

Meeting of the IACC

ASD Science Update

Thomas Insel, M.D.

Director, National Institute of Mental Health and Chair, IACC
IACC Full Committee Meeting – July 10, 2012

When should I be concerned?

Predictive diagnostics: Biomarkers (MEG, DTI, EEG), Cognitive (eye gaze, video tasks), Screening (1 yr check up)

PEDIATRICS

The Official Journal of the American Academy of Pediatrics

Six Developmental Trajectories Characterize Children With Autism

May 1, 2012

Christine Fountain, Alix S. Winter and Peter S. Bearman

THE AMERICAN JOURNAL OF
PSYCHIATRY

Differences in White Matter Fiber Tract Development Present From 6 to 24 Months in Infants With Autism

Jason J. Wolff, Hongbin Gu, Guido Gerig, Jed T. Ellison, Martin Styner, Sylvain Gouttard, Kelly N. Botteron, Stephen R. Dager, Geraldine Dawson, Annette M. Estes, Alan C. Evans, Heather C. Hazlett, Penelope Kostopoulos, Robert C. McKinstry, Sarah J. Paterson, Robert T. Schultz, Lonnie Zwaigenbaum, Joseph Piven, the IBIS Network

Am J Psychiatry 169:6, June 2012

BMC Medicine

A stable pattern of EEG spectral coherence distinguishes children with autism from neuro-typical controls - a large case control study

Frank H. Duffy and Heidelise Als

BMC Medicine 2012, 10:64

How can I understand what is happening?

Defining the problem: Synaptic pathology, Circuit disorder, Whole body issues (immune, GI, etc)

PNAS

Brain enlargement is associated with regression in preschool-age boys with autism spectrum disorders

Christine Wu Nordahl^a, Nicholas Lange^b, Deana D. Li^a, Lou Ann Barnett^a, Aaron Lee^a, Michael H. Buonocore^c, Tony J. Simon^a, Sally Rogers^a, Sally Ozonoff^a, and David G. Amaral^{a,1}

PNAS | December 13, 2011 | vol. 108 | no. 50 |

PLOS one

Developmental Trajectories of Resting EEG Power: An Endophenotype of Autism Spectrum Disorder

Adrienne L. Tierney, Laurel Gabard-Durnam, Vanessa Vogel-Farley, Helen Tager-Flusberg, Charles A. Nelson

June 2012 | Volume 7 | Issue 6 | e39127

nature

Mutations causing syndromic autism define an axis of synaptic pathophysiology

Nature. 2011 Nov 23;480(7375):63-8.

Benjamin D. Auerbach, Emily K. Osterweil & Mark F. Bear

What caused this to happen and can it be prevented?

Genomic risk factors: New candidates, de novo mutations, rare events

PNAS
MAY 22, 2012

A common X-linked inborn error of carnitine biosynthesis may be a risk factor for nondysmorphic autism

Patrícia B. S. Celestino-Soper^{a,1}, Sara Violante^{b,c,1}, Emily L. Crawford^d, Rui Luo^e, Anath C. Lionel^f, Elsa Delaby^g, Guiqing Cai^h, Bekim Sadikovic^a, Kwanghyuk Lee^a, Charlene Lo^a, Kun Gao^e, Richard E. Person^a, Timothy J. Moss^a, Jennifer R. German^a, Ni Huangⁱ, Marwan Shinawi^{a,j,2}, Diane Treadwell-Deering^{j,k}, Peter Szatmari^l, Wendy Roberts^m, Bridget Fernandezⁿ, Richard J. Schroer^o, Roger E. Stevenson^o, Joseph D. Buxbaum^h, Catalina Betancur^g, Stephen W. Scherer^{f,m}, Stephan J. Sanders^p, Daniel H. Geschwind^e, James S. Sutcliffe^d, Matthew E. Hurlesⁱ, Ronald J. A. Wanders^b, Chad A. Shaw^a, Suzanne M. Leal^a, Edwin H. Cook, Jr.^q, Robin P. Goin-Kochel^{a,j,r}, Frédéric M. Vaz^{h,1}, and Arthur L. Beaudet^{a,j,r,1,3}

nature



***De novo* mutations revealed by whole-exome sequencing are strongly associated with autism**

Sanders, et al.

Sporadic autism exomes reveal a highly interconnected protein network of *de novo* mutations

O'Roak, et

Patterns and rates of exonic *de novo* mutations in autism spectrum disorders

Neale, et
al.

April 5, 2012

What caused this to happen and can it be prevented?

Environmental risk factors: Results from CHARGE study

Is Maternal Influenza or Fever During Pregnancy Associated with Autism or Developmental Delays? Results from the CHARGE (CHildhood Autism Risks from Genetics and Environment) Study

Ousseny Zerbo • Ana-Maria Iosif • Cheryl Walker • Sally Ozonoff • Robin L. Hansen • Irva Hertz-Picciotto

Journal of Autism and Developmental Disorders
May 2012 [epub]

PEDIATRICS
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

April 9, 2012 [epub]

Maternal Metabolic Conditions and Risk for Autism and Other Neurodevelopmental Disorders

Paula Krakowiak, Cheryl K. Walker, Andrew A. Bremer, Alice S. Baker, Sally Ozonoff, Robin L. Hansen and Irva Hertz-Picciotto

Maternal periconceptional folic acid intake and risk of autism spectrum disorders and developmental delay in the CHARGE (CHildhood Autism Risks from Genetics and Environment) case-control study¹⁻³

Rebecca J Schmidt, Daniel J Tancredi, Sally Ozonoff, Robin L Hansen, Jaana Hartiala, Hooman Allayee, Linda C Schmidt, Flora Tassone, and Irva Hertz-Picciotto

American Journal of Clinical Nutrition, July 2012

Which treatments and interventions will help?

New initiatives in medication development: biomarker driven trials, public-private partnerships, leveraging on results w FraX and Rett

FNIH Biomarkers Consortium

- Autism Speaks, Simons Foundation, FDA, NIH, 5 companies

FAST Fail Trials in Autism Spectrum Disorders (FAST-AS) Initiative

- An NIMH initiative to implement rapid Proof of Clinical Mechanism (POCM) and Proof of Concept (POC) trials in order to quickly test and analyze novel interventions

Autism Treatment Network (ATN)

- Autism Speaks, HRSA, NIMH developing best practices, RCTs, biobank

Which treatments and interventions will help?

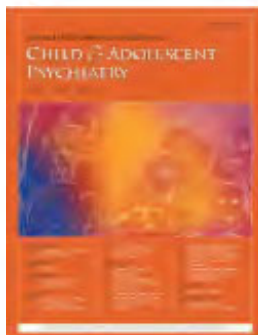
New findings w behavioral treatments:

Longer term effects, generalizability, pre-emptive Rx



Making the connection: randomized controlled trial of social skills at school for children with autism spectrum disorders Apr 2012

Connie Kasari,¹ Erin Rotheram-Fuller,² Jill Locke,³ and Amanda Gulsrud¹



Longitudinal Follow-Up of Children With Autism Receiving Targeted Interventions on Joint Attention and Play

**Connie Kasari, Ph.D., Amanda Gulsrud, Ph.D., Stephanny Freeman, Ph.D.,
Tanya Paparella, Ph.D., Gerhard Hellemann, Ph.D.**

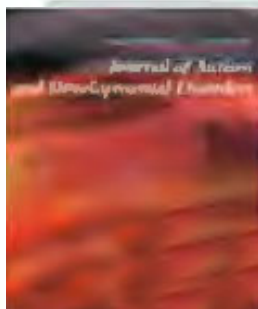
JOURNAL OF THE AMERICAN ACADEMY OF CHILD & ADOLESCENT PSYCHIATRY
VOLUME 51 NUMBER 5 MAY 2012

ORIGINAL PAPER

Pivotal Response Treatment for Infants At-Risk for Autism Spectrum Disorders: A Pilot Study

May, 2012

Amanda Mossman Steiner, Grace W. Gengoux, Ami Klin and Katarzyna Chawarska



Where can I turn for services?

Economic and health issues: Effects on caregivers, costs of medical care

PEDIATRICS **Implications of Childhood Autism for Parental Employment and Earnings**
The Journal of the American Academy of Pediatrics

March 19, 2012 [epub]

Zuleyha Cidav, Steven C. Marcus and David S. Mandell

**Research
in
Developmental
Disabilities**

Volume 33, Issue
2, March-April
2012, pages 467-
476

Concurrent medical conditions and health care use and needs among children with learning and behavioral developmental disabilities, National Health Interview Survey, 2006–2010

Laura A. Schieve, Vanessa Gonzalez, Sheree L. Boulet, Susanna N. Visser, Catherine E. Rice, Kim Van Naarden Braun, Coleen A. Boyle

Service and Wider Societal Costs of Very Young Children with Autism in the UK

Barbara Barrett, Sarah Byford, Jessica Sharac, Kristelle Hudry, Kathy Leadbitter, Kathryn Temple, Catherine Aldred, Vicky Slonims, Jonathan Green and PACT Consortium

Journal of Autism and Developmental Disorders, 2012, Vol. 42 No. 5, pgs. 797-804

What does the future hold, particularly for adults?

Estimating the Prevalence of Autism Spectrum Conditions in Adults:



Jan. 31,
2012

Extending the 2007 Adult Psychiatric Morbidity Survey

Brugha T, Cooper SA, McManus S, Purdon S, Smith J, Scott FJ, Spiers N, Tyrer F



Journal of the
AMERICAN GERIATRICS SOCIETY

Autism Spectrum Disorders in Older Adults: Toward Defining a Research Agenda

Joseph Piven and Peter Rabins, on behalf of the Autism-in-Older Adults Working Group
November 2011

Postsecondary Education and Employment Among Youth With an Autism Spectrum Disorder



May 14, 2012 [epub]

Paul T. Shattuck, Sarah Carter Narendorf, Benjamin Cooper, Paul R. Sterzing, Mary Wagner and Julie Lounds Taylor

What other infrastructure and surveillance needs must be met?

Prevalence and database: CDC reports 1 in 88 (1 in 54 boys) – 78% increase from 2002. NDAR expands to >30,000 subjects.

Centers for Disease Control and Prevention

MMWR

Surveillance Summaries / Vol. 61 / No. 3 March 30, 2012

**Prevalence of Autism Spectrum Disorders —
Autism and Developmental Disabilities Monitoring
Network, 14 Sites, United States, 2008**

**Sharing Heterogeneous Data: The National Database for
Autism Research**

Neuroinformatics May 2012

Dan Hall, Michael F. Huerta, Matthew J. McAuliffe, Gregory K. Farber