**2012F158R Enhancing persistency of lactation: a functional genomic approach**

**U of A, Masahito Oba**

**March 2012 – February 2016**

**AM Funding: $50,000 Total Funding: $485,725**

**Funding Partners: Agriculture funding consortium, University of Alberta**

Background: The milk production of dairy cows is determined by the peak and persistency of milk yield. Cows exposed to a long day photoperiod (16 h light and 8 h dark) increase milk yield by 8 – 10 % compared to cows on a short day photoperiod (8 h light and 16 h dark). Photoperiod has been shown to interact with other forms of management, such as bST, however information regarding the interaction of dietary grain allocation and photoperiod management is limited. Additionally, few studies have looked at the relationship between photoperiod and feeding pattern as well as feed sorting. The extent of photoperiod management in Alberta dairy herds has also not been well documented. We wanted to increase knowledge on photoperiod management as well as explore the best way to use it on farm.

Objectives:

1. To determine the interaction effects of photoperiod management and dietary grain allocation on the productivity of lactating dairy cows
2. Determine effects of photoperiod on feeding behaviour of lactating dairy cows
3. Identify and relationship between actual photoperiod that animals are exposed to and the persistency of lactation for cows that calved in the summer or winter

Methods:

* 60 mid lactation cows were subjected to either a long day or a short day photoperiod. Feed sorting and eating pattern (distribution of eating time throughout the day) were measured before and after the 30 d light adaptation period. After light adaptation cows were fed 3 diets over 3 separate 4 week treatment periods. The diets were low grain (15 % rolled barley), medium grain (25% RB) and high grain (35% RB). Milk yield, milk components and blood was sampled/measured during the last week of each treatment period.
* 20 dairy farms near Edmonton, AB were visited in both the winter and summer months. Light intensity was measure over 48 hours and farms were divided into 2 groups, LP: farms that provided 16 – 18 h of light over 150 lux followed by 6-8 h dark and SP: