Dr. Lithgow's lab is focused on understanding the role of aging in the origins of age-related chronic disease. Specifically, his lab has led the field in the identification of pharmacological interventions in aging. The Lithgow lab utilizes molecular genetics, biochemistry and a range of leading edge technologies, including proteomics and metabolomics. His team utilizes the microscopic worm, *C. elegans*, which ages rapidly but exhibits many characteristics of human aging. Using this model, the lab has identified scores of chemical compounds that suppress disease phenotypes and extend lifespan. Many of these compounds promote protein homeostasis, which usually fails during normal aging and is also a factor in diseases such as Alzheimer's and Parkinson's.

Current Research Projects:

1. Identifying chemical compounds (natural and synthetic) that promote proteostasis and extend healthspan and lifespan. The lab has identified scores of compounds with one or more of these properties and are working to understand their mechanisms of action. The lab is collaborating on mouse experiments testing the effects of these compounds on neurological disease and age-related bone loss.
2. Determining the extent to which age-related accumulation of metals contribute to aging and disease pathology. We are manipulating metal levels in *C. elegans* using drug-like compounds.
3. Investigating tissue-to-tissue signaling in the regulation of the mitochondria unfolded protein response.
4. The lab is also part of a consortium, the *Caenorhabditis* Intervention Testing Program along with Monica Driscoll's lab (Rutgers) and Patrick Phillips lab (Univ. of Oregon). The consortium is an NIA funded program to establish standard conditions for testing chemicals for effects on longevity and healthspan with a view to identifying robust interventions in aging for future pre-clinical and clinical research.

To learn more about the Lithgow lab, click HERE.
To apply to the Lithgow lab, return to the Internships Homepage.