



# Soy n' Tomatoes

*This dynamic duo is fighting cancer.*

*by Duane Leonhard*

**M**mmm! That smells good! What is that cooking in the laboratories at the Parker Food Science and Technology Building?

It is specially formulated soy bread. Uggg! Soy bread!

“That is the problem with many soy products—they just don’t taste good to a lot of Americans,” said Yael Vodovotz, an assistant professor in food science and technology, who worked for months on a soy bread recipe. “We have adjusted formulations to overcome this problem. People actually like our bread.”

Creating a recipe for soy bread may have been the easiest task for Vodovotz, who formerly created foods for astronauts at the NASA Johnson Space Center. Her research now entails examining the physical properties of food on a molecular level. Vodovotz and her colleagues at The Ohio State University were handed a \$1.27 million grant by the United States Department of Agriculture (USDA) and the task of developing new foods that combine tomatoes—another food with a sub-par taste appeal—and soy. Soy and tomatoes, when consumed, have been associated with reduced risks of cancers and heart disease.

Her colleagues include Steven Clinton, MD, associate professor of hematology and oncology and is also the leader of Ohio State’s Cancer Center’s Chemo Prevention Program;

Steven Schwartz, professor of food science and technology; Mark Failla, professor and chair of the Department of Human Nutrition; and Joshua Bomser, assistant professor in food science and technology.

While much remains to be learned about the effects of these foods on the growth rate of cancer cells, all of the scientists previously listed agree that Ohio State are perfectly positioned for this collaborative phytochemical research. “Ohio State is unique in that it has, on one campus, a college of agriculture, a college of medicine and public health, a cancer center with its own hospital, pharmacology and analytical chemistry programs and a campus-wide nutrition program. In fact, we are the only university in the country with its own medical center on campus,” remarked Schwartz.

Bomser and Vodovotz initiated the research proposal. “The USDA had a call for proposals and we Ohio State thought we had a good idea and a great research team,” said Bomser.

The grant proposal document states: “At present, the potential health benefits of soy and tomato products are undergoing extensive investigation as individual foods; however, the impact of combining these two foods’ functional characteristics and benefits have not been investigated.” The proposal adds, “The combination of soy and tomato products is particularly

relevant, since each component is associated with a lower risk of cardiovascular disease and prostate cancer.”

The long-term goal of the three-year grant is two-fold: to create a system for studying functional foods; and to apply it toward developing new foods that combine soy and tomatoes.

“Creating a new food combination involves five steps: Making the food product, studying the physical and cellular properties of the product, performing sensory studies, performing clinical trials in humans and last, disseminating the information to various health officials,” Schwartz said.

Soy contains chemicals with the ability to block cell proliferation and stimulate natural cell death. Since tumors are masses of stimulated cell

growth, these chemicals can potentially reduce the growth of tumors, Bomser said. He specializes in the

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cellular and molecular mechanisms in food products.

Tomatoes contain lycopene (the red pigment) that may serve as a potent antioxidant that helps prevent cancer by reducing oxidative stress formed from the oxygen radicals that we breathe in everyday. “These oxygen radicals can damage DNA, proteins and lipids within our cells and a lifetime of exposure to these oxidants can contribute to the development of cancer,” explained Bomser.

“Research and development of soy products will benefit the soybean industry and the general public,” said

John Buck, who grows corn, soybeans and wheat in Marion County. Buck is a graduate from Ohio State. He Delaware, Marion, Morrow and Union counties on Ohio’s Soybean Council.

No one knows for sure what the new food product will be at the present time. It will likely be a tomato-based food containing soy, said Schwartz. “The final product will be the last to come out of the research. On a larger scale, we were rewarded this grant to establish a model approach that can be applied to other food combinations as well,” he added.

“And they all will taste good!” cheered Vodovotz.

*Duane Leonhard is a junior from Mt. Gilead.*

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