# Scientist pushes boundaries of food sensory research

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Susan Duncan will be able to utilize state-of-the-art video technology to study behavior response to food.

Anyone who has ever been lured by the call of a dozen fat- and sugar-laden donuts in the office break room while a healthy container of yogurt looks on helplessly can relate to Susan Duncan's research regarding emotions, physiological responses, and eating.

For better or for worse, "people don't realize the subconscious food

consumption decisions happening before they get to the point of eating," said Duncan, a professor of food science and technology in the Virginia Tech College of Agriculture and Life Sciences. "Our research is striving to understand how people emotionally interact with foods and the relationship to obesity and the science associated with decision-making and choice."

Her research methodologies include categorizing language and facial motions for clues to emotional responses to food and conducting taste tests where consumers rate appearance and flavor profile of food products. In the new Human and Agricultural Biosciences Building 1 Duncan has a state-of-the-art laboratory for measuring emotions using software that translates facial expressions into emotions.

"I'm really excited that we have this showcase spot that will really accentuate the lab," she said.

The new sensory research lab will enhance research collaborations with industry clientele and the facility has already allowed greater interaction with faculty from other departments. Duncan is currently working on a research project that involves examining physiological responses of participants to find out what lies in the decision-making processes deep inside the brain. Working with colleagues across campus, she will be able to measure EEG, skin response, and the heart rate of study participants as well.

She's doing this work in a unique collaboration with Martha Ann Bell, professor of psychology; Dan Gallagher, associate professor of civil and environmental engineering; Ben Knapp, director of the Institute for Creativity, Arts, and Technology; and Steve Sheets, professor of accounting. Duncan also works closely with Rick Rudd, department head of agricultural and extension education, with emotions and food.

The new food science and technology sensory laboratory has state-of-the-art video cameras for reading facial expressions and for observing behavior and choice in response to a food product. Touch screen monitors are used to capture consumer participant responses, as well as more analytical sensory methods, to foods and other consumer products.

A specialized face-reading software program interprets muscular motions to translate study participants' facial expressions into emotions, which are then compared to how well the food is liked by the taster. The addition of the physiological measures with face-reading and reporting of how well participants liked a product will help Duncan better segment consumer responses to food.

The new laboratory space also includes room for observing individual or group dining situations, interaction with food packaging, and focus group discussions. This level of insight into consumer response will help companies improve products and choose what products to bring to market.

"We're striving to measure subconscious physiological responses occurring in relation to food and how these responses inform and affect the decision-making process," she said. "We're relating this to how well consumers like the product and the associated behavior."

Duncan said the lab is likely the only one of its kind at an academic institution in the U.S.

"Food is such a positive experience in so many ways," said Duncan. "Our research can help consumers make decisions that are healthy as well as emotionally fulfilling."

Provided by Virginia Tech