

UGA researcher leads comprehensive international study on folate

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Lynn Bailey is the head of the foods and nutrition department at the University of Georgia. Credit: Cal Powell/University of Georgia

A University of Georgia researcher is lead author on an international paper on folate biomarkers as part of an initiative to provide evidence-

based guidance for the global nutrition and public health community.

Lynn Bailey, head of the foods and nutrition department within the College of Family and Consumer Sciences, led a comprehensive study on folate, an essential B vitamin required for DNA synthesis and normal growth and development. The paper, published in the *Journal of Nutrition*, includes 18 authors from around the world and represents a consensus of the top folate scientists globally.

The study's primary focus is information relative to folate biomarkers, or biological indices that predict an individual or population group's folate status. Biomarkers in general can be measured to determine if an individual's or group's health is at risk due to nutrient inadequacy.

Adequate folate intake is particularly critical during the early stages of human development to sustain the demand for rapid cell replication and growth of fetal tissues.

A major [birth defect](#) affecting the spinal cord—spina bifida, for example—and brain can be prevented by maternal consumption of sufficient folate prior to and during the very early stages of fetal development.

The paper conveys how a folate status biomarker can be used to assess risk for this type of birth defect and determine if intervention is needed on an individual or population basis.

"This major birth defect is essentially preventable," Bailey said. "It's probably one of the most exciting public health discoveries other than the polio vaccine in the 20th century that a simple vitamin can prevent this devastating and potentially fatal birth defect. This research discovery is the basis of the [folic acid fortification](#) program in the U.S. and the public health recommendation that all women capable of

becoming pregnant take folic acid."

The paper is the product of nearly five years of collaborative work of an expert panel, chaired by Bailey and organized by the National Institute of Child Health and Human Development in 2010 as part of the international program Biomarkers of Nutrition for Development. The initial six nutrients selected for the program—iodine, vitamin A, iron, zinc, folate and vitamin B-12—were chosen for their high public health importance.

Dan Raiten, the NICHD Nutrition Program director, noted that this Biomarkers of Nutrition for Development, or BOND, report provides clinicians with folate assessment tools to diagnose and treat patients; informs public health program planners as to how best to predict folate status and design targeted interventions for population groups to promote health and prevent disease; and delineates priority research areas for scientists and funding agencies, including the National Institutes of Health.

"Folate continues to be a nutrient of high importance in the U.S. both in terms of the national nutrition monitoring system and efforts to assess the impact and implications of current [public health](#) interventions, such as folate food fortification," Raiten said. "This report will be utilized by all the agencies in the U.S. and global agencies in their efforts to evaluate these issues."

One of the unique aspects of the paper, Bailey said, is the multiple users it will reach.

"To me, it is the most impactful paper of my professional career because of the universal need to assess folate status as a means to optimize health throughout the life cycle," Bailey said.

The information has been incorporated into a recent World Health Organization publication to be used globally to assess risk for folate-related birth defects. It also will be used by country-specific agencies such as the Centers for Disease Control and Prevention to assess the need for or adequacy of folic acid fortification.

In addition to the translational impact in developed countries such as the U.S., the paper provides guidelines to address the challenges of assessing [folate status](#) in low-resource countries.

More information: The study on "Biomarkers of Nutrition for Development-Folate Review" is available online at jn.nutrition.org/content/early...206599.full.pdf+html

Provided by University of Georgia

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