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Inside the Institute

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Researchers Discover a Potential Cause of Autism

Problems with a key group of enzymes called topoisomerases can have profound effects on the genetic machinery behind brain development and potentially lead to autism spectrum disorder (ASD), according to research being conducted by CIDD investigators, Mark Zylka and Ben Philpot.

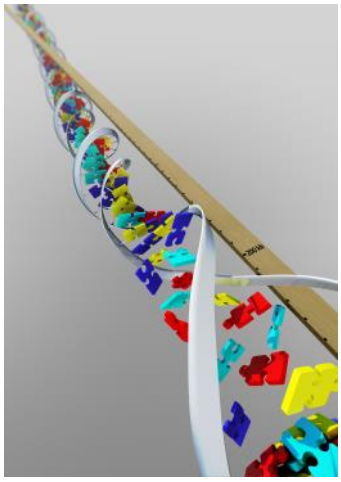

Illustration by Janet Iwasa

The finding represents a significant advance in the hunt for environmental factors behind autism and lends new insights into the disorder's genetic causes. The study, "Topoisomerases facilitate transcription of long genes linked to autism," is published in the journal *Nature* (online August 28, 2013).

"Our study shows the magnitude of what can happen if topoisomerases are impaired," said senior study author Mark Zylka, PhD, associate professor in the Neuroscience Center and the Department of Cell Biology and Physiology at UNC. "Inhibiting these enzymes has the potential to profoundly affect neurodevelopment — perhaps even more so than having a mutation in any one of the genes that have been linked to autism."

The study could have important implications for ASD detection and prevention. "This could point to an environmental component to autism," said Zylka. "A temporary exposure to a topoisomerase inhibitor in utero has the potential to have a long-lasting effect on the brain, by affecting critical periods of brain development."

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Newsletter Highlights

Congratulations to Mark Zylka, Recipient of the NIH Director's Pioneer Award

Mark Zylka never set out find the neurological causes for autism. He cut his teeth studying chronic pain. But while collaborating on the topoisomerase-inhibitors project (see above article) with colleague Ben Philpot, the team serendipitously found that when specific brain enzymes are impaired, some of the genes implicated in autism are mutated. So the big question for Zylka became: what can foul up those enzymes and potentially cause autism?

In their most recent paper, published this past August in the journal *Nature*, Zylka and Philpot describe how certain chemotherapies inhibit the expression of a group of enzymes called topoisomerases. But topoisomerase-inhibitors are found in many other things. No one knows if these other environmental factors cause autism. But Zylka received a five-year, $3.8-million Pioneer Award from the National Institutes of Health to find out what role they might play.

Pioneer Awards are given to scientists who have stepped beyond their typical field of study to conduct research that could pave the way for treatments of major medical problems. Zylka, who came to UNC School of Medicine in 2006, also won a Hettleman Prize for his work in autism and chronic pain. Read more about Zylka's work in A New Frontier.

A University Center for Excellence in Developmental Disabilities Education, Research, and Service (UCEDD) with core funding from the Administration on Developmental Disabilities (ADD)

A Developmental Disabilities Research Center (DDRC) with core funding from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)

A Leadership Education in Neurodevelopmental and Related Disabilities (LEND) Program with core funding from the Maternal and Child Health Bureau (MCHB)

UNC IDDRC Funded for Another Five Years

We are very pleased to announce the successful renewal of the UNC Intellectual and Developmental Disabilities Research Center (IDDRC), awarded by the National Institute of Child Health and Human Development (NICHD). The total award amount for this grant is $1.3M per year, for the next five years. This funding will be used to support the "Clinical Translational Research Center for Neurodevelopmental Disorders", with the overarching goal of promoting research that leads to important advances in the prevention and treatment of IDDs.

The UNC IDDRC is the primary research arm of the Carolina Institute for Developmental Disabilities (CIDD). Joe Piven, M.D., Director of the CIDD, has led the UNC IDDRC since 2000. He provides scientific oversight for the Center, with the goals of enhancing collaborative research teams and cross-discipline projects, and the utilization of cutting-edge technology by IDDRC investigators. Sheryl Moy, Ph.D., is Associate Director of the IDDRC and the CIDD Director of Research. With Piven, she co-manages day-to-day operations of the IDDRC and works closely with him to make scientific and administrative decisions.

One of 15 NICHD-funded IDDRCs around the U.S., this Center provides critical research, training and administrative support to 39 funded investigators, from multiple disciplines, who are making significant contributions to understanding and treating neurodevelopmental disorders. While their expertise encompasses many of the currently recognized concentrations in IDD research, three particular strengths highlight the breadth, depth and clinical relevance of IDD research being conducted at UNC. These strengths include the following themes: Autism and Related Syndromes, Early Development of Brain and Behavior, and Early Detection and Intervention.

The research cores in this Center are designed to provide innovative, advanced, and cost-effective scientific facilities and services. Where possible, the cores leverage existing University resources by partnering with other relevant Centers/Departments, and work to encourage interdisciplinary, translational research and foster new collaborations. The cores are divided into human (Clinical Translational) and animal (Preclinical) research; with the Bioinformatics and Biostatistics Core cutting across both domains. Consolidating core labs into Clinical Translational and Preclinical Cores, with parallel structures focused on rodent and human phenotypes, encourages clinical-preclinical integration and translational research.

The Clinical Translational Core (CTC) includes the 'Participant Registries' and Brain Measurement Laboratories. It includes services for subject recruitment, brain phenotyping and development of biomarkers of brain outcome measures. The Participant Registries, directed by Steve Reznick, Ph.D., assists investigators with identification and recruitment of research subjects. It is comprised of four registries: the Autism Registry, the Fragile X (FX) Registry, the General IDD Registry, and the Child Development Registry.

The Brain Measurement Laboratories, directed by Aysenil Belger, Ph.D., provide critical support (e.g., novel software developed for processing brain images from infants, infant/toddler EEG/ERP, eye tracking; and consultation for MRI/DTI/fMRI studies) for a number of high profile studies measuring brain and brain-related characteristics. Martin Styner, Ph.D., Associate Director of this core lab, has made imaging analysis tools freely available, on-line, to numerous studies of developing human and non-human primate brain. This core has been instrumental for studies of early biomarkers (MRI, DTI, eye tracking, EEG) that may predict later disease, as well as identifying new brain biomarkers for tracking disease outcomes. The highly-productive track record of successful core support documents the importance of the CTC for "application of basic science discoveries to the clinical setting," as well as the key role these services play in maximizing the ability of IDDRC researchers to make a lasting impact on the field.

The Preclinical Core includes the Mouse Behavioral Phenotyping Laboratory, the Confocal and Multiphoton Imaging Facility, and the Animal Brain Imaging Analysis Service. Together, these components allow investigators to evaluate mouse models using a range of phenotyping approaches. The mouse behavior laboratory, led by Sheryl Moy, provides testing services for the multi-domain characterization of novel genetic and environmental models of neurodevelopmental disorders, and has established optimal protocols for preclinical drug screens relevant to IDD symptoms.

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Ben Philpot Receives SFARI Award

The mission of the Simons Foundation Autism Research Initiative (SFARI) is to improve the diagnosis and treatment of autism spectrum disorders by funding innovative research of the highest quality and relevance. Congratulations to Dr. Ben Philpot and his team at UNC who recently received a SFARI Award to extend research in correcting excitatory-inhibitory imbalance in autism.

Autism appears to be caused by aberrant synapses, or connections between brain cells. A leading hypothesis is that a generalized hyper-excitability in the brains of individuals with autism impairs cognitive functions and increases seizure susceptibility.

However, it is difficult to examine how neural hyper-excitability contributes to autism traits and whether the inappropriate neural connectivity at its root can be corrected by balancing excitatory and inhibitory activity in the brain. One obstacle is that autism can be caused by a wide range of genetic mutations, making it difficult to model neural hyper-excitability.

In 2012, Ben Philpot and his team found that genetic deletions of UBE3A create hyper-excitability in the brain due to differential modifications in excitatory and inhibitory synapses. UBE3A is known to be linked to some forms of autism.

The researchers plan to extend this work by examining the precise mechanisms by which dysregulation of UBE3A contributes to neural hyper-excitability and behavioral abnormalities. They plan to manipulate UBE3A levels in mice to determine the deficits that underlie neural hyper-excitability. Insights from this research may guide strategies for correcting the excitatory-inhibitory imbalance in UBE3A-linked and perhaps broader forms of autism.

Stephen Hooper Receives Outstanding Achievement Award

Congratulations to Dr. Stephen Hooper, recipient the 2013 Outstanding Achievement Award. Each year the Association of University Centers on Disabilities (AUCD) honors individuals for their exemplary work and service in the field of developmental disabilities. The Outstanding Achievement Award recognizes an executive, faculty, or staff member who has demonstrated excellence in three major areas of the field -- teaching, scholarship, and service to the wider community.

Dr. Hooper is Professor of Psychiatry, Psychology, Pediatrics, and Education at UNC and has carried a number of titles at the Carolina Institute for Developmental Disabilities, including Director of Training and Education, Director of Child and Adolescent Neuropsychology, and Associate Director. His research focuses on increasing the understanding of the neurobiological bases of childhood disorders, with a particular emphasis on phenotypic neurocognitive functioning.

Dr. Hooper is the Principal Investigator of the Leadership Education in Neurodevelopmental Disorders (LEND) interdisciplinary training grant funded by the Maternal Child Health Bureau, as well as several federally funded research projects. He also serves as the lead on a number of projects for the state of North Carolina.

In addition to teaching several core courses in the school psychology program, Dr. Hooper has regularly supervised developmental, school, and clinical psychology students, interns, and postdoctoral fellows at the CIDD through his Child and Adolescent Neuropsychology Consultation Service. He maintains longstanding relationships with departments across the UNC campus, with faculty at universities across the nation, and with key agencies and divisions in the state of North Carolina.

Dr. Hooper will be presented the Outstanding Achievement Award at the 2013 AUCD Conference Awards Gala on November 19, in Washington DC.

Researchers Discover a Gene's Key Role in Building the Developing Brain's Scaffolding

Dr. Eva Anton

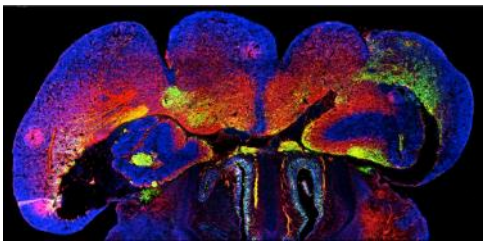
Researchers have pinpointed the role of a gene known as Arl13b in guiding the formation and proper placement of neurons in the early stages of brain development. Mutations in the gene could help explain brain malformations often seen in neurodevelopmental disorders.

"We wanted to get a better sense of how the cerebral cortex is constructed," said senior study author Eva Anton, PhD, a professor in the Department of Cell Biology and Physiology, member of the UNC Neuroscience Center, and CIDD investigator. "The cells we studied — radial glial cells — provide a scaffolding for the formation of the brain by making neurons and guiding them to where they have to go. This is the first step in the formation of functional neuronal circuitry in the brain. This study gives us new information about the mechanisms involved in that process."

The researchers became interested in the Arl13b gene because of its expression in a part of the cell called primary cilium and its association with a rare neurological disorder known as Joubert syndrome. The syndrome is characterized by brain malformations and autism like features.

"In addition to helping us understand an important cellular mechanism involved in normal brain development, this study may offer an explanation for some of the malformations seen in Joubert syndrome patients," said Anton. Although there is no immediate clinical application for these patients, the study does help illuminate the factors behind the disease. "It shows what may have gone wrong in some of those patients that led to the malformations," said Anton.

The cerebral cortex, the brain's "gray matter," is responsible for higher-order functions such as memory and consciousness. Like the scaffolding builders use to move people and materials during construction, radial glial cells provide an instructive matrix to create the basic structural features of the cerebral cortex. Mistakes in the formation and development of radial glial cells can translate into structural problems in the brain as it develops, said Anton.



A mutated Arl13b gene caused neurons (red, green) to form clusters and other malformations in this mouse brain.

Both mice and humans have the Arl13b gene. The researchers generated a series of mice with mutations on the Arl13b gene at different developmental stages to track the mutations' effects on brain development. They discovered that the gene is crucial to the radial glial cells' ability to sense signals through an appendage called the primary cilium. Without this signaling capability, the radial glia were unable to organize into an instructive scaffold capable of orchestrating the orderly formation of cerebral cortex.

"The cilia in these cells play an important role in the initial setup of this scaffolding," said Anton. "Without a functioning Arl13b gene, the cells were not able to determine polarity and formed haphazardly. As a result, they formed a malformed cerebral cortex with ectopic clusters of neurons, instead of the orderly layers of neurons with appropriate connectivity that would be expected, in the developing brain.

The study, "Arl13b-regulated cilia activities are essential for polarized radial glial scaffold formation," was published June 30 in the journal *Nature Neuroscience*.

Jason Wolff Receives NIH Career Development Award

Dr. Jason Wolff has received a Career Development Award (K01) from the National Institute of Mental Health to investigate brain imaging predictors of response to early behavioral intervention in toddlers with autism. The award, which provides funding for training and research, brings together leading experts from the fields of special education, autism, and neuroimaging, including CIDD investigators Drs. Sam Odom (also Director of the Frank Porter Graham Child Development Institute), Joseph Piven, and Martin Styner. The 5-year project includes collaborations with two studies at UNC, the Infant Brain Imaging Study ACE Network, led by Dr. Piven, and the Institute of Education Sciences funded Joint Attention Mediated Learning study, led by Dr. Odom and Dr. Hannah Schertz (of Indiana University).

2013 CIDD Community Talk Series

Join us to learn about recent advances in developmental disabilities.

The CIDD has been hosting a series of talks to share information about recent advances in developmental disabilities. These sessions are a great opportunity for parents, teachers, professionals, and others to learn more about specific developmental disabilities topics. All talks are free, and everyone is welcome.

Wednesday, November 13

Greg Olley, Ph.D.
Psychologist, Clinical Professor Carolina Institute for Developmental Disabilities, UNC-CH

People with Developmental Disabilities and the Criminal Justice System: Risks and Resources

Children and adults with developmental disabilities, including autism, are at risk for encountering the criminal justice system. This talk will address the risks and resources to protect and support vulnerable populations.

Wednesday, December 11

Anne Wheeler, Ph.D.
Associate Professor of Psychiatry and Adjunct Clinical Professor of School Psychology Carolina Institute for Developmental Disabilities, UNC-CH

Introduction to Mindfulness and Mindful Parenting

Mindfulness is defined as the "state of being attentive to and aware of what is taking place in the present." It is thought that mindfulness assists in allowing shifts in one's relationship to internal experiences; fear, anger, or sadness for example. Increases in emotional equanimity in the face of intrusive thoughts, distressing emotions and behavioral impulses are therefore thought to result from greater mindfulness. This talk will provide an overview of mindfulness as a daily practice with a specific focus on use of mindful parenting techniques.

Sessions are held from 7PM to 8:30PM at the CIDD
To RSVP or for more information, please contact Debbie B. Reinhartsen at (919) 966-4138 or Debbie.Reinhartsen@cidd.unc.edu

Courtney Thaxton Awarded Two-Year NARSAD Young Investigator Grant

Congratulations to Courtney Thaxton, PhD, who was awarded a 2-year NARSAD Young Investigator grant for the project "Modeling Pitt-Hopkins Syndrome, an Autism Spectrum Disorder, in Transgenic Mice Harboring a Pathogenic Dominant Negative Mutation in TCF4," with the aim to make a new mouse model for Pitt-Hopkins Syndrome, an autism spectrum disorder with phenotypic similarities to Angelman syndrome.The NARSAD Young Investigator Grant provides support for the most promising young scientists conducting neurobiological research. Dr. Thaxton is a postdoctoral fellow in the Philpot lab and one of only 200 researchers worldwide selected for funding.

New Social Workers Join CIDD

From Left: Sarah Dababnah, Sherry Mergner, Morgan Parlier, and Leslie Payne

Morgan Parlier, MSW, LCSW joined the CIDD faculty this past summer. She completed her graduate degree through the Joint Master of Social Work program through UNCG and NCA&TSU in 2003. Over the last three years, she participated in interdisciplinary clinics at CIDD including: School Aged Team, Behavioral Medicine and Prader-Willi under the supervision of Elaine Goolsby, MSW, LCSW. As a result, she has completed her credentialing as a Licensed Clinical Social Worker. In addition to her clinical skills, Morgan has more than a decade of experience as a research coordinator for several NIH-funded projects exploring the genetic underpinnings of autism spectrum disorder with an emphasis on the Broad Autism Phenotype (BAP). Currently, she coordinates a pilot initiative exploring older adults with ASD (age 50+) under the supervision of Dr. Joe Piven. Their hope is to develop a comprehensive program at CIDD that will include clinical evaluation, intervention services and resource navigation for this underserved population. In addition, she participates on several interdisciplinary clinics, provides ongoing family support, and counseling services. Her clinical interests include: adolescents, adults and older adults with ASD and their families/caregivers. Outside of work, Morgan devotes her time to her loving partner, their incredible toddler, and their two loyal canines.

Sherry Mergner, MSW, LCSW is a Clinical Assistant Professor and the AHEC Liaison at UNC-CH, School of Social Work, where she coordinates continuing education programs for mental health, substance abuse and developmental disability professionals. She is also social work faculty for the Leadership Education in Neurodevelopmental Disorders (LEND) grant at the CIDD, where she recruits social workers for this specialized training in Developmental Disabilities. She provides clinical supervision to Sarah Dababnah, MSW, LCSWA, a former LEND Trainee (2009-10) and currently a PhD Candidate at UNC's School of Social Work. Sherry also provides clinical services to families at the CIDD. From 2010-13, Sherry served as the Project Coordinator for an Autism Masters Training Grant through UNC-CH, School of Medicine, Department of Allied Health Services. The purpose of this training grant was to educate occupational therapy and speech and language pathology master-level students on Autism Spectrum Disorders. She is the proud mother of Noah, 14 years old with High Functioning Autism and Nathan, 12 years old who is typically developing. Sherry has served as a Mother's Mentor for UNC-CH, TEACCH and was on the board of the Orange/Chatham Chapter of the Autism Society of NC from 2005-2007. She is very active in her community and within her children's school promoting autism awareness and education.

Morgan and Sherry are working collaboratively to enhance the social work presence within the Institute and to offer additional supports to families served at CIDD. In addition, they have coordinated with the UNC School of Social Work to establish a CIDD field placement. Leslie Payne, a first year MSW graduate student and LEND fellow, is CIDD's first social work field trainee.

Angelman Syndrome Foundation Awards Research Grants

The Angelman Syndrome Foundation has a long history of funding new and innovative research testing the pathogenesis and therapeutics of Angelman syndrome (AS). Research is the key to improving the lives of individuals with AS and to finding a cure. This is why the Angelman Syndrome Foundation sponsors AS research through grants to researchers who pursue promising avenues of discovery. This year's AS research grants focus on projects that seek to discover new therapeutics for AS or to better understand the scientific complexities of AS.

2013 Angelman Syndrome Foundation funded research includes two CIDD projects:

Defining Treatment Parameters for Angelman Syndrome - Ben Philpot, Ph.D.

A previously developed mouse model for Angelman syndrome (AS) enables the maternal copy of the Ube3a gene to be turned on and off. By activating the Ube3a gene at different stages of the mice' lives, it will help the research community define the optimal age window for AS treatment. The team will also research how broadly the gene needs to be turned on in specific regions of the brain to affect treatment. Investigators will determine whether AS therapeutics need to be maintained throughout life, or if AS only needs to be treated during early life.

Studies to Determine How Angelman Syndrome-associated Missense Mutations Disrupt UBE3A Function - Mark Zylka, Ph.D.

Angelman syndrome (AS) is typically caused by genomic deletions that encompass the maternal copy of UBE3A. In some patients with AS, the UBE3A protein is present but with a single amino acid change known as a missense mutation. Investigators noticed that essentially all of the AS-associated missense mutations are located in specific regions (or "hot-spots") of the UBE3A protein that are critical for UBE3A function. This research will evaluate how each known mutation affects UBE3A function. Furthermore, it has the potential to more accurately predict whether new mutations in UBE3A are benign or cause AS. Such studies could lead to therapeutics that stabilize UBE3A in a subset of patients with AS.

Congratulations to Angela Mabb, Ph.D., Recipient of the 2013 Joseph E. Wagstaff Postdoctoral Fellowship

The Angelman Syndrome Foundation (ASF) established the Joseph E. Wagstaff Postdoctoral Fellowship in 2010 to foster the brightest and best young researchers in pursuit of Angelman syndrome scientific discovery.

Dr. Mabb is using the Joseph E. Wagstaff Postdoctoral Fellowship to further understand the role topoisomerase inhibitors play in genetics and how improper functioning of the UBE3A gene occurs. Her goal with this research is to contribute its findings to other research projects in this area with the ultimate goal of finding a treatment for Angelman syndrome.

Dr. Mabb has participated in a number of research projects during her education and post-doctoral work at several leading research institutions, including Duke University, the University of Wisconsin and the University of North Carolina, Chapel Hill. Her interest in Angelman syndrome stems from her past research endeavors in drug discovery, genomic imprinting and other related areas. Dr. Mabb earned her two B.S. degrees in Chemistry and Bio-Molecular Science from Clarkson University, and her Ph.D. in Molecular and Cellular Pharmacology from the University of Wisconsin, Madison. Her sponsoring mentor at UNC is Ben Philpot, Ph.D. and she is working jointly with Mark Zylka, Ph.D.

Portia Kunz Receives Postdoctoral Award for Research Excellence

Dr. Portia Kunz (McCoy) is a postdoctoral fellow in the Department of Cell Biology and Physiology under the mentorship of Drs. Ben Philpot. Each year, the Postdoctoral Scholars Awards for Research Excellence are given in recognition of the research promise demonstrated by individual postdoctoral scholars. The award is designed to recognize research potential and to assist postdoctoral scholars in their continued professional development.

Dr. Kunz's research focuses on determining the manifestation of structural synaptic deficits associated with the autism spectrum disorder, Angelman syndrome. Understanding how and when structural deficits arise will serve as a readout for the future testing of potential therapeutic agents as well as define a critical period for effective treatment administration. She has also been active in the AS clinic at the Carolina Institute for Developmental Disabilities examining anxiety behaviors in individuals with AS.

Researchers Discover Potential Cause of Autism *continued*

This study could also explain why some people with mutations in topoisomerases develop autism and other neurodevelopmental disorders. Topiosomerases are enzymes found in all human cells. Their main function is to untangle DNA when it becomes overwound, a common occurrence that can interfere with key biological processes.

Most of the known topoisomerase-inhibiting chemicals are used as chemotherapy drugs. Zylka, Philpot, and their team are searching for other compounds that have similar effects in nerve cells. "If there are additional compounds like this in the environment, then it becomes important to identify them," said Zylka. "That's really motivating us to move quickly to identify other drugs or environmental compounds that have similar effects — so that pregnant women can avoid being exposed to these compounds."

Drs. Mark Zylka and Ben Philpot

Zylka and his colleagues stumbled upon the discovery quite by accident while studying topotecan, a topoisomerase-inhibiting drug that is used in chemotherapy. Investigating the drug's effects in mouse and human-derived nerve cells, they noticed that the drug tended to interfere with the proper functioning of genes that were exceptionally long — composed of many DNA base pairs. The group then made the serendipitous connection that many autism-linked genes are extremely long.

"That's when we had the 'Eureka moment,'" said Zylka. "We realized that a lot of the genes that were suppressed were incredibly long autism genes." Of the more than 300 genes that are linked to autism, nearly 50 were suppressed by topotecan. Suppressing that many genes across the board — even to a small extent — means a person who is exposed to a topoisomerase inhibitor during brain development could experience neurological effects equivalent to those seen in a person who gets ASD because of a single faulty gene.

The study's findings could also help lead to a unified theory of how autism-linked genes work. About 20 percent of such genes are connected to synapses — the connections between brain cells. Another 20 percent are related to gene transcription — the process of translating genetic information into biological functions. Zylka said this study bridges those two groups, because it shows that having problems transcribing long synapse genes could impair a person's ability to construct synapses.

"Our discovery has the potential to unite these two classes of genes — synaptic genes and transcriptional regulators," said Zylka. "It could ultimately explain the biological mechanisms behind a large number of autism cases."

Congratulations to Elaine Goolsby on Her Retirement

Thank you to Elaine Goolsby, MSW, LCSW, for her years of dedicated service to the University. We wish her much happiness in her retirement!

Elaine was recruited by Dr. Harry Chamberlin in 1963 to fill the position of Chief Social Worker with the Developmental Evaluation Clinic, formerly the Division for Disorders of Development and Learning (DDDL), the Clinical Center for the Study of Development and Learning (CDL), and now the Carolina Institute for Developmental Disabilities (CIDD).

Over the past 50 years, Elaine has held many faculty positions within the School of Social Work and the School of Medicine including Lecturer, Clinical Scientist, Assistant Professor, and Clinical Associate Professor. Her first official retirement was effective December 31, 1991, but she soon returned in early 1993 to continue teaching, mentoring students, and providing clinical services to the families seen here at the CIDD.

Elaine has touched many lives over the course of her work at UNC. She has been a valued mentor to countless students, families, faculty and staff and we will miss her very much.

Stephen Hooper Named Chair of Department of Allied Health Sciences

William L. Roper, MD, MPH, Dean of the UNC School of Medicine, has appointed Stephen R. Hooper, PhD, Chair of the Department of Allied Health Sciences (DAHS) and Associate Dean for Allied Health Sciences.

Dr. Hooper is a Professor of Psychiatry, Psychology, Pediatrics, and Education at UNC and has carried a number of titles at the CIDD, including Director of Training and Education, Director of Child and Adolescent Neuropsychology, and Associate Director. He is an international expert in child neuropsychology with much of his research, clinical activity, and community outreach devoted to developmental disabilities.

"I certainly thought that my career would end with the CIDD, but I have been given an opportunity to assume another wonderful leadership role within the medical school. After 26 years at the CDL/CIDD, it is hard to think of being at another place," said Dr. Hooper. "It has been a wonderful run and I truly have enjoyed working with each and every one of you over the years. It is hard to imagine working with a better group of people. I know that the CIDD will continue to be one of the national leaders in the field of intellectual/developmental disabilities, and I hope to continue my connections and collaborations as I move into my new position. With that said, I am extremely excited about my new leadership role, and look forward to working with the faculty and staff at the UNC Department of Allied Health Sciences."

Dr. Hooper joined the UNC faculty in 1987 as an Assistant Professor in the Department of Psychiatry and as Director of Psychology at the Clinical Center for the Study of Development and Learning (CDL). His appointment as Chair and Associate Dean became effective October 1, 2013.

Welcome New T32 Postdocs

Katrina Martin, Ph. D. received her doctorate in Special Education from the University of California, Berkeley. Working with Drs. Laura Sterponi and Marci Hanson, Dr. Martin's dissertation examined how young children with autism identify and respond to others' emotion. Combining observed behavioral response with physiological data, Katrina's research provides a bridge between the fields of education and neuroscience. At CIDD Dr. Martin will be working with Dr. Linda Watson using these measures to explore outcome effects of an early intervention study for children at risk for developing autism. Physiological and behavioral response to empathetic processes and sensory stimuli will be examined. Additionally, Dr. Martin will coordinate a project investigating social approach behaviors in young children at risk for autism. Her work aims to provide insight into the physiological correlates of social, sensory and empathetic behavior in children with neurodevelopmental disorders.

Meghan Swanson, Ph.D. received her doctorate in Behavioral Neuroscience from the Graduate Center at the City University of New York under the mentorship of Dr. Michael Siller. For her dissertation she developed an eye-tracking measure of joint attention and conducted initial validation on populations of healthy adults, typically developing children, and children with ASD. She has published research from her dissertation in the *Journal for Autism and Developmental Disorder* and *Research in Autism Spectrum Disorders*. Meghan joined the CIDD T32 to work with Dr. Joseph Piven on the Infant Brain Imaging Study (IBIS), a longitudinal study of infants at-risk for ASD, where she will investigate potential early language environmental factors that relate to later aberrant brain development and clinical outcomes. Her work will aim to elucidate brain-behavior mechanisms in ASD, and may help to identify more subtle signs of the disorder allowing for early detection of risk, before behavioral manifestation and delayed trajectory are established.

Jeffrey Stirman, Ph.D. received his doctorate from the Georgia Institute of Technology (Atlanta, GA) in bioengineering. Working in the lab of Dr. Hang Lu, Jeffrey developed microfluidic systems, automated imaging technology, and applied image analysis techniques to investigate the developmental regulation of neural networks and how these networks regulate behavior in the model organism *C. elegans*. Through the CIDD T32 program, Jeffrey will be working with Dr. Spencer Smith, exploring the structure and coding schemes of the neural networks involved in visual processing. They will examine the deficiencies in visual processing in mouse models of autism with the goal of gaining an understanding of the pathophysiology of the neural networks in autism spectrum disorders.

UNC IDDRC Funded for Another Five Years *continued*

Image analysis services, overseen by Beatriz Paniagua, Ph.D., employ automated methods for processing MRI/DTI in animal models, including mice, rats, and non-human primates. The Confocal/ Multiphoton Imaging Facility, led by William Snider, M.D., Director of the UNC Neuroscience Center, supports studies on cellular and molecular mechanisms in neurodevelopment, utilizing labeled neural tissue, brain slices, or intact, living embryonic brains. Overall, these different components of the Preclinical Core allow IDDRC investigators to link abnormal behavioral phenotypes to changes in brain structure, regional connectivity, cellular function and molecular processes.

Biomedical research is increasingly faced with the complex tasks of processing, analyzing, integrating and interpreting vast amounts of data from behavioral, imaging and genetic studies. In the Bioinformatics and Biostatistics Core, directed by Fei Zou, Ph.D., and co-directed by Margaret Burchinal, Ph.D., the IDDRC brings together expertise in bioinformatics and biostatistics to leverage overlapping resources and expertise required for state-of-the-art processing and analysis of biomedical data, and to expand opportunities for cross-disciplinary, collaborative research on IDDs.

Since its inception in 1967, the UNC IDDRC has had a major impact on developmental disabilities research and scientific training at UNC. With this successful NICHD renewal, we will be able to continue to pursue the overarching goal of promoting research that leads to important advances in the prevention and treatment of IDDs.

Welcome to Our 2013-14 Long-Term Trainees

Fatima Beck is a parent trainee for the LEND program and is currently employed at Piedmont Health Services as a Bilingual Care Manager. She is mentored by Mrs. Ann Palmer and is the parent of 4 children, including a 16 year old son who has autism.

Andrea Bucker is a 3rd year student in the Audiology Program at UNC. She is also a CIDD Medium-Term LEND trainee, mentored by Dr. Jack Roush. Her areas of study/interest are Cochlear Implants and Pediatric Audiology.

Laura Brown is in the Duke Pediatric Physical Therapy Residency and UNC LEND Fellowship. She is mentored by CIDD faculty member Kathleen Ollendick. Her areas of study/interest include providing families with a more comprehensive set of resources that extends beyond the discipline of physical therapy, and the physical activity in children with developmental disabilities.

Susan Cheung is a 3rd year Audiology Trainee. She is mentored by Dr. Jack Roush. Susan's area of focus is Pediatrics and Cochlear Implants.

Cara Damiano is a Clinical Psychology Practicum Student who is mentored by Dr. Gabriel Dichter. Cara is currently in her 6th year of her PhD Program. Her current research interest is in neural correlates of reward processing in children with autism. Her clinical interests are treatment and intervention with children with autism and DD.

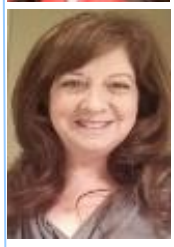
Erin Eves is a Nursing LEND Trainee at the CIDD and is mentored by CIDD LEND Faculty member Dr. Linda Beeber. Her areas of study/interest are Community Mental Health. Erin is in her final year of her Master's Program and anticipates graudating in Spring 2013.

Michelle Franklin is a Nursing LEND Trainee and is mentored by Rob Christian, MD and Linda Beeber, PhD, RN, CS. Michelle's area of interest is integration medical and psychiatric care within developmental disabilities population.

Laura Greaver is a 3rd year Audiology LEND Trainee. Her CIDD faculty mentor is Dr. Jack Roush. Her areas of study/interest are Pediatric Audiology (particularly cochlear implants and working with families of children with hearing loss.

Sara Hannigen is a CIDD Psychology Intern and is mentored by CIDD faculty Anne Wheeler. Sarah's professional interests focus on autism spectrum disorders, developmental disabilities, neuropsychological assessment, and high-risk infants.

Hannah Hodson is a 3rd year Audiology LEND Trainee. Her CIDD Faculty mentor is Jack Roush. Hannah's areas of study/interest are Pediatric Audiology and Auditory Development.



Lynn Hoffmann is a LEND Post-Doctoral Fellow. She earned a Psy.D in Clinical Psychology from Argosy University. Lynn is mentored by Dr. Becky Edmondson-Pretzel. Areas of study/ interest include developmental disabilities, Post Traumatic Stress Disorder, and Traumatic Brain Injury.

Susan Kermon is a LEND Self-Advocacy Trainee mentored by Deb Zuver. She has a BFA in Sculpture from UNC-Greensboro and was diagnosed with ASD in February 2012. She has a particular interest in adults who have learned later on in life that they are on the spectrum.

Jessica Keroack is a 4th year Psychology Extern at CIDD, who is mentored by Anne Wheeler. Her areas of study/interest are: social emotional learning, positive youth development, pediatric neuropsychology and neurodevelopmental disability.

James Leyva is a 3rd year Audiology student participating in the LEND Program at CIDD. His faculty mentor is Dr. Jack Roush. James is interested in private/business administration.

Eli Lovell is a 2nd year Public Health and Nutrition (MPH/RD) LEND Trainee, who is mentored by CIDD LEND Faculty member, Janice K. Sommers, MPH. His area of study/ interest is Pediatric Nutrition and Childhood Obesity Prevention.

Kylee Miller is a Psychology LEND Post-Doctoral Fellow. Her clinical interests are in diagnostic evaluation and treatment of DD and pediatric populations. Her research interests lie at the nexus of cognition, health, and academic performance in school aged children, as well as patient education and advocacy for at-risk / underserved populations.

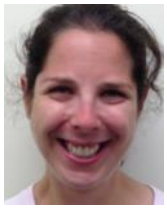
Welcome to Our 2013-14 Long-Term Trainees *continued*

Leslie Payne is a first year MSW graduate student and LEND fellow seeking to develop a career in private practice specializing in DD. She is a former CIDD employee of five years, having completed autism research primarily with Dr. Piven and Morgan Parlier. She is also doing her first year social work field placement at CIDD.

Rebecca Payne is a 2nd year doctoral student and a LEND Education Trainee. She is mentored by CIDD Faculty member, Donna Yerby. Rebecca's area of study/interest is Literacy.

Melissa Scales a LEND Physical Therapy Trainee, mentored by Katie Ollendick, PT, DPT. Melissa's area of study/interest includes Early Mobility and School Based Related Services.

Sarah Scow is a Public Health LEND Trainee. Her CIDD Faculty mentors are Angela Rosenberg/Katie Ollendick. Sarah's area of study/interest is improving provision of physical therapy services to children with DD and their families, including an emphasis on community resources.



Alexis Teplin is a LEND Self-Advocacy Trainee. She is mentored by CIDD faculty members Deb Zuver and Donna Yerby. Alexis' area of study/ interest is Child Development and Early Childhood Education.

Adrienne Villagomez is a Special Education LEND Trainee and third year doctoral student in School Psychology. She earned her B.A. in 2010 from Temple University. Primary interests in developmental disabilities include neurodevelopment and learning as well as advocacy efforts for individuals with I/DD.

Angie Waitt is a 2nd year Speech Language Pathology LEND Trainee. Her CIDD Faculty mentor is Margaret DeRamus. Angie's area of study/interest is Autism.

Ginger Walton is Self-Advocacy and Policy LEND trainee. Ginger also has a background as in Nursing. Her CIDD faculty advisory is Deb Zuver.

Melissa Weiss is a LEND Trainee who is a parent of a child with developmental disabilities. Her discipline is School Counseling and she his mentored by Ann Palmer. Her area of interest is counseling students/families affected by ASD. Melissa will graduate May 2014 with a Masters in School Counseling.

Cecil Yeatts III is a 3rd year Doctor of Audiology Student. He is participating in the LEND Program at CIDD and is mentored by Dr. Jackson Roush. His area of study/interest is cochlear Implants.

Angelman Syndrome Foundation Conference Presentation

Dr. Portia Kunz (McCoy), postdoctoral fellow in the Department of Cell Biology and Physiology, and **Sheena Berry,** school psychology graduate student, presented "*Separation Anxiety in Individuals with Angelman Syndrome: A Case Study*" at the Angelman Syndrome Foundation conference in Orlando this past July. Mentors for the project are Drs. Anne Wheeler and Rob Christian.

Dr. Portia Kunz (left) and Sheena Berry (right)

Faculty and Staff Enjoy Time Together During Our CIDD Luncheon

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For more than 40 years, the programs of the Carolina Institute for Developmental Disabilities have provided innovative, high-quality clinical, research, and training activities supporting individuals with developmental disabilities.

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