

Project Summary

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Lauren Childs is working on a project in mathematical immunology under the direction of Tom Kepler. The immune system is fascinating because it has the capacity to destroy millions of different antigens, harmful elements to the body. Because it must recognize so many specific molecules, the immune system is quite complex. My project examines only the action of B-cells in germinal centers of lymph nodes. Within the germinal centers B-cells, with different antibodies, contact the antigen. The affinity of the B-cell to the antigen is a result of the type of antibody residing on their surface. The B-cells whose antibodies more specifically bind to the antigen are selected to proliferate, while the other B-cells die. In particular, I am looking at the interaction between affinity maturation and somatic mutation. Although considerable research has been done on this topic, it has again emerged as interesting with the discovery of the importance activation-induced cytidine deaminase (AID) in somatic mutation.