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AAAS Recognizes Functional Foods Researcher

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COLUMBUS, Ohio -- As a young scientist, Steven Schwartz was fascinated by the effects that food can have on health -- good and bad. But, while food-related toxicants held some interest, "I decided that rather than focus on negative aspects, I'd rather look at the positive," Schwartz said.

It turned out to be a good choice. Schwartz, professor of food science and technology in Ohio State University's College of Food, Agricultural, and Environmental Sciences, has been recognized for his work by being named as a fellow of the American Association for the Advancement of Science. Schwartz, who has published more than 140 peer-reviewed publications, was chosen as a fellow of AAAS for his distinguished contributions to the field of food chemistry and health, particularly antioxidants and other components related to chronic disease, oxidative stress, bioavailability and cancer.

Schwartz was always interested in the nutritional aspects of colorants in food, such as beta carotene and lycopene. These pigments, which give fruits and vegetables their deep rich colors, also have health benefits, but just when and how they work isn't always understood. Schwartz collaborates with other food scientists, plant breeders, medical researchers and other professionals to examine the health effects of components in tomatoes, soy, berries and cruciferous vegetables. In some cases, the work has led to the development of products that could boost these foods' functional effects in the body.

"Some of the functional foods that we're developing collaboratively show promise as chemopreventatives," Schwartz said. "If we're successful, people could actually change their diet and reduce their risk of developing chronic illnesses over their lifetimes, or perhaps slow the development of a disease after it strikes."

Schwartz credits much of the progress of his lab to an uncommon collaboration between his team and that of Dr. Steven Clinton, Ohio State professor of hematology and oncology and leader of the

Comprehensive Cancer Center's Molecular Carcinogenesis and Chemoprevention Program. The two first began working together when Schwartz was at North Carolina State University and Clinton was at Harvard University's Dana-Farber Cancer Institute. In 1996, Schwartz moved to Ohio State, and Clinton joined two years later.

"It's rare for people in agriculture to work with researchers in the medical field, but Clinton is a rare individual," Schwartz said. "He has a Ph.D. in nutrition, then went on to study for his M.D. with a specialty in oncology, so he has deep understanding of both nutrition and health."

Both Mark Failla, professor and chair of the Department of Human Nutrition, and Clinton are key players in an interdisciplinary research center that Schwartz leads, the Center for Advanced Functional Foods Research and Entrepreneurship (<http://fst.osu.edu/caffre/>). CAFFRE's mission is to develop functional foods and components that promote health by bringing together a diverse group of scientists, from plant breeders, food scientists and human nutritionists to clinical researchers and market economists.

Several products that CAFFRE has developed are currently in clinical trials. One is a soy bread rich in phytonutrients and high in protein that is being tested for its effectiveness in preventing heart disease.

Another product, soy-tomato juice, is being studied for its effectiveness against prostate cancer. This juice is made with tomatoes specially bred for high lycopene content and was tested extensively to assure that people liked its sensory characteristics, including flavor and texture. Pilot clinical trials verified that the lycopene and other phytochemicals were well-absorbed and improved participants' blood lipid levels and antioxidant status. Researchers are now starting clinical trials to study the product's effectiveness against prostate cancer by working with patients at Ohio State's Arthur G. James Cancer Hospital and Richard J. Solove Research Institute.

In addition, Schwartz leads the Center for Advanced Processing and Packaging Studies (CAPPS), designed to conduct industrially relevant research to advance new technologies within the food industry. This multi-university center was established by the National Science Foundation and is currently completely funded by member companies.

The center is part of the NSF's Industry and University Cooperative Research Program, designed to bring university researchers together with companies to advance the global competitiveness of U.S. companies in targeted areas by grouping corporate funding for university research.

While about 40 such centers exist around the country, CAPPS (<http://fst.osu.edu/CAPPS/>) is the only one focused on food science and food engineering. The member companies' funds are pooled, university researchers submit proposals, and an industry advisory board decides what research to fund.

"These funds support pre-proprietary research to advance the whole industry," said Schwartz, who has been involved with CAPPS since working at North Carolina State. A third university, the University of California-Davis, is also involved in the center.

The AAAS Section on Industrial Science and Technology will recognize Schwartz at the Fellows Forum to be held during the AAAS Annual Meeting this February.

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