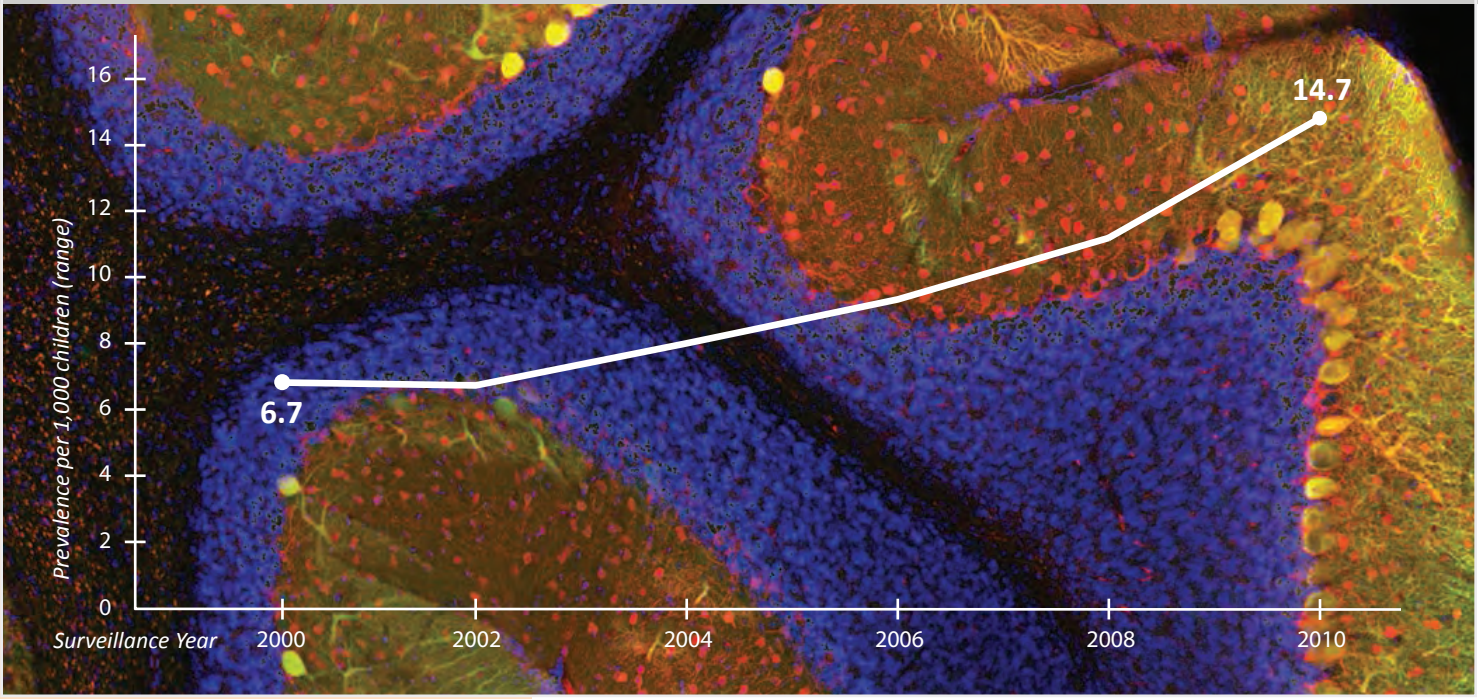
Autism Spectrum Disorders in the US



Neurons in the mouse cerebellum expressing the synaptic protein SAPAP-4.

The Need

- **Support** basic research on ASD
- **Translate** ASD research results into better diagnostic techniques and treatments
- **Encourage** multidisciplinary research collaborations among scientists, engineers, and clinicians to jump-start technology transfer from bench to bedside

Inside the Simons Center for the Social Brain

Toward Understanding - And Treating - Autism

The mission of the Simons Center for the Social Brain is to understand the neural mechanisms underlying social cognition and behavior, and to translate this knowledge into better diagnosis and treatment of autism spectrum disorders (ASD).

The Simons Center studies the underlying mechanisms of ASD in both humans and relevant model organisms and systems, as neural correlates of social cognition and behavior exist in diverse species. Experimental approaches take advantage of MIT's strengths in genetics and genomics, molecular and cell biology, analyses of neural circuits and systems, cognitive psychology, mathematics and engineering.

SIMONS CENTER FOR THE SOCIAL BRAIN

For more Information please visit:
http://web.mit.edu/scsb/

Building a Base

A researcher scans a subject at the Martinos Imaging Center at MIT.

The Simons Center supports its programs through:

> **SEED GRANTS:**
A one-year, $150,000 grant supports early stage ASD research in two labs. The aim is to generate pilot data that could attract follow-on funding.

> **SIMONS POSTDOCTORAL FELLOWSHIPS:**
These two-year fellowships consist of a stipend and expenses for autism-related research bridging at least two labs.

> **TECHNOLOGY INNOVATION HUBS:**
The advancement of neuroscience research depends heavily on technology development. The goal of the Technology Innovation Hubs at the SCSB is to enable a cross-functional group of scientists and engineers to create the next generation of technologies for autism research.

- Induced Pluripotent Stem Cell (iPSC) Tech Hub
- Near-Infrared Spectroscopy Tech Hub
- Mouse Behavior Tech Hub

"We expect the SCSB to be a model of a partnership between universities, foundations, and industry around basic and applied research dedicated to brain disorders"

Professor Mriganka Sur

Toward an Impact

> **TARGETED PROJECTS:**

The Simons Center supports collaborative, focused projects undertaken by multiple laboratories to explore in depth specific aspects or types of autism. These Targeted Projects are structured to encourage collaboration among researchers in order to quickly and flexibly address pressing questions in autism research.

- Shank3:
Multi-level analysis of the Shank3 mutation in autism: translating genetic studies into pathophysiological mechanisms and therapeutic targets

- 16p11.2:
Role of the 16p11.2 CNV in autism: genetic, cognitive and synaptic/circuit analyses

- Language Pragmatics:
The nature of the pragmatic impairment in autism spectrum disorders

Building the Community

> **Colloquium Series:**
The Simons Center, in collaboration with other Universities and Hospitals in Boston, runs a regular Colloquium Series which brings major autism researchers to MIT. This is the longest running seminar series on brain disorders in the Boston area.