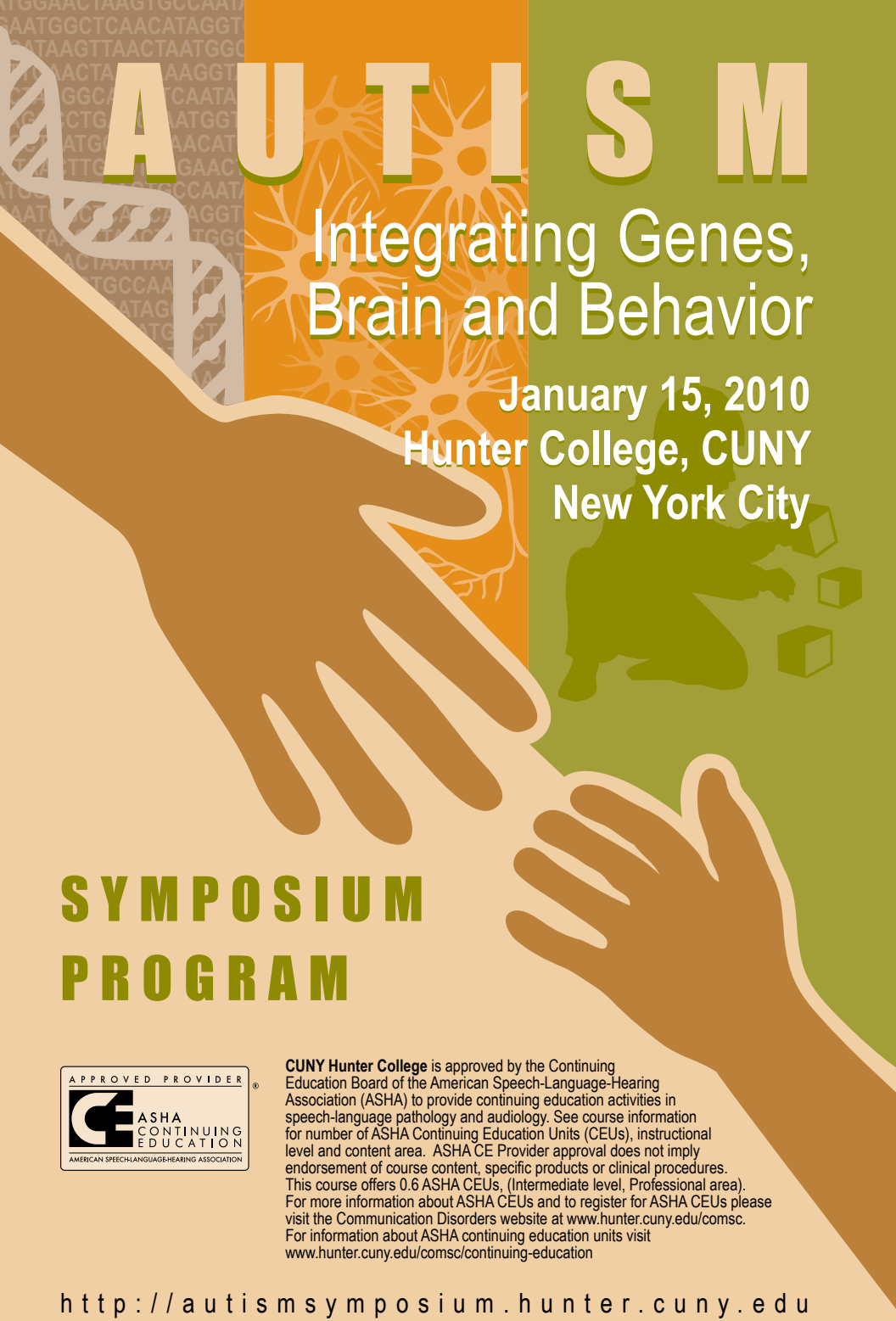
AUTISM

Integrating Genes, Brain and Behavior

January 15, 2010
Hunter College, CUNY
New York City



SYMPOSIUM PROGRAM

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CUNY Hunter College is approved by the Continuing Education Board of the American Speech-Language-Hearing Association (ASHA) to provide continuing education activities in speech-language pathology and audiology. See course information for number of ASHA Continuing Education Units (CEUs), instructional level and content area. ASHA CE Provider approval does not imply endorsement of course content, specific products or clinical procedures. This course offers 0.6 ASHA CEUs, (Intermediate level, Professional area). For more information about ASHA CEUs and to register for ASHA CEUs please visit the Communication Disorders website at www.hunter.cuny.edu/comsc. For information about ASHA continuing education units visit www.hunter.cuny.edu/comsc/continuing-education

http://autismsymposium.hunter.cuny.edu

23rd Annual International Symposium

Sponsors:

Hunter College of the City University of New York,
Center for Study of Gene Structure & Function.
Weill Cornell Medical College,
Clinical & Translational Science Center.

Additional CTSC member institutions:

Memorial Sloan-Kettering Cancer Center, Hospital for Special Surgery,
Hunter College School of Nursing, Cornell University Cooperative Extension.
Collaborator: New York Academy of Sciences.

Center for Study of Gene Structure and Function

The Center for Study of Gene Structure and Function is a consortium of researchers within Hunter College of The City University of New York — one of the largest public universities in the nation. At the heart of the Gene Center's mission is an imperative to build unique collaborations among biologists, chemists, biopsychologists, biophysicists, and bioanthropologists; to recruit and equip outstanding faculty; to develop and share core research facilities; and to implement strategies for scientific networking.

Since the Center's inception in 1985, the growing number of papers published in peer-reviewed journals and the number and amount of grants obtained by the faculty have been the most visible hallmarks of the Center's success. The Gene Center provides a vibrant research environment marked by workshops on cutting-edge research techniques; frequent research colloquia by guest scientists; and an annual international symposium, which is a major event on the New York scientific calendar.

The Gene Center encourages bright undergraduates, including minorities to make a career in biomedical research by hosting a Summer Program for Undegraduate Research (SPUR). Additionally, the Center in conjunction with the Clinical Translational Science Center (CTSC) and Weill Cornell Medical College offers the opportunity for qualified applicants, including minorities to pursue a PhD degree in Biomedical Science as well as a certificate in Clinical Investigation. Hunter College is a leader in academic diversity, with an undergraduate student population that reflects the demographics of New York City. Dr. Robert Dottin, Director of the Gene Center, along with the Hunter College community has successfully diversified the faculty and graduate student bodies, providing role models for excellence in Science.

Visit the Gene Center website: http://genecenter.hunter.cuny.edu

The RCMI Program of the National Institutes of Health enhances the research capacity and infrastructure at minority colleges and universities that offer doctorates in health sciences. http://www.ncrr.nih.gov/resinfra/ri_rcmi.asp

National Center for Research Resources

The NCRR provides laboratory scientists and clinical researchers with the environments and tools they need to understand, detect, treat, and prevent a wide range of diseases. This support enables discoveries that begin at a molecular and cellular level, move to animal-based studies, and then are translated to patient-oriented clinical research, resulting in cures and treatments for both common and rare diseases. NCRR connects researchers with one another, as well as with patients and communities across the Nation, to harness the power of shared resources and research. http://www.ncrr.nih.gov

NATIONAL INSTITUTES OF HEALTH

The NIH, a part of the U.S. Department of Health and Human Services, is the primary Federal agency for conducting and supporting medical research. Composed of 27 Institutes and Centers, the NIH provides leadership and financial support to researchers in every state and throughout the world. Its mission is science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce the burdens of illness and disability. http://www.nih.gov

Clinical and Translational Science Center

The Clinical and Translational Science Center (CTSC) is a unique collaboration between renowned biomedical and community organizations centered on Manhattan's east side. Weill Cornell Medical College and Graduate School of Medical Sciences is home to the administrative core of the CTSC, led by CTSC Program Director Julianne Imperato-McGinley, MD, Associate Dean of Translational Research and Education at Weill Cornell Medical College (WCMC).

In addition to WCMC, the CTSC partner institutions include:

- Hunter College, Center for Gene Structure and Function
- Hunter College, School of Nursing
- Hospital for Special Surgery
- Memorial Sloan-Kettering Cancer Center
- Cornell University Co-operative Extension in New York City

Affiliated hospitals include New York-Presbyterian Hospital, Lincoln Medical Center, Methodist Hospital, New York Downtown Hospital, New York Queens Hospital, Wyckoff Heights Medical Center, and Brooklyn Hospital.

The CTSC is designed to bring together the resources of all partner and affiliate institutions to facilitate novel translational research. Separately, these institutions include superb academic centers of excellence, a diverse patient base, and a unique community-engagement program designed to foster collaboration between community groups and translational research scientists. Each partner and affiliate has an unmistakable character that enhances multi-disciplinary interaction. Integration of these unique resources and intellectual assets will facilitate translation of research findings in the laboratory to clinical research at the bedside and ultimately to best practices within underserved communities.

For more information about the CTSC, please visit http://www.med.cornell.edu/ctsc. A Translational Research Support Team and a wide range of services, including core laboratories and professionally staffed patient care inpatient and outpatient units, are available to support clinical and basic science investigators who are interested in translational research. Contact a CTSC Research Facilitator to find out more: hks2001@med.cornell.edu.

The CTSC is funded through the Clinical and Translational Science Awards, a national consortium that is transforming how clinical and translational research is conducted.

The 23rd Annual International Symposium of the Center for Study of Gene Structure & Function at Hunter College, with the Weill Cornell Medical College Clinical and Translational Science Center, is supported by the National Institutes of Health, National Center for Research Resources, Research Centers in Minority Institutions - G12-RR-003037 and Clinical Translational Science Award - UL1RR024996

MORNING SESSION

Chair: ***Julia Kaltschmidt*** *, Sloan-Kettering Institute*

8:30 Breakfast

9:00 Introduction by **Robert P. Dottin,** Director of the Center for Study of Gene Structure & Function and Professor of Biology at Hunter College, CUNY
Jennifer J. Raab, President, Hunter College, CUNY
Julianne Imperato-McGinley, Associate Dean of Translational Research, Weill Cornell Medical College

9:30 **Daniel Geschwind, Keynote Speaker,** UCLA
Autism Genetics: From gene to brain to cognition and behavior.

10:15 **Jeff Lichtman**, Harvard University
Connectomics in the Developing Nervous System

10:45 Coffee/ Posters

11:00 **Hollis Cline**, The Scripps Research Institute
Building Brain Circuits

11:30 **Jason Dictenberg**, Hunter College, City University of New York
Imaging Synaptic Connectivity in Mouse Models of Autism

11:45 **Christopher Walsh**, Harvard University
World-wide and Genome-wide Searches for Autism Genes

12:15 **Samie Jaffrey,** Weill Cornell Medical College
Morning Discussion Moderator

12:30 Lunch and Poster Session
Poster Session: student organizers - **Beth Jaffe** (Hunter College, School of Education) & **Sebastian Shaffer** (Weill Cornell Medical College)

AFTERNOON SESSION

Chair: ***Michael Lewis*** *, Hunter College, CUNY*

1:30 Poster Awards Ceremony

1:45 Remarks:
Robert P. Dottin, Director of the Center for Study of Gene Structure & Function and Professor of Biology at Hunter College, CUNY
Sidney A. McNairy, Jr., Director, Division of Research Infrastructure, National Center for Research Resources, National Institutes of Health

2:00 **Geraldine Dawson, Keynote Speaker**, Autism Speaks
New Directions in Early Detection and Intervention in Autism

2:45 **Mirella Dapretto,** UCLA
Social Motivation, Attention and Learning in the Autistic Brain

3:15 **Helen Tager-Flusberg,** Boston University
Language in ASD: From Behavioral Phenotypes to Neurobiology and Genetics

3:45 Coffee/ Posters

4:00 **Sally Rogers**, UC Davis M.I.N.D. Institute
Integrating Neuropsychology, Development, Behavior and Treatment for Early Autism

4:30 **Michael Siller**, Hunter College, City University of New York
A Parent Mediated Intervention Increases Responsive Parental Behaviors among Parents of Children with Autism: Preliminary Results from a Randomized Controlled Trial

4:45 **Marshalyn Yeargin-Allsopp**, CDC
Epidemiology and Changing Paradigm of Autism Spectrum Disorders

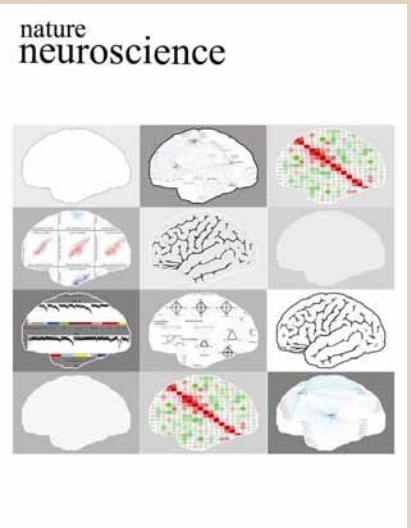
5:15 **Shirley Cohen,** Hunter College School of Education
Afternoon Discussion Moderator
Concluding Remarks

Daniel Geschwind
Keynote Speaker

UCLA

Autism Genetics:
From Gene to Brain to Cognition and Behavior

Abstract: Autism is a neurodevelopmental syndrome characterized by difficulties in language, social cognition and the presence of repetitive, stereotyped behaviors. Genetic studies have yielded new insights into its causes and potential mechanisms. But, these studies have also revealed significant heterogeneity. It is becoming clear that autism and autism spectrum disorders have many diverse genetic causes, leading us to conceive of it more as the autisms than as a single condition. Recognizing its heterogeneity, we have approached genetic studies of this condition to develop large sample sizes in a collaborative manner, first leading the development of a large shared open resource called the Autism Genetic Resource Exchange (AGRE). We also have taken the position that some of the risk for ASD is on a continuum with normal variation, and have focused our own research on defining specific endophentoypes based on quantitative measures that provide more analytic power than using the categorical phenotype alone. These phenotypes include gene expression profiles and measures related to language delay. Our work in language delay has identified CNTNAP2 as a potentially important risk factor for ASD, which appears to be part of a molecular, language related pathway downstream of FoxP2. We have worked to connect genetic risk to the development of brain circuits starting with study of anatomical expression patterns of several autism candidate genes including CNTNAP2, MET and others that have been replicated. CNTNAP2 was remarkably restricted to frontotemporal-subcortical (striatal) circuits providing a link between genetic susceptibility and specific brain circuits involved in autism. This type of multi-stage analysis of genetic risk variants will be useful in providing convergent evidence necessary to begin to understand how genes relate to human higher cognition in health and disease.



Bio: Daniel Geschwind is the Gordon and Virginia MacDonald Distinguished Professor of Neurology, Psychiatry and Human Genetics, and Director of the Neurogenetics Program and Center for Autism Research and Treatment at UCLA. He obtained an A.B. degree in psychology and chemistry at Dartmouth College; and his M.D. and Ph.D. degrees at Yale University School of Medicine. He completed his neurology residency at UCLA in 1995, where he has remained following training, joining the faculty in 1997. He also serves as the Co-Director of the UCLA Center for Neurobehavioral Genetics, within the Semel Institute. Dr. Geschwind has published more than 100 papers and review articles and serves on the editorial boards of the journals Neurobiology of Disease (Associate Editor); Biological Psychiatry (Deputy Editor); Neurogenetics; and Current Genomics, as well as on several review committees and scientific advisory boards, including the March of Dimes, the Cure Autism Now Foundation, the Faculty of 1000 Medicine, and the Society for Neuroscience's Program Committee. He received the Derek Denny-Brown Neurological Scholar Award from the American Neurological Association in 2004. Dr. Geschwind's laboratory works broadly within the field of neurogenetics and over the last 5 years has focused these efforts increasingly on autism spectrum disorders.

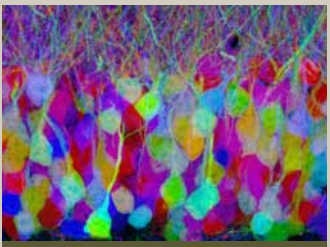
Overall, three primary areas of research in neurogenetics are encompassed -- autism and language; focal neurodegenerative syndromes; and the structural/molecular basis of human cognitive specializations. In each of these independent but overlapping domains, his laboratory has used genetics and what is now sometimes referred to as a functional genomic approach. He and his collaborators have engaged in a multi-pronged strategy, from studying normal human and animal model brain patterning, to diseases where language and social communication are disrupted (such as autism).

Jeff Lichtman

Harvard University

Connectomics in the Developing Nervous System

Abstract: It is likely that pattern of connections between nerve cells is not only of fundamental importance to normal brain function, but that disruptions in this pattern may underlie certain disorders of the nervous system including autism. My laboratory has a longstanding interest in how the normal pattern of connections develop in early postnatal life. We are particularly interested in the substantial reorganization seen in developing neural circuits as mammals shape their nervous system to conform to their experiences in early postnatal life. To study the branching patterns of developing circuits and their dynamics we have used transgenic animals in which individual neurons express spectral variants of fluorescent proteins. These mice allow us to watch the reorganizations as they occur by time-lapse imaging in vivo. We have also randomized the amount of several different fluorescent proteins expressed in individual neurons (Brainbow transgenic mice) to sort out the wiring of many neurons simultaneously. To track axons long distances we developed image processing tools to identify the same axon in multiple images. The reconstructions show many surprises about the ways axons are organized and branch. Recently we developed automated methods for serial electron microscopy to do the same kind of analysis in the central nervous system based on a novel microtome and a scanning electron microscope approach. Ultimately we hope to compare neural circuits in animal models of autism with wild-type brains.



Bio: Jeff Lichtman has an AB from Bowdoin (1973), and an M.D. and Ph.D. from Washington University (1980) where he worked until 2004, most recently as Professor of Neurobiology. In 2004 he moved to Harvard University where he is a Professor in the Department of Molecular and Cellular Biology. He is also a member of the newly established Center for Brain Science. Lichtman's research interests revolve around the question of how mammalian brains accommodate information based on their early experiences. He has focused on the dramatic rewiring of neural connections that takes place in early postnatal development. This work has required development of techniques to visualize the patterns of connections in the nervous system and how they are altered over time.

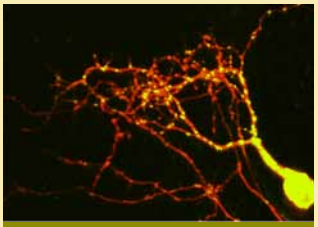
Hollis Cline

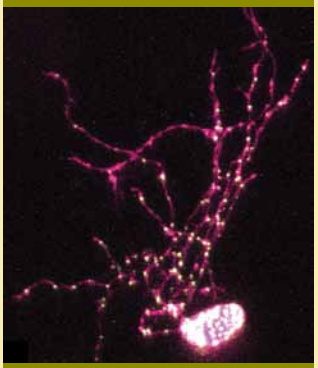
The Scripps Research Institute
La Jolla, CA

Building Brain Circuits

Abstract: Studies on the development of sensory systems in the CNS have demonstrated that brain circuits develop through an iterative process in which feedback from developing synaptic connections governs subsequent events in circuit development and function. I will discuss the Synaptotrophic Hypothesis, which states that synaptic connections between developing neurons control the exploratory behavior of developing neurons, the development of neuronal arbors and consequently the establishment of neuronal circuits. Several recent studies have applied modern molecular genetic, imaging and electrophysiological methods to address the applicability of the Synaptotrophic Hypothesis and now provide strong evidence that maturation of excitatory synaptic inputs is required for the development of neuronal structure in the intact brain.

Bio: Hollis T. Cline, Ph.D., is a professor at The Scripps Research Institute in San Diego. She received a Ph.D. in neurobiology from the University of California, Berkeley, in 1985. Using time-lapse imaging, electrophysiology, and molecular genetic techniques, Cline developed an experimental system to assess cellular and molecular mechanisms underlying plasticity in response to visual stimulation in living animals. She is using her Pioneer Award to launch a large-scale project to understand the architecture, development, and plasticity of brain circuits. Cline is a member of the Board of Scientific Counselors of the National Institute of Neurological Disorders and Stroke and was recently a Council member of the Society for Neuroscience.



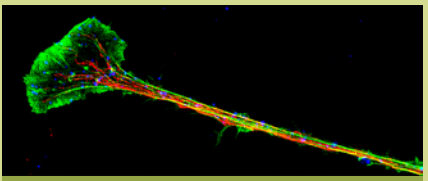


Jason Dictenberg

Hunter College, City University of New York

Imaging Synaptic Connectivity in Mouse Models of Autism

Abstract: During brain formation billions of neurons must form proper connections or "wiring" to ensure normal function and cognition throughout development. This process is very dynamic: individual neurons form many connections initially, but only a fraction of these persist into adulthood. The retention of important connections, or synapses, for brain function appears to involve fine tuned expression of genes at precise moments in development. Recent advances in understanding the key genetic pathways that contribute to normal brain development now provide an opportunity to identify both the genetic and environmental contributions to ASDs. Based on these data we hypothesize that ASDs result from a disruption of temporally fine-tuned genetic programs that regulate the formation and maturation of synapses, the place where individual neurons transmit signals that are the basis of learning, memory and behavior. To test our hypothesis in the context of this dynamic synaptic process, we have quantified changes in the number and type of synapses during the early synapse formation and refinement period just after birth in one of the best known mammalian genetic models of autism, the fragile X syndrome mouse. We have focused our studies on synaptic scaffold proteins and neural cell adhesion molecules (NCAMs) that initiate synapse formation and are now implicated as "hot spots" for genetic mutation in autism pathogenesis in humans. Live cell imaging of synapse dynamics using these markers will be highlighted to show how activity-dependent changes result in a shift in the balance of molecules that directly regulate excitatory and inhibitory circuitry in this single-gene model of autism. (Supported by NIH grant GM084805 to J.D.)



Bio: Jason Dictenberg, Ph.D. is an Assistant Professor of Biological Sciences at Hunter College and the Graduate Center, City University of New York. He received his BA from Brandeis University with Honors (1993) and a Ph.D. from the University of Massachusetts Medical School (2000). He completed a post-doctoral fellowship at Albert Einstein College of Medicine where his research demonstrated that the dynamics of mRNA transport to synapses were defective in the hippocampus of the Fragile X syndrome mouse. His research interests focus on the role of mRNA transport and translation within neuronal dendrites and at synapses, and the dysregulation of this process in diseases of cognitive function. His laboratory is studying how activity-regulated expression of dendritic mRNAs influences synapse development and morphologic plasticity. Emphasis is placed on the visualization of single mRNA dynamics within dendrites of living neurons and the subsequent translation of these mRNAs in response to synaptic stimulation. These approaches are being developed using super-resolution quantitative digital microscopic techniques coupled with novel in vivo methods for spatial and temporal control of light-activated gene expression. Ultimately this research will highlight how dendritic mRNAs are regulated in the processes of synaptogenesis and long-term synaptic changes that underlie plasticity, and defects that give rise to alterations in learning and memory that result in neurological disease. Dr. Dictenberg is the recipient of grants from the NIH and NSF to study the role of mRNA transport and translation in synapse development.

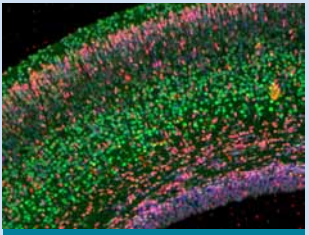
Christopher Walsh

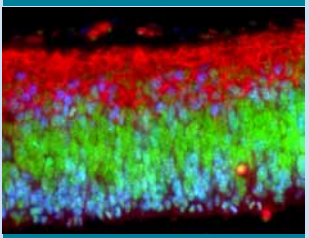
Harvard University

World-wide and Genome-wide Searches for Autism Genes

Abstract: Although autism is considered the most heritable of the neuropsychiatric conditions, specific genetic mutations are identifiable <20% of affected children. Though ≈70% of autistic children are mentally retarded, ≈30% are not, and some autistic children are highly intelligent. Mental retardation (MR) is considered a largely Mendelian disease, with mutations in hundreds of genes accounting for the disorder.

We have taken an approach to studying autism analogous to that used in MR, utilizing rare, large families, where parents share ancestry, to identify recessive causes of autism. Some families are large enough so that a single family provides suggestive linkage (LOD score>2.5), with the responsible loci generally being heterogeneous, as expected by analogy to MR. Interestingly, some autism patients show homozygous deletions within areas of linkage that either remove genes, or in some cases are near genes but do not affect the genes' coding sequences. These noncoding deletions encompass highly conserved elements, some predicted to encode binding sites for transcription factors. The genes that are in or nearest to homozygous deletions tend to be expressed in adult hippocampus and regulated in their expression by neuronal activity. These data suggest that autism mutations may run a spectrum from null mutations to milder mutations that may disrupt neuronal function only partially, and hence might be better targets for therapies.





Supported by the HHMI, NIMH, NLM Family Foundation, and the Simons Foundation.

Bio: Christopher Walsh is Bullard Professor of Pediatrics and Neurology at Harvard Medical School, Chief of the Division of Genetics at Boston Children's Hospital, and an Investigator of the Howard Hughes Medical Institute at Beth Israel Deaconess Medical Center, Boston.

Dr. Walsh completed his MD and PhD degrees at the University of Chicago. After a neurology residency and chief residency at Massachusetts General Hospital, he completed a fellowship in genetics at Harvard Medical School. Dr. Walsh has studied patterns of neural stem cell division in the developing brain, cell fate choices, and cell migration in the developing cerebral cortex. He has also pioneered the analysis of human genetic diseases that disrupt the development or function of the cerebral cortex, causing severe brain disorders of childhood such as mental retardation, epilepsy, and autism.

Among his awards are a Jacob Javits Neuroscience Investigator Award from the National Institute of Neurological Disorders and Stroke, the Dreifuss-Penry Award from the American Academy of Neurology, the Derek Denny-Brown Award and the Jacoby Award from the American Neurological Association, and the Research Award from the American Epilepsy Society.

Geraldine Dawson

Keynote Speaker

Autism Speaks

New Directions in Early Detection and Intervention in Autism

Abstract: Recent prospective studies of infants at risk for ASD have provided insights into very early development in autism and allowed clinicians to develop new screening tools for identifying infants at risk for ASD. This presentation will review research on early development and screening in ASD, focusing on the infant-toddler period. At the same time that early screening tools are being developed, novel approaches to early intervention are being tested with infants at risk for ASD as young as 12 months of age. An overview of the empirical literature on early intervention in ASD will be provided. New approaches to early intervention that are appropriate for infants and toddlers will be described. The hope is that, by intervening very early in life, the course of early brain and behavioral development can be modified and the core symptoms of autism can be significantly reduced or even prevented, in some cases.

Bio: Geraldine Dawson became Autism Speaks' first Chief Science Officer in January of 2008. In this role, Dawson serves as the scientific leader of Autism Speaks, working with the scientific community, stakeholders, and science staff to shape, expand, and communicate the foundation's scientific vision and strategy. Dawson is also Research Professor of Psychiatry at the University of North Carolina at Chapel Hill and Adjunct Professor in the Department of Psychiatry at Columbia University.

Prior to joining Autism Speaks, Dawson was Professor of Psychology and Psychiatry at the University of Washington (UW) and Founding Director of the UW Autism Center, which has been designated an NIH Center of Excellence since 1996. While at the University, Dawson led a multi-disciplinary autism research program focusing on genetics, neuroimaging, diagnosis, and treatment. Dawson's own research has been in the areas of early detection and treatment of autism, early patterns of brain dysfunction (electrophysiology), and more recently, development of endophenotypes for autism genetic studies. Dawson received continuous NIH funding for her research from 1980 until 2008 when she left UW to join Autism Speaks. Dawson's scientific achievements include discovering that autism symptoms could be recognized during infancy, defining the earliest manifestations of autism, pioneering the use of event-related brain potentials to study early brain dysfunction in autism, development of behavioral and electrophysiological endophenotypes in genetic studies of autism, and development and evaluation of the Early Start Denver Model, an intervention for infants and toddlers with autism. Dawson has published over 180 scientific articles and chapters and co-edited or authored a number of books about autism spectrum disorder and brain development, including Autism Spectrum Disorders; Human Behavior, Learning, and the Developing Brain; and A Parent's Guide to Asperger Syndrome and High-Functioning Autism. She has received over 50 grants supporting her research, including 17 research grants from NIH. From 2000-07, Dawson founded and directed University of Washington Autism Center's multi-disciplinary clinical services program, which is the largest of its kind in the northwestern United States. A strong advocate for families, Dawson has testified before the U.S. Senate on behalf of individuals with autism and played a key role on the Washington State Autism Task Force.

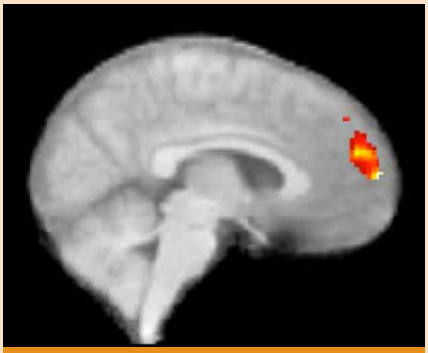
Dawson earned a Ph.D. in developmental and child clinical psychology from the University of Washington. After graduate school, she studied as a postdoctoral fellow at the Neuropsychiatric Institute at UCLA and, a year later, accepted a position as Assistant Professor at University of North Carolina in Chapel Hill. In 1985, she returned to the University of Washington as a faculty member, where she continued her research on autism and practiced as a clinical psychologist specializing in autism until she accepted her current position at Autism Speaks. She currently resides in North Carolina with her husband and daughter.

Mirella Dapretto

UCLA

Social Motivation, Attention and Learning in the Autistic Brain

Abstract: Infants' early biases to attend to human faces and voices likely play a pivotal role in guiding and constraining social learning and development. Conversely, the lack of such attentional preferences may significantly and negatively impact the developmental trajectory of individuals with Autism Spectrum Disorders. In this talk, I will present data from a series of recent studies conducted in children with ASD using functional magnetic resonance imaging (fMRI) which provide insights about the nature, possible causes, and consequences of these altered attentional processes in ASD. In discussing these research findings, I will seek to highlight how a theoretical framework synergistically informed by data from behavioral, neuroimaging, and genetic studies may offer new solutions to the puzzle of autism.



MPFC Activity is Inversely Related to Level of Social Impairment in ASD

from Wang et al, 2007, Archives of General Psychiatry

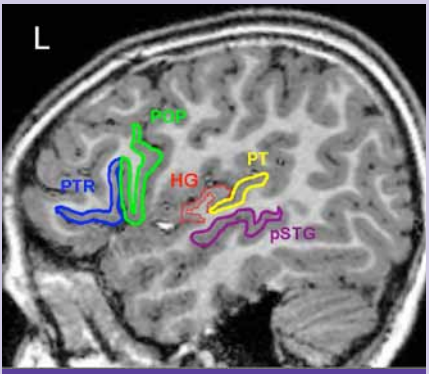
Bio: Dr.Dapretto is presently appointed as Associate Professor in the UCLA Dept. of Psychiatry & Biobehavioral Sciences. She received a Ph.D. in Developmental Psychology from UCLA and later acquired expertise in functional magnetic resonance imaging (fMRI) as a postdoctoral fellow at the UCLA Ahmanson-Lovelace Brain Mapping Center. Using neuroimaging techniques and an interdisciplinary approach, Dr.Dapretto's research examines the neural representation of language and social cognition in both the adult and typically-developing brain, as well as in developmental disorders such as autism. Dr. Dapretto has been the recipient of several awards, including an NIH grant to study the neural representation of language in typical development, and several grants (funded by Cure Autism Now, the National Alliance for Autism Research, and Autism Speaks) to study the neural basis of the socio-communicative impairments observed in autism spectrum disorders. Her work has been published in high-profile scientific journals such as Neuron, Brain, Nature Neuroscience, and Archives of General Psychiatry. Currently, Dr. Dapretto is the Principal Investigator of the imaging project within the NIH funded Autism Center of Excellence at UCLA.

Helen Tager-Flusberg

Boston University

Language in ASD: From Behavioral Phenotypes to Neurobiology and Genetic

Abstract: Among the defining symptoms of ASD are deficits in language and communication. In this presentation I will review the pragmatic aspects of communicative impairment that are universal and specific to ASD; and the more heterogeneous features of language impairment that define different subgroups within ASD, that suggest co-morbidity with other disorders. The key features of these language phenotypes will be described including evidence from behavioral, structural and functional neuroimaging studies in individuals with ASD and their first degree relatives. Implications for genetic studies and clinical application will be discussed.



Bio: Dr. Tager-Flusberg is currently Professor in the Department of Psychology at Boston University, and in the Department of Anatomy & Neurobiology at Boston University School of Medicine. She received her doctorate in Experimental Psychology from Harvard University, and then held appointments at the University of Massachusetts and the Eunice Kennedy Shriver Center before going to Boston University in 2001. Her research, which is currently funded by grants from the NIH, Autism Speaks, and the Simons Foundation focuses on early neurobehavioral markers and developmental trajectories of infants at risk for autism or SLI; and neurocognitive profiles of language and social phenotypes in autism, Williams syndrome and other disorders. She has edited 4 books and written over 150 peer-reviewed papers and chapters, and is the Associate Editor for 3 journals. She has presented her research at universities, conferences and workshops to professional and community groups.

Sally J. Rogers

UC Davis

Integrating Neuropsychology, Development, Behavior, and Treatment for Early Autism

Abstract: The difficulties of young children with autism, taken together, form a neuropsychological profile that differentiates early autism from other developmental disorders and patterns. Some areas of this profile represent delays in development, and others represent disordered patterns that are never seen in typical development. This profile, defined via experimental studies, is reflected in a behavioral repertoire that also differentiates autism from other early developmental disorders. The most efficacious treatments for young children have tended to focus on the behavioral repertoire. However, a current thrust of treatment research is to develop targeted treatments for the specific deficits associated with autism. Basing early intervention approaches on the neuropsychology of early autism, rather than the behavioral repertoire of excesses and deficits, may lead to more focused, effective, efficient and economic interventions. This talk will suggest ways in which an early intervention approach could be constructed from efficacious interventions targeting the developmental/neuropsychological profile of early autism and it will provide some data from a randomized controlled trial using such an approach- the Early Start Denver Model.

The Early Steps Study: An Autism Center of Excellence Research Network, funded by NIMH and NICHD.

Bio: Sally J. Rogers is a developmental psychologist and a Professor of Psychiatry at the M.I.N.D. Institute, University of California Davis. She is the principal investigator of several autism research projects, including one of the ten NIMH/NICHD funded Autism Centers of Excellence (ACE) network projects, involving a multi-site controlled trial of an infant-toddler treatment for autism, with her collaborators Cathy Lord at University of Michigan and Annette Estes at University of Washington. She is also the director of an interdisciplinary postdoctoral training grant for autism researchers. She is involved at the international level in major clinical and research activities involving autism, including membership in the executive board of the International Society for Autism Research, an editor of the journal Autism Research, and a member of the Autism, PDD, and other Developmental Disorders workgroup for the DSM V.

She received her Ph.D. from Ohio State University, with a specialization in Mental Retardation and Developmental Disabilities. She has spent her career studying cognitive and social development in young children with disabilities. She has published over 150 papers, books, and chapters on topics including cognitive development in children with profound mental retardation, cognitive and social development of blind infants, symptoms of toddlers with Fragile X Syndrome, as well as numerous papers on clinical and developmental aspects of autism. She has been very interested in imitation problems in autism for many years and has made seminal contributions to this line of autism research, including a recent book. Her current research focuses in two areas: on developing effective interventions for infants and toddlers with autism that families and professionals can deliver, and on earliest identification of autism in infancy, which she carries out with her colleague, Sally Ozonoff. In addition to research, she is also a clinician, providing evaluation, treatment, and consultation to infants, children and adults with autism and their families. The intervention model that she developed with Geri Dawson and other colleagues at University of Colorado Health Sciences Center, University of Washington, and University of California Davis – the Denver Model and the Early Start - is internationally known and the treatment manual and instrumentation for this approach has been recently published.

Michael Siller

Hunter College, CUNY

A Parent Mediated Intervention Increases Responsive Parental Behaviors among Parents of Children with Autism: Preliminary Results from a Randomized Controlled Trial

Abstract:

Background: Two prospective longitudinal studies have shown that responsive parental behaviors reliably predict the long-term (16-year) language gains of children with autism (Siller & Sigman, 2002, 2008). Both studies focused on the extent to which parental behaviors were responsive to their child's focus of attention and activity during shared toy play (i.e., maternal synchronization).

Objective: This research aimed to evaluate whether maternal synchronization can be effectively increased using an innovative parent education program. The intervention procedures are manualized and include 12 in-home training sessions.

Methods: 70 preschoolers with autism and their mothers were enrolled in this study and randomly assigned to either the experimental intervention or a control condition. Children ranged in age between 32 and 82 months (mean = 57.1 months; SD = 12.3) and had limited expressive language skills (mean expressive language age = 15.9 months; SD = 9.0). During the intake and exit assessments, mothers and children were instructed to engage in ten minutes of free play. Interactions were videotaped and coded for responsive maternal behaviors (maternal synchronization).

Results: Preliminary results from this randomized intervention study suggest that mothers who participated in the experimental intervention made larger pre-post gains in synchronization than mothers who participated in the control condition, $t(56) = 2.2$, $p < 0.05$.

Conclusions: These results demonstrate that the experimental parent education program effectively increases responsive parental behaviors in autism.

Bio: Dr. Siller is an Assistant Professor in the Psychology Department at Hunter College of the City University of New York (CUNY). He attended graduate school at the University of California at Los Angeles, where he obtained both his M.A. (2001) and Ph.D. (2006) in Developmental Psychology. His doctoral work was acknowledged with the Millard Madsen Distinguished Dissertation Award. Dr. Siller also attended the Free University of Berlin in Germany where he gained an M.A. degree (Diplom Psychologe) with an emphasis in Clinical Psychology (1999). He has presented and published internationally on the development of social and communication skills in young children. Dr. Siller is particularly interested in how parent-child play interactions contribute to the social, emotional, and communication development of young children with autism spectrum disorders. Currently, he collaborates with Dr. Sally Rogers (M.I.N.D. Institute, UC Davis), co-directing the Autism Speaks Toddler Treatment Network.

The initial aim of Dr. Siller's research was to develop a novel measure of parental communication that captures responsive parental behaviors, and also takes into account the unique challenges that parents of young children with autism face during interactions with their children. He first used this measure in a cross-sectional study comparing parental communication patterns across different diagnostic groups (Siller and Sigman, 2002). Contrary to previous findings, this research showed that mothers of children with autism were as responsive to their children's focus of attention and ongoing activity as mothers of typically developing children or children with mixed developmental delays. In light of this finding, Dr. Siller conducted two prospective longitudinal studies to evaluate the link between individual differences in parental communication and children's subsequent gains in communication skills (Siller and Sigman, 2002, 2008). This research provided the first pair of studies to show that responsive parental behaviors reliably predict the long-term (16-year) language outcomes of children with autism.

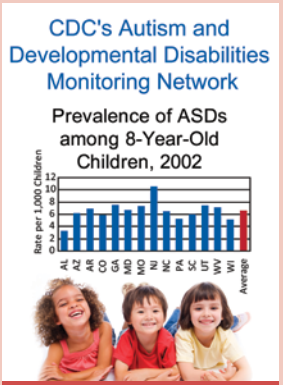
His recent research has progressed from naturalistic to experimental designs where subjects are randomly assigned to different treatment conditions. Dr. Siller initiated two intervention studies designed to provide an experimental test of the direction of effects linking responsive parental behaviors with the development of communication skills in children with autism. The first randomized trial involved 70 pre-verbal children with autism between 2½ and 6½ years of age (Siller, Hutman and Sigman, 2007). Early results show that his experimental parent education program is efficacious for increasing responsive behaviors among parents of young children with autism. In addition, he is currently collaborating with Dr. Connie Kasari (Department of Education, UCLA) to evaluate whether the same parent education program can also be effective for promoting the communicative behaviors of toddlers (18 to 30 months) who are at "high risk" for Autism Spectrum Disorder.

Marshalyn Yeargin-Allsopp

CDC

Epidemiology and Changing Paradigm of Autism Spectrum Disorders

Abstract: There is considerable ongoing debate about whether autism and autism spectrum disorders (ASDs) are more common today than in the past. The earliest epidemiologic studies of autism from the1960s report prevalence estimates for autism of 0.4-0.5 per 1,000 children. More recent estimates of ASD prevalence average 6-7 per 1,000 with some studies reporting estimates higher than 10 per 1,000 children. During the last decade, in the United States, education and medical service providers have also reported significant increases in the number of individuals receiving services for autism. Despite these concerns about rising rates of autism, until this decade there has not been an ongoing surveillance system to monitor the prevalence of ASDs over time in the United States. In an effort to improve our understanding of the prevalence, population characteristics, and public health impact of these conditions, the Centers for Disease Control and Prevention (CDC) funded a multi-site surveillance network for ASD and other developmental disabilities known as the Autism and Developmental Disabilities Monitoring (ADDM) Network. A recent ADDM Network report for surveillance year 2006 represents an update of prevalence estimates across the US. This lecture will report these results along with strategies and future directions for ASD surveillance and research. This lecture will also focus on the impact of the use of differing case definitions and methods of ascertainment over time on the reported prevalence of ASDs.



Bio: Marshalyn Yeargin-Allsopp, M.D. - Medical Epidemiologist; Chief, Developmental Disabilities Branch; National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention. Dr. Yeargin-Allsopp received her B.A. degree in biology from Sweet Briar College and M.D. degree from Emory University. She completed an internship and residency in Pediatrics at Montefiore Hospital, Bronx, New York. She was on the faculty of the Albert Einstein College of Medicine and completed a fellowship in Developmental Pediatrics at the Rose F. Kennedy Center of Yeshiva University, the Albert Einstein College of Medicine. She is board-certified in Pediatrics and Neurodevelopmental Disabilities. Dr. Yeargin-Allsopp joined CDC in 1981 as an Epidemic Intelligence Service Officer and completed a Preventive Medicine Residency in 1984. Since coming to CDC, she has designed and implemented the first U.S. population-based study of developmental disabilities in school-age children in an urban area. It has served as the basis for a CDC population-based developmental disabilities surveillance system, the Autism and Developmental Disabilities Monitoring (ADDM) network and a CDC epidemiologic research study, Centers for Autism and Developmental Disabilities Research and Epidemiology (CADDRE). Dr. Yeargin-Allsopp is an Adjunct Assistant Professor of Pediatrics at the Emory University School of Medicine; she was one of the original members of the State of Georgia Interagency Coordinating Council for Early Intervention Services (for children from birth- 2 years) and is the medical director of the Clayton County Early Intervention Program in metropolitan Atlanta. She is a past member of the Scientific Advisory Board and Scientific Affairs Committee for Autism Speaks and a past member of the Medical Advisory Board for the NIH-funded CPEA and STAART (Autism) Centers. She is a member of the Medical Advisory Board for Reaching for the Stars, a parent advocacy group for children with cerebral palsy and was previously a member of the Board of Directors for the Marcus Autism Center, a program in Atlanta that provides services to individuals with developmental disabilities. She is the Chair of the Interagency Coordinating Committee for the National Children's Study, a large government-funded project to prospectively follow 100,000 children from before birth to early adulthood, to study a range of environmental and social risk factors and health and developmental outcomes. Dr. Yeargin-Allsopp was the CDC liaison to the American Academy of Pediatrics (AAP) Committee on Children with Disabilities from 1997 to 2004 and was a member of the AAP Autism Expert Panel until 2007. She was the 2006 recipient of the C. Anderson Aldrich Award of the AAP Section on Developmental and Behavioral Pediatrics and the 2008 recipient of the Arnold J. Capute award of the Council on Children with Disabilities of the AAP. Dr. Yeargin-Allsopp has presented internationally and published extensively on the epidemiology of developmental disabilities, including autism and cerebral palsy.

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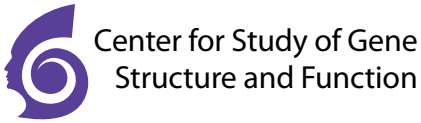
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