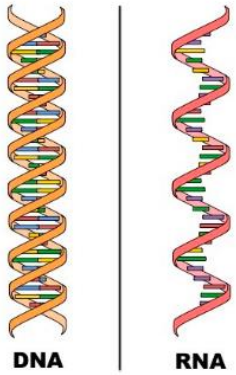
Accelerated Cure Project for MS

October 2018

Accelerating research towards a cure for multiple sclerosis

Repository Spotlight – Dr. Manu Rangachari, Laval University

Genetic analysis of MS patient DNA has played an important role in identifying genetic variants that correlate with disease. Analysis of ACP Repository DNA samples as a part of the International MS Genetics Consortium has helped identify these genetic variants.



Even more detailed insights into the contributions of genes to the MS disease process can be obtained by studying patterns of gene expression during disease. Gene expression involves reading and decoding the genetic (DNA) code to produce RNA and proteins. Both of these classes of "gene product" molecules play a role in development, metabolism and disease.

ACP has worked with several investigators who have studied gene expression using Repository samples (RNA samples). Some of these valuable data have been returned to ACP and made available to the MS research community for further analysis. Dr. Manu Rangachari, at Laval University in Quebec City, performed a re-analysis of some of these returned gene expression data and, using machine learning analytical techniques, identified several interesting changes that correlate with disease severity. This information may be very useful in developing MS diagnostics and in identifying new drug targets.

Whole blood is a "mixed bag" of many different immune cell subtypes. Separation of these cell types allows a finer analysis of gene expression in which one can look at changes in gene expression in each subtype. Dr. Rangachari will be using frozen samples from the ACP Repository for the next stage of his work. These samples consist of a different population of immune cell types that play a role in disease. Using a method called mass cytometry, Dr. Rangachari plans to separate these cells into immune cell subclasses (T-cell variants, B-cell variants, etc.), and look at the patterns in gene expression (proteins) and how these correlate with disease severity as well as how they change during disease progression. Dr. Rangachari's data, and other returned data sets, enrich the ACP Repository as a resource to advance and accelerate research into demyelinating diseases.