A new USDA Center for Collaborative Research on WIC Nutrition Education will provide funding for innovative nutrition education projects. The CNRC WIC Center is led by Dr. Karen Cullen, professor of pediatrics – nutrition at the CNRC. The center will work cooperatively with the USDA Food and Nutrition Service to administer the competitive process to solicit, evaluate and fund researcher-initiated, innovative WIC nutrition education projects to improve target behaviors.

The CNRC WIC Center will develop and release a Request for Proposals (RFP) in December 2012 and will provide expert advice to potential applicants during the application process. The proposals will be due in April 2013. The CNRC WIC Center website will be under development and will have all study information, plus contact information for all investigators and consultants. The CNRC WIC Center website will be available Dec. 1. Check kidsnutrition.org for more information.
STUDY POINTS TO NUTRITION’S ROLE IN DISEASE TREATMENT

Nutrition can play a significant role in the treatment of disease, according to Dr. Farookh Jahoor with the USDA/ARS Children’s Nutrition Research Center at Baylor College of Medicine, whose recent study demonstrated the mechanism by which two amino acid nutritional supplements could be used to treat MELAS (mitochondrial encephalomyopathy, lactic acidosis and stroke-like episodes) syndrome, a common mitochondrial disorder in the United States. The genetic disease affects people starting at a young age, usually before age 20. Its symptoms are various, including muscle weakness, epilepsy, diabetes and a buildup of lactic acid, but one of the most significant is stroke-like episodes caused by dysfunction in the walls of blood vessels.

Patients with MELAS show increased mitochondria production. Mitochondria are a cell’s power producers and are involved in processes such as cell division and the production of signaling molecules.

This study sought to determine if the increased number of mitochondria in blood vessel cells of MELAS patients interfered with nitric oxide (NO) production and, if so, why. The compound NO is made by blood vessels that are functioning correctly but if there is a lack of it, blood vessels will not dilate properly, as is the case with MELAS and other diseases of blood vessels.

Researchers measured NO in study participants and found that it was lower than in the control group of people without MELAS syndrome. They then investigated the role of arginine, an amino acid from which NO is made. Arginine is found in foods we eat, such as meat, seafood, wheat and nuts, and is also made by our own bodies when it is synthesized from another amino acid called citrulline.

In the study, patients were given arginine supplements for two days and then their nitric oxide levels were measured again. There was an increase in NO production, according to Jahoor.

They were then given citrulline supplements and the NO measurements were taken. Researchers found that NO production was even greater after taking the citrulline supplements than the arginine supplements.

“What this suggests is that the precursor for NO production is the arginine that is made from citrulline. This may be so because citrulline is more easily transported into the cell, making the process of synthesizing NO from arginine more efficient,” Jahoor said.

The study suggests that both arginine and citrulline supplementation in MELAS patients may improve blood vessel function, but suggests that citrulline may be the more effective treatment, he said. Randomized controlled trials are necessary to determine effectiveness of the supplements.

“This could have an even broader application, including treatment for people with coronary artery disease and high blood pressure, in which arginine also plays a role,” Jahoor said.

Others involved in this study included Dr. Ayman El-Hattab, University of Missouri Health Care; and Drs. Jean Hsu, Lisa Emrick, Lee-Jun Wong, William Craigen and Fernando Scaglia, all of BCM.

This study was funded by the Society for Inherited Metabolic Disorders (SIMD) through a SIMD/Hyperion fellowship awarded to lead author Dr. Ayman El-Hattab and by funds from the USDA/ARS.

Volunteers

Houston-area residents are invited to participate in the following nutrition research projects designed to help CNRC scientists learn more about the nutritional needs of children. Free parking is provided. For most studies, financial compensation is provided and transportation may be available.

For more information on any CNRC study, contact Marilyn Navarrete at 713-798-7002 or rilynn@bcm.edu.

Visit CNRC study opportunities online by scanning the QR code to the right using your smart phone.

BUTTERFLY GIRLS New!

8-10 year old African American girls and a parent needed to participate in an 8 week online program promoting healthy eating and physical activity. No meetings to attend; participate from the comfort and convenience of home.

BREAKFAST STUDY

Children who are 8 to 10 years old are needed for a study on breakfast consumption and mental abilities. The study includes three overnight visits to the CNRC. There will be blood draws at each visit (numbing creams and sprays are available).

CARDIOVASCULAR STUDY

Normal weight and overweight adolescents and young adults 13 to 21 years old with and without type 2 diabetes are needed for a research study investigating risk for heart disease in youth. Study involves body composition, heart scan and blood tests.

VEGGIE KIDS STUDY

Researchers at Baylor College of Medicine are seeking healthy vegetarian (no red meat for the past 6 months) children ages 4 to 10 years to participate in a nutrition study looking at iron absorption. Three short study visits to the Children’s Nutrition Research Center in Houston are required. Compensation and free parking provided.

PUBERTY & INSULIN RESISTANCE

Texas Children’s Hospital and Baylor College of Medicine are recruiting subjects to participate in a research study to see how weight and puberty influence sugar metabolism. Both lean and overweight children who are approximately 8 to 17 years old are needed. The study requires two office visits in a research unit. A no-cost health exam will be included. Saturdays and Sundays are available for your visits.
RESEARCHERS ADDRESS ROLE OF FUNCTIONAL FOODS IN PROMOTING GOOD HEALTH

When we think of eating healthy, we consider those foods that provide essential vitamins and minerals to keep us well. However, there are certain foods, called functional foods, which can play an especially significant role in our health by serving to ward off diseases.

According to Dr. Michael Grusak, ARS Research Plant Physiologist and professor of pediatrics at the USDA/ARS Children’s Nutrition Research Center at Baylor College of Medicine, these functional foods are known to promote and contribute to good health. They can include a range of things, such as compounds that act as antioxidant or antimicrobial agents. Grusak and Dr. Gabriella Gazzani of Pavia University in Italy compiled a series of articles about functional foods for a special food biotechnology issue of Current Opinion in Biotechnology.

“Functional foods play a role in improving human health,” said Grusak. “There are compounds in foods that aren’t the essential nutrients, but still have the capacity to promote good health.”

Grusak said that some of these compounds can potentially complement drugs that we take for certain ailments or even help address health issues rather than using drug therapy. More research needs to be done in this area before this is possible.

Some examples of functional foods are those that help with antimicrobial activity – these help minimize the growth of microbes such as fungi or bacteria. Cranberry juice, for example, can be used to help treat urinary tract infections. Unique compounds in onions, leeks and garlic also have been shown to inhibit the growth of certain pathogenic bacteria.

Foods and beverages – such as berries, tea, coffee or chocolate – contain compounds in the flavonoid or anthocyanin classes of chemicals that can provide resistance to microbes that contribute to ulcers or oral health diseases (cavities). Similarly, components of olive oil or essential oils from herbs have been shown to have antimicrobial, antioxidant and anti-inflammatory properties.

Functional foods are being developed by manufacturers by adding plant extracts, beneficial microbes or other ingredients into different foods that we consume. Manufacturers go through rigorous procedures to isolate, analyze and sometimes package these compounds before adding them into our foods. Yogurt products, with beneficial lactobacillus bacteria that promote gut health, are one example of a functional food product.

“There is a significant amount of research that’s been done to figure out how

(Continued on page 4)

PREGNANCY & CHILD HEALTH

Did you have a pregnancy complicated by preeclampsia or a baby with low birth weight? Can a complicated pregnancy in mom put the child at risk for future health problems? To answer this question, we are conducting a research study that looks at pregnancy history and its effect on the child’s health. Study involves body composition and blood tests.

DIET AND STOMACH PAIN

Does your child have stomach pain that you believe is related to his/her diet? Children between the ages of 7 and 17 are needed for a research study. Researchers are interested in learning more about the role of diet in childhood stomach pain. Participants will be asked to start a specific diet on two separate weekends to determine whether this will help the pain. Food will be provided.

LACTATION STUDY: GENE EXPRESSION

Pregnant mothers who are healthy, between 13 and 35 years of age, who will exclusively breastfeed for the first two months and who will be delivering at Texas Children’s Pavilion for Women or Ben Taub General Hospital are needed for a research study that will investigate factors (the regulation of gene expression) that affect breast milk production during the first six weeks.

CNRC DIRECTOR OFFERS PERSPECTIVE ON FOOD SAFETY IN THE UNITED STATES

At a recent international conference on children’s food, Dr. Dennis Bier, director of the USDA/ARS Children’s Nutrition Research Center at Baylor College of Medicine, reviewed food regulations that affect children’s foods in the United States. His report on this topic appeared in a recent issue of the Annals of Nutrition & Metabolism.

According to Bier, other than for infant formulas, food regulations for children are the same as they are for adults in the United States. There are no specific regulations beyond infancy, as there are in some other countries. Bier says that this has proven to be a good policy since there have been no documented detrimental consequences.

Bier says that the United States has had a successful history of food regulation, and a proposed new act, once it becomes a law, will make it even stronger.

The Food Safety Modernization act was created in response to an increase in concern over food safety due to bacterial contamination and to the increasing fraction of foods imported from other countries. This new act is meant to keep better track of the food supply and give the regulatory agencies the ability to institute recalls.

“It will make food safety even better in the future,” said Bier.

The act gives the Food and Drug Administration (FDA) authority to impose stricter controls over food production, processing and distribution and allows them to require a food manufacturer to develop food safety plans that include hazard analysis and preventive controls.

One of the most important changes is that it allows the Commissioner of Food and Drugs to order a mandatory product recall under certain conditions.

The act also allows the FDA to:

- Issue performance standards that prevent/eliminate significant food contaminants
- Implement increased record keeping to provide tighter food surveillance and tracking of food back through the supply chain
- Mandate inspections and access plant records without notice
- Suspend plant operations for safety violations

“The changing nature of our food supply has made it necessary to further ensure food safety and also to give the FDA better authority to regulate and enforce it, preventing and minimizing consequences of food contamination,” said Bier.

Although food regulation in the United States is always undergoing changes, according to Bier, the fundamentals of food regulatory acts go back almost to the beginning of the last century and have continued to improve since then.
SCHOOL BREAKFAST (continued from page 1)

Based on the research, a pilot program was developed and implemented in three low-income middle schools. Free breakfast was offered to all students, and the program was promoted through the creation of brochures in both English and Spanish that were targeted to students, parents, and teachers.

Cullen noted that teachers and principals were very supportive of the program since it benefits the school as a whole.

Three additional schools served as the control group in the study. Those schools offered free and reduced breakfast to only qualifying students and saw about a 20 percent increase in participation during the course of the study.

Others involved in the study include CNRC researcher Deborah Thompson and Kathleen Watson, previously with the CNRC. It was supported by the National Institute for Child Health and Development and the USDA, Agricultural Research Service.

FUNCTIONAL FOODS (continued from page 3)

to introduce these components into foods to get the most benefit out of them,” said Grusak.

For example, some of these components can get degraded in the stomach because of stomach acids. Manufacturers have developed ways to encapsulate the compounds such that they are preserved for passage into the gastrointestinal tract, where they are absorbed or contribute to gut health in other ways.

Although there are several foods on the market that contain these compounds, Grusak said that research will be ongoing to develop even more foods and to evaluate their potential health-promoting properties.