



Dr. Pauza works with graduate student Brandon Rakowski.

MARY PAUZA, PH.D.

Chemokine Synergism

For Dr. Mary Pauza, the pleasure of research is asking why — trying to understand something new and novel about how something works.

Her two-year, NIH Academic Research Enhancement Award (AREA) Grant — (R15) from the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health is looking at the function of two molecules called chemokines — small, soluble proteins secreted by cells. Chemokines attract white blood cells to sites of inflammation. Dr. Pauza is studying the impact of these chemokines on the composition, magnitude and kinetics of inflammatory responses, specifically in type 1 diabetes.

Looking at two chemokines, CXCL 9 and CXCL 10, which were believed to be redundant, Dr. Pauza and her team are finding instead that they are potentially synergistic — that is, they are complementary, working together to recruit white blood cells.

These two chemokines bind to the same receptor. If researchers can identify and control the receptors, the chemokines could not call other cells to the sites. That could reduce inflammation,

thereby slowing or preventing disease.

Using osmotic infusion pumps full of chemokines, Dr. Pauza can precisely measure the proteins' behavior in the peritoneum of mice (*in vivo*), identifying the specificity, magnitude and kinetics of the chemokines' cellular recruitment, measuring different concentrations of the chemokines and distinguishing different cell types.

“The more we can understand about how cells are attracted to sites of inflammation, the more likely we will be able to design ways to control it,” Dr. Pauza says. That has relevance to any kind of inflammatory situation — anything from a cut on a hand (where inflammation may be a beneficial part of the healing process) to type 1 diabetes and other diseases most people don't associate with inflammation such as transplant rejection and atherosclerosis.

“Basic science research can be just as rewarding as clinical research,” she says. “The majority of clinical research has its basis in basic research. I love the quest in basic research; I love to ask why something works and how it works.” ■