



# BENCHMARKING FLAVOR

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## Meat scientist Jerrad Legako details keys to your best beef-eating experience.

by Abbie Burnett, Certified Angus Beef LLC; and Norman Martin, Texas Tech University

**W**hat makes a great steak? No question, flavor is at least equivalent to tenderness in importance to the overall eating experience, if not a little more, says Jerrad Legako, associate professor with Texas Tech University’s Department of Animal and Food Sciences.

But what is flavor, and how is it experienced?

It’s a complex combination, says the Lubbock-based meat science researcher. More than taste on the tongue, flavor encompasses perceptions of texture and mouth feel. It’s olfaction, Legako says, using a technical term for the

world of aroma and flavor. Receptors on the tongue help perceive spiciness. Ambiance and prior experiences help complete the overall impression of the eating experience.

All of these attributes affect perceptions of flavor, but Legako and his research team are looking for a nuanced key to the best beef-eating experiences.

“With the sensitivity of the olfaction system, volatile compounds are incredibly important for our perceptions of flavor,” he says.

They’re volatile because they evaporate at room temperature.

The organic compounds start as sugars, amino acids, lipids and thiamine, breaking down in beef’s aging, storage and cooking processes. Sugars and amino acids are also water-soluble and may provide basic tastes like sweet, sour, salty and bitter.

### Capturing flavor

Then cookery enters with its Maillard reaction, a process that reduces sugars and proteins to the volatile compounds that add flavors perceived as nutty, roasted, garlicky, whiskey and honey. It’s the chemical reaction that gives browned and roasted foods — such as dumplings, cookies, biscuits, marshmallows and steaks — their characteristic flavor.

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Lipids, the top contributor, produce flavor through oxidation, Legako explains, citing Australian studies. “Fat is the delivery system.”

Among beef cuts with varying fat levels, those with the most fat would always deliver more of the same volatile compounds.

To be clear, the flavor components fat delivers come not

*Continued on page 112*



from the fat, but from the effects of cookery on amino acids and sugars.

“Yet they’re dissolving in that fat, retained in that high-fat sample and being delivered,” he says, “an increased sensory response or a more intense beef flavor through the greater delivery of those volatile compounds.”

Basically, fat serves as a reservoir to deliver flavor.

### **Benchmarks of flavor**

Legako and team tested this reaction across different cookery types, higher degrees of doneness and different grades of beef. The consistent find? The higher the grade, the better the flavor, increasing linearly from USDA Standard to USDA Prime.

“This is at least some support for marbling content in a way influencing volatile compound delivery,” Legako says.

Legako, who joined the Texas

Tech faculty in 2016, is charged with instructing courses, such as experimental techniques in meat chemistry and muscle biology, food analysis and food chemistry. He received the American Meat Science Association’s 2019 Distinguished Achievement Award.

Legako’s research and teaching specialization is in the area of meat science, and his research program primarily focuses upon pre- and postharvest factors that influence beef quality. Some of the specific factors being explored in Legako’s research group include how animal diet, management, genetics, postmortem aging, packaging and cooking influence beef flavor. ■

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Editor’s note: Abbie Burnett is a producer communications specialist for Certified Angus Beef LLC. Norman Martin is director of communications and marketing for the College of Agricultural Sciences & Natural Resources at Texas A&M University.