UA Division of Endocrinology’s Craig Stump, MD, PhD (also of SAVAHCS), and UA College of Nursing’s Charles A. Downs, PhD, ACNP-BC, talked on “RAS-Induced Skeletal Muscle Insulin Resistance” and “RAGE-Induced Changes in the Proteome of Alveolar Epithelial Cells.” Archived video can be viewed here.
Summary

- Inhibiting ROS appears to slow the progression to T2DM.
- Ang II stimulates the production of ROS in tissues including skeletal muscle.
- NADPH oxidase is a source of Ang II generated ROS.
- Therefore, the RAII may be implicated as a common mechanism underlying the development of hyperglycemia and other manifestations of the metabolic syndrome.

Next Steps?

- EXPs experiments in skeletal muscle cell cultures
- Mitochondrial function studies: Knockout or overexpression of mPTP
- Role of Mitochondrial Permeability Transition Pore (mPTP)

- mPTP is a mitochondrial inner membrane protein that regulates mitochondrial membrane potential.
- Deletion of the mPTP reduces ROS production.
- Overexpression of the mPTP increases ROS production.

- mPTP is a target for future studies to understand the role of ROS in diabetes.
Overview

- Background
- Study design & proteome analysis—30,000 ft view
- RAGE function in the alveolar epithelium, a broad view
Conclusions

- RAGE has multiple functions in the lung.
- RAGE contributes to alveolar epithelial cell responses to stimuli—specifically inflammation and redox balance.
- RAGE may be a therapeutic target for lung diseases.
Photos courtesy of David Mogollón, Communications Coordinator, UA Department of Medicine, (520) 626-1137 or dmogollon@deptofmed.arizona.edu