

## **Autism studies build on past investments and guide future research**

*By Kelly Lenox*

Three new NIEHS-funded studies on autism spectrum disorder (ASD) illustrate the broad scope of current research into this significant health concern. Cindy Lawler, Ph.D., chief of the [NIEHS Genes, Environment, and Health Branch](#), which manages the Institute's grants for autism research, discussed these exciting new advances in the quest to better understand and help prevent and treat these disorders.

### **Results of long-term investment**

A study team led by researchers at the University of Southern California (see [story](#)) found that the combination of prenatal exposure to air pollutants, combined with a genetic predisposition to ASD, led to a higher risk of the disorder. These results provide an important advance in the field, and also illustrate, as Lawler pointed out, the value of long-term investment. "This story has been a while in the making, but NIEHS has been involved along the trajectory, funding not only this study, but some of those on which it builds."

For Lawler, the Center for Children's Environmental Health at the University of California (UC), Davis, illustrates how consistent funding and interdisciplinary collaboration are moving the field forward. The center gave rise to the [CHARGE \(Childhood Autism Risks from Genetics and the Environment\) study](#)

(<http://beincharge.ucdavis.edu/>)

at the [UC Davis MIND Institute](#).

(<http://www.ucdmc.ucdavis.edu/mindinstitute/>)

"It takes a lot of time to build the infrastructure of a large study. We're now reaping the benefits of investments we made starting more than ten years ago, and the work is beginning to uncover environmental risk factors," she explained. "This is only possible because of the funding that helped build it and is still supporting it."

### **New directions in research - exploring the mind-gut connection**

Another study (see [story](#)), examining the incidence of gastrointestinal (GI) symptoms and ASD, is part of a growing interest in chronic co-occurring conditions. "This study confirms what we hear from a lot of parents, especially regarding how some of the comorbidities, such as GI issues, are as important as the core symptoms of autism in terms of the impact on families," explained Lawler.

However, more research is needed to discover whether the GI symptoms contribute to the core symptoms or the reverse, or whether other changes might be at the root of both groups of symptoms.

Work connecting GI disturbances to ASD also has implications for other studies that are beginning to explore the microbiome, a community of microorganisms inhabiting an area such as the human gut. Very little is known about how the microbiome of children with autism compares to that of typically developing children, or of children with developmental disabilities but not autism.

Lawler pointed out that findings related to GI disturbances may advance knowledge of ASD, as well as lead to treatment approaches that may provide relief for families.

### **Listening to families**

It was information from families, specifically, Somali families in Minneapolis, that led the University of Minnesota to investigate the prevalence of autism among their children (see [story](#)).

"The prevalence in Somalis was high, with one in 32 children affected, but it was not different from the prevalence in whites. The rate in Hispanics and black non-Somali children was significantly lower," Lawler observed.

In addition, intellectual disability among children with ASD was found much more often in Somali children than in all other groups, but the reasons are unknown.

"Are there cultural issues related to assessing IQ in the Somali population, or that make it less likely for schools and health



*Lawler is the NIEHS program lead for autism research. (Photo courtesy of Steve McCaw)*

service providers to identify ASD in Somali children who have average or above average intelligence?" Lawler continued. "If there is a true difference in the characteristics of Somali children with ASD, further study is needed to determine which factors may be involved, for example, factors related to race, ethnicity, health care practices, socioeconomics, or immigration."

### **Advancing autism research**

From uncovering gene-environment interactions, to expanding understanding of connections between co-occurring symptoms, to breakthroughs in epidemiology, researchers are making wide-ranging discoveries and answering questions that will help guide future autism research.

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