



**MEATHEAD,  
AMAZINGRIBS.COM**

# MEAT MYTHS, BUSTED

We all have painful memories of epic BBQ failures. But they are avoidable. Understanding is the first step in mastery, and science helps to filter the hogwash, bust the myths, and take down the old husbands' tales and canards passed along by pitmasters whose rituals have gone largely untested since that first forest fire. I regularly consult with several scientists, chief among them Professor Greg Blonder, Ph.D., of Boston University. With experiments and science, here are just a few of the myths that we have busted about meat.

**MYTH: The red juice is blood.**

**BUSTED:** Meat juices are almost all water tinted pink by a protein called myoglobin, and myoglobin is never found in the blood stream. If it were blood, the juice would be the same as your blood—dark, almost black—and it would coagulate on the plate. But instead, it remains thin and watery. Every time we call it "blood", somewhere a bell rings and a teenager swears off meat and becomes a vegetarian. Let's just call it "juice" from now on, OK? And someone please tell those Beyond and Impossible people to stop saying their veggie burgers "bleed" like real meat. Even real meat doesn't bleed!



**MYTH: Let meat come to room temperature first.**

**BUSTED:** A lot of recipes, especially those for big roasts, direct you to take the meat out of the fridge an hour or two before cooking and "let it come up to room temp." Here's the theory: Say you want a steak to be served medium rare, about 130°F. If your fridge is 38°F, then the meat must climb 92°F. But if the meat is room temp, 72°F, then it needs to climb only 58°F. It will cook faster and there will be less overcooked meat just below the surface. But a 1 1/2" steak takes over two hours for the center



to come to room temp. A 4 1/2 pound pork roast 3 1/2" thick takes—are you ready for this—10 hours! After two hours in my tests, the meat was only 49°F in the center, and after four or five hours it began to smell funny. Just take your meat straight from the fridge to the cooker. It will warm much faster in the cooker than sitting on the dining table. Besides, smoke sticks better to cool meat. It's a process called thermophoresis and it's the same phenomenon that makes steam stick to your cool mirror when you shower. It should go without saying, never leave poultry, burgers, or ground meat at room temp for more than a few minutes. They are susceptible to contamination within the meat and sitting around can really mess up these meats and your digestive system.

**MYTH: Searing meat seals in the juices.**

**BUSTED:** This myth is so old it's an antique. It has been debunked many times yet can still be found in such improbable locations as the Ruth's Chris Steak House website: "Our USDA Prime steaks are prepared in a special 1,800°F broiler to seal in the juices and lock in that delicious flavor." The first to propagate the idea was a leading German chemist named Justus von Liebig,



author of the 1847 book, *Researches on The Chemistry of Food*. Liebig hypothesized that, in the words of his 1902 biographer W.A. Shenstone, "in roasting, the escape of the juices should be retarded by heating as strongly as possible at first; the juice then hardens on the outside and protects the surface, which prevents subsequent loss." The concept was debunked in the early 1900s, but the myth lives on. The truth: meat is about 75% water and most of that is contained in thousands of long thin muscle fibers. Heating meat always squeezes out juices and nothing can stop the process. Some juices drip off during cooking and some evaporate. Although searing browns and firms up the surface, which makes it better tasting, it does not somehow weld the fibers shut and lock in the juices. In fact, the surface gets crusty mostly because it has dried out due to high heat. As food scientist Harold McGee says in his landmark book, *On Food and Cooking: The Science and Lore of the Kitchen*, "The crust that forms around the surface of the meat is not waterproof, as any cook has experienced: the continuing sizzle of meat in the pan or oven or

on the grill is the sound of moisture continually escaping and vaporizing." FoodNetwork personality Alton Brown and J. Kenji López-Alt of SeriousEats.com have also conducted experiments showing that steaks and roasts continue to exude juices after searing. Just look at the juices that pool on your cutting board or plate, even when the steak or roast is still whole! Let's put this myth to bed. Of course, that doesn't mean we should not sear. Searing produces browning by the Maillard reaction and caramelization, and brown is beautiful. Brown is delicious!

**MYTH: Grill marks are the sign of a great steak.**

**BUSTED:** Grocery, restaurant, and grill ads show beautiful steaks and burgers with crosshatched grill marks. Some restaurants even buy premarked chicken that they can microwave and serve. Cooking magazines and books teach readers how to get great grill marks. But those grill marks (see picture 1) are merely superficial branding, unlike the deep, rich sear that delivers maximal taste and texture (in picture 2). In picture 1, only about one third of the surface is fully browned on the ribeye. The diamond shapes between the grill marks remain tan, full of unrealized flavor potential. When it comes to meats and many other foods, the goal is to get golden brown to dark brown color on as much of the meat's surface as possible because dark brown means hundreds of tasty compounds have been created through the Maillard reaction and caramelization. I'll admit that some foods do benefit from grill marks. On thin foods like shrimp, skinny chops, skirt steaks, asparagus, and bell peppers, grill marking quickly browns the exterior without overcooking the interior. But watch out that your delicious brown stripes don't turn into burnt, bitter tasting scars.



**MYTH: After an hour or two, meats stop taking on smoke.**

**BUSTED:** Meat does not have doors that it shuts as it cooks. There is a lot of smoke moving through the cooking chamber, although sometimes it is not very visible. If the surface is cold or wet, more of the smoke sticks. Usually, late in the cook, the bark gets pretty dry, and when the coals are not producing a lot of smoke, we are fooled into thinking the meat is somehow saturated with smoke. Throw on a log for smoke and baste the meat to make it moist, and the meat will start taking on smoke again. Just don't over-baste or aggressively spray because you could wash off some of the smoke that took hours to build up.



**MYTH: The fat cap will melt and make the meat juicier.**

**BUSTED:** Nonsense. The fat cap rests between the skin and muscle of animals in order to keep them warm. It is usually white,

fairly hard, and can be as much as an inch thick. Meat scientist and our beef consultant, Dr. Tony Mata, explains that "Fat will not migrate into the muscle as it is cooked. Fat is mostly oil. Meat is mostly water. Oil and water don't mix. Protein in muscle is also immiscible in fat because of its chemical configuration. In addition, in most cases, there is an anatomical barrier between muscle and fat cap, namely, a layer of connective tissue holding muscle groups together. That layer is also water based." Dr. Blonder adds, "as the meat cooks, water-based juices are being pushed from the interior to the surface. No way fat can swim upstream." The truth is that the fat cap melts when it softens during cooking. Some of the melted fat lightly coats exposed muscles groups, and some of it drips onto the fire, where it vaporizes and settles back on the meat, adding flavor. So there is some benefit to surface fat. But the potential danger of leaving a thick layer of fat on the outside of steaks and chops is that it can drip so heavily onto the fire that it flares up and deposits soot on the meat. A large amount of constantly dripping fat might even incinerate your entire meal. What's worse is that most people will trim off the fat at the dinner table along with your carefully crafted spice rub. And there goes all the flavor you lovingly rubbed onto the fat.



*Meathead is the barbecue whisperer who founded Amazingribs.com, by far the world's most popular outdoor cooking website. He is the author of "Meathead, The Science of Great Barbecue and Grilling," a New York Times Best Seller that was also named one of the "100 Best Cookbooks of All Time" by Southern Living magazine. This article was excerpted and modified from his book. More on his book here: <https://amazingribs.com/book>. For 3000+ free pages of great barbecue and grilling info, visit AmazingRibs.com and take a free 30 day trial membership in the Pitmaster Club.*

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