1127-92-402 **Changbing Hu**, **James D Johnson** and **Jiaxu Li*** (jiaxu.li@louisville.edu). *Modeling the distribution of insulin in pancreas.*

Maintenance of adequate pancreatic beta-cell mass, via suppression of programmed cell death and/or sustained proliferation is critical for the prevention or delay of diabetes mellitus. It is well established that insulin potently activates mitogenic and anti-apoptotic signaling cascades in cultured beta-cells. Furthermore, loss of beta-cell insulin receptors is sufficient to induce T2DM in animal models. However, it remains unclear whether the in vitro effect in human islets and the in vivo effects in mice can be applied to human physiology. The major obstacle to a complete understanding of the effects of insulin's feedback in human pancreas is the absence of technology to measure the concentrations of insulin inside of pancreas. To contextualize recent in vitro data, it is essential to know the local insulin concentration and distribution in pancreas. We formulate a novel mathematical model to investigate the distribution and concentration of insulin within pancreas using existing physiological data and islet imaging data. It is revealed that insulin concentration along pancreas increases nearly linearly in the fashion of increasing quicker in tail area but slower in head area. The factor of small diffusion with blood is negligible since the convection of blood flux dominates. (Received February 07, 2017)