Dr. Anthony Torres, director of the Biomedical Laboratory at Utah State University’s Center for Persons with Disabilities (CPD), recently presented a seminar at Johns Hopkins University in Baltimore, Md., on research that suggests a link between the immune system and autism. 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 was invited by Dr. Robert Yolken, the Stanley Distinguished Chair of Developmental Neurovirology in the department of Pediatrics at Johns Hopkins Medical School, to present the seminar. Torres and Yolken have worked on joint research projects for more than a decade. Following leads published by former CPD researcher Dr. Reed Ward and a research group at the University of California-Davis, Torres’ research group 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. The research was recently published in Brain, Behavior and Immunity.

There is strong evidence that autism runs in families, said Torres, which has been interpreted by many scientists to indicate that autism is inherited, but little evidence has been found that links genes to autism. 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.

Torres studied DNA from two autism groups. The first group included 70 subjects from the Utah Autism Project and the Oregon Health and Science University Autism Clinic. The second group included 88 subjects from the Autism Genetics Resource Exchange (AGRE). Upon statistical examination, both groups have similar results, suggesting a strong association of KIR activating genes with autism. Torres is currently studying the same KIR genes in new samples received from the Genetic Disease Branch of the California Department of Health, which has one the largest bank of autism samples in the country.

Research team members included Jonna Westover, a CPD research scientist; Cole Gibbons, a former USU undergraduate who is now a medical student at New York University; Randall Johnson, a former USU undergraduate who received a MS in Biostatistics from Johns Hopkins and is a research statistician at the National Cancer Institute; and David C. Ward, a retired Yale University genetics professor who worked for a short time with the Utah Science Technology and Research program (USTAR).

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