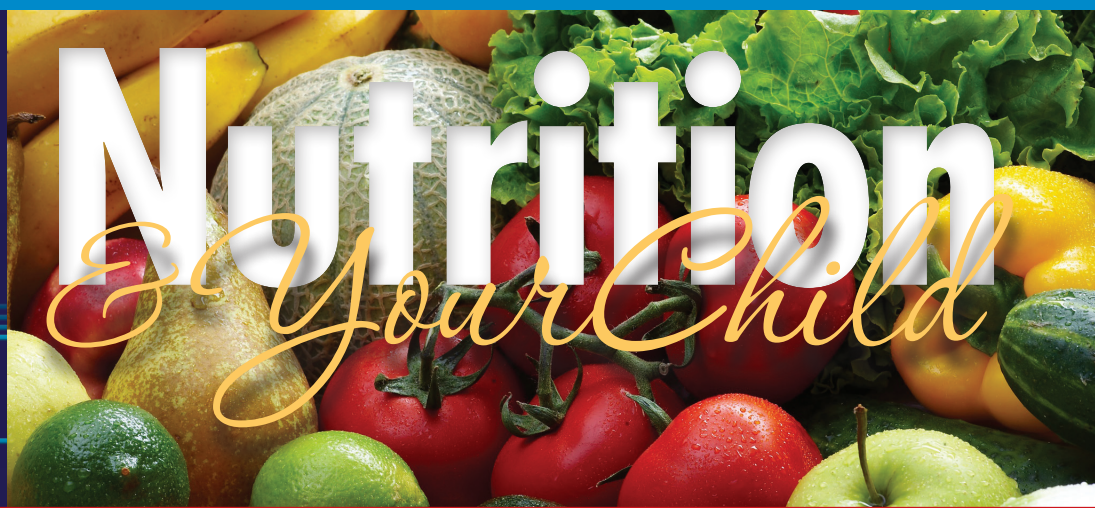


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TRAINING THE NEXT GENERATION OF SCIENTISTS

When Dr. Teresa Davis isn't working tirelessly in her lab to find better ways to improve growth in low birth weight infants, she's devoted to guiding young scientists in the next steps of their careers. "Mentoring is one of the most important responsibilities of our faculty," said Davis, professor of pediatrics at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine.

Her commitment to mentoring and her desire to take her role beyond the laboratory are what led her to be recognized by the department of pediatrics at BCM with the 2010 Research Mentor Award.

The next generation of researchers benefit from those who come before them and Davis' mentoring is a perfect example of this. Since 2000, her postdoctoral fellows have won 25 research awards from the American Society for Nutrition, the American Academy of Pediatrics and the Society of Critical Care Medicine as well as grant awards from the National Institutes of Health. Several of her postdoctoral fellows have also gained key academic appointments including department head and director of neonatology.

Davis' research focuses on nutritional management for infants born at a low birth weight, defined by the March of Dimes as weighing less than 5 pounds, 8 ounces at birth. Almost 10 percent of infants born in the United States have a low birth weight, and although the survival rates of these infants have improved over the years, nutritional management remains a concern. Her research focuses on identifying the mechanisms by which nutrients, hormones and growth factors regulate growth in an infant, specifically the regulation of the growth of skeletal muscle because it is the fastest growing tissue in an infant.

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Walking School Bus program
INCREASES CHILDREN'S PHYSICAL ACTIVITY

The U.S. Physical Activity Guidelines for Americans calls for children to have at least 60 minutes of moderate to vigorous physical activity daily, yet most U.S. children are not meeting this minimum goal.

A recent research study published in *Pediatrics* evaluated whether a Walking School Bus program could increase moderate to vigorous physical activity by promoting walking to school. The study was conducted with fourth-graders at eight elementary schools in the Houston Independent School District by researchers from the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine. The study found that students who participated in the program increased how much they walked to school and their minutes of moderate to vigorous physical activity.

Dr. Jason Mendoza, assistant professor of pediatrics at BCM, who conducted the study, says that "one promising way for improving children's physical activity is getting them to walk or bike to school."

"The decrease in walking or biking to school occurred in the same time frame as the childhood obesity epidemic in the United States, so it could be a contributing factor to the historically high rates of obesity," said Mendoza.

Mendoza and colleagues conducted the first group randomized control trial to measure the impact of walking or biking to school through the Walking School Bus program. The program allowed children to walk to school as a group, led by responsible adults. Students were picked up in front of their home or at a designated stop, similar to a carpool.

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Schools Use Software
TO GIVE PARENTS POWER IN THE CAFETERIA

Some schools in the Houston area have implemented software in their cafeterias that allows parents to intervene on their children's food selections in the cafeteria.

A recent study published in the *Journal of School Health* showed that many parents were not taking advantage of the software; however, Dr. Karen Cullen of the USDA/ARS Children's Nutrition Research Center

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VIDEO GAMES: USEFUL TOOLS FOR GETTING KIDS TO EAT MORE FRUITS AND VEGGIES

The evidence continues to mount that video games designed to encourage youngsters to eat more fruits and vegetables may be having a positive impact.

A recent study by researchers at the USDA/ARS Children's Nutrition Research Center at Baylor College of Medicine showed that youngsters who played two video games designed to impact health behaviors did in fact increase their fruit and vegetable intake. The results appeared in the American Journal of *Preventive Medicine*.

The study was the fourth in a series of studies that have examined the impact that video games can have on children's diet and other health behaviors.

"Most behavior-changing programs aren't having an effect and those that do have only a small effect," said CNRC researcher Dr. Tom Baranowski, lead author of the study and professor of pediatrics at BCM. "Frankly, existing interventions are boring to kids so we've got to find better ways of reaching children using a medium they enjoy.

"Since more money is spent in the U.S. on video games than on movies, video games seem like a very promising kind of vehicle to bring about behavior change," he said.

The most recent study included 150 children ages 10 to 12. Children assigned to the treatment group played two video games—"Escape from Diab" and "Nanoswarm: Invasion from Inner Space" for nine 40-minute sessions. Those in the control group visited websites that offered educational information and activities, including video games. However, Baranowski emphasized these games were knowledge based, not behavior-change based.

"Diab" and "Nanoswarm" are both commercial-quality video games that

incorporate a broad diversity of behavior change procedures woven in and around engrossing stories.

The results were measured using two different methods—one that showed the children in the treatment group increased their fruit and vegetable intake by a whole serving per day and another that showed an increase of two-thirds of a serving of fruits and vegetables per day.

This study also sought to determine if the video games had any impact on the children's physical activity levels, water consumption and amount of television they watched each day. Again, two different methods were used as measure—one showed an increase of 7 minutes per day in physical activity while the other showed no change. There were no changes in any of the other behaviors.

The next steps in the video game research include conducting a similar study but in a larger group of children as well as developing video games and phone apps geared toward parents.

"Our thinking here is that rather than focus on kids alone, let's focus on the parents too. So we're developing a game for parents to train them in more effective vegetable parenting practices," said Janice Baranowski, assistant professor of pediatrics at BCM and co-author of the study.

The study was funded by the National Institute of Diabetes and Digestion and Kidney Diseases. Others involved in the research include Debbe Thompson and Noemi Islam, of the CNRC; Melissa Juliano Griffith and Kathleen Watson, formerly with the CNRC; Nga Nguyen, of the M.D. Anderson Cancer Center; Richard Buday, of Archimage Inc.; and Russ Jago of the University of Bristol United Kingdom.

BUS PROGRAM (continued from page 1)

Because the risk for obesity is higher in children from low-income families, only schools that served mostly low-income families were able to take part in the study.

Researchers established a route for the students to get to school and staff members walked the children to and from school for up to five days a week. Children and their parents chose how often they would walk to school as opposed to riding in a car or bus.

Baseline data were collected on all students, including socio-demographic information, how far they lived from school and their regular method of transportation to school. To measure physical activity, students wore accelerometers, devices similar to pedometers, that measure physical activity for up to seven days.

Researchers collected follow-up data four to five weeks after the program began. At the baseline, 24 percent of children in the intervention group walked or biked to school, whereas 40 percent in the control group walked or biked to school. At the follow-up, researchers found that 54 percent of students in the intervention group walked or biked to school

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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.

For most studies, financial compensation and free parking are provided, and transportation may be available.



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

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). Financial compensation provided.

HEALTH STUDY

Fifth graders and a parent are needed to fill out a questionnaire and be weighed and measured for a national health study.

PROBLEM SOLVERS NEEDED

14- to 17-year-old teens, fluent in English, are needed for the development of a questionnaire to measure physical activity problem solving ability.

Fill out questionnaires online once and wear a physical activity monitor for seven days. Financial compensation provided.

LACTATION STUDY

Are you 18 to 35 years old, healthy and exclusively breastfeeding? Is your baby less than 10 weeks old? If so, you are needed for a study investigating factors that affect breast milk production. The study includes a 24-hour stay at Texas Children's Hospital with your baby. Financial compensation provided.

HEALTHY KIDS-HOUSTON

An after-school enrichment program to promote healthy lifestyle among minority children.

and 32 percent in the control group walked or biked to school.

Previous research indicates that active commuting to school naturally declines as the school-year progresses, and those in the control group followed this trend.

At baseline, the amount of moderate to vigorous physical activity was approximately 46 minutes per day in both the intervention and control groups. At follow-up, the amount for the intervention group was approximately 48 minutes, and the amount for the control group was approximately 41 minutes. That seven minute difference between the intervention and control group makes an impact—it helps children in the intervention group fulfill 12 percent of the recommended 60 minutes per day of physical activity.

“This study shows us that a Walking School Bus program can increase children’s walking to school, which in turn increased their physical activity and decreased their risk of pedestrian injury, since the children walked with adults,” said Mendoza.

Researchers will now look at the impact of the Walking School Bus program over a longer period of time and in a larger school sample and will incorporate Body Mass Index (BMI) calculations to measure overweight and obesity. They will also implement a similar “bicycle train” program to measure the effects it has on physical activity in children.

Funding for the study came from the Robert Wood Johnson Foundation, the National Cancer Institute, the Harris County Hospital District Foundation and the U.S. Department of Agriculture. Researchers that took part in this study include CNRC researchers Dr. Tom Baranowski, Dr. Theresa Nicklas, Doris Uscanga; Dr. Kathy Watson, formerly with the CNRC, and Dr. Marcus Hanfling of BCM.

Through her research using animal models, Davis has found that after a meal, the rise of amino acids, the building blocks of protein, and the hormone insulin in the blood stimulates the synthesis or making of protein, particularly in skeletal muscle. This ability for insulin and amino acids to stimulate protein synthesis is heightened in an infant and decreases with age. Davis and colleagues have identified components in the intracellular signaling pathways, the pathways by which information is communicated from one cellular structure to another, that result in protein synthesis in the muscle. They have also found that the activity of these signaling components is altered by the rise in amino acids and insulin after a meal.

Davis’ research applies to many low birth weight infants, for whom providing enough protein to meet their requirements for growth can often be a challenge. She has researched how the level of protein in baby formula affects the growth of muscle and the mechanisms that regulate the growth. The consumption of formula moderately low in protein reduces the growth of muscle and other tissues in the body because it reduces the activity of the signaling pathway that regulates protein synthesis.

Recently, in a paper published in the *Journal of Nutrition* (<http://jn.nutrition.org/content/140/12/2145abstract?sid=78b5ddc-9f3f-49e4-9661-fd9aeb73a288>) Davis and colleagues showed that the activity of the signaling pathway can be enhanced by supplementing a low protein diet with a single amino acid called leucine. Amino acids are the building blocks of protein, and in this case, leucine increases the synthesis



Dr. Teresa Davis’ Lab (Second from left)

of proteins in muscle and other tissues in the body. Supplementation with leucine can potentially be used to help manage the nutrition of infants who are unable to tolerate full formula feeding.

“Anything we can do to improve the growth trajectory is important,” said Davis.

She continues her work to improve strategies for the nutritional management of infants and children by examining the impact of different feeding methods on protein synthesis and growth of muscle in infants. Her lab is also looking at the effectiveness of a novel functional amino acid supplement to improve protein accumulation.

Davis was recently elected vice president of the American Society for Nutrition. The ASN is the world’s premiere nutrition organization dedicated to bringing together outstanding researchers, clinical nutritionists and industry to advance our knowledge and application of nutrition. She will serve as president in 2012-2013. Davis has worked with ASN to advance the careers of young nutrition scientists throughout the world. ASN provides numerous career activities for graduate students and postdocs including leadership opportunities, career resources, awards and travel grants and networking opportunities.

Children must be between 9 and 12 years of age with no medical or physical limitation to take part in physical activities. The free program is being offered twice a week over three 6-week periods at the following Houston Parks and Recreation Department community centers: Charlton, Edgewood, Linkwood, DeZavala, Townwood and Garden Villas. Some centers will offer additional physical activity, nutrition and healthy habits lessons. Participants must be willing to commit to the entire duration of the program.

FAMILY EATS

African-American families with children between 8 and 12 years of age are needed for an 8-week Internet program on healthy eating. Must have Internet access. Financial compensation provided.



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

SCHOOLS USE SOFTWARE TO GIVE PARENTS POWER *(continued from page 1)*

at Baylor College of Medicine suggests it could provide a learning opportunity for school children.

"Parents can use this as an opportunity to talk with their children about healthy lunch choices," said Cullen, one of the authors of the study. "Parents could use this as a teaching tool and encourage children to select the reimbursable meal, and discourage them from purchasing extra food items."

The point-of-sale software systems were designed for many different uses, Cullen said, including keeping track of students' food allergies and setting spending limitations for kids.

Parents can also set food restrictions, such as specifying that their children cannot purchase chips or ice cream.

Cullen said that when parents use the POS system to place restrictions on what their children may buy in the lunchroom, they should take the opportunity to talk to their children directly as well.

For example, they can use it as a chance to talk about the new USDA MyPlate food guide that emphasizes fruit, vegetable, grains, protein and dairy food groups.

Some school districts, said Cullen, let parents go online to see exactly what their child is purchasing in the cafeteria, depending on the software the school has implemented in its cafeteria.

Different schools use various types of POS software in their cafeterias, so parents are encouraged to find out what capabilities their school provides in order to efficiently use the service.

Others involved in this research include Emily Andrepont of Cypress-Fairbanks ISD and Dr. Wendell Taylor of University of Texas School of Public Health.

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