

Louis Jamtgaard, Medicinal Chemistry

Year in School: Junior

Hometown: Columbia, MO

Faculty Mentor: Dr. Vladislav Glinskii, Biochemistry

Funding Source: Molecular Imaging Program

Understanding women health issues through research on female pigs

Understanding how and why vascular changes occur following ovariectomy (removal of the ovaries) can help us understand many symptoms experienced by women undergoing menopause. Some of the post-menopausal conditions may result from vascular changes, and further research could yield better strategies for hormone replacement therapy. Furthermore, Missouri like the entire U.S. will be facing a healthcare crisis as the “Baby Boom” generation ages, and research into age related complications could not only save lives, but could save millions of dollars in future healthcare costs. In our group, previous studies on pigs demonstrated that following the removal of the ovaries blood vessel networks undergo significant changes. These changes were characterized by a decrease in vessel density and an increase in vessel permeability. The purpose of our research was to determine what proteins and growth factors could be responsible for blood vessel changes following the ovariectomy. It was postulated that the blood vessel changes could depend on the level of estrogen, a hormone produced by the ovaries, and estrogen related growth factors. A comparison of 41 growth factors and receptors in blood serum of normal and ovariectomized pigs showed most robust changes in expression levels of platelet-derived growth factors (PDGF's), proteins that play important roles in regulating growth and survival of vascular tissue. To corroborate the data we conducted several additional experiments, which confirmed our previous results. Currently, studies are being conducted which aim at developing new therapeutic strategies for preventing post-menopausal vascular complications.