

Torres Presents Brown Bag Lecture on Autism | CPD

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Dr. Anthony Torres, director of the Biomedical Lab at Utah State University's Center for Persons with Disabilities, recently presented a brown-bag lecture on the link between autism and the immune system. Torres, a medical doctor, has spent his entire career in research, formerly at the National Institute of Health, Yale University and private biotech companies, and now at USU.

Torres spoke to an audience of about 25, including a group of Logan High School students, and gave an overview of the role genetics plays in the causes, diagnosis and potential treatments for autism. The spectrum of disorders now affects 1 in 68 children in the United States, according to the Centers for Disease Control.

Torres said there is a 2 to 6 percent recurrent risk of autism in siblings, a 10 percent chance of autism in fraternal twins, and a 36-91 percent risk of autism in identical twins.

"A lot of people say that proves it's genetic," Torres said. "They do have the same genetics, but it's also the same environment." Either, or both, could impact the cause of autism.

Technology is constantly changing, Torres said, and that influences the way in which research can be carried out. For example, he said, molecular amplification models can identify a single base pair of DNA in less than an hour.

Diagnostic tests have also changed over the years, he said.

"It's the time for genetics," Torres said. There are 3.5 billion base pairs in the human genome. Mutations can occur as single nucleotides, insertion/deletions and duplications.

Recent research by others into microsatellites, or repeating sequences of 2 to 5 base pairs of DNA, have shown no meaningful association with autism, Torres said, although humans are identified by their microsatellites.

Torres' past research examined KIR genes, which help regulate the killing response of Natural Killer lymphocytes (NK-lymphocytes). Their data suggests a highly significantly increase in activating KIR genes compared to inhibiting KIR genes, which indicates an increase killing response of NK-lymphocytes in subjects with autism.

There is strong evidence that autism runs in families, said Torres, which has been interpreted by many scientists to indicate that autism is inherited. He said his work has shown there is a preferential inheritance from mothers

Another explanation for familial clustering may be that family members have similar exposures to microorganisms or environmental chemicals, he said. Instead of scanning hundreds of thousands of genetic polymorphisms across the entire genome, Torres and his team took a more targeted approach and examined very specific genes on chromosome 19 called the leukocyte receptor complex, in particular the KIR genes.

An audience member asked about the applied perspective to Torres' research: how does it help those with autism?

"I think we will contribute to the diagnosis," Torres said. Eventually, he said, it might be possible to create gene therapies, such as decoys, that fool the immune system and reduce symptoms.