Name: Bayley Waters

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Major Professor: Barak Blum

Degree Objective: PhD, Endocrinology and Reproductive Physiology

Background: BA, Psychology – University of Wisconsin, Madison

Current Research Project: My project seeks to understand the role of Roundabout (Robo) receptors in the pancreatic islets of Langerhans. Islets are clusters of endocrine cells within the pancreas that regulate glucose homeostasis in vertebrate animals. The way these different endocrine cell types are arranged spatially within the islet is called islet architecture. Insulin resistance can drive proliferation of beta cells as they attempt to produce more insulin, and this increase in beta cell mass forces the islet to remodel while maintaining appropriate architecture. Failure of beta cells and islets to appropriately compensate contributes to development of diabetes. Our lab previously discovered that expression of Robo in the beta cells is required during development for mouse islets to establish proper architecture. I am now leading a project exploring whether Robo is also required to maintain islet architecture throughout life, and in the context of insulin resistance. I am using various transgenic mouse models to delete or overexpress Robo in the beta cells of adult mice. These mice are further exposed to islet compensation-inducing challenges, such as a high fat, high carbohydrate diet, and pregnancy. I can then visualize the islets using immunofluorescence, and quantify size and architectural changes. Aberrant islet architecture appears in all forms of diabetes mellitus; therefore, understanding how Robo may contribute to stabilization of islet architecture in adulthood and flexibility of islet remodeling under insulin resistant stress will provide key insights into Robo's role in diabetes.

Honors:

Grants Received:

Publications:

Donovan, A.M., Alibali, M.W. & Waters, B.J. (2016, July). Gesture and embodiment in mathematical learning: Do actions leave a legacy in gesture? Paper presented at the meeting of the International Society for Gesture Studies, Paris, France.

Irving, A.A., Waters, B.J., Plum, L.A. & DeLuca, H.F. (2021, May). Loss of functional vitamin D receptor does not affect intestinal tumor development, but has synergistic effects on calcium metabolism when coupled with loss of functional Apc. Manuscript in preparation for BMC Cancer.

National Presentations:

Other Presentations:

Irving, A.A., Waters, B.J., Plum, L.A. & DeLuca, H.F. (2019, April 4). Absence of vitamin D receptor in a rat model of colon cancer does not affect tumor development. Poster presented at University of Wisconsin Carbone Cancer Center Research Retreat, Madison, WI.

Teaching and Mentorship:

ERP Service: