

# Gene-Environment Interactions in Diabetes

## Sigma Xi Annual Banquet and Lecture

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**John A. Burns School of Medicine, University of Hawai'i, Mānoa**

### **Abstract of Presentation:**

Native Hawaiians and Pacific Islanders experience a disproportionately higher prevalence and earlier onset of cardiometabolic health outcomes, including Type-2 diabetes mellitus (DM) than that of the general population, which has been linked to disparate social factors often associated with an obesogenic environment (*i.e.* diet, lifestyle/behaviors, and stress). A common hallmark of DM thought to be causative is chronic inflammation. Evidence is emerging that an obesogenic environment promotes inflammation in the body, and induces alterations in cell function that lead to insulin resistance and DM-related complications. The Department of Native Hawaiian Health established the Partners in Care community-based diabetes self-management lifestyle intervention program to improve glycemic control and reduce the risk of DM-related complications. It is not fully understood how this intervention influences inflammation and glycemic control in DM patients, however our results suggest that epigenetic mechanisms are in fact modified by lifestyle. This presentation will offer new insight into how epigenetic mechanisms facilitate gene-environment interactions that influence diabetes and other chronic diseases, and suggest important implications for disease treatment/management and lifestyle-health advocacy.

### **Speaker Biography:**

Dr. Maunakea earned his Ph.D. in Biomedical Sciences from the University of California, San Francisco in 2008, and completed postdoctoral training at the National Institutes of Health. He subsequently joined the John A. Burns School of Medicine at the University of Hawai'i, Mānoa, where his research has made important contributions in the field of Epigenetics, focusing on genetic effects that are not encoded in the DNA sequence of an organism. These effects on cellular and physiological phenotypic traits result from external or environmental factors that switch genes on and off and affect how cells express genes. In particular, he has developed and applied novel high-throughput, genome-wide technologies that survey DNA methylation and histone modifications, both central components of epigenetic processes, and has discovered novel roles for DNA methylation in regulating alternative promoter usage and in pre-mRNA splicing. In his current position as Assistant Professor in the Department of Native Hawaiian Health, Dr. Maunakea is applying epigenomic information toward understanding the relationships of gene-environment interactions that underlie the development of diseases of health disparities, including autism spectrum disorders and cardiometabolic diseases, anticipating that such studies will contribute to the development of more effective targeted diagnostic, preventive and therapeutic strategies.

**When:** Saturday, November 19, 2016; 11:30-2:00

**Where:** Beautiful Treetops Restaurant. 3737 Manoa Rd, Honolulu, HI 96822 (top of Manoa Valley). 988-6839.

**Delicious Buffet Luncheon:** \$18.00. Ample free parking.

**RSVP:** To guarantee your seat at the banquet, please email Dr. James Campbell ([jamesrca@hawaii.edu](mailto:jamesrca@hawaii.edu)) by Friday, November 4. For more information, please call: 971-8965. **OPEN TO EVERYONE.**