OMICS Group Conferences
Accelerating Scientific Discovery

4th World Congress on
Diabetes & Metabolism

August 14-16, 2013 Holiday Inn Chicago-North Shore, USA

Development and Characterization of the Gene Mine Mouse Model of Diabetic Retinopathy

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Abstract

Diabetes and its associated complications are a cause of mortality and morbidity across the globe. With duration, all forms of diabetes can lead to the development of complications. Diabetes induced ocular disease, also known as Diabetic Retinopathy (DR) is the most common vascular complication leading to irreversible blindness among working age adults. In DR the retinal vasculature and the neural is damaged due to prolong hyperglycemic conditions. Despite extensive research molecular and the genetic basis of DR remains unclear. The availability of an animal model would be a significant advantage to understand the underlying case for DR. However, a true diabetic mouse model which demonstrates the array of features seen in human DR does not exist. Thus, a new approach is needed. We are studying a large recombinant inbred panel of mice "The Gene Mine" to identify a suitable mouse model to investigate DR. The Gene Mine is a genetic reference population of mice established from eight diverse founders. The high level of genetic diversity and mapping power of "The Gene Mine" is particularly advantageous to study complex disease traits such as DR. To date we have studied over fifty Gene Mine strains, three of which have shown characteristics typical of DR. We believe that the Gene Mine strains showing DR features will enable us to identify the genes involved in DR. This will aid the development of novel therapeutic targets to hopefully arrest this devastating vision threatening disease.

Biography

Lakshini Weerasekera is a final year Ph.D student under the supervision of Dr. Lois Balmer and Prof. Grant Morahan at the Center for Diabetes Research, University of Western Australia. In 2003, she graduated from University Bangalore, India with a Bachelor of Science degree in Genetics, Biochemistry and Microbiology. Upon graduation, she joined the Human Genetics Unit, Faculty of Medicine in Colombo, Sri Lanka, where she worked on thrombophilic polymorphisms and its association with pregnancy complications. During her research career, Lakshini has published three papers in reputable journals.