Dr. Lana Garmire and team win University of Hawai'i Cancer Center's Publication of the Month

by Chantal Jackson

HONOLULU, HI - Dr. Lana Garmire won University of Hawai'i Cancer Center's November Publication of the Month award for her collaborative paper, "mirMark: a site-level and UTR-level classifier for miRNA target prediction," printed on October 25th 2014 in Genome Biology. Dr. Lana Garmire is a tenure-track assistant professor in the Cancer and Epidemiology Program at University of Hawai'i Cancer Center.

Micro RNA (miRNA) is a type of small RNA that regulates genes; markedly, miRNA plays an important role in cancer, and other diseases. Specifically, miRNAs regulate gene expression by binding to untranslated regions (UTRs) of mRNA.

Currently, other computational methods to predict miRNA targets are inadequate. In their study, three PhD students Mark Menor, Travers Ching, Xun Zhu, together with collaborator Dr. David Garmire, and senior corresponding author Dr. Lana Garmire employed machine learning methods and most comprehensive databases determine miRNA binding; in particular, if a specified gene is a miRNA target or not. This method is capable of miRNA target prediction at the site-level and gene-level. It achieves significantly better prediction than other tools, including TargetScan the most popular tool developed by David Bartel's group at MIT.

Dr. Lana Garmire explains, "The present goal is to determine if a gene sequence is a target of miRNA, which can be done at two levels: a coarse level (UTR-level), or a fine level (Site-level)." Dr. Garmire further highlights the general application for this miRNA target prediction approach, "We want to improve the inconsistency and overlap associated with different predictive tools, and this will help us better understand miRNA's functions in cancer. In this manner, knowledge-based guidance will be provided to molecular biologists for their experiments."

miRNAs are indicated as good biomarkers and therapeutic candidates for various cancers including breast, prostate and liver. The method discussed in this report will theoretically improve experimental research of such diseases, and ultimately serve to improve the lives of individuals enduring them.