SPECIAL REPORT SUBARTICLE

Notable papers of 2015

BY **SPECTRUM**

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This year, the community of autism scientists heralded numerous advances, making it difficult to prune a long list of notable papers to just 10. Our selection, based on input from autism researchers, captures the full spectrum of findings — from molecular biology to large-scale epidemiology.

Here, in reverse chronological order, are the papers that made the cut. All of them changed the way we think about autism and its treatment.

1. Brain stimulation could ease memory problems in Rett syndrome

Electrically stimulating a particular circuit in the brain improves learning and memory in a mouse model of Rett syndrome, raising hopes for a treatment in people.

Hao S. *et al. Nature* **526**, 430-434 (2015) **PubMed**

2. Control centers for genes rife with autism-linked DNA blips

DNA sequences called enhancers — which boost the expression of genes from within or outside them — are enriched for genetic variants linked to autism.

Yao P. *et al. Nat. Neurosci.* **18**, 1168-1174 (2015) **PubMed**

3. Lab-spun spheres reveal common biology in boys with autism

Balls of neurons derived from the skin cells of four boys with autism show shared alterations in biology and gene expression.

Mariani J. *et al. Cell* **162**, 375-390 (2015) **PubMed**

4. Boys with autism inherit mutations from unaffected mothers

Rare inherited mutations that contribute to autism are primarily passed down from unaffected mothers, consistent with the idea that women are somehow protected from the disorder.

Krumm N. *et al. Nat. Genet.* **47**, 582-588 (2015) **PubMed**

5. Genes dwarf environment in autism's origins, study says

The genetic makeup of an individual plays much a bigger role than environmental factors in whether he or she develops autism.

Colvert E. *et al. JAMA Psychiatry* **72**, 415-423 (2015) **PubMed**

6. Women with severe autism point to new gene candidates

Looking in families with a history of severe autism among women, researchers have unearthed 18 new candidate genes for the condition.

Turner T.N. *et al. Nature* **520**, 51-56 (2015) **PubMed**

7. Studies trace far-reaching effects of single autism gene

The autism gene CHD8 regulates thousands of other genes, many of which are master regulators in their own right.

Cotney J. *et al. Nat. Commun.* **6**, 6404 (2015) **PubMed**

8. Snippets of RNA may reverse symptoms of Angelman syndrome

Small pieces of RNA restore the expression of a key gene missing in Angelman syndrome and offer the promise of a highly specific cure.

Meng L. *et al. Nature* **518**, 409-412 (2014) **PubMed**

9. Noisy patterns of connectivity mark autism brains

A new study may have solved a decade-old debate about whether the brains of people with autism are more or less connected than those of controls: They're both, depending on where in the brain you look.

Hahamy A. *et al. Nat. Neurosci.* **18**, 302-309 (2015) **PubMed**

10. The social network: How everyday interactions shape autism

Dynamic exchanges with a caregiver are a crucial part of any child's development. In a child with autism, however, this 'social feedback loop' might go awry.

Green J. *et al. Lancet Psychiatry* **2**, 133-140 (2015) **PubMed**