Announcer: The Missouri State Journal, a weekly program keeping you in touch with Missouri State University.

Emily Yeap: We have all heard the phrase, “It's in my genes.” Can your diet affect how your genes behave? Yes, it can, according to a field of science known as nutrigenomics. I'm Emily Yeap.

Joining me today are two guests from Missouri State University: Dr. Amanda Brodeur, associate professor of biomedical sciences and Natalie Allen, registered dietitian and clinical instructor of biomedical sciences. They shed light on nutrigenomics and how it can help people better choose what to eat.

Brodeur.

Dr. Brodeur: Nutrigenomics involves the interaction between diet and your genes. With the completion of the Human Genome Project in the early 2000s, we discovered the entire sequence of the human genome. With that, we've learned that there are many genes that are involved in metabolism, diet, different aspects of our healthcare. Nutrigenomics is a specific area where we look at the interactions between diet, so what we eat, and the genes in our genome. We can use this science to better understand how our diet and things we consume influence gene expression and we can use it to understand what areas of our diet may be important for us to modify or use to make us feel better.

Emily Yeap: Allen believes nutrigenomics will contribute to more personalized healthcare.

Natalie Allen: Diet information is going to be more specific. A good example would be right now we tell people your cholesterol is high, you have a history of heart disease in your family, try all of these things to lower your cholesterol levels. Whereas with nutrigenomics, we may be able to say you know what, you specifically need to limit saturated fat, whereas somebody else might want to add soluble fiber to lower their cholesterol, and somebody else might want to add an activity to raise their good cholesterol levels. Instead of an umbrella diet, we're going to be able to be specific and really hopefully see a change in that person's lab value and their cholesterol and their cardiac health.

Emily Yeap: According to Allen, nutrigenomics is valuable in addressing major health issues.

Natalie Allen: We know that genetics plays a role in several of the biggest healthcare issues in our country. Obesity, diabetes, and inflammation, which we think is tied to a lot of chronic diseases. With the study of nutrigenomics, we're able to look at for example obesity. A study looked at twins and 80% of the difference in the Body Mass Index or the weight in the twins was tied with genetics. If we can figure out genetically how their obesity works, then maybe we can help them to not be obese and do things in their diet or their lifestyle that would help them reduce that risk factor. Same with diabetes. Diabetes accounts for more than 90% of the disease in the world and we may be able to tell people now you have a genetic predisposition for diabetes related to nutrigenomics testing, so they could be more on top of it, hopefully more preventive. Looking at their diet, looking at carbs, looking at appropriate portion sizes, so being ahead of the game and hopefully not developing diabetes and not having that risk factor down the road. Then, we also know just generally if you want to cut inflammation in your body, you can add foods into your diet, such as olive oil, fruits, vegetables, some legumes, things that have pre and probiotics. Reducing inflammation, we know will decrease your risk for certain diseases like stroke. We're looking at nutrigenomics and specifically what do your genes respond to as far as reducing inflammation in the body.

Emily Yeap: How would someone get nutrigenomics testing? Brodeur explains.

Dr. Brodeur: There's direct to consumer testing, so an individual can seek out a lab that performs this testing and have it done on their own. They can go through a medical doctor or through a dietitian to get these tests as well. Once you have the test, it's a test where you isolate DNA from a patient, so we would need a cheek swab sample. We isolate the DNA from those cheek cells and then they give you a report. The biggest thing that I can encourage people to do is to take that report to a healthcare provider. If you're looking at nutrigenomics, you would want to take that to a dietitian. If you're looking pharmacogenomics or other areas of gene testing, you may want to take that to a physician or a pharmacist or another healthcare provider so that they can help you to interpret that data.

Then with that information, you can make decisions on your healthcare. But really, science is just coming alive in this area. There are going to be a lot more tests available, a lot more areas in health and medicine where we can look to our genes to gain information.

Emily Yeap: That was Dr. Amanda Brodeur and Natalie Allen from the Department of Biomedical Sciences at Missouri State. I'm Emily Yeap for the Missouri State Journal.

Announcer: For more information, contact the Office of University Communications at 417-836-6397. The Missouri State Journal is available online at ksmu.org.