Biography

Dr. Lauren Aleksunes is a Professor in the Ernest Mario School of Pharmacy and the Environmental and Occupational Health Sciences Institute at Rutgers University. She received her Pharm.D. and Ph.D. degrees from the University of Connecticut and completed a postdoctoral fellowship at the University of Kansas Medical Center. With a K99/R00 grant in hand, Lauren joined Rutgers where her research interests continued in the transport of toxicants in the placenta, kidneys, and brain. As a leader of an active research team, Lauren has published over 120 papers and funds her laboratory with multiple NIH R01 grants. She is also active in the Society of Toxicology and the American Society for Pharmacology and Experimental Therapeutics. Lauren is passionate about training the next generation of biomedical scientists and oversees a number of educational programs at Rutgers University.

Abstract

“Clues to Predicting Drug Toxicity in Patients: From Genetics to Biomarkers”

Kidney injury can be observed in up to a third of oncology patients treated with high dose cisplatin using traditional clinical markers, including serum creatinine and urinary albumin excretion. However, these indicators of nephrotoxicity are considered insensitive since a significant degree of tubular damage is needed in order to increase their levels. Preclinical studies by our laboratory and others have demonstrated the mechanisms responsible for the secretion of cisplatin by the kidneys. The organic cation transporter 2 and copper transporter 1 contribute to the tubular uptake whereas the multidrug and toxin extrusion protein 1 and multidrug resistance-associated protein 2 mediate the urinary secretion of cisplatin and its conjugates. Modulation of these transport pathways through genetic and pharmacological interventions can alter the susceptibility of mice and humans to cisplatin nephrotoxicity. This presentation will focus on the utility of screening transporter genetic polymorphisms using sensitive biomarkers to personalize oncology regimens that maximize therapeutic benefits while limiting adverse drug reactions.