

## *Biomarkers for Vincristine-induced Neuropathy*

Danni Li, Purdue University; Jayachandran Devaraj, Purdue University; and Doraiswami Ramkrishna, Purdue University

Vincristine is a vinca alkaloid, a commonly used chemotherapy drug for treating leukemia, lymphoma, multiple myeloma and some pediatric cancers. Its major dose-limiting side effect is peripheral neuropathy. The current dosing of “standard-dose-for-all” ignores the genetic and phenotypic variations among different patients, and causes severe neuropathy in some patients while ineffectively treats the others. In the present study, we aim to discover novel biomarkers involved in vincristine-induced neuropathy and identify patients with varied metabolic characteristics. Thus treatment can be tailored accordingly to improve outcomes of vincristine treatment. Pre-dose and post-dose serum samples were collected from two groups of patients (low and high toxicity groups) at the beginning of treatment and at the end of treatments. Liquid chromatography–mass spectrometry (LC-MS) was used to identify and quantify metabolites in the samples. Metabolomics data analysis tools were utilized to analyze the raw spectrum obtained from LC-MS. From statistical analysis and modeling, we identified 27 compounds that showed a difference in intensity between low toxicity and high toxicity patients at the beginning of the treatment. Further verification against database and validation are needed to confirm the biomarkers to be able to be useful in clinics. Successful validation of the biomarkers will enable the clinicians to treat the patients according to their characteristics which will ultimately improve the survival and quality-of-life of cancer patients.