Kristin Mussar, Ph.D. Updates

Update as of 8/31/16:
In this project, we identified a population of white cells called macrophages residing in the pancreas of newborns that is necessary for islet cells to expand in number as well as to mature into functional insulin-producing cells. We found that a functionally similar population capable of boosting islet proliferation exists in the bone marrow of adult individuals, which suggests that there might be potential for islet repair in adults. Our lab is currently investigating whether this bone marrow population can be used as a cell therapy to enhance the repair process of islet cells in adult mouse models of injury. This project is important because it has identified a different set of white blood cells that may allow the proliferation of insulin-producing cells in the pancreas of diabetic patients, offering hope for a cure.

Update as of 4/20/16:
In our last update, we identified a population of macrophages residing in the pancreas of newborns that was necessary for islet cells to expand in number as well as to mature into functional insulin-producing cells. Recently, we found that a functionally similar population capable of boosting islet proliferation exists in the bone marrow of adult individuals, which suggests that there might be potential for islet repair in adults. We are currently investigating whether this bone marrow population can be used as a cell therapy to enhance the repair process of islet cells in adult mouse models of injury. Additionally, we are still working to characterize the molecular signals underlying the effects that this cell population has on islet cell expansion and maturation. Thank you again for donating and making this research possible!

Update as of 12/15/15:
In the past four months, we were able to isolate and begin to characterize a population of macrophages that appears to drive islet cells to expand in number. Importantly, we found that these cells are required for islets to form and secrete insulin in newborns. Our most recent efforts are focused on finding out the growth signals that these cells produce to drive the expansion of beta cells. These results support our original hypothesis that one day these cells may be used as a therapeutic strategy to elicit islet cell regeneration in Type 1 diabetics.