

Our Children, Our Nutrition

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ACNC IS STUDYING THE GASTROINTESTINAL TRACT AND IMMUNE SYSTEM DEVELOPMENT

An infant's early diet is a very important piece of the puzzle that helps a baby grow up to be a healthy child, and eventually, a healthy adult. Research has suggested that infants who are fed breast milk, for instance, may have immune systems that are stronger than those of infants who are formula-fed. Immune function is a body's ability to fight off infection and the agents that can make a person sick, such as bacteria and viruses. An important question that hasn't yet been fully answered is how specific infant feeding practices alter immune function in babies, and if these changes are long-lasting into childhood and beyond.

Early feeding can impact the types of bacteria that live in the gastrointestinal (GI) tract. The gut bacteria are a normal part of everyone's biology, and form what we call our microbiome, important for one's health and immune system. In addition to affecting the microbiome, infant feeding can also change small molecules that are produced by the infant metabolism, which are called metabolites. These metabolites can reflect what fuel infants are burning and how much they are building muscle. Many researchers believe that both the gut microbiome and infant metabolism can affect gut development and immune function.

Dr. Yeruva and her team, Anne Bowlin and Angelica Chavez, at Arkansas Children's Nutrition Center (ACNC) are interested in answering these questions and have been working on finding the answers by using baby pigs to model human infant feeding. Baby pigs, or piglets, are actually a lot like people in

terms of their GI tract development, and potentially their microbiome and metabolites. Dr. Yeruva's studies will help find out if breast-milk feeding leads to well-developed guts and stronger immune function compared formula-feeding. At this point, Dr. Yeruva's team has already shown that sow-milk fed piglets have GI tracts and lymphoid immune tissue that are much more developed than formula-fed piglets, and those that are sow-milk fed have heartier gut membranes and lower expression of certain inflammatory molecules. This doesn't tell the whole story though. The next steps in this research are to understand more about how the gut and immune function develop with aging with the different diets, and then to understand what this means for the long-term health of children.

Dr. Yeruva's results may be compared to findings from the Beginnings Study which is following children from birth through 6 years who were breast-fed or formula-fed. In the future, ACNC will be able to use the piglet model to see if changing infant formula by adding specific species of bacteria (probiotics), or food that helps the gut bacteria survive (prebiotics), or other components that are found in breast milk, will boost the immune system. These studies will help ACNC researchers to achieve the Center's overarching goal to improve infant feeding practices and diets to help infants become healthier children, and someday, healthier adults.

ACNC HAPPENINGS:

Farewell and Feel Better.



Many of you have the pleasure of knowing Stephanie Ware, RN. She worked at ACNC for 3 years. Due to health issues she is unfortunately

no longer able to work with us.

Her smile and fun sense of humor is missed by co-workers and participants alike.

Her infectious laugh had the ability to put people at ease, even while she was collecting blood from them. She is a patient and kind teacher who believes in our mission and has a passion for working hard and caring for others. Fortunately, Stephanie is able to come by and visit with us and she entertains us with updates about her sweet daughters and wonderful husband.

New Staff Babies at ACNC!



Macy Sellew
Born December 4



Benjamin Atwood
Born December 9

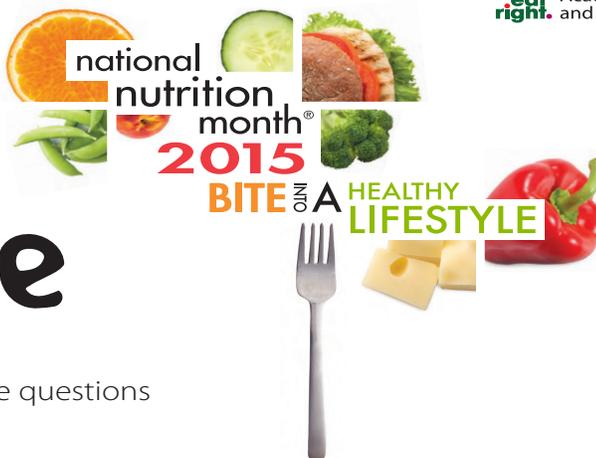


Andi Xaysuda
Born February 2



Mya Keene
Born May 29

Rate Your Plate



Are You Eating Right with MyPlate? Answer the questions below and add up your score..

Do you:	Most days	Sometimes	Never
Consider nutrition when making food choices?	2	1	0
Avoid skipping meals?	2	1	0
Include 3 or more whole-grain foods daily?	2	1	0
Eat at least 2 ½ cups of veggies daily?	2	1	0
Vary veggies with dark green and orange varieties?	2	1	0
Eat at least 2 cups of fruit daily?	2	1	0
Get 3 cups of low-fat or fat-free milk or yogurt daily?	2	1	0
Choose lean meats and poultry?	2	1	0
Vary protein with more fish, beans and nuts?	2	1	0
Limit added fats, sugars and salt?	2	1	0

Based on *Dietary Guidelines 2010*. <http://www.health.gov/dietaryguidelines/2010.asp>

- 16 to 20 points:** Healthy eating seems to be your habit already!
- 10 to 15 points:** You're on track. A few easy changes will make your total eating plan healthier.
- 0 to 9 points:** Sometimes you may eat smart. For good health, add more smart choices to your eating plan.

Visit www.eatright.org and www.chooseMyPlate.gov for more information about MyPlate.

MEET THE SCIENTIST: VENKAT LAXMIYERUVA, PH.D.



Dr. Yeruva is an Assistant Professor in Department of Pediatrics at the University of Arkansas for Medical Sciences. She has a master's degree in Microbiology Immunology and a Ph.D in Biochemistry. She has been working at UAMS since 2007 and joined the ACNC team in 2013 to lead the Nutritional Immunology laboratory.

Her research focuses on health-oriented basic and translational studies of immunity. The goal of her studies is to understand the factors that differentiate breast-feeding and formula-feeding in terms of immune system and gut functions later in life.

Outside of work, Dr. Yeruva likes to spend time with her husband and son. She loves cooking, reading fiction novels, and travelling around the world. She believes that having a good balance between professional and personal life is important.

MEET THE STAFF: ANDREA SELLEW



Andrea Sellew, RN is the Research Nurse at ACNC. She comes from the Neonatal ICU at ACH. Andrea says that “working at ACNC is the perfect opportunity to combine all of my interests and do what I love!” She enjoys getting to know the participant families throughout the studies. She has a BA in Anthropology from Boston University, BS in Nursing from University of North Florida and MPH in Maternal/Child Health from George Washington University. She has a 4 year old daughter, Carolina, a 4 year old stepson, Carter, and a new sweet baby girl, Macy, born in December. When she and her husband Tony aren’t herding kids and pets, they enjoy camping, hiking and watching Diner’s, Drive-Ins and Dives.

ACNC Welcomes New Faculty Member

We are very happy to announce a new member of the ACNC faculty! As of January 1, ACNC’s own Dr. Keshari Thakali was promoted to Assistant Professor in the Department of Pediatrics at the University of Arkansas for Medical Sciences. Thakali has partnered with Dr. Kartik Shankar since 2011 in the Center’s developmental programming research group, where she studies fetal programming of obesity and metabolic syndrome.

Here’s a little bit more about Dr. Thakali, in her own words:

“I was born in the small town of Willits in Mendocino County in Northern California. When I was growing up, my family moved around a lot in the U.S. and overseas (every 2-3 years), so I don’t have any place I consider “home.” I graduated high school from Grand Canyon National Park (seriously, my school was at Grand Canyon National Park). I attended the University of Arizona in Tucson, AZ from 1998-2002, and graduated magna cum laude with honors with a B.S. in Environmental Science and a minor in Chemistry. From 2000-2002, through an undergraduate biology research program at Arizona, I worked in the laboratory of Christopher Rensing, Ph.D. in the Department of Soil, Water and Environmental Science studying multicopper oxidases in *E. coli*, and was co-author on a PNAS publication for this research. I took a toxicology class in my junior year and decided that toxicology and human medicine was considerably more interesting than saving the environment (but I’m still an avid recycler, I try to ride my bike to work, and have a small but thriving garden).

In 2002, I joined the Department of Pharmacology and Toxicology at Michigan State University in Lansing, MI as a graduate student. When I joined graduate school, I was pretty set on joining a toxicology laboratory, but was quickly sucked down the cardiovascular path and joined the lab of Stephanie

Watts, Ph.D., the “queen” of serotonin. My dissertation project was to characterize receptor interaction (both physical and pharmacological) of the potent vasoconstrictor peptide endothelin in arteries and veins. Shortly after my Ph.D., I moved to Little Rock to work with Nancy Rusch, Ph.D., Chair of Pharmacology and Toxicology at UAMS, and an expert on L-type voltage gated Calcium channels. In Dr. Rusch’s lab, I developed my own project characterizing L-type Calcium channel function in rat mesenteric veins and was awarded a postdoctoral NIH NRSA.

In Sept 2011, I joined Dr. Kartik Shankar in his laboratory at ACNC to study fetal programming of obesity and metabolic syndrome, commonly known as the GLOWING Study. My primary role in this study is processing and analyzing the mom’s placenta and umbilical cord. We have already discovered that there are differences in umbilical cord gene expression suggesting that maternal body composition during pregnancy can change the baby’s gene expression.

Outside of being a science nerd to the core, I am an avid mountain biker and was the 2010 and 2012 female 19-39 Category 1 Arkansas State Mountain Bike Champion. I also enjoy rock climbing and have participated in 24 Hours of Horseshoe Hell at Horseshoe Canyon Ranch for the past 4 years.”

(Thakali KM, Saben J, Faske JB, Lindsey F, Gomez-Acevedo H, Lowery CL., Badger TM, Andres A, Shankar K. Maternal pre-gravid obesity changes gene expression profiles towards greater inflammation and reduced insulin sensitivity in umbilical cord. Pediatr Res. 2014, 76(2):202-210.)



Sponsored by

ACNC:

Saturday, June 6th at

8:00am

Registration includes official race t-shirt and all day admission to the zoo!

Spring 2015

Currently Enrolling Studies:

fMRI Study

This is a short-term study designed to look at 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 7½ and 8½ 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.

Expecting Study

This study is designed to determine how the health and physical activity of a mother during pregnancy could affect the growth and development of her child.

Qualifications

Moms must be healthy, less than 12-weeks pregnant, over the age of 18, have a BMI \geq 30, sedentary, and meet other specific entry criteria.

Compensation

To thank you for your participation, diapers and monetary compensation will be provided.

To learn more:

501-364-3309

email: acncstudies@uams.edu



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Changing Science, Changing Lives



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www.arkansaschildrensnutritioncenter.com

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