Immunogenetics of Human Rheumatic and Autoimmune Diseases (10/23/2017)

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A Brief Summary of the Research Team and Research Projects
Dr. Yu received his postgraduate trainings in Oxford and Cambridge, U.K. between 1983 and 1990. Since 7/1990, he has been a faculty member of The Ohio State University and a principal investigator at the Research Institute of Nationwide Children’s Hospital.

The theme of Dr. Yu’s research projects is centered on the molecular biology and genetics of immune effector proteins in human autoimmune and immune-mediated diseases. Dr. Yu’s research team did the original work that established gene copy number variations (CNVs) among healthy subjects and patients. The discovery of common, continuous CNVs provides an important conceptual and technical advance on the genetics of human complex diseases. Dr. Yu’s team demonstrated the differential susceptibilities for gene CNVs of complement C4A and C4B in systemic lupus erythematosus (SLE), idiopathic inflammatory myopathies (IIM), type 1 diabetes and rheumatoid arthritis.

Dr. Yu’s research team has trained 9 doctorate (PhD) graduates, 4 masters’ (MS) students and 8 clinical fellows in hematology/oncology, endocrinology, rheumatology and molecular biology over the past 27 years. In addition, many postdoctoral fellows, visiting professors, medical students, undergraduate students and high school students performed experiments or collaborative projects in the laboratory. The research projects in Dr. Yu’s lab are being sponsored by the NIH and private foundation grants. Dr. Yu’s team has published 109 research articles, among them 17 articles have been cited >100 times according to the Google Scholar.

Dr. Yu’s team welcomes dedicated medical student(s) who wish to gain wet-lab, hand-on experience on molecular genetic studies of human rheumatic, endocrine or neurologic diseases. Typical experiments would include patient/human subject recruitment, processing of blood samples to harvest DNA, RNA, plasma and sera, and creation of cell lines. You will perform Southern blot analyses using genomic DNA, quantitative realtime polymerase chain reactions to quantify gene copy number variations and/or RNA expression levels, immunodiffusion to determine plasma protein concentrations, immunofixation to decipher protein polymorphisms, and flow cytometry to investigate cell bound levels of complement activation products. Independent thinking, innovative and creative approaches to study human complex diseases are particularly encouraged.

The current research focus is to decipher the patterns of variations for immune effector gene CNVs in autoimmune and immune-mediated diseases among different racial and ethnic groups, in pediatric onset and adult onset patients, and to develop translational approaches to facilitate disease diagnosis and personalized therapies based on precise genetic information.

Send us an email of give us a call if you are interested!