Diabetic Complications Consortium

Application Title: Loss of glucose sensing with vagal neurocircuits contributes to glycemic dysregulation and gastrointestinal dysfunction in a mouse model of Type 2 diabetes

Principal Investigator: Kirsteen N Browning

1. Project Accomplishments:

Several unforeseen events necessitated an extension being applied for with this project:

- The grant was not activated until February 2015
- IACUC approval for the breeding protocol was secured in June 2015
- Jackson Laboratories could not supply the mice required to start and maintain the breeding colony until July 2015.
- Several of the female mice proved "difficult" mothers which delayed the breeding regimen significantly

Nevertheless, the breeding colony is now established and additional mice will be purchased from Jackson Laboratories to maintain and expand the colony.

A Masters degree student in the Department of Comparative Medicine (Dr Regina Munden) has joined my laboratory to complete her masters research project using these mice and is in charge of the breeding colony and phenotyping of the mice. We anticipate collecting tissues from the first set of mice within 2 weeks and completing the necessary investigations into the altered gastrointestinal phenotype of these mice by March 2016.

In collaboration with Dr Andras Hajnal (Department of Neural and Behavioral Sciences, Penn State College of Medicine), we have additionally secured IACUC approval to perform a Vertical Sleeve Gastrectomy on these mice to investigate whether this type of bariatric surgery reverses, or even prevents, the onset of Type 2 diabetes, and the neurophysiological basis of these changes. This requires allowing the mice to develop Type 2 diabetes (at approximately 12-16 weeks of age), performing surgery and monitoring phenotypic changes for 2-3 weeks post-surgery. We anticipate performing the surgical interventions by December 2015.

2. Specific Aims:

No further progress on the specific aims to date (see above).

3. Publications:

No publications to date