

Shaking up the aging process: Formula could help seniors keep their muscle

By Jeff Richardson

Above: Ron Wolf '91, a research subject in an ongoing nutrition study at UAF, reviews plastic food models that display possible meal choices with the help of clinical coordinator Sheri Coker. UAF photos by Jeff Richardson and JR Ancheta unless otherwise noted.



Photo caption: Robert "Trey" Coker. UAF photo by Leif Van Cise.

Coker, who has a Ph.D. in exercise physiology, worked at the time at the University of Arkansas for Medical Sciences' Department of Exercise Physiology.

That effort went beyond just his own rehabilitation. A researcher at the University of Alaska Fairbanks Institute of Arctic Biology since 2013, Coker has spent the last 10 years addressing a vexing problem: How can people maintain their muscle mass in the face of physical inactivity or aging?

It's a particular problem for elderly people who are overweight and might want to improve their health. Cutting calories is the most effective way for them to drop pounds, but, unless accompanied by exercise, they lose muscle along with fat.

"In the scenario I was in, activity wasn't on the table," Coker said. "That's especially true for a lot of older individuals, and especially obese older individuals. It's kind of a catch-22 for them."

To develop the best nutritional strategy for this scenario, Coker used stable isotopes of common elements to track and monitor feeding-induced changes in muscle growth. That effort provided definitive evidence that a specific set of essential amino acids might just win the battle against muscle atrophy.



Graduate student *Brandon Putuuqti Kowalski '16*, left, and Coker prepare a treadmill for a volunteer at the Arctic Health Research Building

With the help of a group of Fairbanks-area seniors and an \$11.8 million grant from the National Institutes of Health, Coker is exploring whether his proprietary meal replacement enriched with essential amino acids will eliminate the loss of skeletal muscle, even during weight loss in older obese individuals.

That, in turn, could offer a key to helping people stay active and functional in their later years.

“This whole thing is about maintaining independence as we age.”

Melynda “Sheri” Coker, who is the clinical coordinator for the senior nutrition project and Coker’s wife, is gathering vast amounts of data from Woolf and other volunteers to help gauge whether the diet is having its intended effect.

It starts with a physical screening to see which volunteers are eligible to participate. Since then, Woolf has had scans to measure his body composition and bone density. Blood tests are monitoring his body functions, and on his wrist he wears an ActiGraph, a device that tracks his activity levels and sleep patterns.



Animal and human studies have shown that a serving of the proprietary amino-acid formula is at least 2½ times more effective in preserving muscle than a high-quality protein source alone, Coker said. The data being collected from Woolf and other participants will determine whether the same is true for human research subjects over a longer period of time, even under the conditions of intentional weight loss.

The formula is meant to address one of the primary barriers to muscle maintenance in aging bodies. The muscle breakdown that older people naturally face is amplified by the increasing struggles that they have making use of the nutrition in their food. Over time, the digestive system simply becomes less efficient at transporting, absorbing and recognizing those nutrients.

Seniors can offset that problem by eating more protein, but that increases caloric intake. That combination creates a tough balance for many older people who struggle to maintain a healthy balance between weight and fitness.

After studying the problem for more than a decade, Coker believes that the right blend of essential amino acids could reduce the need for excess calories and allow seniors to both keep their muscle and lose fat.

"As you come into the world, you have this steep increase in physical function until 20," Coker said. "Starting at about 35-40, you're trying to keep that function, and at 45 to 60, you're really just trying to hang on. This unique formula is designed to help them do it."

Coker's fascination with nutritional therapies evolved into a business in 2013, when he and a former colleague at the University of Arkansas launched a company, Essential Blends, to develop nutritional products.

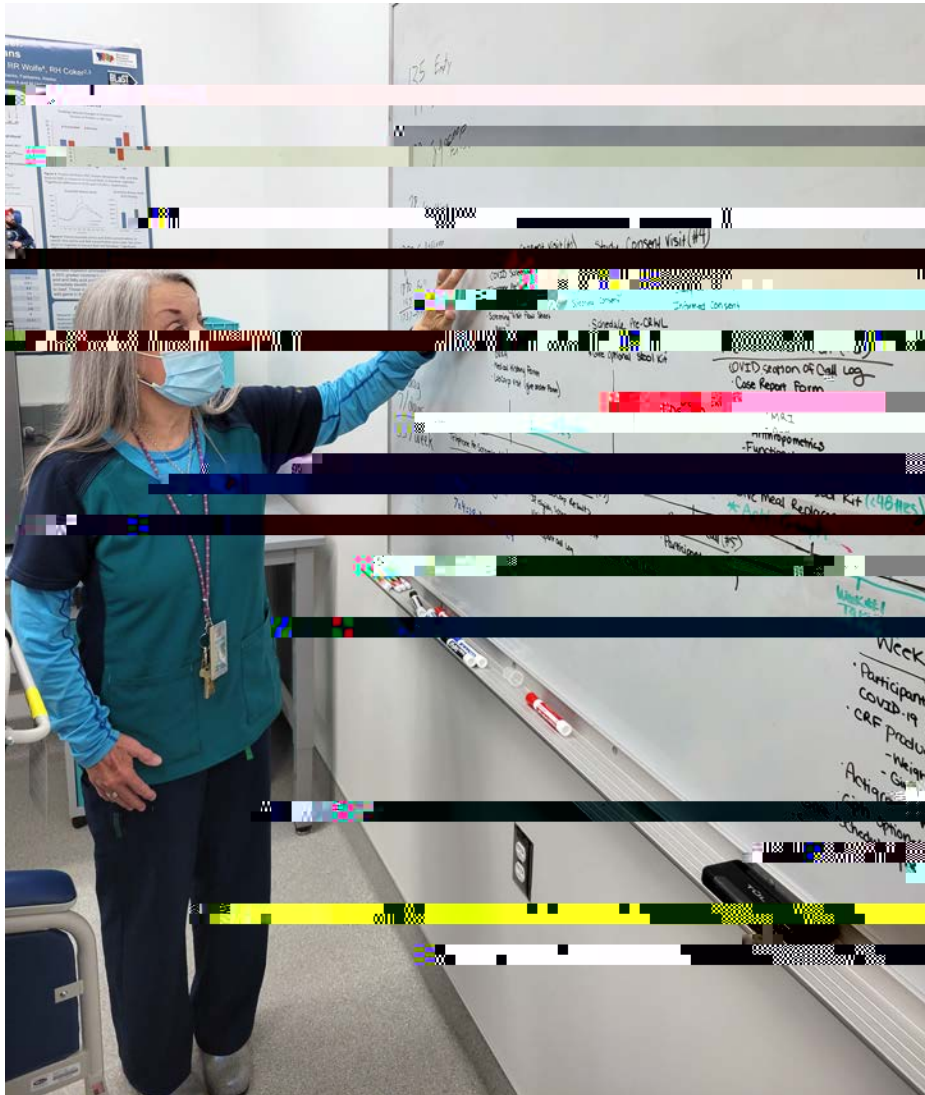
Beyond the ongoing senior nutrition study, Essential Blends research is also working on formulas that help patients suffering from congestive heart disease, and for individuals recovering from substance abuse to restore liver function. Coker has also worked with the "kin1 B estsE e calso nds, o v t thc nds reseaf 1 fovc c

good for my office, because the end product of his research will enhance the likelihood of commercialization.”

Although the early returns are promising, there’s still a long road ahead for the senior nutrition study. The current cohort of the study attracted about 70 volunteers, but just four seniors advanced to the research stage after a stringent screening process removed candidates with underlying health conditions or other factors that made them ineligible.

Despite that low number, it’s an encouraging start as the Cokers look for more volunteers. The response from Fairbanks seniors has been outstanding, even if only a few have made it to the research phase so far, said Sheri Coker.

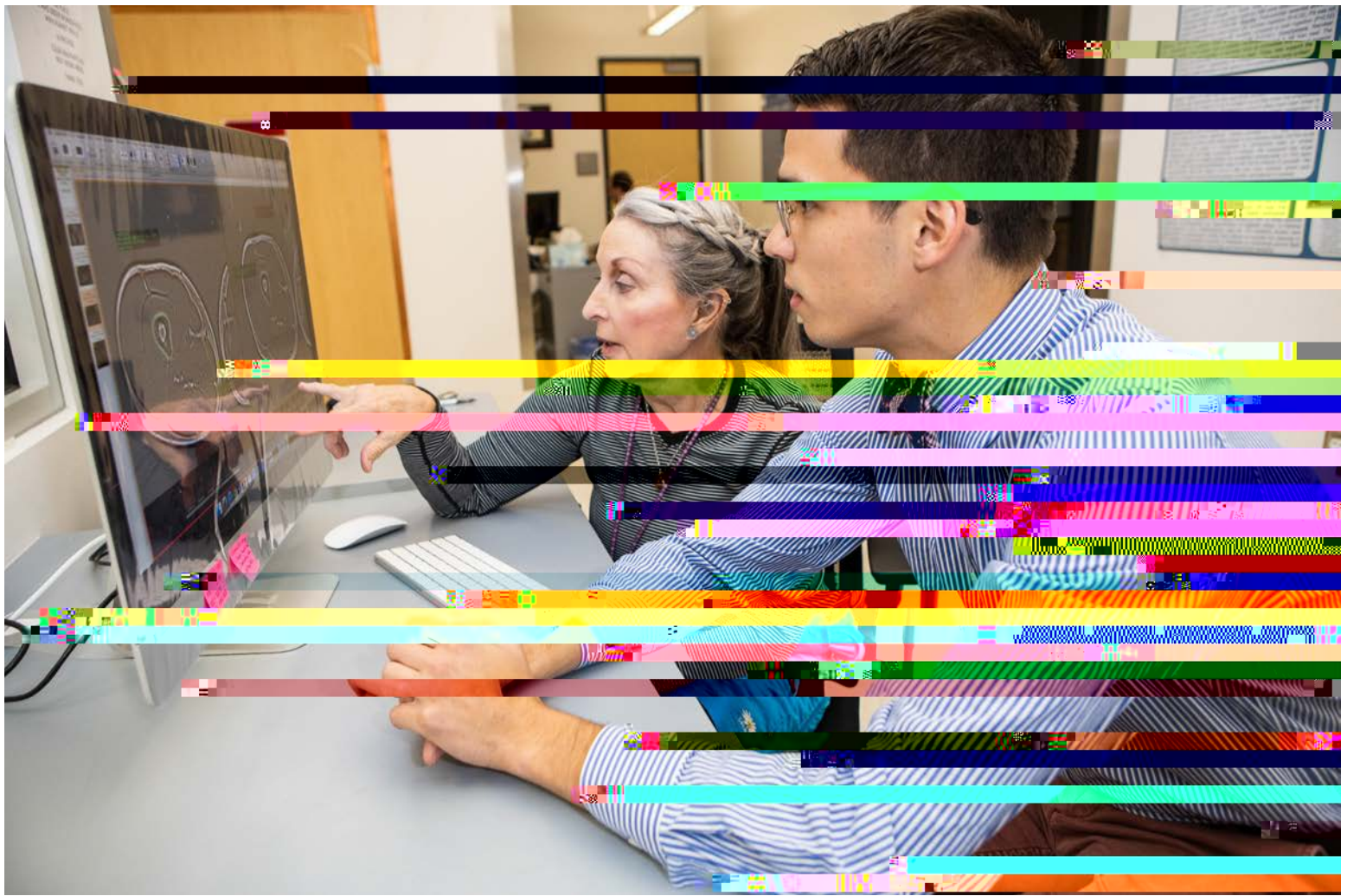
“It just proves our community is so interested in things like this,” she said. “The people in our town just want to better themselves.”



Sheri Coker discusses the steps that volunteers take throughout an ongoing nutrition study. The process includes a 12-week weight-loss phase followed by 12 weeks of weight maintenance.

Once the 12-week weight-loss portion of the study is complete, a 12-week maintenance phase will study the effects of drinking a single meal-replacement shake a day with an otherwise normal diet.

"We want to find the true answer to the question of whether this can work," he said. "If it can't, we've got to come up with something that will."



Sheri Coker, left, and graduate student Brandon Putuqti Kowalski read a volunteer's CT scans at the Arctic Health Research Building