Research into friendly bacteria moves on to food industry

Dr. Salam Ibrahim, a food microbiologist in SAES, has developed a new technology that can improve the effectiveness of certain probiotic nutritional supplements. Jarrow Formulas of Los Angeles, a vitamin manufacturer, has recently purchased the nonexclusive rights to use the technology in some of its probiotic products.

Probiotics are nutraceutical foods and supplements that contain live cultures of microorganisms that are essential for good health. Nutraceutical research combines agriculture and biotechnology to develop foods or dietary supplements that have a medical-health benefit, including the prevention and treatment of disease. It is an important component of food research in SAES. The nutraceutical industry as a whole generates approximately $6 billion a year, and is growing.

Yogurt is one of the most common probiotic foods, but nutraceutical companies also produce tablets, capsules or powders that contain the friendly bacteria. Ibrahim’s technology helps to insure that more of the microorganisms survive processing, thus resulting in a better product for consumers.

“The food industry can benefit greatly by research that improves specific supplements’ ability to maintain their quality throughout the manufacturing process,” said Ibrahim. “The results of this research may help to improve the market for beneficial supplements and increase demand for the development of more beneficial combinations.”

Ibrahim developed the compound as part of his ongoing research into bifidobacteria, organisms that occur naturally in the gut of all healthy mammals and that are essential for good health. Bifidobacteria aid in digestion, counteract pathogenic bacteria, and bolster the immune system. They are frequently included along with lacticobacilla as live active cultures in yogurt. Consumers take supplements containing the organisms to replenish the digestive system’s natural flora, which can be depleted by antibiotics, poor diet, smoking, alcohol or other stressors.

Ibrahim is moving ahead with further research into nutraceuticals. In addition to bacteria, he is interested in food safety, and frequently experiments with other products that can retard growth of pathogens such as E.coli and salmonella. He recently discovered that figs can halt the growth of certain strains of E.coli, and has had similar success with mushrooms, herbs and friendly bacteria. He also has a patent pending for a natural food preservative made from bifidobacteria and spices that he developed at A&T.

Dr. Salam Ibrahim (center) talks about probiotic products with his graduate research assistant, Siham Ahmad (left), and an undergraduate assistant, Gwenetta Flowers.

Dr. T’s Moment

It’s time for a new school year so I thought I’d share some facts about our School of Agriculture and Environmental Sciences.

Last year SAES had a record enrollment of 671 students. This fall we are expecting 740 students. Unless the enrollment at Florida A&M grows drastically, this will give SAES the largest enrollment of any 1890 land-grant university with a school of agriculture. We are on the move.

Last year SAES generated $10.2 million in competitive and formula funds. That’s one-third of the university’s $30 million in funded research. This puts us second behind the College of Engineering, although we are only one-third their size. We are on the move.

Later this year you will learn more about a new partnership we have formed with the Natural Resources Conservation Service. We will be the host for one of the three regional technical support centers they are opening across the country.

We are completing the final drafts of our Strategic Plan. It’s our thought that we should be the architects of our prepared future. I can’t wait to share more of this information with you.

As I write, the General Assembly is poised to match federal funding for our Cooperative Extension and Agricultural Research programs. This money allows us to continue to seek answers and provide solutions to some of the problems and issues plaguing our state.

What a year this is shaping up to be. We remain on the move.

— Dr. Alton Thompson
Dean, SAES
The Research Apprenticeship Program (RAP) in SAES has been the start of hundreds of science careers for 24 years. Those who went through the program long ago still retain fond memories of their summers on the A&T campus; memories that include bonds of friendship that have stood the test of time, that include bonds of friendship that have stood the test of time, that include bonds of friendship that have stood the test of time.

The enrollment rate of RAP students is approximately 80 percent — a testimony to the quality of the Aggie experience, says Ayell Reeves, coordinator of the program. Competition is keen for RAP slots. More than 230 applied from across the country, and just 19 were selected. Bailey Turner-Rayford, now a marketing program specialist for the North Carolina Department of Agriculture and Consumer Sciences, credits RAP with showing her how far a degree in agricultural education could take her. It’s not just about teaching in schools,” she said. “It’s actually about understanding government policies, issues and legislation, and how these affect small and limited resource farmers,” she continued. "There is a lot of room for personal expression. You can take an idea you have, and turn it into something.

Some examples of research from the 2004 RAP class illustrate Carr’s point. Students in June and July analyzed harmful chemicals leaching from plastic containers into baby food. Another project examined the effectiveness of dairy-based antacids in treating heartburn. Others measured the heart healthy compounds in farm-raised black sea bass and tilapia, examined hydrogen gas production from fermented food waste, or surveyed middle school students on their attitudes toward obesity. Clemente McWilliams got his initial start in agricultural economics in the RAP program in the summers of 1985 and ‘86. He went on to major in the subject at A&T, and today is a manager at A&T’s Co. in Raleigh. “It instilled confidence, built our analytical and leadership skills,” he recalled. During their four weeks, RAP students conduct a laboratory or field research assignment, under the guidance of a faculty mentor. They then present their findings on a poster describing methods, findings and conclusions in words, pictures and graphs.

Activities and field trips provide participants time to socialize and get acquainted with the Aggie lifestyle. Many, like Carr and McWilliams, quickly come to feel that A&T is home. The enrollment rate of RAP students is approximately 80 percent — a testimony to the quality of the Aggie experience, says Ayell Reeves, coordinator of the program. Competition is keen for RAP slots. More than 230 applied from across the country, and just 19 were selected. Bailey Turner-Rayford, now a marketing program specialist for the North Carolina Department of Agriculture and Consumer Sciences, credits RAP with showing her how far a degree in agricultural education could take her. It’s not just about teaching in schools,” she said. “It’s actually about understanding government policies, issues and legislation, and how these affect small and limited resource farmers,” she continued. "There is a lot of room for personal expression. You can take an idea you have, and turn it into something.

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SAES videographer Ron Fisher found Small Farms Field Day at the University Farm was a chance to get the lowdown on the swine unit, while farmers and farm-support professionals from across North Carolina received overviews of more than a dozen research projects. For more details on Small Farms Field Day, see the story inside.