



# Our Children, Our Nutrition

Summer 2009

*Changing Science, Changing Lives*

## ACNC First in World to Receive NMR Machine

The Arkansas Children's Nutrition Center is celebrating the arrival of its latest assessment tool. The machine, known as the NMR, utilizes Nuclear Magnetic Resonance technology to measure the total water present in the body as well as water present in the stomach and bladder. This machine is the first of its kind in the world, specifically created for work with children in a clinical research

setting. The ACNC is interested in the information the NMR provides because it helps us learn more about the composition of children—learning more about their bones, muscles, organs, etc. The machine is particularly helpful to the ACNC because children can wiggle in the NMR and accurate data is still recorded. The NMR supplements body composition assessments already being used in *[continued on page 3]*



## ACNC Receives New Address

For over a year, Arkansas Children's Hospital has been undergoing some big changes including the building of a new hospital. Another big change that recently occurred was the changing of Marshall Street, the main street on the ACH campus, to Children's Way.

With the street name change, all buildings on campus have received new addresses, including the ACNC. Please note that the new ACNC address



is 15 Children's Way. A portion of Children's Way remains blocked in front of the main hospital, so access to the ACNC portion of Children's Way can be found at 10th or 13th Streets off of Dr. Martin Luther King, Jr. Drive.

### *Our Children, Our Nutrition*

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Arkansas Children's Nutrition Center is an intramural research program of the U.S. Department of Agriculture's Agricultural Research Service. It is housed on the campus of one of the ten largest children's hospitals in the United States, Arkansas Children's Hospital. ACH, the Arkansas Children's Hospital Research Institute and the University of Arkansas for Medical Sciences are partners with the Arkansas Children's Nutrition Center.



**Our vision,  
Our research,  
Our families,  
Our team,  
Our facility,  
Our ACNC...  
changing science,  
changing lives.**

### Meet Our Staff: Elizabeth Woods

Elizabeth Woods joined the ACNC team as a research assistant near the end of 2008. With a B.S. in Dietetics from Harding University, she came equipped with a background in nutrition and with an eagerness to work one-on-one with kids of all ages. "So many parts of my job make me love coming to work that it doesn't really feel like work, but instead a place where I am able to pursue my interest in nutrition," comments Elizabeth. In her job, she works directly with study participants on the day of their study visit. She assures good data is obtained while making sure the participant is comfortable and having as good a time as possible. "It always makes me smile when I ask one of the kids what they are going to do for their birthday and who they are going to invite," says Elizabeth. "They usually ask me if I'm going to come to their birthday party too. My weekend plans would be pretty booked if I accepted all the invites, but it makes my day to make a new friend."

## Arkansas Children's Nutrition Center to be Awarded \$31 Million Over 5 Years

The Arkansas Children's Nutrition Center (ACNC) will receive more than \$31 million from the United States Department of Agriculture (USDA) over the next five years to fund research in the areas of human development and disease prevention. The funding will continue the center's innovative research into how nutritional status and dietary factors shape human development and influence susceptibility to childhood diseases, as well as those illnesses that initiate early in life but do not appear until adulthood. The USDA notified the Arkansas Children's Nutrition Center in late April that it won approval to continue its research, which will amount to more than \$6.2 million over each of the next five years. The news followed an intensive peer review process that lasted longer than a year. The Arkansas Children's Nutrition Center (ACNC) is funded and operated by the USDA under the umbrella of the Human Nutrition Research Centers program. ACNC is affiliated with the Arkansas Children's Hospital (ACH) and is located on the Arkansas Children's Hospital Research Institute (ACHRI) campus.

"Learning about how diet and other lifestyle factors alter early development will help improve health as children reach adulthood," said Thomas Badger, PhD, director of ACNC and a professor of Physiology/Biophysics and Pediatrics at the University of Arkansas for Medical Sciences (UAMS). "Miracles begin with the research our hard-working scientists produce, and they wouldn't be possible without the USDA's support." The Arkansas Children's Nutrition Center is one of only two Human Nutrition Research Centers in the nation that are dedicated entirely to exploration of issues affecting children. Four other centers funded by the USDA focus on adults and aging. Research into the benefits of soy formula and the development of childhood obesity are among the projects that will benefit from the renewed funding. ACNC investigators are exploring a theory that overweight women who are pregnant send biological signals to their developing fetuses which predisposes them for obesity when they grow up. The researchers believe this happens through programming of a baby's metabolism before birth. ACNC is

recruiting women into the study before or within the first six weeks of conception, and will follow them at monthly visits throughout pregnancy. After the women deliver, the investigators will study the babies' growth, development and metabolism through their second birthdays. While federal funds paid for the construction of the other five Human Nutrition Research Centers in the United States, private donors to the ACH Foundation funded the ACNC facility. The center employs 15 scientists and more than 50 additional staff members. Each investigator also receives funding from other agencies, including the National Institutes of Health, the American Heart Association and the Department of Defense. The ACNC has been a long-time partner with ACH, UAMS and ACHRI. Most of the ACNC scientists maintain faculty positions with UAMS. Arkansas Children's Hospital is the only pediatric medical center in Arkansas and one of the largest in the United States serving children from birth to age 21.

*-Portion of May 18, 2009 press release  
courtesy ACH Public Relations Dept.*



A well balanced diet contains many foods and these foods have several components in common and several unique components. For example, nearly every food has a calorie source, usually carbohydrates (especially sugars) and/or fat. Many foods also have proteins, vitamins and minerals. In addition, however, there are many “non-nutrient” dietary factors in foods, especially in vegetables and fruits. These plant-based components are referred to as “phytochemicals” (plant-chemicals) and the vast majority of these have no known effects on our bodies. However, some phytochemicals can affect

growth and development of children and can have significant effects on adults.

One of the areas of research that sets the Arkansas Children’s Nutrition Center apart from others is a substantial emphasis on non-nutritive dietary factors. Understanding which foods contain dietary factors that could affect growth, development, and metabolism is extremely important, because these effects could be beneficial or harmful. Some phytochemicals can also interfere with medications, thus reducing the efficacy (the beneficial effects) of medications. There are literally thousands of



## From the Director

Thomas M. Badger, Ph.D.



phytochemicals known to be present in plant foods we consume and many of these have been identified and many have not. It takes specialized equipment and highly-trained scientists to determine the chemical structure and actions of these compounds. The ACNC has the facilities, equipment and scientists to study the effects of dietary factors, such as phytochemicals, and to learn which have biological actions and are likely to affect child

development. Fruits, vegetables, grains and beans all contain many phytochemicals that have been determined to have significant biological actions. Examples of phytochemicals that have been found to have important actions include: naringin, a dietary factor in grapefruits; anthocyanidins, found in dark colored berries; and isoflavone, found in soy foods. Naringin interferes with enzymes that are important in drug metabolism, so medications like sedatives and drugs for high blood pressure and cholesterol lowering may reach higher than safe levels if taken with grapefruit juice. This is an example of phytochemicals having biological effects. In future newsletters, we will discuss ACNC findings on phytochemicals that affect child development and health.

# Study Participation Opportunities

### fMRI

This is a short-term study designed to figure out how the food kids ate as babies affects how they think today. Participants attend up to three study visits on the campus of Arkansas Children’s Hospital.

### Qualifications

Children participating in this study must be healthy, between the ages of 7 and 8 and have been fed mostly breast milk, milk-based formula or soy-based formula from birth until their first birthday.

### Compensation

Those completing each visit will receive monetary compensation in the form of a VISA card. A bonus card will be given to families completing all visits. Partially completed visits may be partially compensated.

### Beginnings

This is a long-term, observational study for healthy babies. It is designed to look at how babies fed either breast milk, milk-based formula or soy-based formula grow and develop over the first six years of life.

### Qualifications

Babies must be healthy, full-term and weigh at least six pounds at birth. Babies are enrolled in the study around 2 months of age and must be fed mostly breast milk, milk-based formula or soy-based formula.

### Compensation

Participants will be offered diapers or formula for the first year of participation. Following that, monetary compensation will be provided. Additional compensation may be provided for completion of each visit.

Interested in learning more about a study being conducted at ACNC? Think you may qualify to participate? All research studies require potential participants to be screened. This process is simple and conducted via telephone in approximately 5-15 minutes. During that time, the study can be explained in more depth and any questions you have may be answered.

Screening is done as a way to learn more about you and your baby or child. Typical questions center around the child’s diet, your pregnancy and any other pertinent information that relates to the study being conducted. To be screened or learn more, please contact the ACNC Recruitment Line at 501-364-3309 or toll-free at 866-423-1311. For certain studies, pregnant moms may be placed on a waiting list.

**This study has been a delight.**  
**\*\*ACNC Study Participant Parent**

### NMR Machine

*[continued from pg. 1]*

our research, such as the DXA and PeaPod® machines. Participants in current research studies may have the opportunity to use this assessment at upcoming study visits. All current participants will receive information on the NMR and will be asked to sign updated consent forms before use.



15 Children's Way  
Little Rock, Arkansas 72202



## What About Water?

It is finally summertime! The sun is shining, kids are out of school and sports are in full swing. Be sure to take note of the following tips and facts to keep a well-hydrated family this summer season.

-1-

You always hear that your body is made up mostly of water and it is the truth. To keep your body's water levels nice and balanced, adults should drink approximately sixty-four fluid ounces of water daily. Actual tap or bottled water should comprise the bulk of this amount, but you may also include decaffeinated tea and coffee, milk,

and fruit juices as water sources.

-2-

Children easily can become dehydrated. Pay careful attention to children when they are playing outside in the hot summer sun. You should ensure that they have access to (and are actually drinking) water or water-containing beverages throughout the duration of their play time. The best way to cool down is actually drinking water—not jumping into a swimming pool!

-3-

It can be tough to consume enough water in a day. Try carrying a bottle of water

with you during the day while at work or while out running errands. Consider ordering water instead of a soft drink with your meal at restaurants. At breakfast time, if possible, drink fruit juice instead of a cup of caffeinated coffee.

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New habits can be tough to incorporate into your busy life. The most important thing is to find what works for you and your family and put it into practice. Have a great summer and remember to drink up!

—Deanna Ramsey, M.S., R.D.,  
ACNC research assistant



**“**The most important thing is to find what works for you and your family and put it into practice.**”**