Translational Medicine Research in Autism: Challenges and Opportunities

January 25-27, 2011
Santa Monica, CA
Translational Medicine Research in Autism

Purpose of the meeting

Identify strategies to accelerate the development of novel diagnostics and drugs that can assist in early detection and ameliorate the core or associated symptoms of ASD, improve response to behavioral interventions, and ultimately enhance the quality of life for people with ASD and their families.
Challenging pathway to drug discovery

How can we accelerate discovery and development?
Objectives of meeting

1. Promote collaboration and cross-fertilization among academic community, industry, NIH, non-profit organizations, and stakeholders
2. Facilitate entry of pharmaceutical companies into the autism field
3. Identify promising drug targets and strategies for their validation
4. Identify gaps and opportunities for future research and strategies for accelerating progress
Day 1: Topics and Speakers

**Translational medicine research in ASD: State of the science and pathway forward**

- Ed Scolnick, MD (Broad) - Future of Diagnostic Tools and Treatment of Psychiatric Conditions
- Thomas Insel, MD (NIMH) - ASD translational research: challenges and opportunities
- David Bredt, MD, PhD (Eli Lily) - Pathway from basic research to drug development
- Robert Ring, PhD (Pfizer) - Challenges facing autism drug discovery: Industry perspective
- Paul Chapman, PhD (Takeda) - Discussion leader

**Single gene disorders associated with ASD – What can drug discovery?**

- Mustafa Sahin, MD, PhD (Harvard) - Tuberous sclerosis complex
- Alcino Silva, PhD (UCLA) - mTOR signaling in autism and other psychiatric disorders
- Mark Bear, PhD (MIT) - Insights from fragile X and related single gene disorders
- Huda Zoghbi, MD (Baylor) - Rett syndrome and MECP2 Duplication Disorder: Relevance to ASD
- Randy Carpenter, MD (Seaside) - Discussion leader
### Day 1: Topics and Speakers (con’t)

**ASD genetics and signaling pathways: What are the promising target pathways?**

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<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
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<tbody>
<tr>
<td>Joe Buxbaum, PhD</td>
<td>Mt. Sinai</td>
<td>Genetics of ASD: Insights into target pathways</td>
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<td>Dan Geschwind, MD, PhD</td>
<td>UCLA</td>
<td>Cntnap2 gene knockout as a potential mouse model for ASD</td>
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<td>Tom Sudhof, MD</td>
<td>Stanford</td>
<td>Neurexins and Neuroligins – From Synapses to Autism</td>
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<td>Randy Blakely, PhD</td>
<td>Vanderbilt</td>
<td>Modeling the Serotonin Driven Traits of Autism in Transgenic Mice</td>
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<td>Luis Parada, PhD</td>
<td>U Texas</td>
<td>PTEN pathway</td>
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<td>Rene Anand, PhD</td>
<td>Ohio St.</td>
<td>Nicotinic Receptors: Biomarkers and Therapeutic Targets for ASD</td>
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<td>Will Spooren, PhD</td>
<td>Roche</td>
<td>Discussion leader</td>
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Day 2: Topics and Speakers

**Gastrointestinal, immune and metabolic abnormalities, seizures, hormonal systems**
- Pat Levitt, MD, PhD  
  USC  
  Gastrointestinal Conditions and ASD Heterogeneity
- Judy Van de Water, PhD  
  UC Davis  
  Role of Immune abnormalities
- Bob Naviaux, MD, PhD  
  UC San Diego  
  Mitochondrial Dysfunction in Children with ASD
- Richard Hass, MD  
  UC San Diego  
  Autism and Seizures
- Evdokia Anagnostou, MD  
  U Toronto  
  Oxytocin pathway

**Strategies for target validation: Challenges and promising directions**
- Jackie Crawley, PhD  
  NIMH  
  Behavioral phenotyping in genetic mouse models of ASD
- Eric Klann, Ph.D.  
  NYU  
  Translational control: Molecules, synapses, and behavior
- David Amaral, PhD  
  UC Davis  
  Primate models of ASD
- Steve Warren, PhD  
  Emory  
  Fragile X: Molecular mechanisms and therapeutic implications
- Ricardo Dolmetsch, PhD  
  Stanford  
  Using iPSCs to study the neurobiology of ASD
- Thomas Insel, MD  
  NIMH  
  Synthesis and priority needs for accelerating drug discovery
Addressing the gaps and roadblocks

What is needed?

– Promising drug targets related to core and associated features
– Validated animal models
– High throughput drug screening platforms
– Large clinical registries/tissue banks with both phenotypic data and biosamples (DNA, iPSCs, brain tissue, etc.)
– Clinical trial networks
– Biomarkers predictive of treatment response
– Sensitive clinical trial endpoints and surrogate endpoints
– Innovative clinical trial designs (enrichment, stratification, adaptive designs)