

OPINION

Abnormal brain immune cells: Autism's cause or result?

BY GREG BOUSTEAD

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New revelations about the function and biology of the brain's immune cells, known as microglia, raise important questions about their potential role in autism, argues **Beth Stevens** in last week's **Viewpoint**.

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The potential link between microglia and autism is intriguing.

Researchers have repeatedly **connected high levels of microglia** with autism — both in postmortem brains from people with the disorder and in mice — suggesting a meaningful association between the two. Most recently, scientists **found increased numbers of microglia** in specific regions of the brain associated with autism.

What remains less clear is the cause-and-effect relationship between microglia and autism: Is an increase in microglia driving the disorder, or are these immune cells reacting to conditions in the brain caused by autism?

Stevens maintains that understanding the basic function and normal biology of microglia is key to unlocking this mystery. And, as she notes, the field has made progress in this area.

For instance, microglia have been found to **affect brain development** in healthy mice and to **regulate the pruning of synapses**, the junctions between neurons, a process researchers believe is disrupted in people with autism.

What's more, a **surprising mouse study** overturned the belief that microglia develop and enter the brain after birth, by showing that most microglial cells differentiate from precursor cells in the yolk sac and migrate into the brain early enough to affect embryonic development.

Is this enough to start filling in the pieces of the microglia-autism puzzle, and to test the causal role of microglia in autism with new experiments?

What do you think?

- **How does the discovery that microglia enter the brain early during neurodevelopment explain the cells' role in brain disorders? What about the finding that microglia mediate synaptic pruning?**
- **What working hypothesis would explain a causal role for microglia in autism? How would you test this?**

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