Dr. Gregory Cartee Leads New Studies on Skeletal Muscle and Aging

Gregory Cartee, PhD, professor in the School of Kinesiology and the Department of Integrative Physiology and research professor at the U-M Institute of Gerontology, has published two new studies on skeletal muscle and aging, in the December 2012 issue of the *Journal of Gerontology: Biological Sciences*. Dr. Cartee is also the director of the U-M Nathan Shock Center’s In Vivo Functionality Core.

In one study, Dr. Cartee and his team found that calorie restriction in older rats leads to improved insulin-stimulated glucose uptake, and improved Akt phosphorylation, in both fast-twitch and slow-twitch muscles. This represents an important new finding. Moderate calorie restriction leads to improved health in many species, but this new research filled in some of the unknowns with regard to the effects of calorie restriction on older rats. Taken together with previous published findings from Dr. Cartee’s group, the current results suggest the underlying mechanisms for enhanced insulin-stimulated glucose uptake may not be identical in old rats as they are in younger adult rats. Click here to read more: [http://biomedgerontology.oxfordjournals.org/content/67/12/1279.full](http://biomedgerontology.oxfordjournals.org/content/67/12/1279.full)

Another study successfully isolated and analyzed glucose uptake and muscle fiber type in single muscle fibers from both adult rats and old rats, opening up the possibility of a new approach for assessing age-related differences in muscle at the single-fiber level. Many age-related diseases in humans have been linked to insulin resistance, but the extent of the resistance doesn’t seem to be the same in all skeletal muscles. Using this new method to measure glucose uptake for different fiber types in the same muscle is an important step toward understanding the relationship between fiber type and age-associated insulin resistance. Click here to read more: [http://biomedgerontology.oxfordjournals.org/content/67/12/1286.full](http://biomedgerontology.oxfordjournals.org/content/67/12/1286.full)

The two studies go hand-in-hand. “A future research goal,” Dr. Cartee explains, “is to use our new method for measuring glucose uptake in single fibers to learn about the fiber type-dependent effects of calorie restriction on glucose uptake. This approach will help us understand the processes by which this dietary intervention can oppose insulin resistance at the cellular level.”