at clinicaltrials.gov or by calling (615) 936-3288. ■



Genetics of ADHD

BY BILL SNYDER

Researchers at Vanderbilt Medical Center have found evidence that genetic variations affecting three different brain chemicals may contribute to the three types of attention-deficit hyperactivity disorder (ADHD) that clinicians recognize.

The researchers previously found that a variant of a gene that produces a protein which inactivates the brain chemical norepinephrine was associated with the predominantly “inattentive” type of ADHD. Other findings have indicated that genetic variation targeting the brain chemical dopamine associate with the predominantly “hyperactive and impulsive” type.

Now, in the *Journal of Neurodevelopmental Disorders*, graduate student Brett English, working with the lab of VKC investigator Randy Blakely, Ph.D.,



Brett English and Randy Blakely

and their colleagues, report a link between a gene controlling the neurotransmitter acetylcholine and the “combined” type of ADHD, which is characterized by both inattention and hyperactivity/impulsivity.

Although further research is needed to confirm the Blakely group’s finding, the work could lead to better treatments for ADHD, tailored for each subtype, said Blakely, the Allan D. Bass Professor of Pharmacology and director of the Vanderbilt Center for Molecular Neuroscience.

Hyperactivity is often treated with drugs like Ritalin, which are thought to act primarily by blocking inactivation of dopamine to increase the supply of this brain chemical. A newer ADHD drug, Strattera, blocks inactivation of norepinephrine.

Currently, no FDA-approved drug targets the synthesis or destruction of acetylcholine as a path to treating ADHD. Such medications are used for the treatment of Alzheimer’s disease. However, these medications have limited utility due to side effects.

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Leading the Vanguard of Discovery

Sohee Park, Ph.D.

Professor of Psychology and Psychiatry
Vanderbilt Kennedy Center Investigator
Joined Vanderbilt Kennedy Center 2002



Research Interests

Research in Park’s lab focuses on understanding the neurobiological bases of schizophrenia and related conditions. Current projects aim to elucidate cognitive-perceptual and affective functions in schizophrenia, neurobiological underpinnings of creativity, and social consequences of neurocognitive abnormalities. Park uses diverse methods and techniques, including cognitive and social psychological paradigms, functional MRI, diffusion tensor imaging, near-infrared optical imaging, and hormonal assays to understand the complex relationships among behavior, brain structure, and function.

Principal Investigator

- Etiology of Working Memory Deficits in Schizophrenia, National Institute of Mental Health
- Social Consequences of Neurocognitive Deficits, National Alliance for Research on Schizophrenia and Depression
- Neurocognitive Consequences of Cannabis Use, National Institute on Drug Abuse
- Components of Working Memory Deficits in Schizophrenia, National Institute of Mental Health

Clinical Interests

Park’s clinical interests involve individuals with schizophrenia or bipolar disorder as well as individuals at risk for psychosis (e.g., relatives of people with psychosis, cannabis users). Overall she is interested in individual differences in cognition and social functions.

Honors and Awards

- American Psychological Association Dissertation Research Award, 1990
- International Congress on Schizophrenia Research, Young Investigator Award, 1991
- NARSAD Young Investigator Award, 1991, 1996
- Senior Scientist Award, 10th Biennial Winter Workshop on Schizophrenia, 2000
- Honorable Mention, Klerman Award from NARSAD, 2000
- Joseph Zubin Memorial Award for Early Career Contribution to Psychopathology, 2002
- NARSAD Independent Investigator Award, 2004

Selected Publications

- Gibson, C., Folley, B. S., & Park, S. (2009). Enhanced divergent thinking and creativity in musicians: A behavioral and near-infrared spectroscopy study. *Brain and Cognition*, 69, 162–169.
- Thakkar, K. N., Brugger, P., & Park, S. (2009). Exploring empathic space: Correlates of perspective transformation ability and biases in spatial attention. *PLoS One* 4(6), e5864.

Lee, J., Folley, B. S., Gore, J. C., & Park, S. (2008). Origins of spatial working memory deficit in schizophrenia: An event-related fMRI and near-infrared spectroscopy study. *PLoS One*, 3(3), e1760.

Park, S., Matthews, N. L., & Gibson, C. (2008). Imitation, simulation and schizophrenia. *Schizophrenia Bulletin*, 34(4), 698-707.

Tadin, D., Kim, J., Doop, M. L., Gibson, C., Blake, R., Lappin, J. S., & Park, S. (2006). Weakened center-surround interactions in visual motion processing in schizophrenia. *Journal of Neuroscience*, 26, 11403-11412.

Education

B.A., 1979-1982, Natural Sciences Tripos, University of Cambridge, Cambridge, UK
M.A., 1983-1985, Psychology, Columbia University, New York, NY
Ph.D., 1985-1991, Psychology, Harvard University, Cambridge, MA

Attraction to Developmental Disabilities Research

We have been studying neurocognitive deficits of adults with schizophrenia and schizotypal personality for almost two decades. To determine the source of these problems, it is abundantly clear that we need to look at developmental antecedents. I am very much interested in neurocognitive and social changes during adolescence because this is the period during which the behavioral signs of psychosis emerge.

We also are aware that many developmental disabilities lead to psychiatric problems in adulthood, but that these difficulties are not yet adequately addressed. We would like to be able to study social and emotional consequences of neurocognitive deficits in these individuals.

Lastly, I do have a long-standing interest in developmental psychology. I originally started graduate training at Columbia University in cognitive development, looking at the acquisition of the color concept in infants in two language groups. Although I changed my research direction, my early developmental training has been extremely helpful and influential in the way I approach research problems.

Reasons for Kennedy Center Membership

The Vanderbilt Kennedy Center is a truly unique and rich source of research support and information, and also of ideas and inspiration. The network of research and clinical labs connected with the Center provides investigators with vast opportunities for innovative collaborations. ■



Accolades BY AMY POTTIER

Four VKC researchers have been elected **Fellows of the American Association for the Advancement of Science (AAAS)** by their peers in recognition of their distinguished efforts to advance science or its applications. They are: **Randy Blakely**, Ph.D., Allan D. Bass Chair in Pharmacology; **Kathryn Edwards**, M.D., Sarah H. Sell Professor of Pediatrics; **Jonathan Haines**, Ph.D., T. H. Morgan Professor of Human Genetics; and **Louis Muglia**, M.D., Ph.D., Edward Claiborne Stahlman Professor of Pediatrics. Vanderbilt now counts 39 AAAS Fellows among its faculty.

Kathleen Artman-Meeker, Special Education doctoral student (**Mary Louise Hemmeter**, Ph.D., advisor), won the J. David Sexton Doctoral Student Award from the Council for Exceptional Children's Division for Early Childhood.

Claudia Avila-Lopez, VKC Hispanic Outreach Coordinator, has been **appointed to the Disabilities and Language Minorities Committee of the Tennessee Supreme Court's Access to Justice Commission.**



Shari Barkin, M.D.

Shari Barkin, M.D., Marian Wright Edelman Professor of Pediatrics and director of the Division of General Pediatrics, has been **selected to serve on the National Academy of Sciences Board of Children, Youth and Families.**

Camilla Benbow, Ed.D., Patricia and Rodes Hart Dean of Education and Human Development, was **elected to the Executive Committee of the National Science Board**, which sets policy for the National Science Foundation and advises the president and Congress on national science and engineering research and education policy. Benbow also **received the National Association for Gifted Children's 2009 Presidential Award.**

Leonard Bickman, Ph.D., Betts Professor of Psychology and Human Development, is **co-author of *The SAGE Handbook of Applied Social Research Methods*** (Sage, 2009).

At the Spring 2009 School of Medicine Faculty Meeting, **two VKC faculty were recognized for their mentoring.** **Randy Blakely**, Ph.D., Allan D. Bass Professor of Pharmacology and director of the Vanderbilt/NIMH Silvio O. Conte Center for Basic Neuroscience Research and the Center for Molecular Neuroscience, received the **F. Peter Guengerich Award for Mentoring Postdoctoral Fellows or Residents in the Research Setting.** **Alfred George, Jr.**, M.D., Grant W. Liddle Professor of Medicine and director of the Division of Genetic Medicine and the Institute of Integrative Genomics, received

the **Elaine Sanders-Bush Award for Mentoring Graduate and/or Medical Students in the Research Setting.**



Stephen Camarata, Ph.D.

Stephen Camarata, Ph.D., professor of hearing and speech sciences, has been **named chair of the National Institutes of Health Child Psychopathology and Developmental Disabilities Study Section.**



Bruce Compas, Ph.D.

Bruce Compas, Ph.D., Patricia and Rodes Hart Professor of Psychology and Human Development, **co-authored a report from the National Research Council and Institute of Medicine** on detecting and preventing the adverse effects of parental depression on children.

Compas also has been **appointed chair of the Psychosocial Development, Risk and Prevention Study Section of the National Institutes of Health's Center for Scientific Review.**

Kevin Ess, Ph.D., M.D., assistant professor of neurology, received a **2009 Clinical Scientist Development Award from the Doris Duke Charitable Foundation.**

Jonathan Gitlin, M.D., Physician-in-Chief of Monroe Carell Jr. Children's Hospital at Vanderbilt, James C. Overall Professor and chair of Pediatrics, was **appointed assistant vice chancellor for Maternal and Child Health Affairs and associate dean for Clinical Affairs in the School of Medicine.**



John Gore, Ph.D.

John Gore, Ph.D., Chancellor's University Professor of Radiology & Radiological Sciences and Biomedical Engineering and director of the Institute of Imaging Science, has been **named chair of a National Institutes of Health study section on medical imaging.**



Steve Graham, Ed.D.

Steve Graham, Ed.D., and **Karen Harris**, Ed.D., professors and co-holders of the Currey Ingram Chair in Special Education, were appointed **members of the Expert Working Group on Writing Development and Writing Instruction for the National Institute of Child**

Health and Human Development and the National Institute of Literacy.

Maureen Hahn, Ph.D., assistant professor of medicine, and **Gregg Stanwood**, Ph.D., assistant professor of pharmacology, **received 2009 Young Investigator Awards from NARSAD.**

Jon Kaas, Ph.D., Distinguished Professor of Psychology, **edited the new textbook, *Evolutionary Neuroscience*** (Elsevier, 2009).

Kathleen Lane, Ph.D., associate professor of special education, **co-authored *Developing Comprehensive School-Wide Intervention Programs to Prevent and Manage Antisocial Behavior: A Step-By-Step Approach*** (Guilford Press, 2009).

David Lubinski, Ph.D., professor of psychology, **won the MENSA Award for Research Excellence, Senior Investigator**, for the 2006 *Psychological Science* paper, "Tracking Exceptional Human Capital Over Two Decades," of which he was lead author.

Sarah Powell, Special Education doctoral student (**Lynn Fuchs**, Ph.D., advisor), won the **Best Dissertation Award from the Council on Learning Disabilities** for her dissertation, *Contribution of Equal-Sign Instruction Beyond Word-Problem Tutoring for Third-Grade Students with Mathematics Difficulty.*

Dan Reschly, Ph.D., professor of education and psychology, is **co-chair of the Metro Nashville Transformation Leadership Group on Students with Special Needs.** Reschly also co-presented the **B. F. Skinner Lecture in Education at the Annual Conference of the Association for Behavior Analysis International.**

Jeffrey Schall, Ph.D., E. Bronson Ingram Professor of Neuroscience and director of the Center for Integrative and Cognitive Neuroscience and the Vanderbilt Vision Research Center, **received a Chancellor's Award for Research** at the Fall Faculty Assembly.

Jeannette Stankowski, Neuroscience graduate student (**BethAnn McLaughlin**, Ph.D., advisor), **received the 2009 Graduate Student Travel Award from the Middle Tennessee Chapter of the Society for Neuroscience.**

Anne Marie Tharpe, Ph.D., professor of hearing and speech sciences, has been **named chair of the Department of Hearing and Speech Sciences and associate director of the Vanderbilt Bill Wilkerson Center.**

Jeremy Veenstra-VanderWeele, M.D., assistant professor of psychiatry, **received one of two 2009 Junior Investigator Awards from the American Academy of Child and Adolescent Psychiatry.**

Continued on page 8



DIRECTOR'S MESSAGE from page 1

5 children has a developmental disability.

Beyond a jointly held mission, working together is facilitated by breaking down traditional distinctions among people. While the VKC has many programs, funding sources, and faculty, staff, and students who are specifically devoted to research, training, or service, as much as possible we blur these distinctions. Increasingly, we also are blurring the traditional boundaries between those who receive services and those who provide such services.

Consider the following few recent examples.

A neuroscientist explores new directions.

After attending a monthly journal club on Down syndrome and talking with parent participants, a stellar neuroscientist, Aaron Bowman, Ph.D. (Neurology), developed a new research project on Down syndrome, supported by a VKC Hobbs Discovery Grant.

Parents of children with disabilities are now providing services. In my new ARRA-funded Challenge Grant, parents of children with disabilities have been hired to test a peer-mentor model of public health delivery. These parents will be leading stress-reduction groups for other parents, as well as collecting physiological, health, and other outcome data.

Staff members become students. By participating in the bi-monthly series "More About That," VKC administrative and support staff members learn more about the many VKC programs and discuss disability-related topics.



Parents of children with disabilities are peer mentors in the Parent Stress Intervention Project.

The series was launched by our training director, Terri Urbano, Ph.D., M.P.H., director of operations, Tim Stafford, and VKC UCEDD co-director, Elise McMillan, J.D.

Staff members become programmatic leaders.

Initially hired to help disseminate research and best practice information in VKC Communications, Courtney Taylor, M.Div., now also leads the VKC Disability, Religion and Spirituality program. In this role, she supervises Vanderbilt Divinity School interns, oversees the development of booklets and other materials on including persons with disabilities within faith communities, collaborates on producing and analyzing a web-based survey of the experiences of persons with disabilities in faith communities, presents nationally, and oversees a lecture series.

Students become community service providers.

Many graduate students, especially from the

Department of Special Education, have stretched beyond their student roles. They lead VKC sibling support groups, organize state-wide advocacy training for parents, conduct statewide surveys on the service needs of persons with disabilities, and serve on the Mayor's Task Force on Special Education and a statewide Task Force on Postsecondary Education for students with intellectual disabilities. These graduate students also have given numerous conference presentations and are being recognized both locally and nationally for their efforts.

Persons with disabilities, traditionally the recipients of services, become the staff members who provide services to others.

Many persons with intellectual or developmental disabilities are uniquely positioned to serve as peer mentors or research assistants in VKC-affiliated clinics, camps, and other settings. Their input is invaluable as we strive to develop best-practices and personalized approaches to medical and psychosocial interventions.

As we hold to a joint mission and minimize traditional distinctions, we all benefit. While not denying that each group has their own unique strengths and experiences, we are nonetheless stronger and more creative when such distinctions are lessened. This issue of *Discovery* showcases many rich examples of how the VKC cuts across such traditional boundaries. Even as I now serve as VKC director, I remain an eager student of the lessons learned from the Center's faculty, staff, trainees, and persons with disabilities and their families. ■

GENETICS OF ADHD from page 6

The gene that Blakely's group has identified as an ADHD risk factor may allow for better therapies to be developed. Indeed, Blakely and Alicia Ruggiero, Ph.D., instructor in Pharmacology, are working to develop such agents through a National Institutes of Health grant.

"We still have work to do to see if genotyping persons with ADHD based on these findings can accurately predict disease subtypes," Blakely said. "These are complex disorders, and I'm sure that genetic variation is only one of the risk factors these kids may have. But long term, the genetic exploration of ADHD risk may lead to more personalized treatment strategies for this disorder."

English and Blakely's co-authors were Maureen Hahn, Ph.D., Ian Gizer, Ph.D., Michelle Mazei-Robison, Ph.D., Angela Steele, Daniel Kurnik, M.D., Mark Stein, Ph.D., and Irwin Waldman, Ph.D.

Blakely's ADHD research efforts were initiated by resources provided through a VKC Hobbs Discovery Grant. ■

ACCOLADES from page 7

The **Vanderbilt Chapter of Best Buddies** was presented with an **Outstanding Chapter Award** at Best Buddies International's 20th annual Leadership Conference. **Elise McMillan, J.D.**, VKC UCEDD co-director, is the Chapter's faculty advisor.

The **Vanderbilt Kennedy Center** received **Exceptional Parent Magazine's 2009 EP Maxwell J. Schleifer Distinguished Service Award**.

The award is given to organizations working on behalf of those with disabilities, that are involved in scientific research leading to early detection and appropriate intervention therapies, and that demonstrate leadership in expanding the awareness that people with disabilities can be productive citizens in our society. The VKC was nominated by Capital Finance Group/Mass Mutual. VKC Director Elisabeth Dykens, Ph.D., accepted the Award on home plate at Greer Stadium, home of the Nashville Sounds, on Disability Awareness Night. ■



David Howell of Capital Financial Group/Mass Mutual; his wife Hecseliz Howell; Elisabeth Dykens; Seth Link; and Rick Rader, Editor-in-Chief of *Exceptional Parent Magazine*



Reaching Out BY COURTNEY TAYLOR

Statewide Disability Needs Survey

Researchers from the Vanderbilt Kennedy Center (VKC), in collaboration with the Tennessee Developmental Disabilities Network, have been assessing disability service needs in Tennessee. A survey was developed in September 2009 and disseminated across the state to individuals with disabilities and their families, professionals working in disability-related agencies, and other interested parties. The survey, which closes February 15, gathers data on services in education, home and community-based programs, transition services, collaboration and information sharing, employment, funding, and health care. Data collected will inform work within the network for the next 5 years. A summary of the analysis, when completed, will be posted on the VKC and Network websites.



Tennessee Disability Pathfinder's New Website

Tennessee Disability Pathfinder has a new website design with improved accessibility. The site includes an easier-to-navigate homepage with links and features about disability-related programming. New features for visitors include: multiple ways to search for service agencies by counties; the ability to customize search criteria by specifying broad or specific service-type categories and/or service areas; improved text searching; and browsing the service categories. Other features include an events calendar, email forms, and an improved Spanish resources section. Pathfinder is a joint project of the Tennessee Council on Developmental Disabilities and the Vanderbilt Kennedy Center. To view the new site, visit: www.familypathfinder.org.

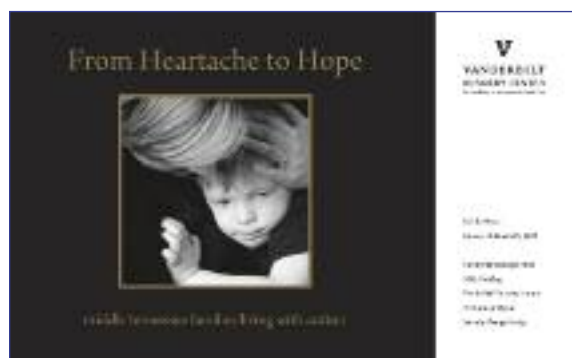
Publications

VKC Communications continues to develop and disseminate educational materials for individuals, families, professionals, and policymakers based on

the research, training, and services facilitated through the Center and its programs. Publications are generally free of charge and may be downloaded directly from the VKC website. Three recent publications developed through the Mid-Tennessee Interdisciplinary Instruction in Neurodevelopmental Disabilities (MIND) Training Program include: *A Brief Parent Guide on Autism*, *Tips on Autism for Health Care Providers*, and *Working With Spanish-Speaking Families*. Tips and Resources fact sheets are available on the science of specific disabilities, the effects disabilities might have on the individual and family, and treatment and service options. New fact sheets include: *Fragile X Syndrome, Including Students with Multiple/Severe Disabilities in the Classroom*, *Inclusion in a Faith Community Tip Sheet (for Congregational Care Committees)*, *Inclusion in a Faith Community Tip Sheet (for Individuals and Families)*, *Inclusion in a Faith Community Tip Sheet (for Religious and Spiritual Leaders)*, *Inclusion in the Classroom*, and *Recognizing Hearing Loss in Young Children*. Publications may be downloaded at kc.vanderbilt.edu/site/resources/publications.

Outreach Services Move

In December, refurbished space on the 5th floor of the Vanderbilt Medical Arts Building became the new home for several VKC clinics and programs that had previously been located in two separate buildings on the edge of the campus. The relocated programs are the Behavior Analysis Clinic, Family Outreach Center, Hispanic Outreach Services, Reading Clinic, and Tennessee Disability Pathfinder. The new Parent Stress Reduction project for parents of children with disabilities also is located there. The new consolidated space facilitates communication among programs to better serve individuals and families. Free valet parking is available for visitors. While email and phone numbers remain the same, the new address for these programs is 1211 21st Ave. S., Suite 539, Nashville, TN 37212. For information, contact (615) 936-8852 (VKC UCEDD main line).



From Heartache to Hope

The current VKC art exhibit features photographs from the book, *From Heartache to Hope: middle tennessee families living with autism*. The black-and-white photographs, taken by Nashville photographer Rebekah Pope, feature 18 families who are racially and socioeconomically diverse residents of rural

and urban settings in Middle Tennessee.

A reception was held in January to honor the families and to celebrate the book. Local author Leisa A. Hammett provided the moving family stories that accompany the photographs. Proceeds from book sales benefit the Autism Society of Middle Tennessee. The exhibit in the VKC lobby continues through March 29 and can be viewed weekdays, 7:30 a.m.-5:30 p.m. To purchase the book, visit www.autismmid Tenn.org. ■

Campers' Artwork Displayed at Vanderbilt Health One Hundred Oaks

BY GRETCHEN HERBERT



Portrait of Chuck Close in Eighty Parts
Acrylic on canvas, 82" x 102"

Each summer, the Vanderbilt Kennedy Center provides camps for children and adolescents with disabilities and their peers.

In 2009, students in the TRIAD Social Skills Camp and the Shriver Transitions and Sports Camp participated in art workshops led by an art educator from the Frist Center for Visual Arts. The weekly art activities were based on the Frist's exhibit, *Chuck Close Prints: Process and Collaboration*. Close created "portraits" composed of gridded cells.

After learning about Close's art and collaborative process, the campers each painted one of eighty 10 x 10 inch squares assembled into a single collage, 8 x 9 feet, which collectively suggests the human face. The work is exhibited at Vanderbilt Health One Hundred Oaks.

Since the partnership between the VKC Camps and the Frist Center began, more than 200 students with developmental disabilities have received exceptional arts education and have created original art that has been exhibited at the Vanderbilt Kennedy Center, the Frist Center, Tennessee Performing Arts Center, and elsewhere in the community. ■



Spotlight: One Family's Journey Melissa Beasley BY COURTNEY TAYLOR



COURTESY OF BEASLEY FAMILY

When Vanderbilt Kennedy Center Leadership Council member Melissa Beasley received her Master's degree in speech pathology and communication disorders from Western Kentucky University, she did not yet realize how relevant that degree would become in the life of her own family. Practicing in nursing homes, hospitals, schools, and rehabilitation centers for years and working with individuals ranging in age from 1 to 100, Beasley eventually became the vice president of operations and staffing for a pediatric clinic founded by a former colleague from graduate school.

It was after the birth of her second child, Ethan, who was born with Down syndrome, that Beasley decided to leave her position.

"I wanted to devote all the time I could to Ethan and to coordinating early intervention strategies," said Beasley. "I always say I went from being a full-time therapy staffing coordinator to being a full-time therapy staffing coordinator. I just used to do it for 40 people and now I do it for one."

In addition to Ethan, who is now 2, Beasley and her husband Jeb have Noah, who is 6, and Olivia, 7 months. Noah is in kindergarten at Franklin Road

Academy, and Ethan is enrolled in both the Westminster Preschool and in the Susan Gray School. Beasley notes how important Ethan's time in the Susan Gray School has been in providing the structure and extra therapy that he needs.

"When Ethan was first born, I thought I would do it all," said Beasley. "After all, I am a trained therapist. I quickly learned that structured learning environments were going to add so much. Ethan needs constant stimulation, and he gets that being with other kids and with the teachers in his programs. We started him in early intervention when he was 6 weeks old. I just sort of knew how to get the ball rolling, which is a good thing, but sometimes I think I may know a little too much. I am always worrying about what that next step is, or what is coming. It's good to have that knowledge, but it can also be overwhelming."

Prior to birth, Ethan was not given a diagnosis of Down syndrome. Beasley had several ultrasounds that gave no indication that there might be any cause for concern. About 10 hours after he was born, the neonatologists began raising questions. Beasley recalls that there was a 3-day whirlwind of "He has Down syndrome. He does not have Down syndrome." "He has a heart condition. He does not have a heart condition." It was an uncertain and trying time for the family. In the end, Ethan did receive a diagnosis of Down syndrome, and he did not have a heart condition.

"Ethan is very healthy," said Beasley. "He loves to swim and has been taking lessons from a Special Olympic swim coach since he was about 7 months. He will just completely submerge himself under water, will blow bubbles, and he can swim very far on his own, which at his age is quite good. He is just very physical. He loves balls, he loves people. He is a happy child."

Beasley's work on the VKC Leadership Council began in 2008. She serves on the Arts

and Recreation Committee and has a true passion for the research being done at the Center. She involved Ethan in research at the Vanderbilt Kennedy Center when he was just 9 months.

"Ethan received top notch instruction in communication in his first research study," said Beasley. "And as a parent, I received top notch instruction, too. I was required to attend trainings on how to promote his speech and language. The trainings were so helpful for me, and I had prior exposure to the material through my work. I can only imagine how helpful it is for a parent who does not have a speech background. They showed us how to sustain what they were doing. I think that philosophy of caring for the whole family has been present in everything we have done at the Vanderbilt Kennedy Center. I feel like this is such an important component of the Center's mission."

Beasley plans to enroll Ethan in more research projects as he is eligible.

The Beasley families—Mr. and Mrs. Thomas W. Beasley and Mr. and Mrs. John E. Beasley—are funding innovative research at the Center through the Beasley Family Discovery Grant. Through Discovery Grants, donors provide essential seed funding for the discovery of new knowledge that provides a foundation for improving the lives of individuals with disabilities. VKC researchers use Discovery Grants to gather novel data that will strengthen their ideas and provide a competitive edge in obtaining larger federal or foundation grants.

"We plan to stay involved and take advantage of all that the Center has to offer," said Beasley. "We will participate in the Summer Camps, in the Reading Clinic, and Noah and Olivia will be involved in the sibling programs when they are old enough. The Vanderbilt Kennedy Center is like a partner that helps me to look ahead for that next step." ■

2009 Hobbs Discovery Grants Announced BY JAN ROSEMERGY

VKC Director Elisabeth Dykens, Ph.D., announced that four 2009 Nicholas Hobbs Discovery Grants have been awarded to interdisciplinary teams led by VKC researchers.

Discovery Grants are made possible by generous donors. The grants provide essential seed funding that allow investigators to gather novel data that strengthen their ideas and help gain a competitive edge in obtaining larger federal or foundation grants.

"Hobbs Discovery Grants have led to an astounding 34:1 return on investment," Dykens said, "and there's no way to measure the difference that this investment makes in individual lives. We're enormously grateful to donors who make such discovery possible."

►**Reading disabilities and brain imaging.** Reading disability is a serious life-long condition that negatively affects schooling, health status, and social adjustment. Investigating the neurological correlates of children with late-emerging reading disabilities is the focus of the project led by **Don Compton**, Ph.D. (Special Education), in collaboration with **John Gore**, Ph.D. (Radiology & Radiological Sciences), and **Laurie Cutting**, Ph.D. (Special Education). The grant will make it possible to conduct structural and functional imaging sessions with a subset of children in their current project on late-emerging reading disabilities. The study may provide insight into the earlier identification and treatment of late-emerging

reading disabilities, with the hope of prevention.

►**The role of catecholamine neurotransmitters in neurodevelopmental and mental health disorders.** Catecholamines and other neurochemicals are believed to play a role in causing psychiatric disorders, and they are therapeutic targets in drug therapies. Most studies have focused on functions of these neurotransmitters in mature development, even though they are expressed early in brain development. Using a mouse model, **Maureen Hahn**, Ph.D. (Genetic Medicine), with **Gregg Stanwood**, Ph.D. (Pharmacology), will use genetic and pharmacological techniques to disrupt the norepinephrine transporter (NET) during prenatal development, with the aim of identifying long-

Continued on page 11



Linda Brooks Helps Next Step Take Some Next Steps BY COURTNEY TAYLOR



Wendy, Ashley, and Linda Brooks

Next Step at Vanderbilt, the new and only college certificate program for students with intellectual disabilities in Tennessee, has received a generous gift from longtime supporter, friend, and Vanderbilt Kennedy Center Leadership Council member Linda Brooks and her family.

Brooks has been advocating for postsecondary options for students with intellectual disabilities for over 20 years. Her interest and concern for the lack of programs began when she was searching for postsecondary programming for her daughter Wendy, who has Down syndrome.

“I had a terrible time trying to find education classes for Wendy once she had aged out of the school system,” said Brooks. “I went through the State and through the private sector and was astonished that there was nothing for her. Wendy needs educational stimulation to continue to make progress. My search proved to be very disappointing.”

“A few years ago, Linda urged the Vanderbilt Kennedy Center to address this crucial need and committed a gift to help make this happen,” said Elise McMillan, J.D., VKC UCEDD co-director. “Linda’s vision and commitment provided a strong foundation for statewide coalition building and looking at such programs nationwide—which have now culminated in Next Step at Vanderbilt, thanks to the her gift and now a 3-year grant from the Tennessee Council on Developmental Disabilities.” Brooks is especially encouraged by the program’s inclusion of independent living skills in the curricula and by its focus on employment.

“As more and more people find out about the program, the movement will grow bigger and stronger,” said Brooks. “More people will want to join, and before you know it, there will be programs all over the State. As Vanderbilt is

successful, other colleges and universities will want to step on board and develop programs of their own. I couldn’t help Wendy go to college all those years ago, but I can help the young kiddos now who are capable and willing to learn.”

Brooks’s gift and the Council grant provide support to Next Step at Vanderbilt as it welcomes its first students in January 2010.

“On behalf of Next Step at Vanderbilt and the entire Vanderbilt Kennedy Center, we thank Linda Brooks for her knowledge and for her commitment to improving the lives of individuals with disabilities and their families,” said Elisabeth Dykens, Ph.D., VKC director. “Her willingness to share her expertise and her generosity with this financial gift will assist students with intellectual disabilities as they transition into life after high school, as they are exposed to the exciting life of a college student, and as they secure meaningful employment which will bring them closer to leading independent lives.”



Next Step Students

Linda Brooks currently serves on the Leadership Council of the Vanderbilt Kennedy Center and is on the boards of the Siloam Family Health Center and the Brookwood Community in Brookshire, Texas. She is a member of the Ambassador’s Circle of Centerstone and is a past board member of Brightstone, Progress, the Nashville Alliance for the Mentally Ill, Centerstone, and the Mental Health Association of Middle Tennessee. Brooks earned her B.A. degree from East Texas State University in 1962. In 1968, she married Samuel Allen Brooks, Jr., who died in 2003. They have three children, Wendy, Dan, and Ashley. ■

2009 HOBBS DISCOVERY GRANTS *from page 10*

lasting neuronal consequences of this insult. Their studies will provide data describing the roles of catecholamine signaling during brain formation and in the causes of neurodevelopmental and mental health disorders.

► **Combined behavioral and medication treatment for problem behavior.** Problem behavior, which includes aggression, self-injury, and/or property destruction, occurs in 15% to 20% of people with autism and intellectual disabilities. In this project, **Jeremy Veenstra-VanderWeele**, M.D. (Psychiatry), working with **Craig Kennedy**, Ph.D. (Special Education), and **Cassandra Newsom**, Psy.D. (Pediatrics), are developing the foundation for a novel intervention using a combined behavioral and

medication approach to treat problem behavior in children and adolescents with autism and intellectual disability. The medication being tested has been shown to facilitate behavioral treatment in other clinical populations and animal models. The trial will compare behavioral treatment plus medication to behavioral treatment plus placebo in children and adolescents with autism and intellectual disability.

► **Perceptual training for reading disabilities.** Developmental reading disabilities are a costly and debilitating problem that affects as many as 1 in every 10 readers. Evidence now indicates a strong neurological basis for reading disabilities. Previous research has focused on how deficits in individual sensory systems (i.e., hearing, vision) contribute to

reading problems, but recent evidence suggests that problems in how the brain combines or “integrates” visual and auditory information may also play an important role. **Mark Wallace**, Ph.D. (Hearing & Speech Sciences), with **Calum Avison**, Ph.D. (Radiology & Radiological Sciences), will investigate the relationship between multisensory processing and reading abilities, with an emphasis toward the design of better remediation approaches. The work will explore the neural bases of multisensory processing via functional imaging, and will assess how multisensory-based training approaches impact multisensory brain circuits. Knowledge gained will contribute to the detection, diagnosis, and treatment of reading disabilities. ■



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To subscribe to VKC feeds or to learn more about how to use RSS, visit kc.vanderbilt.edu/site/newsandevents/rss.



Discovery is a quarterly publication of the Vanderbilt Kennedy Center designed to educate our friends and the community, from Nashville to the nation. The Center is committed to improving the quality of life of persons with disabilities of thinking, learning, perception, communication, mood and emotion caused by disruption of typical development. The Center is a university-wide research, training, diagnosis, and treatment institute. It is a *Eunice Kennedy Shriver* Intellectual and Developmental Disabilities Research Center funded by the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, and a University Center for Excellence in Developmental Disabilities (UCEDD) funded by the Administration on Developmental Disabilities. *Discovery* is supported in part by Grant No. HD 15052 from EKS NICHD, Administration on Developmental Disabilities Grant #90DD0595, and LEND Training Grant: No. T73MC00050 MCHB/HRSA.

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Treatment and Research Institute for Autism Spectrum Disorders
Wendy Stone, Ph.D., *Director*

Discovery
Editor/Writer: Jan Rosemergy, Ph.D.
Writers: Amy Pottier, M.A., Courtney Taylor, M.Div.
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CALENDAR OF EVENTS | FEBRUARY-JUNE 2010



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■ FEBRUARY 3*

Developmental Disabilities Grand Rounds
Pediatric Obesity: Diabetes Prevention in the Latino Population
Shari Barkin, M.D., M.S.H.S., Marian Wright Edelman Professor of Pediatrics, Director of the Division of General Pediatrics
Wednesday 8 a.m.

■ FEBRUARY 16

Vanderbilt Kennedy Center Science Day
Details and registration at kc.vanderbilt.edu
Tuesday 8:30 a.m.-3:30 p.m.
Vanderbilt Student Life Center

■ FEBRUARY 17*

Educate to Advocate: Strategies to Advance Disability Public Policies
For trainees and others interested in disability-related legislative advocacy
Panelists: Doria Panvini, VKC Community Advisory Council; William Edington, Tennessee Council on Developmental Disabilities; Carol Westlake, Tennessee Disability Coalition

Wednesday 12-1 p.m.
Register at kc.vanderbilt.edu/registration
Information (866) 936-8852

■ MARCH 1

Disabilities, Religion, and Spirituality
Title TBA
Thomas E. Reynolds, Ph.D., Associate Professor of Theology, Emmanuel College of Victoria University
Co-sponsors Carpenter Program in Religion, Gender, and Sexuality, Vanderbilt Divinity School, and Faith for ALL
Monday 4:10 p.m.
Art Room, Vanderbilt Divinity School

■ MARCH 3*

Developmental Disabilities Grand Rounds
Dopaminergic Modulation of Brain Development and Behavior
Gregg Stanwood, Ph.D., Assistant Professor of Pharmacology
Wednesday 8 a.m.

■ MARCH 3

Neuroscience Graduate Program Seminar Series
The Role of the Medial Prefrontal Cortex in Mediating Resistance and Vulnerability to Adverse Events
Steven F. Maier, Ph.D., Distinguished Professor of Psychology, Director of the Center for Neuroscience, University of Colorado-Boulder
Co-sponsor Vanderbilt Brain Institute
Wednesday, 4:10 p.m. Room 1220 MRB III Lecture Hall

■ MARCH 12*

Community Advisory Council Meeting
For details contact (615) 936-8852
Friday 9:30 a.m.-2 p.m.

Unless otherwise noted, events are free and open to the public. Events are subject to change. Please check the website calendar at kc.vanderbilt.edu or contact (615) 322-8240 or toll-free (1-866) 936-VUKC [8852].

Please keep this calendar and check the Event Calendar on the VKC website for updates. If you wish to receive event announcements by email, send your email address to amy.pottier@vanderbilt.edu.

For disability-related training and other events statewide and nationally, see the Pathfinder Disability Calendar www.familypathfinder.org.

*Event will be held in Room 241 Vanderbilt Kennedy Center/MRL Building



CALENDAR OF EVENTS | FEBRUARY-JUNE 2009

■ MARCH 24*

Statistics and Methodology Core Training Seminar
Data Preparation, Standards and Data Integrity: The Devil is in the Detail

Ana Regina de Andrade, Ph.D., Senior Lecturer in Economics; Research Associate, Center for Evaluation and Program Improvement
Catherine Smith, Assistant Professor of Psychology, Cumberland University
Wednesday 12:30 p.m.
Register at
kc.vanderbilt.edu/registration

■ MARCH 26 & 27

Augmentative and Alternative Communication
Sponsors: Dept of Special Education, Vanderbilt Bill Wilkerson Center, VKC
For both events, register at
kc.vanderbilt.edu

► *A Parent's Perspective*

Robert Rummel-Hudson, author of *Schuyler's Monster: A Father's Journey with His Wordless Daughter*
Friday 6-8 p.m., Mayborn 204
No fee.

► *We Dance, We Sing, We Do All Kinds of things: Working with Young Children with Multiple Disabilities*

Using Assistive Technology
Karen Casey, M.S., CCC-SLP
Saturday 9 a.m.-4:30 p.m.
Workshop fee (includes materials, lunch) \$175 professionals, \$50 students/parents if registered by March 15. ASHA CEUs offered.
Room 8380 Medical Center East

■ MARCH 30*

Community Forum
What's on the Forefront of Down Syndrome Research?

Panelists: Aaron Bowman (Neurology), Elisabeth Dykens, Ph.D. (Psychology), Sasha Key, Ph.D. (Hearing & Speech Sciences), Tracy McGregor (Pediatrics); moderator Tyler Reimschisel, M.D. (Pediatrics)
Tuesday 6-7:30 p.m.
Register at kc.vanderbilt.edu

■ MARCH 31*

Research Ethics Grand Rounds
Ethical Issues in the Use of Statistics

Panelists: Elisabeth Dykens, Ph.D. (Psychology), Karoly Mirnics, M.D. (Psychiatry), Frank Harrell, Ph.D. (Biostatistics)
Wednesday 12 noon

■ MARCH 31

Neuroscience Graduate Program Seminar Series

Role of MeCP2 & HDACs in Regulating Synapse Function and Behavior
Lisa M. Monteggia, Ph.D., Assistant Professor of Psychiatry, UT Southwestern Medical Center at Dallas
Co-sponsor Vanderbilt Brain Institute
Wednesday, 4:10 p.m. Room 1220 MRB III Lecture Hall

■ APRIL 7*

Developmental Disabilities Grand Rounds
Prader-Willi Syndrome and Serotonin 2C Receptor Editing: Every Dogma Has Its Day
Ronald Emeson, Ph.D., Joel G. Hardman Professor of Pharmacology
Wednesday 8 a.m.

■ APRIL 7

Neuroscience Graduate Program Seminar Series

Title TBA
Jeffrey D. Macklis, M.D., D.HST, Pearlstein Professor of Neuroscience, Neurology, and Neurosurgery, Harvard Medical School; Professor of Developmental and Regenerative Biology, Harvard University; Director, MGH-HMS Center for Nervous System Repair
Co-sponsor Vanderbilt Brain Institute
Wednesday, 4:10 p.m. Room 1220 MRB III Lecture Hall

■ APRIL 16-17

Second Annual Tennessee Adult Brothers and Sisters (TABS) Conference

Goals are to empower and educate adult siblings. See registration webpage for details.
Friday-Saturday

Holiday Inn Select at Vanderbilt, 2613 West End Ave., (888) 465-4329 (call for room reservations)
\$50/person, \$25 student if registered by April 1; \$60/\$35 thereafter
Fee covers materials, meals, TABS t-shirt
To register (required):
kc.vanderbilt.edu/registration
Contact (615) 343-0545
ashley.coulter@vanderbilt.edu

■ APRIL 19*

Capacity Building Institute, Postsecondary Education for Students with Intellectual Disabilities
Offers strategies and resources that can be used by college faculty and administrators and community leaders to support development and implementation of inclusive postsecondary education options for students with intellectual disabilities.
Organized by Think College.

Co-sponsors VKC UCEDD and TN Council on Developmental Disabilities.
Monday 9 a.m.-3 p.m.
Cost \$35 includes breakfast/lunch
Special rate \$25/person for groups of 3 or more.
Conference registration (required)
kc.vanderbilt.edu/registration
Contact (866) 936-8852
elise.mcmillan@vanderbilt.edu,
cathryn.weir@umb.edu

■ TRIAD SCHOOL-AGE SERVICES

With the Tennessee Department of Education, TRIAD offers free autism-specific workshops for parents, school personnel, and the community in locations across the state.
Information and registration, contact Linda.Copas@state.tn.us, (615) 741-7790
See also
tennessee.gov/education/speced/announcements.shtml

■ VKC SUMMER CAMPS

TRIAD Social Skills Camp
Music Camp
Dates to be announced
Contact Gretchen Herbert, Recreation and Art Coordinator, (615) 343-7046

■ ARTS AND DISABILITIES

Vanderbilt Kennedy Center Exhibits
Monday-Friday 7:30 a.m.-5:30 p.m., Lobby
Information contact (615) 343-7046

- JANUARY 18-MARCH 29, 2010
From Heartache to Hope: middle tennessee families living with autism
Photo exhibit

- APRIL 5-AUGUST 30, 2010
GitArt by 2009 VKC Music Campers