

Applicant

Dr. Andrew Johnson, National Heart, Lung and Blood Institute

E-mail Address

johnsonad2@nhlbi.nih.gov

Project Title

The genetics of cell count ratios and their relationship to cell type epigenetics, expression, and disease

Project Summary

Human blood cell populations are integral for nearly all aspects of physiology as critical carriers of oxygen (red cells), as the basis for wound healing (platelets) and as fighter of infections (white cells). These cell counts are routinely measured in clinical settings and in research studies. Due to their availability, they have been studied in combination with genetics in large populations to find new genes that contribute to cell type counts and functions. However, each cell type has generally been considered alone (white, red or platelet), failing to acknowledge that those cells interact with each other and have common pathways of development. In this work we plan to try to do large genetic studies that find genes that contribute not only to one cell population at a time but seem to alter the balance of blood cell types. Such genes could be important therapeutic targets to restore proper blood cell functions, or to understand blood diseases.

Keywords

Complete blood cell counts, Genetics, CBC, Platelets, White cells, Red cells