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# Heavenly Hamburgers Made Easy

With 20 Great Tested Recipes

Version 1.0



**By Meathead & Dave Joachim**



A DEEP DIVE GUIDE FROM  
Meathead's [AmazingRibs.com](http://AmazingRibs.com)



HEAVENLY HAMBURGERS  
MADE EASY



MEATHEAD  
DAVE JOACHIM



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**Version 1.0**

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## ABOUT MEATHEAD



Meathead is one of only 40 living members of the Barbecue Hall of Fame. He is the barbecue whisperer, hedonism evangelist, and mythbuster who founded **Meathead's 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, one of “22 Essential Cookbooks for Every Kitchen” By **SeriousEats.com**, and one of the “25 Favorite Cookbooks of All Time” By **Christopher Kimball’s Milk Street**.



He is also the author of **The Meathead Method: A BBQ Hall of Famer’s Secrets and Science on BBQ, Grilling, and Outdoor Cooking with 114 Recipes**, which was hailed by food-science guru, **Alton Brown**, as “the only book on outdoor cookery you’ll ever need.” Packed with out-of-the-BBQ-box recipes that use flavorful ingredients like black garlic, gochujang, yuzu, miso, zhug, and tare sauce, **The Meathead Method** is where BBQ goes next.

Meathead was previously a syndicated wine critic for the *Washington Post* and *Chicago Tribune*. He has taught at Cornell University’s School of Hotel Administration in Ithaca, NY, and Le Cordon Bleu in Chicago, and he has judged food, wine, beer,

and spirits around the world. He lives in the Chicago area with his wife, a PhD microbiologist and a food safety expert, so if you dine at his house you will eat and drink well, and safely.

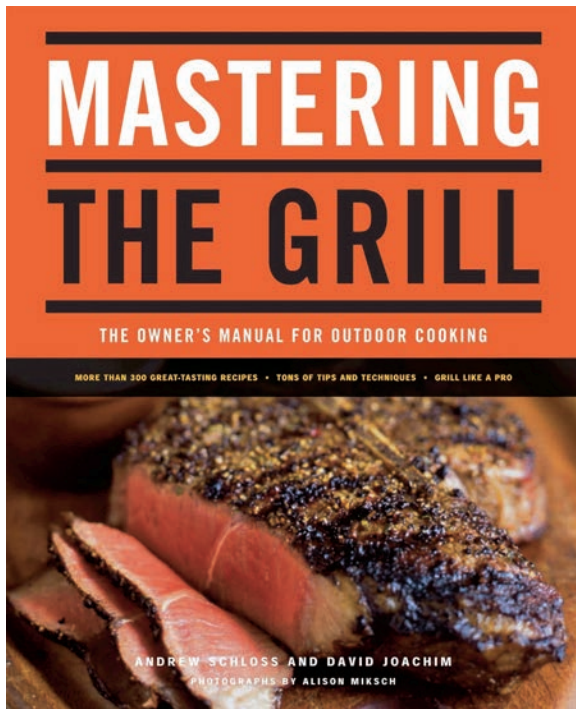




## ABOUT DAVID JOACHIM



David Joachim is the Vice President and Editorial Director of AmazingRibs.com. He has authored or collaborated on **more than 50 cookbooks**, four of them on BBQ and grilling, one on pork, and two on pizza.



He helped edit Meathead's first book, **Meathead**, and co-wrote the Food Science column in *Fine Cooking* for eight years before the magazine's demise in 2019. He is also the co-author of **The Science of Good Food**, which won an International Association of Culinary Professionals (IACP) Award, a World Gourmand Award, a Cordon D'Or Award, and was a finalist for a James Beard Award. His "**A Man, A Can**" series of books has sold more than one million copies, and his recipes and tips have appeared everywhere from *AARP* and *Bicycling* to *USA Today* and *Men's Health*.

Since high school, Dave has enjoyed a second life as a drummer in various rock and alternative bands on the East coast. He regularly experiments with burgers and recently visited Kentucky and Scotland for extended visits in what he calls his

“Year of Whiskey.”



## SPECIAL THANKS TO

**Clint Cantwell**, President of AmazingRibs.com and author of some of our favorite recipes, a few of which are on these pages

**Max Good**

**Prof. Greg Blonder**, Science Editor of AmazingRibs.com

**And the rest of the team**



# ABOUT DEEP DIVE GUIDES



*“This is my invariable advice to people: Learn how to cook – try new recipes, learn from your mistakes, be fearless, and above all have fun!”*

— *JULIA CHILD*

Deep Dive Guides is the ebook imprimatur of Meathead's AmazingRibs.com. It is a growing series of ebooks in which we have attempted to share our breadth and depth of experience on a culinary topic. They are designed to give you an inexpensive deep dive into a topic so you come away knowledgeable and confident. They contain numerous links to pages on the internet and videos. You will enjoy this book best if you read it while you are connected to the internet.

Some of this content is scattered among the 2,000+ pages on Meathead's AmazingRibs.com. Although websites are great references, they are not great learning environments, not nearly as good as books. We think that binding together carefully edited articles in an organized flow from start to finish in book format, is a far better way to learn than from articles scattered around on a website.

Some of this info appears in other Deep Dive guides because we think that it is important that they all contain foundational info on such things as meat science, safety, tools, etc. So we have included the most important info within these pages, and written new, previously unpublished, related info. Enjoy!

## QUESTIONS?

Have a question? Meathead and the site's knowledgeable moderators answer reader questions promptly. Post questions to the bottom of any page of **AmazingRibs.com**

## ABOUT MEATHEAD'S AMAZINGRIBS.COM



Called "*By far the leading resource for BBQ and grilling information*" by Forbes, Meathead's AmazingRibs.com is all about the science and art of barbecue, grilling, and all forms of outdoor cooking. With more than 2,000 pages of free information, the site offers hundreds of thoroughly tested recipes, tips on technique, original science research, myth-busting, and unbiased equipment reviews by a full-time grill and smoker tester.

The site has numerous extraordinary features, among them the world's largest collection of thermometer reviews and test results, a unique curing calculator, and a salt conversion calculator. The site also specializes in using science to bust scores of barbecue and grilling myths.

## ABOUT THE AMAZINGRIBS.COM PITMASTER CLUB



The **AmazingRibs.com Pitmaster Club** is the world's largest barbecue association with more than 15,000 paid members who enjoy a lively community forum and more than 20 cool benefits to membership, including monthly drawings with prizes worth up to \$3000. You are invited to take a free 30-day trial membership. No credit card necessary. Click here <https://AmazingRibs.com/pitmaster>

Here are some of the 20+ benefits to membership:

- 120 broadcast quality instructional videos from the world's top pitmasters
- We block all ads on the website from members!
- Free \$20 Food Temperature Guide Magnet with 80+ benchmark temps
- Free ebooks
- Free Barbecue News magazine every month
- Free Tailgater magazine
- Exclusive recipes, recipes, recipes!
- 3 monthly giveaways worth up to \$3000

- Cartoons!
- Great discussions and debates with knowledgeable moderators and no flamewars allowed
- 3 informative monthly email newsletters
- Meat-Ups
- Discounts on products we love
- Members can buy cool embroidered Pitmaster Club bowling shirts or inexpensive T-shirts
- Membership certificate
- Support for World Central Kitchen
- Easy Autorenewal



PART I  
INTRODUCTION



*“The man who invented the hamburger was smart. But the man who invented the cheeseburger was a genius.”*

*Matthew McConaughey*

Sometimes a burger in hand just makes life more liveable. The juicy, savory meat. The soft, warm buns. Cold, crunchy lettuce. Some creamy sauce. A burger done right hits all the flavor and texture buttons. Even the temperature contrast is exciting. According to food historian Andrew F. Smith, “the hamburger is

the single most popular food item consumed in the United States.” From a classic smash burger to an 8-ouncer decked out with truffles, caviar, and lobster, there’s a reason hamburgers are mainstays on menus everywhere. Burgers just taste damn good.

But so do steaks. Which begs the question: What is it about a burger, if it’s made from the exact same meat as a tasty steak, that sometimes makes a burger taste more satisfying than a steak? Is it because a hamburger is a sandwich, and our reptilian brains are hardwired to love eating with our hands? “Me. Like. Eat. Food.” says Zog. Or is something about the burger meat itself and how it’s prepared?

If you consider the research of Harvard anthropologist Richard Wrangham, it could come down to one simple fact: a burger is easier to eat than a steak. A burger gets in our bellies faster. No fork or knife required. There’s less chewing. There’s a reason you don’t see many drive-thru steakhouses.

According to Wrangham’s ground-breaking book, *Catching Fire*, the process of cooking is one of the keys to human evolution. His research shows how cooking food rather than eating it raw is partly responsible for the increase in hominid brain sizes and smaller teeth and jaws that developed about 1.8 million years ago. Wrangham details how our development of cooking made food easier to chew and easier to digest, which made calories quicker and easier for us to absorb, which increased our brain size and gave *homo erectus* more time to do a host of things *other* than sit around chewing and digesting food for hours on end every day. Wrangham argues that cooking is what allowed *homo erectus* to leave Africa and spread to parts of Asia and Europe, adapting to various environments around the globe and to different foods along the way, which helped *homo erectus* evolve into the highly advanced modern humans (*homo sapiens*) we are today.

Our evolution as a species aside, we want you to become a Zen master of burgers. Join us to find out how to make America's favorite food the absolute best it can be. We want every burger you make and eat to be even better than your last. Whether you like thick hamburgers grilled over charcoal, thin smashburgers seared on a griddle, or flame-broiled burgers deeply browned and crusted, this book includes everything you need to cook the best burgers of your life.

We begin with a summary of general burger history and burger types, and then get into the nitty-gritty of beef cuts, grinding meat, burger blends, cooking methods, food safety, seasoning, sauce, buns, cheese, and more than 20 recipes that help you achieve burger nirvana.



## THE HALLOWED HALLS OF HAMBURGER HISTORY



*"A hamburger is warm and fragrant and juicy. A hamburger is soft and non-threatening. It personifies the Great Mother"*

*Herself, who has nourished us from the beginning. A hamburger is an icon of layered circles, the circle being at once the most spiritual and the most sensual of shapes. A hamburger is companionable and faintly erotic: the nipple of the Goddess, the bountiful belly-ball of Eve."*

*Tom Robbins, from "The Genius Waitress" 1983*

The hamburger was not an American invention. Nor German. Ground meat has been around forever and the cornerstone of sausage production for centuries.

Legend has it that Russian Tatar soldiers (a.k.a. Tartars), the infamous Mongolian hordes under Genghis Khan, carried beef under their saddles where the meat was pulverized, and cite that as the beginning of the concept. Because they had no time to cook it, they ate it raw. But there is no evidence to support this and a smushed rancid horse steak is not a hamburger by any definition. It is questionable if a tartar could have survived many of these pathogen laden meals.

Chopped or scraped meat has been around probably since soon after man began eating meat. Shaping it into a patty or stuffing it in a casing is the story of sausage, mentions of which go back to early Greece. Homer's *Odyssey* contains mentions of sausage and sausages and hamburgers are cousins.

The Hamburg Steak, a ground beef sausage served without a casing on a plate, is the most direct ancestor of the modern hamburger, and it may have first been made in Hamburg, Germany in the 1300s. Nobody's left to say for sure.

In Hannah Glasse's 1805 cookbook "*The Art of Cookery Made Plain and Easy; Excelling any Thing of the Kind ever yet published*" there is her recipe for *Hamburg Sausages*. It is beef, minced small, mixed with beef fat, pepper, cloves, nutmeg, garlic, white wine vinegar, bay salt, common salt, red wine, and

rum. The mix is then stuffed into a large casing made from animal intestines, hung in a chimney, and smoked with sawdust for a week to 10 days until dry. She says “they are very good boiled in pease pottage, and roasted with toasted bread under it, or in an amlet.” Pease pottage is a porridge made from peas and a lot of other things and an amlet is an omelette.

In the 1860s, a New York physician, Dr. James Henry Salisbury, had success treating diarrhea among Yankee soldiers with grilled pulped rump steak patties, and he and his disciples popularized the Salisbury Steak treatment, which happened to taste good too. In the 1880s he introduced the Salisbury Steak, patties of beef scraped from pounded steaks, seasoned and mixed with onion, then simmered or grilled. He prescribed it three times a day as a treatment for all manner of digestive ailments. It caught on and appeared in numerous menus and cookbooks. **I have written more about Salisbury Steaks, and shared a recipe, here.**

The hamburger sandwich, a cooked ground beef patty between two slices of bread, seems to be an All-American derivative of Hamburg and Salisbury Steaks, and there are several claims to its invention, each of which is credible yet questionable. We may never know who was the real inventor.



1885 – Charles “Hamburger Charlie” Nagreen (above). Born in Wisconsin in 1870, at age 15, in 1885, Nagreen was selling meatballs at the fair in Seymour, WI. He smashed a meatball and placed it between two slices of bread so fair goers could stroll the midway and eat at the same time. He named it after the Hamburg steak, the ground beef platter popular with the many German settlers in the area. Nagreen came back to the Seymour Fair, and others, for 65 years. Seymour now calls itself **Home of the Hamburger** and the fair celebrates the handheld meal every year and with a statue of Nagreen. Evidence to support this claim is thin.



1885 – **The Menches brothers.** According to legend, two brothers from Ohio made a living as vendors at fairs, and they

specialized in sausages cooked on a griddle. In 1885 they were at the Erie County Fair in Hamburg, NY, also called the Hamburg Fair, they ran out of sausage and all they could buy from the local butcher was some chopped beef which they griddled and sold on bread. Alas, there isn't much evidence to support this legend, either.

**Late 1880s – “Uncle Fletch” Davis.** Fletcher Davis of Athens, TX, laid claim to fame by bringing hamburger sandwiches to the 1904 St. Louis World's Fair, where they were very popular. Local legend says he sold them at his cafe on the Henderson County courthouse square as early as the late 1880s. A report in the New York Tribune from the Fair described a hamburger sandwich, but did not name the vendor, and like Nagreen and the Menches brothers, only legend supports his claim.

**1900 – Louis Lassen at Louis Lunch.** Lassen sold steak sandwiches in the heart of New Haven, CT, and made ground beef steaks and meat loaf from the trimmings. Legend has it that one day in 1900 a man rushed into the small luncheonette and ordered a quick meal that he could eat on the run. Lassen slapped a broiled ground beef patty between two slices of bread, possibly toast, and sent him on his way. Before long, it was on the menu.



Established in 1895, **Louis Lunch** is still in business in the original tiny building, which was moved to a new location nearby in 1975. Great grandson Jeff Lassen is behind the counter many days. Each hamburger is hand formed from beef ground fresh daily, cooked in the original 1898 vertical broilers with a flame on either side and served between two slices of white bread toast. A sign on the wall says “This is not Burger King. You don’t get it your way. You take it my way or you don’t get the damn thing.”



His way would be a spreadable cheese sauce on the bottom slice, a slice of fresh tomato, and a slice of onion. Louis' grandson Ken once said "no true connoisseur would consider corrupting the classic taste with mustard or ketchup."

**1891 – Oscar "Uncle Web" Weber and Fannie Mae Bilby.** By July 4, 1891, the family party was getting out of hand. Uncle Web and Fannie Mae were expecting more than 100 to drop by their Angus cattle farm in Bowden, OK, which was still in Indian territory. To stretch his dollar, he ground up beef, formed it into patties, and Fannie Mae made "big, buttered yeast buns to

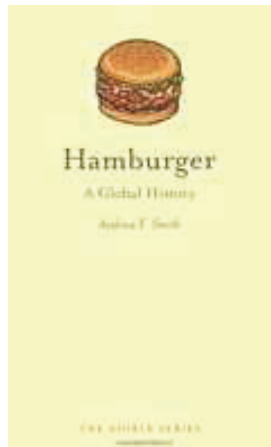
sandwich the patties,” according to a report in the *Tulsa World*. This seems to be the first recorded instance of the bun enveloping the burger.

Now if you’re a purist, like my friend the estimable **Josh Ozersky**, rest his soul, author of the fascinating book **The Hamburger**, it is the bun that makes the hamburger. He argues that Hamburger Charlie Nagreen, the Mendes boys, Uncle Fletch, and Louis Lassen all made nothing more than sandwiches. “To admit ground beef on toast as a hamburger is to make the idea of a ‘hamburger’ so loose, so abstract, so semiotically promiscuous as to have no meaning.” So there. If you buy Ozersky’s argument, and if the story of Uncle Web is true, then July 4, 1891 may be the seminal moment.

But wait. There’s more. In order to cook his feast, Uncle Web forged a 3-inch thick pig iron griddle and suspended it above hot embers. He carved his initials and the date in the masterpiece. According to *Tulsa World*, “The Bilby backyard burger and root beer parties grew so big and were so popular that in 1933 Web opened a hamburger and root beer stand at what is now 38th Street and Peoria Avenue. He called it Weber’s” and that very same griddle is still used today by his great grandson, Rick Bilby at Weber’s Root Beer Stand.

### **Fakelore**

In his definitive book **Hamburger: A Global History**, culinary historian Andrew F. Smith uncovers hamburger “fakelore.” He debunks the myths that the Tartars invented it, that it first appeared on a menu at Delmonico’s in NYC in 1834, that Ray Kroc founded McDonald’s, and the first Mickey D’s is in Desplaines, IL. All untrue.



### 20th Century Express

As the Great Plains swelled with beef and Chicago Stockyard meat processors like Swift and Armour made the fattening, slaughter, and butchering an assembly line process, with the invention of refrigerated rail cars and the laying of miles of new track, the price and popularity of beef made it the All-American dish.



The US Patent Office was swamped with inventions for meat choppers and grinders in the late 1800s for sausage and ground beef production. Before long, cheap ground beef, made from bulls, old steers, trimmings, tough cuts, and scraps, became the working man's dish of choice. Tasty, and packed with calories,

ground beef fueled the workers in the steel foundries, the assembly lines, the housing boom, and the highway boom.

But it was not until 1921 in Wichita, KS, that the hamburger began its ascent to American icon with the opening of the first White Castle restaurant. The shiny white and stainless steel interior with spotless uniforms combatted the fear created by Upton Sinclair's horrifying inside portrait of the Stockyards, "The Jungle". The owners, Walt A. Anderson and Edgar Waldo "Billy" A. Ingram, started opening other White Castles. There were imitators.

Then, in 1927, the Model A Ford started rolling off the assembly line making it easy and convenient for people to travel to dine. The convergence of hamburger and automobile opened the doors to fast food franchises and eventually the hegemony of McDonald's, founded by Dick and Mac McDonald in 1954 and taken national by Ray Kroc in 1955.

Hamburgers have long been on the menus of restaurants with waiters and waitresses from cafeterias, to cafes, to upscale restaurants, but since 2005 or so there seems to be a tidal wave of burger-centric restaurants aimed at elevating the lowly burger to gourmetdom. Anybody complaining? Didn't think so.

**Starrett's Mechanical Hasher**



Patented on May 23, 1865 by Leroy Starrett of Newburgport, MA, the mechanical food “hasher” sold for \$5. A crank raised and lowered a fixed chopping blade while a wooden bottom bowl rotated.

Advertisements promoted its use for the new Salisbury Steak as well as mincemeat pie, a popular Christmas pie that had beef, heart, raisins, and apples.

It was pitched as “One of the most useful and greatest labor saving inventions...” and “no housekeeper can afford to be without one, while for hotels, restaurants, boarding houses and bakeries they are absolutely indispensable.” The ads claimed that it reduced the time to make a batch of mincemeat from up to three hours, a child of six could do it in “5 to 15 minutes with the greatest ease.” Before long the concept was super-sized.

**National Hamburger Month**

Incidentally, May is National Hamburger Month and nobody knows whose idea it was.

## A TAXONOMY OF THE DIFFERENT SPECIES OF HAMBURGER



*“You can find your way across this country using burger joints the way a navigator uses stars. We have munched Bridge Burgers in the shadow of the Brooklyn Bridge and Cable Burgers by the Golden Gate. Dixie Burgers in the sunny South and Yankee Doodle Burgers in the North. We had a Capitol Burger—guess where. And so help us, in the inner courtyard of the Pentagon, a Penta Burger.”*

*Charles Kuralt, author of "On the Road with Charles Kuralt"  
on CBS*

Once upon a time, hamburgers were the All-American inexpensive meals that Dad was allowed to immolate in the backyard until they looked, and tasted like, black hockey pucks. Then came McDonald's and burgers became tan and tasted like a tanned hide.

To the observant burgologist, there are at least a dozen distinct species and subspecies of burger. Like sports teams, everyone has a favorite. Most hamburgers are distinguished mainly by the condiments. *But condiments don't make the burger. The meat does. And how you cook it.*

Before we get into the nitty-gritty of grinding meat and cooking burgers, let's play culinary anthropologist and study the menu of the major species of burger on the hamburger family tree. For the sake of argument, I will define a hamburger as a sandwich with a patty made mostly from ground beef, cooked, and served between halves of a bun or two pieces of bread that can be garnished with an infinite number of condiments. Yes, you can make burgers from other ground meats like lamb, pork, and turkey. And you'll find hamburger variations around the world like Greek *biftekia* and Serbian *pljeskavica*. You might even travel further down the burger family tree and find cousins like kebabs made from ground spiced lamb or beef, grilled on skewers, and served in pita or other flatbreads. But let's keep it simple and start with the most ubiquitous and beloved American-style burgers on a bun.

## STEAKHOUSE STEAKBURGERS

This is the burger that wakes me up in the middle of the night. It is floating above my bed, just out of reach, dripping on my forehead and whispering provocatively, "Eeeeeat me, eeeeeat me."

Made from ground steak, not scraps of lips and tail, it's about 8 ounces (227 ml) and 3/4-inch (19mm) thick and goes bumper to bumper on a 4-inch (10 cm) bun, with a chocolate brown crust whose savor is accented with charred beef fat amplified by more than a kiss of salinity, and, when broached, it bursts like a grape in the mouth, coating it with earthy beefy flavor that says "I am not a lowly peasant meal. I am not an assembly line product. I am a rare treat that is American cuisine at its epitome because to make me properly, you've gotta have your act together."

In its proper dominion, the steakhouse, this steakburger is usually broiled under scorching hot gas flames or over a gas grill until the proteins metamorphose and the lipids in the fats char. Occasionally it is grilled over charcoal. It sits on a pillowy soft bun capable of absorbing its ample juices, buttered and toasted enough to add richness and crackly texture, simply adorned with lettuce, tomato, perhaps salty/smoky/crunchy bacon, maybe a viscous layer of melted cheddar, and your choice of ketchup, mustard, mayo, or a blend of all three. In such a state, it transmogrifies from a simple sandwich to a feast. **Forget everything you think you know about cooking burgers. Click here for my recipe for the perfect Steakhouse Steakburger.**

## DINER BURGERS



The Diner Burger and variations on the theme have a vocal following, with good reason. It is a 3 to 4-ounce (85-113 g) thin disk of ground beef slapped on a hot griddle, cooked quickly until it is mahogany and crisp on both sides. If the griddle is blazing hot this can happen before the center dries out. The griddle makes contact with maximum meat surface, and that is what the Diner Burger is really all about. Beefy flavor and two surfaces turned brown by that miracle of chemistry, the *Maillard reaction* that makes proteins soar beyond their natural state when heated.

**SUBSPECIES: The Smash Burger.** This one is made by pressing the raw meat down hard onto the griddle with a trowel or heavy spatula. The smashing ensures maximum contact with the griddle to maximize browning and tends to produce jagged edges.



**SUBSPECIES: In-N-Out Animal Style.** In-N-Out Burger opened in 1948 in Baldwin Park, CA, and has achieved cult status, partially for quality (INO controls the sources for much of its meat and other ingredients), partially for service, and partially for its **not-so-secret menu of items not on the menu**, and partially because it is available only at about 250 restaurants in California, Arizona, Nevada, Utah, no more than a day's drive from their distribution center in Baldwin Park. The staff will prepare their patties just about any way you want, but several popular items should be considered true regional styles. Perhaps the most notable is the "Animal Style" which is slapped on the griddle and then smeared on top with Dijon-style mustard before flipping. Typical Animal Style also includes lettuce, tomato, four slices of American cheese, pickles, grilled onions, and extra spread (thousand island style), but you can customize it.

## CHEESEBURGERS



It's really a stretch to call the cheeseburger a distinctive style of burger because, to make a cheeseburger, all you need to do is add cheese to any of the other burger species. Technically, the cheese is a condiment, or a topping, even though sometimes the cheese is placed *between* two thin patties to make the ever-popular subspecies called the Double Cheeseburger. Click here for more details on **The Science of Cheeseburgers**.

**SUBSPECIES: Pizza Burgers.** Top the burger with pizza sauce, which is often just tomato sauce with some oregano added, and melt mozzarella on top. Amp it up with mushrooms and onions if you wish. Despite its national popularity, I consider this just a variation of the cheeseburger.

**SUBSPECIES: The Pimento Cheese Burger (shown at the top of this section).** The Pimento Cheese Burger is especially popular in Columbia, SC, and other pockets of the South. **Pimento cheese spread** replaces the melted cheese as well

as the ketchup, mustard, and secret sauces. You can add lettuce, tomato, and onion, but that's it, and that's unnecessary. And yes, I know the correct spelling is *pimiento with two "i"s*, but nobody spells it that way. And yes, I know cheeseburger is one word in most places, but in the South, it is often two words. **The Varsity**, in Atlanta, GA, probably sells more Pimento Cheese Burgers than anyone else, maybe even more than everyone else combined. The one pictured at the top of this section, from **17th Street Bar & Grill** in Murphysboro, IL, is my favorite. It's a fine-tasting 8-ounce burger, nicely flame-grilled, with a creative spicy pimento cheese topping. There's also a 4-ounce version. Neither is on the menu, so ask for it. **Or click here for our recipe for Smoked Pimento Cheese Burgers.**

## PATTY MELT



The Patty Melt is a cross between the Cheeseburger and the **grilled cheese sandwich**. Traditionally, it is a pan or griddle-seared hamburger patty topped with pan-fried onions topped with Swiss Cheese, then placed between slices of rye bread, cooked on both sides in butter until the bread is toasted and the cheese has melted. Variations include white bread, sourdough, ciabatta, and cooking on a panini sandwich press. The one

shown here is the superb traditional version served at **Zingerman's Roadhouse** in Ann Arbor, MI. It is griddle seared, with caramelized onions, wild mushrooms, a first-rate Swiss, and house-baked rye with a killer crust. Get the sweet potato fries and the pimento cheese macaroni.

### STORE BURGERS



In my personal lexicon, Store Burgers are dispensed by the national fast food chain “stores” as their owners prefer to call them, rather than restaurants. The skimpy patties are made in a warehouse far far away, using trimmings of inferior cuts of meat and slabs of fat, pressed in a mold so they are perfectly flat and round, frozen, and shipped across state lines in giant reefer (refrigerator) semi-trailer trucks. Sadly, burgers are not covered by the **Mann Act**. Some places griddle them, some flame broil them, but, if you peel off the smushed bun, wilted lettuce, pink tomato, corrugated pickle slices, and not-so-special sauce, you

find uniformly gray flaps of mystery meat ground so fine that no bone could survive. They are all cooked well past well done until they are dry and closer to a chamois than a happy meal, wrapped in toilet paper, held under heat lamps until the buns are limp and soggy, and served in a cardboard casket. RIP.

### HOMESTYLE BURGERS

These are the burgers Grandma made. Big and fat and loaded on the inside with so many veggies they almost qualify as a well-rounded meal. Grandma loved to chop onions, garlic, green peppers, and add a splash of steak sauce or Worcestershire sauce. Maybe she'd even mix in some breadcrumbs and an egg as binders. More like meatloaf on a bun, she'd cook these in a frying pan on the stovetop, or even in the oven. Because of all the moisture, they were juicy and crumbly. When you were 10, nothing tasted better after a snowball fight. Now they taste like nothing less than home sweet home.

### JUCY LUCY (ALSO KNOWN AS THE JUICY LUCY) AND OTHER STUFFED BURGERS



The Chicago Tribune restaurant critic Louisa Kung Liu Chu says “The Jucy Lucy may be the best burger in America” and “an ideal convergence of beef and cheese.”

Take a thin patty, fold a slice of American cheese twice, and then top it all with another patty. Pinch the edges together thoroughly and tightly to seal in the goodness and minimize leaking. That’s your Jucy Lucy, so named in 1954 by Matt’s in Minneapolis, MN, and that’s right, there’s no “i” in Jucy.

The molten core of the Jucy Lucy is really really hot, so let it cool a bit before your first bite, or slice it in half. You can try using Swiss, blue, **herbed cream cheese**, or you can use butter, especially herbed butter, or sautéed mushrooms, caramelized onions, bacon jam, jalapeños, you name it. But those are Stuffed Burgers, not Jucy Lucys. There’s even a gizmo out now that helps you make stuffed burgers called **Stufz**. It works pretty well.

## STEAMED BURGERS

**SUBSPECIES: Slyders.** These burgers are cooked with steam rather than dry heat. **White Castle** “Slyders” (a.k.a. Sliders) are the most famous steamed burgers, so named because they slide right down. And yes, they were originally trademarked with a “y”. That’s one below.



First, a layer of chopped onion bits that have been defanged by soaking in water go on a medium hot griddle, then the 2.5-inch (63 mm) square patties go on top of them, never touching the griddle, each with five holes punched in them to speed cooking and to distribute the onion flavor. Then some salt is sprinkled on the squares, then one lonesome crinkle-cut dill pickle slice goes over the center hole, then the bun bottoms, face down, then the bun tops are squeezed into gaps between the bottoms. They sit there and steam in the mist from the onions and the meat, without a cover, just the buns on top. No flipping is necessary. When the order comes in the cook slips the patty and the onions beneath it onto a bun bottom, more cooked onions go on top, your choice of ketchup or mustard, then the top. Take home a sack.

**SUBSPECIES: The Connecticut Steamed Cheeseburger**



Now these are not the same concept as other steamed burgers like the White Castle Slider, which are griddled on one side and steamed on the top. Just cram a 1/3 pound (151 g) patty into a rectangular aluminum pan about 2 x 3-inches (51-76 mm), put a 2 ounce (57 g) hunk of cheese in another pan, and slip them into a small stainless steel steamer box. The **Burg'r Tend'r** is similar to the one used at Ted's. No need to flip it. In about 12 minutes you have a well-done, wet, rectangular burger topped with gooey cheddar.



Probably the best-known practitioner is Ted's World Famous Restaurant in Meriden, just south of Hartford, founded in 1959. A tiny hole in the wall, each burger is made to order from fresh twice ground beef, and there are often lines to get in. Make sure you order the home fries.

**SUBSPECIES: Dome Burgers.** This variant of the Steamed Burger can be found in scores of diners across the nation. The Diner Burger patty is cooked on a griddle under a metal dome, combining dry heat from below, and steam from above. Some short-order cooks even sprinkle water or shaved ice under the dome to create more steam.

## DEEP FRIED BURGERS



Load up a frying pan with oil, preferably tallow made by rendering beef fat, make a thin patty, and when the oil is burbling, in goes the meat. It will sink, and when the crispy disk floats to the top, it is done. Shake off the surface oil, and onto the bun it goes.

Since 1912, **Dyer's Burgers** on Beale St. in Memphis has been the mecca for deep-fried burger lovers. Dyer's even makes a cheeseburger by putting a slice of cheese on top of the patty as it floats in the grease and the cook scoops hot oil over the top. Playboy ranks it as one of the nation's top 10, and Esquire puts it on their list of "60 Things Worth Shortening Your Life For." The owner says his secret is "Pride, tradition, and grease."

Several places also batter and fry their patties. In Jefferson City, MO, **Paddy Malone's Yogi Burger** is a half-pound patty that is dipped in batter and then deep fried, topped with Thousand

Island Dressing and all the fixin's and served on Texas Toast. Is that Irish?

## BUTTERBURGERS



Popular in the dairy state of Wisconsin, there are several variations on the Butter Burger. Some schmear the patty with butter before griddling, some schmear the bun before griddling, but the original, **Solly's Grille**, next door to a heart hospital in Milwaukee, does it simply by slathering butter from Fries Von Keil generously on the toasted bun before enveloping the sirloin patty with the lipid-laden bread.

At Solly's you should most definitely order the chopped onions which are simmered in butter on the griddle. The concept may sound a bit like overkill, but it is very tasty and nobody ever complains that they are dry. In the picture above, you can see the butter-soaked bottom of the bun and the chopped onions

griddled in scads of butter oozing over the top. Make sure you have a Sprecher's Root Beer with your Butter Burger.

Ironically, the ButterBurger at **Culver's**, a national chain, is not a true butter burger. It gets its name from a small amount of butter on the toasted bun, something any good burger should have. I go to Culver's for the custards, not the burgers.

## SMOKED BURGERS



Put your patties in a smoker and then take them out and brown them in a frying pan or on a griddle. Surprisingly, only a few barbecue joints around the nation do it. Among the best is Guy's Market in Houston. The best BBQ man in the state, **Robb Walsh**, says to get it with **BBQ sauce, onions and pickles, not lettuce and tomato**. The Original Texas Barbecue King in LA smokes their humongous one-pound King burgers on their smoker beneath their ribs so they can catch the drippings. That's what I'm talkin' 'bout! I put them in my smoker at about 225°F (107°C)

with lots of smoke for about 15 minutes, and then pan-sear it on top of the grill.

## VEGGIE/PLANT-BASED BURGERS



Not to be left out of the burger party, non-meat eaters have long had their own vegetable/plant-based patty options. Dating back to 1979, Boca was one of the first brands of frozen vegetarian burger patties with its “Sun Burger.” Since then, countless other brands like GardenBurger and Morningstar Farms have followed suit but it wasn’t until Beyond Meat, Inc. introduced the Beyond Burger in 2016 that plant-based burgers actually looked, cooked, and (kind of) tasted like animal meat. Burger King now serves the meat free Impossible Burger. When covered with ketchup, lettuce, tomato, and pickles it tastes ver uch like a Whopper. But remove the patty, rinse it, and taste it and there is no comparison.

## THE NOVELTY BURGER



Finally, we have the Novelty Burger. One might be charitable and call them creative burgers made by innovative chefs, but most don't deserve such elevation.

**SUBSPECIES: Gourmet Burgers.** The concept goes back to the original Hamburg steak and its descendant, the Salisbury Steak which is an attempt to make ground beef compete with real steaks. The concept of upscale hamburgers died as buns swallowed ground meat like Pacman, then resurfaced in 1975, when Manhattan's fabled "21" Club served a \$21 burger. Now Gourmet Burgers are everywhere. Scores of restaurants serve burgers made from expensive Kobe or Wagyu beef with exotic mix-ins and toppings. The *New York Times* credits (blames?) Daniel Boulud with starting the trend in 2001 at his former Times Square DB Bistro Moderne, when he stuffed ground sirloin with braised short ribs, truffles, and foie gras. At more than \$30, it's a fine sandwich, a little rare for my tastes, with a lump of foie gras

about the size of a marble embedded in the center. That's it pictured above.

In 2008 TV chef and restaurateur Bobby Flay opened **Bobby's Burger Palace** in a New York City suburb, and other celebrity chefs have jumped on the bandwagon. Emeril Lagasse has opened BAM (Burgers And More) in the Sands Casino Resort in Bethlehem, PA (now called Urban Table in newer Wind Creek Casino). Hubert Keller opened the Burger Bar in Las Vegas, St. Louis, and San Francisco. And, *mon dieu*, according to the New York Times, **burgers are chic in Paris now!**

**SUBSPECIES: Silly Burgers.** Every pub looking to differentiate itself from the beer hall across the street feels the need to tweak the formula beyond the rational. They come with all manner of mix-ins, ranging from the insanely hot *Bhut jolokia* (a.k.a. the "Indian ghost chile") to hard-boiled eggs. Another Silly Burger, perhaps the silliest of them all, is the Luther Burger, named after one of its early fans, singer/songwriter Luther Vandross. It is a patty between two donuts or donut halves. It was relatively unknown until it starred in a TV cartoon, and grew in fame when the Gateway Grizzlies, a minor league baseball team in St. Louis, started serving it. To make it, they split a deep-fried Krispy Kreme donut, lay a patty on it, and top it with bacon and melted cheese. Is there a doctor in the stadium?

We can also include in this category the 50-pound burgers (betcha can't eat one), the quadruple stack (held together by skewers, not toothpicks), and the burgers topped with everything from pineapple rings to salmon. Any attempt to list all the Silly Burgers is as futile as trying to list all political lies.

**SUBSPECIES: Mini-Burgers.** Among the subspecies is the recent trend of mini burgers. Some are thin disks, some are fat. They are meant to be less filling and higher in markup, and are often served with chocolate martinis and other abominations in

shee-shee bars. Some audacious and uneducated chefs call them sliders. Not, not, not!

## THE NEW MEXICO GREEN CHILE CHEESEBURGER



The Green Chile Cheeseburger is the bomb in the Southwest, especially New Mexico. It is a cheeseburger crowned with green **chiles** or a green chile salsa. Sometimes the chiles are mild, sometimes medium, sometimes hot, and sometimes a blend. In some restaurants, the chiles are smoke-roasted and peeled, some fry them on the griddle, and some puree them in a blender with other goodies. Some burgers are topped with bacon and a dollop of sour cream. My recipe was inspired by Bobby Olguin at the legendary **Buckhorn Tavern** in San Antonio, NM, established in 1943. If you're down that way, don't miss **Owl Bar & Café**, a short walk from Manny's in San Antonio. Click here for **my recipe for New Mexico Green Chile Salsa for Burgers**.

## OKLAHOMA ONION BURGERS



During the Depression meat was expensive so, legend has it, Ross Davis of the Hamburger Inn on Route 66 in El Reno decided to, ahem, beef up (beef down?) the burger by loading it up with onions. He took a thin patty, smashed ion the griddle, then tooka about half an onion, sliced it thin, tossed it on top of the patty, and pressed down. When the edges were dark and crispy he flipped. The original Hamburger Inn has closed, but a second location that opened in about 1938 is still going strong in Ardmore. But their style caught on and numerous restaurants around the state still serve onion burgers, most notably **Tucker's**, a small chain. While the original was and the current classic version is a thin patty, The Mother Tucker weighs in at about a pound. **Click here for my recipe for Oklahoma Onion Smashburgers.**

## OKLAHOMA THETA BURGERS

The Theta Burger can be found all over Oklahoma, and it is usually a 6-ounce patty topped with a smoky tomato sauce sometimes called “hickory sauce”, mayo, dill pickle slices, and shredded cheddar cheese, typically accompanied by onion rings and Dr. Pepper. Also called the Hickory Burger or the Barbecue Cheeseburger, they can occasionally be found in Texas.

Legend has it that the Theta Burger was invented at the Town Tavern in Norman, on the edge of the University of Oklahoma campus, in the '30s or '40s. Apparently, the Kappa Alpha Theta sorority (known as the Thetas) often called the tavern after curfew with a large complicated order for delivery. Owner Ralph Geist loved the business but hated that they tied up the phone and kitchen during a busy time. One of the orders may have been the combo that became the Theta Burger, or it may have been invented by Geist and/or his cook. Regardless, they named the concoction after the sorority so they would all order the same thing and make life easier. The Theta Burger was a hit in OKC, especially among the alums. Before long it had spread across the state. “I Ate A Theta” was a running joke on campus. It shoulda been a bumper sticker.

In 1953, Vince Stephens, who may have worked for Geist, opened the Split-T restaurant 20 miles up the road to Oklahoma City. It was named after the backfield formation favored by the OU’s legendary coach Bud Wilkinson (three running backs in a row behind the QB, and one receiver split out wide).

The Town Tavern and the Split-T are long gone, but **\*Johnnie’s Charcoal Broiler** in OKC is now the home of the most famous Theta Burger (founded by a Split-T alum). When the Split-T was sold in 1994, the recipes went to the new owner, and even though the restaurant was closed a few years later, the owners are selling **Original Split-T Theta Hickory Sauce** in local stores.

It is very thick and tomatoey, much more like ketchup than the standard red barbecue sauce.

### THE LITTLE HAVANA FRITA



An import from Cuba, the *frita* is popular in Miami's Little Havana along *Calle Ocho* (8th Street). The beef patty is thin, about 4 ounces, occasionally mixed with chorizo (a spicy, paprika-colored, coarsely ground pork sausage), slathered with a Picante sauce while it cooks, and topped with a mound of potato shards made by shredding potato on a box grater, then deep frying and salting them.

**El Rey de las Fritas** (The King of Fritas), is a spotless, friendly place in a strip mall on Calle Ocho, and it lives up to its moniker. No lesser a luminary than Bobby Flay calls their fritas **the best burgers in Florida**. He likes them so much that he imitates them with "crunchified" burgers at his restaurants, topped with crushed potato chips. That's one of theirs above.

### THE SAN ANTONIO BEANBURGER

The San Antonio Beanburger is believed to have originated at the late and lamented Sill's Snack Shack (a.k.a. The Triple S) in 1953. The patty is topped with refried pinto beans, cheese (usually Cheez Wiz or cheddar), onions, and crushed Fritos corn chips. Picante and guacamole occasionally barge in but they are interlopers. Several restaurants in and around San Antonio serve a version of the dish. One popular example is at **Cheesy Jane's**.

### THE WEST VIRGINIA SLAW BURGER

The West Virginia Slaw Burger is made like their hot dogs, topped with ground beef chili, hashed coleslaw, chopped onions, and mustard. **Click here for my recipe for the slaw.**

### THE CINCINNATI CHILI CHEESEBURGER

This town has made its fast-food reputation with hot dogs (called Coneys) and spaghetti topped with a ground beef sauce called Cincinnati Chili, which is then topped with oyster crackers, a mound of shredded cheddar cheese, and onions. Although the Chili Cheeseburger is not widespread, it can be found at such landmarks as **Gold Star Chili**, and it earns status on this list because of the ubiquity of Cincinnati Chile on everything in that town. **Click here for my recipe for Cincinnati Chili** which you can add to your burgers with cheese and onions to approximate the real thing.

### THE LA CHILI BURGER

This is a burger topped with ground beef chili, sometimes served on a bun, sometimes open faced. Although it can be found around the nation, it seems to be popular in LA, especially since Tommy's, a chain of more than 30 stores, specializes in it.

## THE NEW ORLEANS BURGER PO' BOY

New Orleans is famous for its po' boy sandwiches, the local version of the submarine. A full po' boy begins with a 12-inch (30 cm) section cut from a long stick of flaky crust, soft center "French" bread and is usually filled with fried fish, fried shrimp, fried crab cakes, or andouille sausage or all of the above. Get a "po' boy dressed" with lettuce or cabbage, tomatoes, pickles, mayo, and your choice of plain yellow mustard or spicy Creole mustard. Hot sauce is optional, but if you skip it they know you're a tourist. Many places also sell po' boy burgers. A shorty is a 6-inch (15 cm) po' boy. This is an interesting concept, and the po' boy is clearly one of the nation's great sandwiches, but the Po' boy burger is really just a burger on po' boy bread.

## MICHIGAN OLIVE BURGER

Hard to call this a type of burger because it is simply a popular regional topping, but since it is regional, here ya go: Top a griddle patty with a mix of mayonnaise and chopped green olives, pimento optional. According to TasteAtlas.com, "Some like to add a bit olive brine to the olive-mayo mix, while others put the mayonnaise on a bun, and the patties are topped with olives before they're placed into the buns. There are many theories about the origins of this burger, and some people claim that Olympic Broil in Lansing made the first olive burger in the 1960s, while others say it was made much earlier at Kewpee Hotel Hamburgs in Grand Rapids."

## BURGERS OF OTHER COUNTRIES

Love of American culture has brought the hamburger to many countries where the growing demand was met by the expansion overseas of McDonald's and Burger King. Some nations have their own peculiar twist on the concept. And some have their

own burger-adjacent traditions of grilling ground meat on skewers and serving them on bread. Lebanese kofta kebabs served with pita come to mind. Lamb is common for these preparations.

## AUSTRALIA

In Australia a typical beef burger sandwich might include sweet canned beets (yuuuuuck), sunny-side up egg, and sliced or canned pineapple. It might also have chile paste such as sambal oelek or sriracha, bacon, cheese, lettuce, tomato, and onion. I am told that there might also be ketchup or barbecue sauce and that the challenge is to keep the beet juice off your shirt.

## DOMINICAN REPUBLIC CHIMI BURGERS

In the Dominican Republic, you can get Chimichurris, a.k.a. Chimi Burgers, from pushcarts and hole-in-the-wall joints everywhere. Each stand takes liberties with the recipe: Some use a green herb sauce similar to Argentine **chimichurri sauce**, while others mix in chopped onion, red bell pepper, garlic, oregano, and cilantro with the ground meat. They are served with a warm coleslaw on top, and a sauce made with ketchup, mayo, and mustard, similar to my **Burger Glop** recipe. Chimi Burgers have traveled with Dominican ex-pats to their new homes in New York and elsewhere.

## INDIA

In India, burgers are served on the flat traditional local Naan bread. Where beef is forbidden it is a veggie burger.

## IRISH SPICE BURGERS AND WURLY BURGERS

In Ireland, deep fried Spice Burgers are the rage. The original recipe had ground beef, onions, grains, spices, and coated with bread crumbs was invented by Walsh Family Foods in the 1950s. They are found mostly at “chippers”, restaurants specializing in fried fish and chips (potatoes). In Dublin, Wurlly Burgers are common, a pure beef burger dipped in batter and fried.

## KOREA

In Korea, don't be surprised to find kimchi, a form of pickled cabbage, on your burger. Hey, just think of it as a type of kraut or slaw.

## MALAYSIA

The Ramly burger is certainly one of the strangest in the world. Named after the company that makes the meat at the center of the concoction, ground beef, soy protein, spices, salt, as well as “flavouring, colouring, and permitted food conditioner.” A Ramly burger starts by cooking a patty on a griddle. Then an egg is broken and spread out on the griddle making a thin omelet. Before it solidifies the burger is placed in the center and the omelet, topped with a scoop of margarine, a splash of Worcestershire sauce, and another of Maggi seasoning (a soy based liquid flavor enhancer). Then the egg is folded around it and topped with ketchup, lettuce, and cheese, and served on a standard hamburger bun.

## SERBIA

The Balkan burger combines ground beef, pork and lamb, slapped into relatively thin patties, and grilled, broiled, or pan-fried. Called *pljeskavica*, Balkan burgers are often served in pita-

like *lepinja* bread with condiments like *kajmak*, a cousin of clotted cream, and *ajvar*, a roasted red pepper and eggplant relish. The meat is variously seasoned, but onion, garlic, paprika, and black pepper are the most common additions.

### NOT QUITE BURGERS, BUT CLOSE



### SALISBURY STEAKS

In the 1860s, during the Civil War, Dr. James Henry Salisbury, had success treating diarrhea with a diet of all lean ground beef. In the 1880s he introduced the Salisbury Steak: Patties of beef scraped from pounded steaks, seasoned and mixed with onion, then grilled. He prescribed these three times a day as a treatment for all manner of digestive ailments. Within a few decades Salisbury Steaks began showing up on menus and in cookbooks, and can still be found on menus, particularly in rural areas, where they are often served on toast, smothered in gravy and mushrooms.

## HAWAIIAN LOCO MOCO

Not a true hamburger because it is not served on a bun, this popular local specialty begins with a bed of white rice, which is topped with a ground beef patty or two, doused with brown gravy, and then crowned with a fried egg or two.

## MEATBALL SANDWICHES



An Italian American favorite. The meatballs are made with moistened bread, egg, and might even have pork or veal in the grind. Two or three balls, about 1.5 to 2" (38-51 mm) are served on a section of a medium crust loaf with a soft center, topped with a **marinara** sauce, and often sautéed peppers and melted mozzarella cheese.

## MEATLOAF SANDWICHES

These are usually made from leftover slices of meatloaf served on white bread, topped with ketchup.

## SPOONBURGERS, SCOOPBURGERS, LOOSE MEAT SANDWICHES, AND MAID-RITES



These are a mound of loose ground meat that has *not* been formed into a patty. Sometimes the meat is griddled and sometimes it is cooked in a pot with stock and spices. The meat is then piled on the bun, crumbly. **Taylor's Maid-Rite** in Marshalltown, IA, has been making them since 1928 and they seem to be popular in many joints around the Mississippi River in Iowa and Illinois. That's a Maid-Rite in the photo above.

Here's a **video by Alton Brown** when he visited a Main-Rite in Quincy, IL. But this is not a patty so it's not really a burger. And I was unimpressed.

## SLOPPY JOES

A variation on the Spoonburger, this loose meat sandwich is usually ground beef cooked in a pan with onion and seasonings, drained, and mixed with a ketchup based sauce, usually doctored heavily and heartily.

## RUNZAS

A German or Russian transplant to Nebraska, Iowa, Kansas, and Colorado, Runzas are soft buns, about 6 by 3-inches (76 mm), stuffed with pockets of browned ground beef, cabbage, and onion, baked and served hot, sometimes topped with cheese. The dish even spawned a chain of Runza Hut restaurants based in Lincoln, NB, founded in 1949.

## DOUGHBURGERS OR SLUGBURGERS

These are a holdover from The Depression when restaurants stretched ground meat by mixing it with flour and cooking it on a griddle. Sometimes called Slugburgers because you could buy one for a nickel (which was called a "slug" at the time), and they are still available in a handful of restaurants in the deep South. There are variations made with grits, soy meal, bread, potatoes, and crackers. There is even an annual **Slugburger Festival** in July in Corinth, MS, but if you miss the party, stop in at **Borroum's Drug Store & Soda Fountain** in Corinth and order one. I'm told it hasn't changed much since it was founded in 1865.



# BASIC MEAT SCIENCE FOR COOKS

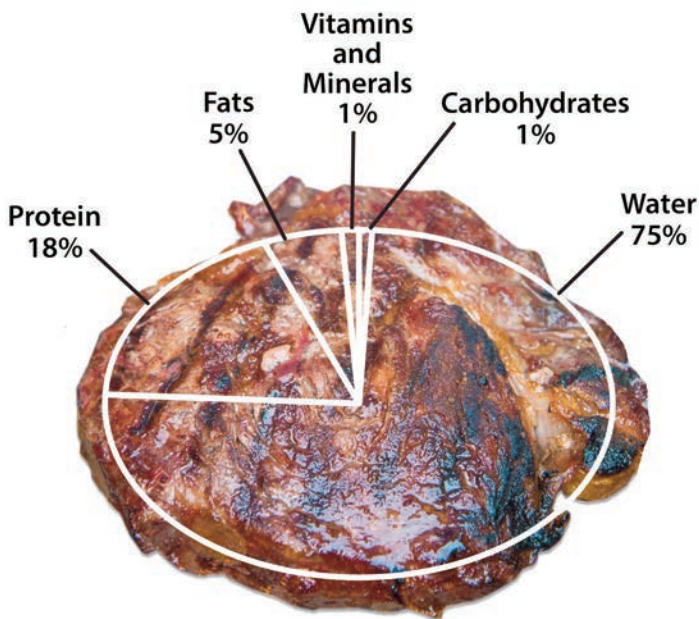


*“It was not her sex appeal but the obvious relish with which she devoured the hamburger that made my pulse begin to hammer with excitement.”*

*Ray Kroc, co-founder of McDonald’s, about the moment he realized his future was in hamburgers*

Every time you form a burger patty and cook it on a grill, griddle, or smoker, you begin a science experiment. To cook the best burgers, it helps to know what's going on inside the meat. As meat is heated, it undergoes physical and chemical changes, and as scientific as these processes are, they are also magical. A basic understanding can help you cook juicier burgers. Here is an overview with links that take you to articles that explain the concepts in greater detail.

Meat is muscle cut from mammals and birds. For some reason, fish muscle is not considered meat by some people, but it should be. That's how you make **Salmon Burgers**, a much maligned burger subspecies. Don't knock it 'til you try it.



On average, lean muscle tissue typically breaks down like this: Water (about 75%), protein (18%), fats (5%), carbohydrates, salt, vitamins, sugars, and minerals (2%).

Different cuts from within an animal can differ significantly. The *average* water content of beef is 72%. Beef chuck, which is often ground for burgers, is more like 63% water, 18% protein, 18% fat, and 1% carbohydrates, salt, vitamins, sugars, and minerals. It's got a higher percentage of fat. Even so, 63% is a pretty high percentage of water. The goal for a juicy burger is to keep as much of that water in the meat as possible. (It also helps to go even higher with the fat percentage.) It's a little easier to keep a steak juicy because the steak has not been ground. And don't let the snobs tell you that you are going to ruin the meat if you use a thermometer to check its temp. Any water loss you might have from stabbing a steak or burger with a thermometer is minor. To illustrate: if you have an 8 ounce filet mignon, 6 ounces is water. Stab it and a few drops leak out from the puncture site, an insignificant part of the 6 ounces. Steaks are not balloons that go phffffff and deflate when you poke them with a thermometer or fork. Burgers aren't either, so please use a digital thermometer to test your burgers for doneness. Food safety is super important with ground meat as you'll find out below.

## MUSCLE CELLS

Here's how meat is built. Muscle cells are more frequently called muscle fibers because they are shaped like tubes. Muscle fibers bundled together are called sheaths, and sheaths bundled together are called muscle or meat.

The fibers, about the thickness of a human hair, contain several types of protein, among them *myosin* and *actin* which bind up water and act like living motors by contracting and relaxing on command. As an animal ages, grows, and exercises, its muscle fibers get thicker and tougher. And muscles like shoulders and legs get thicker and tougher than the smaller, more tender muscles call "tenderloins" that run along the animal's spine.

Myoglobin is another important protein in muscle fibers. Myoglobin receives oxygen and iron from *hemoglobin* in blood, fuel necessary for muscles to function. Myosin and actin are not water soluble, but myoglobin is water soluble, and myoglobin dissolved in water is the pink liquid we see seeping out from a package of ground beef or spilling onto the plate when we cut in a burger in half. Myoglobin is the protein in meat that makes it appear red (see the steak image above). On average, beef has 8 milligrams of myoglobin per gram of meat, according to the meat scientists at Texas A&M University's Department of Animal Science, making it one of the darkest red meats. Lamb has about 6 milligrams per gram, pork about 2 mg/g, and chicken breast about 0.5 mg/g. If pork is the other white meat, lamb is the other red meat. When warmed, meat juices containing myoglobin lose their red color, become lighter pink, and eventually tan or gray. Muscle fibers also contain other proteins: enzymes. **Enzymes play an important role in aging meat.**

## CONNECTIVE TISSUE

Connective tissue is most obvious in the form of tendons that connect muscles to bones and in ligaments that connect bones to other bones. It is also visible as the thin shiny sheathing that wraps around muscles called silverskin or fascia. These tougher, chewier, rubberband-like connective tissues are mostly collagen and elastin (as opposed to the muscle, which is mostly myosin.) We call them gristle and they shrink when heated and become hard to chew. As with muscle fibers, connective tissues thicken and toughen as an animal exercises and ages.



A softer connective tissue called *collagen* is scattered throughout the muscle, often surrounding fibers and sheaths holding them together. When you cook a burger or any meat, collagen melts and turns to a rich liquid called gelatin, similar to the stuff Jell-O is made from. Cooked muscle fibers, no longer bound together by collagen, are now uniformly coated with a soft, gelatinous lubricant. This smooth and sensual substance enrobes meat in a wonderfully silken texture and adds moisture. And yes, this is pretty much the same stuff the Hollywood wives have injected into their faces to get rid of wrinkles.

Lean meats like beef loin and tenderloin, as well as most chicken and turkey, don't have much internal collagen. Tougher, fattier cuts have more collagen, and they are better choices for grinding into hamburger. When cooking tough cuts of meat steaks or roasts with lots of connective tissue, like beef short ribs, brisket, or chuck, it is important to liquefy the meat's connective tissue into gelatin: that's what makes these tough meats taste tender. This takes time. That's why these roasts and steaks are often cooked low and slow. Muscle fibers start seizing up around 125°F to 140°F if heated quickly. But when heated slowly, the rubber band-like connective tissues have time to relax and do not squeeze tightly. In general, it is best to start cooking all meats at about 225°F—even burgers. Slow roasting does wonders for meat. The AmazingRibs.com science advisor **Prof. Greg Blonder** says "Think of silly putty. Pressed hard and quickly, it acts like a rigid solid. Pressed slowly, it flows." When heated

slowly, the muscle fibers, instead of wringing out moisture, relax and simply let water linger inside until evaporation drives it out.

After it melts, as it chills, gelatin can solidify into that jiggly stuff which, with a little filtering, can then be called aspic and served at bridge clubs. Here's a pot of the stuff made simply by boiling a couple of chicken carcasses in water after I ate the meat, discarded the bones, and chilled the liquid. The white is fat, most of which I have removed, and the tan is jiggly gelatin.



## FATS

Fats (*lipids*) and oxygen are the main fuels that power muscles. Fats are packed with calories, which are potential energy released when the chemical bonds are broken. From a culinary standpoint, fat comes in three types (see the steak photo at the top of this section):

1. **Subcutaneous** fats are the thick hard layers beneath the skin.
2. **Intermuscular** fats are layers between muscle groups.

3. **Intramuscular** fats woven amongst the muscle fibers and sheaths improve meat's moisture, texture, and flavor when cooked. These threads of intramuscular fat are called marbling because they have a striated look similar to marble.

Large fat deposits can also be found around organs, especially kidneys. On hogs, the best fat of this type, at least from a culinary standpoint, especially if you make pie crusts, is called leaf lard, and it comes from around the kidneys.

Fats are crucial to meat texture and critical to the juiciness of burgers. Waxy when cold, fats start to melt around 130°F to 140°F, lubricating muscle fibers just as they are getting tougher and drier from the heat. Fat does not evaporate like water when you are cooking, but it can drip away.

Fat also provides much of the flavor in meat. It absorbs and stores many of the aromatic compounds in the animal's food. As the animal ages, those flavor compounds build up and get more noticeable. After the animal is slaughtered, the fat can turn rancid if stored too warm, too long, or in contact with oxygen. So we have a tradeoff. The muscle fibers and connective tissues get tougher as the animal ages and exercises, while the fat accumulates and builds flavor.

Fats, especially animal fats, are the subject of great debate among scientists, doctors, dietitians, and health faddists. For many years, animal fats were thought to be dangerous and avoided. It is now thought that fats, even animal fats, contain many beneficial components, and current science argues that, in moderation, they are essential for health. A great deal of interesting research on the subject is going on as I type this. A great deal of research is contradictory. **Read more about what I have learned about food and health in this article.**

## FLUIDS

Most of the liquid in meat is water. The reddish color in meat and its juices *is not caused by blood*. It is the protein myoglobin dissolved in water. Myoglobin is found only in muscle, not in the blood stream. The blood is pretty much all drained out in the slaughter house. If the stuff on your plate when you sliced a steak was blood, it would be much darker, like human blood, and it would coagulate, like human blood. If the fluids were blood, then pork and chicken would be dark red. It's mostly just water, so let's stop grossing out our kids, and just call it juice. **OK? Every time you call meat juices blood, a bell rings and a teenager becomes a vegan.**

When animals are alive, the pH of the muscle fibers is about 6.8 on a scale of 14. The lower the number, the higher the acidity. The higher the number, the more alkalinity and less acidic. At 6.8, living muscle is just about neutral. When the animal dies, the pH declines to about 5.5, making it acidic. At this pH, muscle fibers form bunches and squeeze out juice, called purge, and that is the juice you see in packages of ground beef that is absorbed by the diapers they put under the meat.

## SLOW TWITCH VS. FAST TWITCH MUSCLES

Muscle fibers need fat and oxygen for fuel. Fat comes from fatty acids in the animal's blood that were created by digestion of its food. Oxygen is carried by the protein *hemoglobin* in the bloodstream, and it hands the oxygen to myoglobin within the muscles.

In general, the more exercise a muscle gets, the tougher it is, and the more oxygen-laden myoglobin it needs. Myoglobin turns meat darker and makes it more flavorful. Dark meats, like chicken thighs are made of "slow twitch" muscles that have evolved to endure slow, steady movement, and they are loaded

with juicy myoglobin. White meats, like chicken breasts, are mostly “fast twitch” muscles, which are better suited to brief bursts of energy, and they have less myoglobin. Dark meats also have more fat for energy. In general, dark meats are better for grinding into hamburger.

When cooked, the slow twitch muscles in dark meat have more moisture and fat and are more flavorful than white meat. White meats contains less moisture and fat, and they dry out more easily when cooked. The legs and thighs of chickens and turkeys are good examples. These animals get more exercise standing and walking than flying, so the legs and thighs have lots of slow-twitch muscles, more pigment, more juice, more fat, and more flavor. They are also slightly more forgiving when cooked. Modern chickens and turkeys have been bred for large breasts because white meat is more popular in this country (and I for one, can't understand why). I'll take tough and flavorful over tender and mild any day.

Ducks and geese excel at flying and swimming, and they get more exercise than chickens and turkeys, so these birds have more dark meat. Duck breasts are deep purple, almost the same color as lamb or beef.

When the conventional wisdom was that dietary fat could cause heart and arterial problems, domestic pigs were bred to have less intramuscular fat. The modern pig does not get much exercise due to its transmogrification into “the other white meat.” In recent years, research has questioned the relationship between dietary fat and health, and many experts extol fat's benefits.

Beef is all pretty much the same color, but slow twitch muscles like chuck, ribs, and brisket have bigger, richer flavor than some of the lesser used muscles like tenderloin. That's important for burgers because flavor is what we're after when choosing beef cuts for burgers. Grinding the meat already makes the beef more

tender, or easier to chew. Go for the tough, flavorful cuts when grinding meat.

Fish live in a practically weightless environment, so their muscles are very different. Fish muscles have very little connective tissue, and that's one reason why fish never gets as tough as pork when cooked. But fish can dry out because there is not much collagen to moisturize the muscle fibers. The color and texture of fish varies depending on the life it leads. Small fish that swim with quick darting motions have mostly fast-twitch muscles and white meat, while flounder, which lives on the sea floor, has delicate flaky flesh. Torpedos like tuna and swordfish swim long distances with slow steady tail movements, so they have firmer, darker, sometimes even red flesh. For these reasons and others, fish can spoil within days of being caught, while red meats keep much longer. Some fish salmon can be ground to make burgers. The texture isn't quite as chewy nor the flavor as intense as beef, but you may enjoy it if you're looking for something lighter.

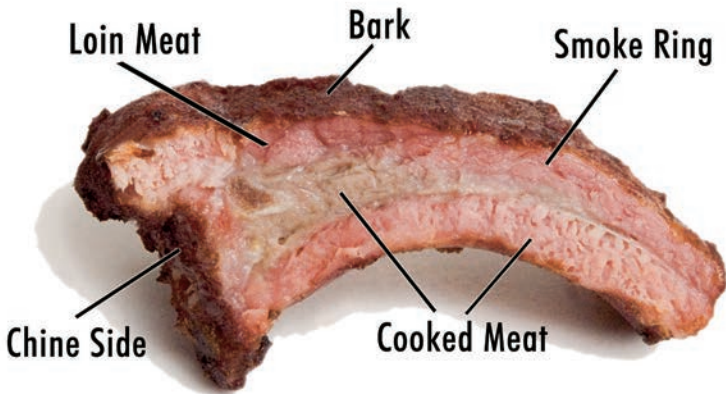
## BROWN IS BEAUTIFUL, BLACK IS BURNT

As burgers and other meats cook, the most magical transformation that occurs is the Maillard reaction. It is named for a French scientist who discovered the phenomenon in the early 1900s. The surface turns brown and crunchy and gets ambrosial in aroma. Who doesn't love the crispy exterior of a slice of roast beef, the browned crust on freshly baked bread, or the crackling surface of a roasted marshmallow? We don't think twice about it, but that brown color on the surface of a well-seared burger is the mark of hundreds of compounds created when heat, especially heat above 300°F, starts changing the shape and chemical structure of the amino acids, carbohydrates, and sugars on the surface of the meat. [Click here to learn more about the \*\*Maillard reaction and caramelization\*\*.](#)

What you don't want is black meat. Let it go too far and it turns to carbon. **Carbonized meat may be unhealthy.**

PRETTY IN PINK

## Anatomy of a Baby Back



There's another color you may notice in cooked meat: pink. Many smoked meats—even burgers—turn bright pink just under the surface. Some people think that pink color means that meat is raw, but not in this case. If the meat were undercooked, the pink would be in the center, not just below the surface. Pink meat near the surface is a common phenomenon called the *smoke ring* and it is caused by gases in smoke preserving the color of myoglobin. Some people think the smoke ring improves taste. That's a myth too. **[Click here to read more about the smoke ring and what causes it.](#)**

## COOK WITH A THERMOMETER, NOT A CLOCK

Different cuts of meat vary significantly in tenderness, fat content, and collagen content. Some are best cooked hot and fast, some better cooked low and slow, and some must be cooked with a combination of hot and slow to reach their optimal taste and texture. **Click here to read an article on the subject of cooking temps.**



**Meathead's AmazingRibs.com**  
**Basic Food Safety Temperature Guide**  
 "By far the leading resource for BBQ and grilling information" Forbes



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**BEEF STEAKS, CHOPS, ROASTS** 🐮 **LAMB** 🐏 **VENISON** 🐇 **DUCK** 🦆

<b>Well Done</b>	<b>155°F (68°C) or more</b>	Tan to brown, no pink, chewy, dry
<b>Medium Well</b>	<b>145 to 155°F (63-68°C)</b>	Tan, pinkish, firm, slightly juicy
<b>Medium</b>	<b>135 to 145°F (57-63°C)</b>	Pink, yielding, juicy
<b>Best: Medium Rare</b>	<b>130 to 135°F (54-57°C)</b>	<b>Bright red, tender, very juicy</b>
<b>Rare</b>	<b>120 to 130°F (49-54°C)</b>	Bright purple to red, stringy,

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**PORK CHOPS, STEAKS, ROASTS** 🐷 **UNCOOKED HAMS** 🐷 **VEAL** 🐐

<b>Well Done</b>	<b>155°F (68°C) or more</b>	Cream colored, tough,
<b>Medium Well</b>	<b>145 to 155°F (63-68°C)</b>	Cream colored, firm, slightly juicy
<b>Best: Medium</b>	<b>135 to 145°F (57-63°C)</b>	<b>Creamy pink, yielding, juicy</b>
<b>Medium Rare</b>	<b>130 to 135°F (54-57°C)</b>	Pink, tender, very juicy

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**Smoked Pork Ribs**  
**Pork Butt, Beef Ribs**  
**Beef Brisket**  
 Cook at 225°F (107°C)



**203°F (95°C)**

**Tuna Steaks**  
 Sear hot & fast



**120-125°F (49-52°C)**

**Lobster, Shrimp, Crab,**  
**Crawfish, Scallops,**  
**Oysters, Clams, Squid,**  
**Mussels, Octopus**



**131°F (55°C)**

**Raw Ground Meats,**  
**Burgers, Sausages,**  
**Meat Loafs**  
 Use 20 to 30% fat blend



**160°F (71°C)**

**Chicken & Turkey**  
 Whole or ground, with or without stuffing cook at 325-375°F (163-191°C)



**160°F (71°C)**

**Most Other Fin Fish**  
 Cook hot until slightly translucent, flaky, tender



**125-130°F (52-54°C)**

**Casseroles & Leftovers**



**165°F (74°C)**

**Pre-Cooked Hams,**  
**Hot Dogs, Sausages**



**140°F (60°C)**

**Potatoes**  
 210°F (99°C)



This is why cooking times are guesstimates at best. Think about the absurdity of a recipe that says, “cook the burger for six minutes on the first side and then four minutes on the second side.” How long it takes to cook depends on how hot the air and the cooking surface are, how thick the burger is, and your target temp.

Depending on the grill, cooking burgers could take twice as long or half as long. Thick burgers take more time, and if you want them medium-rare, they'll take less time than if you want them medium-well. **Click here for more on cooking times and what controls them.**

**You cannot tell if meat is safe or cooked to the proper temp by looking at it.** When you cut into meat to look at it, it can change in a few minutes after it has been exposed to oxygen.

Compounds in marinades and brines can impact color.

Sometimes vegetables in the grill can produce gases that alter meat color. It has long been thought that when chicken juices run clear the meat is safe, but modern chicken farming has changed that. Use a thermometer.

The truth is, meat—especially ground meat—can go from succulent to sucky in just a few minutes. The only way to be sure about doneness is to use a digital thermometer.

Overcook meat and you've wasted your money. Undercook it, and you could give someone a tummy ache or much worse. That is why you ALWAYS cook with a thermometer, not a clock—especially when it comes to burgers. This is the 21st century. The digital age. Stop using 19th century technology. Ditch your dial telephone and your dial thermometer.



But first you need the single most important tool you can have, indoors or out, a good instant read thermometer. Top of the line is the **FireBoard Spark**, above. It has a probe that measures the interior temperature, and a port on the other side in which you can plug a probe, below, that can be inserted into meat and left there or a probe that can be clipped to the cooking grate to measure the air temp. The Spark talks to your computer and smartphone, and records charts. It sells for about \$150.



Below is an excellent instant read that measures precisely and quickly for less than \$15, the **ThermoPro TP15H Waterproof Instant Read Food Thermometer**.



If you can afford it, you should also get a good oven thermometer that tells you what temperature the air in the grill or smoker is. The ThermoWorks DOT TX-1200, below, is a good choice for under \$50. It can also be used as an oven thermometer.

The cheap dial thermometer that came on your grill or smoker is probably off by 25 to 50°F . I have seen them off by 100°F or more!



**Click this link for a buying guide to thermometers with more than 150 test results from our on-staff electrical engineer.**

As the internal temp of meat climbs, more water gets squeezed out, and the meat becomes drier. In general, most meats are juiciest when cooked to medium rare, 130 to 135°F internal temperature.

But that's not hot enough for safety in some meats. Ground meats and poultry are health risks at those temps. Ground meats need to be cooked to 160°F, and poultry needs to go to 165°F to kill pathogenic bacteria. But there's more to the story than that. You can actually serve these meats at lower temps if you know the rules. **Read my article on meat temperatures.**

Meat roasts with a lot of connective tissue such as beef and pork ribs, pork shoulder, and beef brisket, are too tough at these lower temps. They need to go up to 200 to 205°F in order to gelatinize collagens and melt fats. That's well past well done, and yes, water is lost, but the gelatin and melted fats lube the meat and make it taste tender and juicy.

Be aware that if you let meat sit around after you remove it from the heat, the heat built up in the outer layers will push down to the center and overcook the meat, a process called **carryover cooking** (more below). The good news is that **resting meat is probably not necessary, despite what all the TV chefs say.** For more about ideal serving temps, **read my detailed Food Temperature Guide**, which has a handy printout for your fridge.

## WHAT HAPPENS WHEN YOU COOK?



Hot air cooks the surface of a burger or other meat, but the heat cannot penetrate, so the energy built up on the outside of the meat moves slowly towards the center, eventually cooking the burger throughout. As the internal temp of the meat rises, its color is not the only thing that changes. A number of chemical and physical reactions take place, as the molecular structure of proteins and fats are altered by heat. Different reactions kick in at different temperatures. Here's a general guide to temperatures organized from cold to hot. The meat temps shown here are approximate because other variables come into play such as the age of the animal, acidity, salt content, type of heat, humidity, etc. This info has been gathered from multiple sources, including meat science research papers, textbooks, and **Harold McGee's important book, *On Food And Cooking***. [Click here for a complete guide to target cooking temperatures.](#)

**0°F (-18°C).** Ideal freezer temperature.

**25°F (-4°C).** Meat freezes. Meat starts to freeze at a lower temperature than water because water in meat is combined with proteins. Water expands as it freezes and sharp-edged crystals form that can rupture cell walls, creating “purge” when the meat is thawed, which is a spilling of liquid, mostly the pink fluid protein called myoglobin. Faster freezing makes smaller crystals, resulting in less purge.

**32°F (0°C).** Water freezes.

**34-39°F (1-4°C).** Ideal refrigerator temperature. Water is not frozen, and microbial growth is minimized. You do have **a good refrigerator thermometer don't you?**

**41-135°F (5-57°C).** The “USDA Danger Zone,” in which many pathogenic bacteria grow, sometimes doubling in number in as little as 20 minutes. According to the USDA, cold foods must be stored below 41°F (5°C), and hot foods above 135°F (57°C). **That's why we don't leave meats sitting around to come to room temp.**

**95-130°F (35-54°C).** Animal fats start to soften and melt.

**114°F (46°C).** Myofibrillar proteins begin to gel, changing meat texture.

**120°F (49°C).** Myosin, a protein involved in muscle contraction within fibers, begins to lose its natural structure. It unwinds or unfolds, a process called denaturing. It starts to clump, gets milky, and begins firming up the muscle fibers. Purple meats, called “rare,” start turning red. Fish begins to flake, and parasites begin to die.

**130°F (54°C).** Most pathogenic bacteria begin to die, slowly at first, but as the temp rises, they croak more rapidly. At this temp, it takes more than two hours to pasteurize meat. At 165°F (74°C), it takes just seconds.

**130-135°F (54-57°C).** Medium rare. Most mammal meats are at optimum tenderness, flavor, juiciness. If you eat your meat well-done, you need to snap out of it.

**130-140°F (54-60°C).** Fats begin to liquefy, a process called rendering. This is a slow process and can take hours if meat is held at this temp.

**140°F (60°C).** Connective tissues called collagens begin to contract and squeeze out pink juice from within muscle fibers into the spaces between the fibers and out to the surface. Meat begins to get dry. Myoglobin, the pink protein liquid within muscle cells, denatures rapidly and red or pink juices begin to turn clear or tan and bead up on the surface. It is not blood!

**150°F (66°C).** Actin, another protein important to muscle contraction in live animals, begins to denature, making meat tougher and drier still.

**155°F (68°C).** Known as “well done,” meats are overcooked at this internal temperature, yet this is the minimum required for safe burgers. Much moisture has been squeezed out, and fibers have become tough. Bacteria are killed in less than 30 seconds, but spores can survive to much higher temps.

**160-165°F (71-74°C).** The “instant kill zone.” Normal cooking temps kill microbes on the outside of meats rapidly, so solid muscle meats are not likely dangerous since contamination is almost always on the surface. But ground meats and poultry often have bad guys beyond the surface, so you must cook these meats beyond the instant kill zone. **That’s why the recommended internal temp for ground meats is 160°F (71°C)** and for poultry is 165°F (74°C). When you reheat foods, you should take them up to 165°F (75°C).

**140-205°F (71-96°C).** Tough collagens melt and form luscious gelatin. The process can take hours, so low and slow cooking creates the most gelatin. Dehydrated muscle fibers begin to fall

apart and release from the bones. Meat becomes easy to shred. Even though the fibers have lost a lot of water, melted collagen and fat make the meat succulent.

**212°F (100°C).** Water boils at sea level. Boiling point declines about 2°F for every 1000' above sea level.

**225°F (107°C).** Ideal air temperature for “low & slow” cooking of meats high in connective tissue. It is high enough so water evaporates from the surface to help form the desired crust called “**bark**,” but low enough to get the most out of enzymes, collagen melting, and fat rendering.

**310°F (154°C).** The **Maillard reaction** accelerates surface browning, which is caused by chemical changes in proteins and sugars and results in thousands of delicious new molecules. The Maillard reaction begins at lower temps, but really takes off at 310°F (154°C).

**320°F (160°C).** Table sugar liquefies, starts to caramelize, turns light amber in color (clear liquid stage).

**325°F (163°C).** Ideal air temperature for cooking chicken and turkey so skin browns and fat renders.

**350°F (177°C).** Table sugar and brown sugar begin to burn (burnt sugar stage).

**361°F (183°C).** Some animal fats begins to smoke.

**375°F (191°C).** Extra virgin olive oil begins to smoke.

**450°F (232°C).** Peanut oil begins to smoke.

**450°F (232°C).** Some nonstick surfaces begin to emit toxic gases.

**570-750°F (299-399°C).** Primary combustion temperature of hardwood, wherein it smolders and releases large quantities of unburned gases, including microscopic particles called smoke.

## PLAN FOR CARRYOVER COOKING

Meat doneness is a moving target. It is much easier to hit your target temperature when you start cooking at a lower temperature like 225°F. Plus, low temps keep meat tender and moist.

### Conventional Cooking



### Sous Vide



To hit the target temperature you have to remove burgers from the heat when they are 5 to 10°F below target because cooking can continue for about 20 minutes after you remove the meat from the heat. This “carryover” cooking can take a perfectly juicy burger and turn it into dry cardboard.

Here's how carryover works: Energy cooks the outside of the food. Then the outside of the food cooks the inside of the food by **conduction**. When we remove the meat from the heat, it continues to cook because some of the heat built up in the outer layers of the meat continues to be passed towards the center while some of it bleeds off into the atmosphere. How much depends on the overall mass of the meat and the heat energy built up in it during cooking.

It's best to remove burgers from the grill or griddle when they reach 155°F in the center to allow for 5°F carryover, or 160°F. It will be safe. And juicier. Remember, cook with a thermometer, not a watch.

### **What causes properly cooked pork and poultry to be pink, even if it is not smoked?**

Several factors: Gases in the atmosphere of an oven, particularly carbon monoxide, can react with myoglobin in meat and turn it pink, especially on the outer edges. These gases occur in all ovens, especially those that heat by combustion such as gas, charcoal, or wood. They are also present in electric ovens, but to a much lesser degree. When grilling or smoking, there are more of these gases. They more easily penetrate the thinner skin and fat layers of younger animals, so age of the animal is also a factor.

Also, meats with high levels of naturally occurring compounds such as myoglobin are more likely to turn pink. Nitrites in meat can also cause pinking. Nitrites are converted from nitrates in feed and water by microorganisms within the animal. Nitrates naturally occur in many leafy vegetables and can transfer to the meat during cooking, say, from a rub or braise. In fact, grocery store meat trays are occasionally packed with carbon monoxide or nitrogen to keep the meat in the pink.

### **Why is raw red meat sometimes bright red on the outside and dull gray on the inside?**

Fresh cut or ground beef is purplish-red in color. Oxygen reacts with the pigments in red meat to form the bright red color in the grocery store. The interior of the meat may be gray or brown because oxygen has not penetrated into the muscle. This is normal. If, however, all the meat in the package has turned gray or brown, it may be spoiling.

### **What is spoilage?**

There are two types. Oxidation is caused by compounds in meat combining with oxygen and changing the meat's smell, flavor, and color. Badly oxidized meat is called rancid. But oxidized meat is usually not dangerous. The other type of spoilage is bacterial or viral spoilage, and it is very dangerous. There are several commonly occurring bacteria in food that can spoil it, such as are *Bacillus cereus*, *Campylobacter jejuni*, *Clostridium botulinum*, *Listeria monocytogenes*, *Salmonella*, *Shigella*, *Staphylococcus aureus*, and STECs (Shiga toxin producing *E. coli*). Some of these bacteria will merely have you kneeling before the porcelain god, but others can maim or kill you. You can begin killing bacteria by cooking food to a safe temperature of 131°F or higher. At 165°F, bacteria are killed instantly. At 131°F, it can take hours. **For more on bacterial kill temps, click here and scroll down.**

### **Why is meat in my fridge is turning brown?**

At first, oxygen reacts with pigments to turn meat red. After a while, the meat starts to oxidize, which turns it brown, the same way an apple or potato turn brown.

### **Why does my meat shine like a rainbow?**

It is simply a fluke of lighting that strikes the surface just the

right way when the surface has been cut on a certain angle. Strictly refraction, not bacteria or an oil slick.

### **Why is my meat green?**

Bad bacteria. Throw it out.

### **Why are there are dry white spots on my meat from the freezer?**

That's freezer burn. It's like frostbite. The meat has probably been in the freezer too long and/or it was not wrapped tight. It is still safe, but the burned parts will probably be dry and bland. Trim it off and cook it, but don't serve it to Mom or the boss.

### **My meat smells funny, what should I do?**

Sometimes meat will smell a bit odd when you take it out of a vacuum sealed plastic bag, but the smell should dissipate within a few minutes. If it still smells funny, then chances are it is funny. Throw it out. Remember: when in doubt, throw it out!

### **What are those boogers coming out of my burgers and my salmon?**



According to the AmazingRibs.com meat scientist, **Dr. Antonio Mata**, hamburger exudates (I call them boogers) are proteins dissolved in water, mostly myoglobin. When burgers are ground, plump muscle fibers are sheared open. As the meat begins to heat, protein and collagen shrink and squeeze out the proteinaceous fluids, which are pink at first, and then they gel and turn tan just like the meat. In salmon, boogers consist of another group of proteins dissolved in water called *albumin*. The albumin is pushed to the surface by shrinkage caused by heat. Brining helps minimize it, but not always. Salmon boogers can usually be wiped off with a paper towel or a brush. Another good technique is to paint the surface with a simple wash of sweet wine, mirin, or a glaze.



# BEEF GRADES, LABELS, AND GENETICS



*"Know fat? Know flavor. No fat? No flavor."*

*Anonymous chef*

K
. . .
 nowing beef labels and grades can help you cook a much better-tasting burger. You don't want to just buy something labeled "ground beef." It could contain almost anything cut from the animal. You want to get a handle on the different grades, cuts, and labels so you can buy the best.

Beef is the preferred meat for burgers. Vitamin beef. Flesh of bovine. Is there anything more luxurious and decadent than a perfectly grilled custom-blend burger, seared mahogany brown on the surface and dripping with juice? Okay—maybe a prime grade dry aged ribeye, but that's about it.

Cattle are butchered and can be broken down into many different cuts. The most popular use of beef is for burgers, steaks, and roasts, but everything from the tongue to stomach to testicles are served. Even the bones are used for stews and soups.

Beef comes from both steers (boys) and heifers (girls), and the best comes from mature, but not old animals. Young animals, calves, are used for veal. Older, tougher animals are best used for ground beef.

There are some very helpful terms used to describe beef and many appear on labels. It pays to know them when you shop.

## MARBLING

Starting in 1926, the United States Department of Agriculture (USDA) began grading beef. Today, inspectors grade primarily on the age of the animal and the amount of fat mixed in with the lean muscle as measured between the 12th and 13th rib. This fat is called *marbling* because it resembles the striations in marble: Thin, weblike filigrees. The more marbling, the more flavor and juiciness, but marbling has little tenderness impact. Marbling can contribute a lot to the quality of a steak because fat is where the

flavor's at. For ground beef, marbling is less important because the ratio of fat to lean can be adjusted in your burger blend.

That's important because marbling is costly. According to the AmazingRibs.com beef scientist, Dr. Antonio Mata, "Marbling is the most expensive fat the animal generates. Like humans, cattle first deposit fat in the gut. Secondly they deposit subcutaneous/surface fat. Then they deposit fat between muscles, *intermuscular fat*. And lastly they deposit *intramuscular fat*, a.k.a. marbling. Therefore marbling is a highly inefficient, slow, expensive process." And we pay for it. Highly marbled meat also shrinks more when cooked as the fat drips off. And we pay for that too.

Harold McGee, eminent food scientist and author of my "Bible" *On Food and Cooking: The Science and Lore of the Kitchen* has written that much more than marbling influences quality. "Despite the prestige of Prime beef, the current consensus among meat scientists is that fat marbling accounts for no more than a third of the variation in the overall tenderness, juiciness, and flavor of cooked beef. The other important factors include breed, exercise and feed, animal age, conditions during slaughter, extent of post-slaughter aging, and storage conditions before sale."

Carrie Oliver of the Artisan Beef Institute believes there are other criteria including use of drugs and other husbandry conditions, transportation, as well as cutting techniques. I might add freshness, aging, seasoning, and cooking are also highly important quality factors.

## BEEF GRADES



**USDA Choice**



**USDA Prime**



**American Wagyu**



**Wagyu From Japan**

**USDA Utility, Cutter, Canner Beef.** These are the lowest grades of beef and used primarily by processors for soups, canned chili, sloppy Joe's, etc. You will not likely see them in a grocery.

**USDA Standard or Commercial Beef.** Practically devoid of marbling. If it does not have a grade on the label it is probably standard or commercial. These grades are fine for stewed or ground meat, but they are a bad choice for grilled steaks. About 2% fat.

**USDA Select Beef.** Slight marbling. If you know what you are doing you can make this stuff tender. Otherwise, get a higher grade. About 2 to 4% fat.

**USDA Choice Beef.** Noticeable marbling, but not a lot. This is a good option for backyard cooks. About half of all beef is marked USDA Choice. There are actually three numbered sublevels of USDA Choice. Certified Angus Beef (CAB) is limited to only the

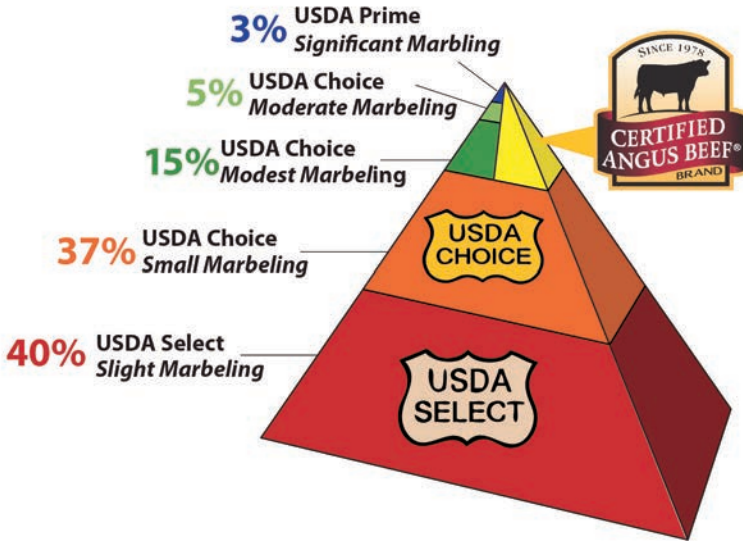
top two levels. Reliable sources tell me that Walmart “Choice Premium” is USDA Choice. The word “premium” is all about marketing and not to be confused with USDA Prime. 4-10% fat. A 12 ounce ribeye typically sell for about \$9 to 11 retail at the time of this writing in 2025, and prices fluctuate depending on supply and demand as well as weather, which impacts the cost of feed.

**USDA Prime Beef.** Significant “starry night” marbling. Often from younger cattle. Prime is definitely better tasting and more tender than Choice. Only about 3% of the beef is prime and it is usually reserved for the restaurant trade. About 10 to 13% fat, about \$20-30 for a 12 ounce ribeye at retail. A dry aged steak can be 15-18% fat and \$30-35 or more for a 12 ounce ribeye.

**Black Angus.** Black Angus cattle are considered by many to be an especially flavorful breed. Alas, it is almost impossible to know if what you are buying really is Angus.

**Certified Angus Beef.** The Certified Angus Beef (CAB) brand is a trademarked brand designed to market quality beef. To wear the CAB logo, the carcass is supposed to pass 10 quality control standards and CAB must be either USDA Prime or one of the two upper sublevels of USDA Choice. Most of it is USDA Choice. CAB costs a bit more because the American Angus Association charges a fee to “certify” the cattle and higher markups take place on down the line.

Interestingly, CAB does not actually certify that the beef labeled Certified Angus Beef is from the highly regarded Angus breed. Their major control is that the cattle must have a black hide, which is a genetic indicator that there are Angus genes in the cattle, but not a guarantee.



**American Wagyu Beef.** American Wagyu cattle have Japanese blood lines and are raised in the US and other countries. Their genetic heritage can be any of a number of Japanese cattle breeds. American Wagyu does not have to adhere to the standards as Kobe beef (below), and many of the American Wagyu are cross bred to make them better adapted to the local climates and diseases. Wagyu and Angus (Wangus) crosses are frequent, and they make mighty fine meat. Wagyu is usually extremely marbled, more than USDA Prime, but not as much as Japanese Wagyu, and the flavor and texture is distinctive. It is also about twice the price of USDA Prime. One can only wonder how long before the cross breeding and lack of enforceable standards dilute the quality.

If you want to try some amazing real American Wagyu, I have links to top suppliers on our mail-order foods page. That's a cross section of a Snake River Farms Wagyu flat iron steak above. The meat is simply remarkable, shot through with thin whisps of buttery marbling. Go for the ribeye or strip loin. Do not die

without having tasted great American Wagyu. Steaks can run up to 30% fat and \$60 to 70 for a 12 ounce ribeye.

That said, I do not recommend buying American Wagyu hamburger which is essentially pre-chewed meat, and which might have non-Wagyu fat in the blend. But if you're after the big bux in a barbecue or steak competition, beware, the guy next to you is using American Wagyu.

## BUSTING THE KOBE BEEF MYTH

**About Kobe and other Japanese Wagyu.** Japan is famous for highly marbled fabulously expensive beef, most notably the mythical Kobe. "Kobe Beef" is a trademarked brand name administered by the Kobe Beef Marketing & Distribution Promotion Association. They oversee producers, slaughterhouses, distributors, retailers, and restaurants who use the name in Japan. There are numerous regulations controlling when the name can be used, not the least of which is that the steer must be born, raised, and slaughtered in Hyogo prefecture (a prefecture is like a state), and fed a specified diet. A 12 ounce ribeye costs well over \$150 retail.

There are four bloodlines of special rare fatted Japanese beef. As a group they are all called Wagyu (Wagyu translates roughly to mean "Japanese cow"). They have a high ratio of fat to muscle and are revered for flavor, tenderness, and most of all, the richness that comes from the chemistry of the fat which practically melts in your mouth like butter. They are not to be confused with American Wagyu, described above.

Kuroge Washu (Japanese Black) is one of the four and it accounts for about 90% of the specialty Japanese beef. It has several sub breeds, the most important of which is Tajima. Villages that grow Tajima according to rigid regimens name their beef after their origins, like European wines. Kobe is the

most famous village, Omi is another, and Matsusaka is another.

In Japan, meat is graded A1 to A5, with A5 having the most internal fat. These five grades are broken down into 12 grades with a Beef Marbling Score called BMS. USDA Prime is 4 to 5 BMS (10 to 13% fat), American Wagyu is usually 4 to 10 BMS, Kobe and the other Kuroge Washu steers can go up to 12 BMS (more than 50% fat) because of their genetics, feed, and handling. Mostly genetics.

Kobe are fed mostly grain and sometimes mash left over from making sake and beer. Despite what you may have read, they are not fed beer. Nor are they massaged. A few may be massaged by loving owners paying for their childrens' college, but it is not a normal part of their cultivation. Today, there are about 4,000 cattle slaughtered each year for Kobe beef, a pittance. 90% of all Kobe is consumed in Japan.

Until late 2012 Japanese beef was not allowed into the US. Until then, everything labeled Kobe was falsely labeled. Fake. Fraudulent. Phoney. Bogus. Disgraceful. It was probably American Wagyu at best. If you think you have tasted Kobe, chances are you have not. All Kobe is sold as boneless, so if you think that T-bone you had in Vegas was Kobe, it was not. And there are no Kobe burgers being sold in the US. If you know a restaurant that advertised Kobe beef prior to mid 2012, then they are likely selling mislabeled fish, too. Run. Even today, it is highly unlikely that a restaurant in the US or Canada advertising Kobe is selling the real deal. Last I checked in November 2017, only two dozen restaurants in the US carry the real thing. And because they are less known, anything labeled Kuroge Washu, Tajima, Matsusaka, Omi is even scarcer. But you can occasionally order Kuroge Washu in the US from select importers. I buy mine from Crowd Cow.

**Some analogies.** Champagne is a region in France. A “Champagne” from California is similar, could even be better, but it is not real Champagne and it is usually not even made from the same grapes. Idaho potatoes come only from Idaho, not France or Japan. Could you imagine the lawsuits if they grew potatoes in Japan and called them Idaho potatoes? Parmigiano-Reggiano is the real parmesan and it comes only from the area around Parma and Reggio in Italy, never from a green toilet paper tube. Maine lobster looks and tastes different than Florida lobster. Florida lobsters have no claws. Can you imagine ordering Maine lobster and not getting claws? In these cases, there is more to it than just a name. Real Kobe is truly different than any other meat in the world.

**Here is how to cook it.** The fat content and texture is close to pork belly or bacon. It is far too rich to just choke down a whole ribeye. I figure about 4 ounces per person. I serve it as an appetizer before a vegetarian meal. Usually a big salad. You could even serve it on top of a big salad, but you don’t want to bury it with a salad dressing. After tasting this you will not want any more meat and besides, serving more meat would be pointless. Begin by thawing it. Get a black cast iron pan or griddle screaming hot. As hot as possible. Black will sear it better than stainless but some people recommend stainless. Beware, it can make the pan very hard to clean). You do not need to oil the pan, the fat will melt rapidly. I recommend that you do not cook the whole steak at once. Cut it into 1” strips. Toss the meat on the heat and cook it long enough to get a dark brown surface, perhaps 3 to 4 minutes per side. You might want to cut a strip and test the timing before you start production. It is too thin to use a thermometer on. After you flip it, sprinkle some salt on the top. Sit down to eat so you don’t collapse in a dead faint. As with American Wagyu, don’t bother buying any ground beef labeled Kobe. If you want a higher-fat, juicier burger, use just mix more fat into your burger blend.

## AGING

After cattle are slaughtered chemical changes called *rigor mortis* make the meat tough within the first 12 hours. The carcass must be chilled rapidly but not frozen, and it takes a couple of days for the muscles to relax enough to be sold. This usually happens in shipment. After that it can be further aged, or ripened, to increase tenderness. Enzymes and oxygen begin to work on the meat during the aging process, but too much age can spoil the meat, especially if bacteria, yeasts, or molds attack the meat. There is a big difference between aged meat and old meat. In addition, aging does not enhance all cuts, and it is not necessary for ground beef. Pork and most poultry do not age well at all because their fats get rancid more rapidly than those of beef.

**Fresh.** This seemingly desirable term means the meat has not been aged at all, so, unlike fruit, it is actually not a sign of highest quality.

**Wet Aged Beef.** Most meat is shipped from slaughter houses as large wholesale cuts packed in plastic vacuum bags in boxes. If kept this way at 34 to 38°F for about 30 days, enzymes tenderize the meat, but the flavor is not as enhanced as it is in dry aging. If you buy vacuum packed beef that has not been aged, keeping it in the fridge for 2 to 3 weeks may tenderize it a bit.

**Dry Aged Beef.** Dry aging beef is an expensive process for tenderizing beef and concentrating its flavor. Dry aged beef is noticeably different tasting than fresh beef because the chemistry of the fat changes drastically. Some describe it as earthy, nutty, gamey, leathery, or even mushroomy. Some people are addicted, some just plain don't like it.

Large hunks meat, usually the best cuts such as the rib primal, are held in a sanitary room at 34 to 38°F and 70-80% humidity, with brisk airflow for 30-75 days. Dry aging is sometimes called

controlled rotting because the exterior of the muscle gets dark purple and mold sometimes grows on the outside of the meat.

In the picture above we see bone-in rib primals in the aging locker of David Burke's Primehouse in Chicago (closed in 2017). They range from, left to right, 7 days, 20 days, 30 days, and 60 days.

During aging natural enzymes break down connective tissue and tenderize the meat while moisture evaporates shrinking the meat up to 20% (fresh beef is about 70% water). The outside crust is trimmed off before they are sliced into steaks and cooked, so another 15% is lost, although some of the trimmings are used in Primehouse's incredible hamburgers. Aged steaks there sell for a bit less than \$1 per day.

It is rare to find dry aged beef in grocery stores because most of them buy their meat in vacuum packed plastic bags. Some specialty butchers and high end restaurants offer dry aged beef. Because precise temp and humidity control are crucial, you should not try dry aging at home.

## OTHER TERMS

**Grass Fed Beef.** Until the 1950s, most US beef was grass fed right up to slaughter by being allowed to graze on open ranges. As the US population grew and demand for cheap beef grew, corn feeding of beef became the norm. Now there is a trend back to grass feeding because many believe it is better for the animals, for people who eat them, and the environment. Some people think grass-fed beef taste better than grain fed, but more think corn fed tastes best. There is a difference in taste. Grass fed beef can have a mineral quality. It can be very distinctive and have more personality than corn fed and many people, especially old timers raised on grass fed love it. Alas, many people aren't charmed by its personality.

**Grain or Corn Fed Beef.** For most of their lives, and especially just before slaughtering, most cattle in the US are fed corn. These cattle have slightly more fat and many people prefer the taste. Cattle love corn, but they do not easily digest it. The process is popular because the animals can be kept in tight pens in feed lots and do not have to graze over open land, and because the meat can be tender, juicy, and sweet.

**Grass or Corn Finished.** Before slaughtering some cattle are brought to feed-lots where they are gorged and fattened. Sometimes grass-fed cattle are corn finished, so consumers who are concerned about corn feeding might also inquire if their grass fed cattle have been corn finished. It's getting complicated out there...

**Organic Beef.** USDA rules passed in 2002 state that certified organic beef must be produced according to strict rules that must be verified with an elaborate paper trail on every animal including its breed, feed, and medical history. To be certified organic it must eat only organic grasses and grains, have unrestricted outdoor access, must never be given antibiotics or hormones, and must be treated humanely. Organic beef is more expensive.

**Natural Beef.** Natural beef must not be given antibiotics or hormones, but they can be grown, fed and handled in the same way as other common cattle. Some physicians and scientists think giving cattle antibiotics could be encouraging the appearance of antibiotic resistant microorganisms in humans.

**Kosher Beef and Halal Beef.** These cattle are grown and slaughtered according to Jewish law (kosher) or Muslim law (Halal). Their requirements are similar. Both require that the animal be slaughtered by slitting the animal's neck veins and drained of practically all blood. Some experts believe this method is painful and inhumane.

## BUY ONLY ROSY COLORED BEEF, RIGHT? MAYBE ...

If that beef in the grocery is looking so rosy and delicious, that's because it's really fresh, right? Well, maybe not.

It seems that Cargill and others have perfected a process for sealing meat in an airtight pack with a carbon monoxide atmosphere, and that keeps the meat from oxidizing and turning brown. For a long time. Even if it is stored improperly.

Seems that even fresh meat can brown easily, and still taste just fine, but shoppers will buy the pink meat first even if it is not fresh. So grocers, who are cutting back on their butchering staff and hate wasting unsold meat, have turned to "modified atmosphere" pre-packaged beef, lamb, and tuna.

Consumer groups are fighting to have the stuff labeled, but the industry is resisting.

So the color of beef in a package is not a good measure of freshness anymore. Check the sell by date! Of course health inspectors can all tell you tales about butchers changing meat labels to extend the sell by date.

The solution? Get to know your butcher and stay on your toes.

## WHERE TO GET GREAT BEEF

You can buy prime beef, aged beef, or Wagyu beef, but only specialty butchers have it. If you can't find it in stores, order it online. We have recommendations of suppliers on our artisan foods page.

# SECRETS OF BURGER ZEN MASTERS



Close your eyes and think of the best hamburger you've ever had. In a restaurant, right? Let's fix this. Let's all go from Grasshopper to Burger Zen Master in our own backyards.

Let me guess what is in your memory: You needed two hands and two napkins. The toasty charry beefy scent wafted to your nose as it was escorted to your table. The perfume told your mouth to start the lube moving the moment the plate became visible. It almost smelled burnt, but it was not.

As you lifted the top of the bun to add ketchup, you saw that the patty had a mahogany skin and the bun was wet with dark juices that looked like the Suwanee River. It was crunchy when your teeth pierced it. The warm salty juices flowed over your tongue followed closely by an assertively deep prime steak flavor, like a steakhouse steak framed by the irresistible bracing flavor of roasted beef fat. The bun was warm, buttery, and crispy on the inside, and condiments amped up the experience, but you really can't remember them. It was the succulent brawny beef that sticks in your mind. The experience ended, reluctantly, with licking the juice off your elbows.

My Platonic Image of the perfect burger is the Pinesburger from the **Glenwood Pines** in Ithaca, NY, *circa* 1980, a complete well rounded meal with carbs (Frenchbread bun), veggies (lettuce, tomato, onions), dairy (American cheese), and protein (the 6 ounce patty of fresh ground chuck, 85% lean), accented by 1000 island dressing. The Pines is under new ownership, but I am told the Pinesburger is still a winner for only \$5.25.



So what are the secrets of a Zen Master's Burger? Finding out has taken me a solid year plus several years after that, a longer odyssey than any other cooking technique I've tried to conquer on your behalf. Whooda think the humble burger was such a pain?

Don't expect perfection the first time you try my methods, but do expect improvement. You'll get closer each time you do it. By the third attempt you should have everyone's attention.

Remember, in any form of experiment, you must set up a repeatable system in which you can change only one variable at a time. If you make your first batch on a charcoal grill, don't switch to a cast iron griddle *and* change the meat blend at the same time. One variable at a time.

Soon you'll know what the restaurants and I know: You'll know the gestalt of the Zen Master's Burger and be well on your way to making your home a hamburger heaven.

Begin by throwing out all your preconceived notions about cooking burgers.

## BUYING BEEF FOR BURGERS

If top quality is your goal, never ever ever no-how no-way buy something labeled "hamburger" or "ground beef" for making burgers. Save these for chili or sloppy Joes.

Hamburger or ground beef can legally come from practically any muscle on the animal. You know the old joke about "lips and sphincters?" You got it. They usually contain up to 30% fat, may include seasonings and flavor additives, may be treated with ammonia (yes, ammonia), may be frozen and then defrosted.

Technically the difference is that, if the meat is packed at a USDA inspected plant, "hamburger" can have fat scraps added and "ground beef" cannot. But the USDA inspects only meat that

crosses state lines, so if it is ground by your grocer, practically any muscle can be in there. Butchers toss trimmings from any old cut in there, and much of the stuff in preformed patties comes from old bulls and no longer productive dairy cows, not known for the tastiest meat.

A maximum of 30% fat by weight is allowed in either hamburger or ground beef and both may have seasonings, but no water, phosphates, extenders, or binders added. I prefer to add my own seasonings.

Much hamburger and ground beef comes from processing plants many miles away and if it is not frozen, it can be several days old when you buy it.

Keep in mind that your grocer and butcher may grind and package their own meat at a central warehouse or in the store, and their facilities are not USDA inspected unless they ship across state lines. The fat content laws, however, apply to all grinders.

**Why is bright red ground hamburger sometimes dull gray inside?** Fresh cut or ground beef is purplish-red in color. Oxygen reacts with the pigments in red meat to form the bright red color in the grocery store. The interior of the meat may be gray or brown because oxygen has not penetrated into the meat. This is normal.

#### BUY MEAT AND HAVE YOUR BUTCHER GRIND IT FOR YOU

Whenever possible you should ask your butcher to grind your meat while you wait. You pick the steak, and she grinds it.

Pre-ground meat, even some of the better cuts of pre-ground meat, such as ground chuck, may have been ground miles away and days ago. Once meat is ground, it begins to oxidize.

If you want to buy ground meat, try to buy it at a store with a butcher in the back room who can grind for you. In grocery stores, butchers usually come in early in the morning, and leave before 5 p.m. They are probably not on duty on Sunday. Find out when your butchers are in, and get to know them by name. Ask them to grind meat for you.

You want at least 20% fat, not 15% as called for in many cookbooks and online recipes. I recommend 25 to 30% fat, especially if you cook the meat to USDA recommended safe temps of 160°F. That's right, you do not want lean burger because fat brings a lot of flavor, moisture, and crispness to the party. Face it, burgers are not diet food so we can't eat them every day. But when we do crave one we want a good one, and that means at least 25 to 30% fat.

Fat is more effective at creating juiciness than mixing ice chips into the raw patty, as some people recommend. You can add butter, but I prefer fresh, white beef fat. Not yellow. I've been known to freeze fat from my briskets and add it to my burger grind. Wrap it tightly in plastic first, then foil, and don't keep it for more than 60 days or it can start to taste funky.

The easiest thing to do is pick a nice looking "choice" grade chuck steak with plenty of fat, and if necessary, ask the butcher to add some fresh white fat trimmings to get the blend up to 25 to 30%. Go ahead. Get it to 30%. Especially if you plan to cook it to the safest temp, well done.

Ask for a coarse grind, using the 1/4-inch holes, only once through the grinder, and ask for it to be packaged loosely. Many butchers grind beef fine or grind it twice. Not for you. It should come out looking like thick wavy spaghetti. Coarser grinds and looser pack make for an uneven surface plus air pockets inside, and that's good.

If you can't get your meat ground to order, buy pre-ground chuck which is usually about 15 to 20% fat. Ground round is usually about 10 to 15% fat. If you buy ground sirloin, you are getting only about 5 to 10% fat. Alas, these are not precise standards. The fat content can vary from one store to another, from one steer to another.

While you're at it, ask for some suet (beef fat) to freeze and mix in the next time your meat is too lean. I have never been charged for it. Your butcher may even grind it for you. If not, you can grind it easily in a food processor. Don't get just any fat. You want fresh white fat, not yellow fat. I've been known to freeze fat trimmed from my briskets and add it to my burger grind. Wrap the fat tightly in plastic wrap first and then foil, and don't keep it for more than 60 days or it can start to taste funky. You can also use suet to coat your griddle or pan if you are making smashburgers.

Another option for lean meat is to add finely chopped raw bacon into the blend. Select the fattiest strips. This is an amazingly effective trick, and bacon brings flavor and salt. That's why we love bacon on top of our burgers.

## IF YOU MUST HAVE LEAN BURGERS

If you like your burgers lean, you risk dry, hard hockey pucks. To combat this, finely chop onions and mix them in the patties. They add moisture.

The smart folks at **America's Test Kitchen** and **Cooks Illustrated** have come up with a very clever way to keep lean beef from drying out, by adding a *panade* (a paste of bread and milk) to the ground beef.

Here's how: For 2 burgers, remove and discard the crust from half of one slice of high-quality white sandwich bread, and chop it into 1/4-inch pieces, to make about 1/4 cup. Add 1 tablespoon

of whole milk and mash it into the bread until you have a paste. Mix this in with the meat. As strange as it seems, this mash holds moisture in well-done burgers.

### BURGER BLENDS



Don't waste money on the tenderest steak cuts from along the back of the steer: Ribeye, filet, or strip. The grinding process will make tough cuts tender. The Hamburger Zen Master wants inexpensive meat that has great beefy flavor like short ribs (side), chuck (shoulder), flank steak (belly), skirt steak (mid-chest), sirloin (hip), hanger steak (diaphragm), or brisket (front-chest).



**Ribs.** Tastewise, beef short ribs are my favorite cut of meat for hamburger. It packs good steak flavor, and even though it is a tough cut of meat, if ground and cooked properly, it can produce excellent burgers. My favorite burgers are 100% shorties. But this is a more expensive cut than chuck unless you can catch it on sale.

Short ribs come from the short plate, from the side of the steer, and are usually heavily marbled with 20 to 30% fat. Most of the time they come with a bone attached, so you'll have to cut it off and save the bones for soup or stock. Sometimes you can get them boneless. First you have to cut the top layer of fat off because there's a tough "silverskin" below it most of the time. You want to see meat on the top. Then you cut it off the bone. There's a leathery cartilage between the meat and bone, so leave it behind. Bone in, there's about 50% waste after you cut the meat off the bones and discard the silverskin. But you can simmer the bones with carrots, celery, and onion to make a nice **beef stock**. I have had problems grinding short ribs in my stand mixer because there is some gristle that clogs the plate, so I often ask my butcher to grind it with her heavy duty grinder.

**Chuck.** This is the cut most of the top burger joints use. Ground chuck comes from the shoulder and usually ranges from 15 to 20% fat. It has good flavor and texture, especially if

freshly ground. To grind your own or have your butcher grind, get either boneless or bone in, it doesn't matter. But get *chuck steaks* not *chuck roast*. Chuck roast has too much sinew, and if you try to grind it yourself the leathery sinew will just clog the grinder. Look for steaks that have, to your eyeball, 20 to 30% fat. That's an 8 ounce chuckeye steak below from the part of the shoulder just in front of the ribeye (they are pretty tasty grilled at a much lower price than ribeye, but that's **another article**).

**Flank, skirt, hanger, and sirloin.** These are really beefy tasting cuts, but they are lean. So I often ask for extra white fat from the butcher or blend bacon fat into the patties.

**Brisket.** Brisket has a big hearty flavor. There are two parts of the brisket. The "point" cut of brisket has about the right fat to lean ratio for burgers, and a lot more fat on top of it. You'll need to trim the fat cap off to get to the right ratio. The "flat" cut of brisket is a slab of lean meat with a 1/4-inch or so thick fat cap on top. Because the fat and lean are easy to separate, you can measure and blend the ratio you want fairly accurately.

**Ground Round** comes from the rump and usually runs 10 to 15% fat. It can be dry and tough, but has a nice beefy flavor. You will want to add fat.

**Ground Sirloin** comes from the area just in front of the hip, and is usually about 5 to 10% fat. This cut tends to be dry because it is so low in fat. It can be pricey, and you will want to add fat.

**The bottom line.** The esteemed cookbook author **Michael Ruhlman** says the cut is not as critical as the ratio of lean to fat. "Beef is beef and, unlike pork, beef tastes like beef no matter where it comes from on the animal. I know people will disagree. I believe the only critical ratio is the meat to fat, so I buy a nice fatty relatively inexpensive chuck steak, and that gives me a great burger every time. Short ribs will give you a great burger

as well. So will sirloin and brisket if you've got the right amount of fat."

**What about the grade?** Go for choice grade beef, not the more expensive prime grade, the fabulously expensive kobe, or wagyu. Expensive cuts are so dear because they have more fat between the muscles than choice beef. But you can add fat to ground meat, so why spend much much more on prime, kobe, or wagyu? Certified Angus is at least choice in grade, so even though it is slightly more, it is a good choice.

## GRIND YOUR OWN



The best way to control quality is to grind your own hamburgers. That way you can select the exact cut or mix of cuts

from the butcher counter, control the fat to lean ratio, get the freshest meat, reduce oxidation, and even reduce risk because A) you'll know that the meat hasn't been contaminated by an improperly cleaned grinder, and B) if you cook it promptly, there is less time for microbial growth.

Begin by removing any silverskin, cartilage, and bones. Then cut the meat and fat into 1-inch cubes. Put the cubes of meat and fat on a sheet pan in the freezer for up to 30 minutes. Get it stiff but don't freeze it solid or the ice crystals will begin to tear open the cell walls and make the meat mushy.

You can also grind lamb, pork, or other meats for burgers. Or mix them.

There are three good tools for grinding your own:

1) **Food processors.** Cuisinarts and other food processors will make fine burgers. In fact I think they are better than real grinders when it comes to tough cuts like skirt and short rib meat. Cut and partially freeze the meat as described above. Work in small batches, just enough to cover the blades, and pulse the processor for about one second until properly chopped evenly, just a bit coarser than what you used to buy. If necessary, lift the top and move the meat around in the bowl to make sure all chunks get chopped. Better too coarse than too mushy. If you have several batches, keep the unprocessed meat in the freezer. Dump the ground meat onto a plate or tray and remove any gristle.

2) **Hand operated meat grinders.** These are what grandma used, they are inexpensive, and last forever. Same process. Cut and partially freeze the meat. I prefer a coarse grind. Do not double grind. Once is enough. You want some of the muscle intact to retain moisture and give the burger some texture.

3) **Stand Mixers.** These mix wet ingredients at a range of speeds, can knead bread or pizza dough, and the meat grinder

attachment is an inexpensive way to amp your burgers up to 11. The process is the same as above. Cut the meat into chunks about 1", partially freeze, and grind.

**Portion Size.** McDonald's standard burger patty has a raw weight of 1.6 ounces, making it fairly small. Smashburgers or **Diner Burgers** usually weigh 4 ounces each before cooking. Most pub burgers weight 5 to 7 ounces. My **Steakhouse Steakburgers** weigh 8 ounces each. When you grind burgers yourself, calculate the total raw weight you're looking for and round up a bit to account for any bits of meat and fat that get stuck in the grinder. **Here are some possible scenarios for two burgers.**

**Cleanup.** When you are done grinding, gather the meat on a tray or in a bowl and handle it as little as possible. Toss it in the fridge. Clean the grinder thoroughly with soap and hot water before you load into the dishwasher. If you don't have a dishwasher, it's a good idea to submerge the parts in boiling water for a minute. Dirty grinders are a major source of food-borne illness.

## BE CAREFUL WITH MIX-INS

There is a raging controversy over the wisdom of mixing ingredients into the patty. On one side, there's Food Network's Bobby Flay, author of the cookbook **Bobby Flay's Burgers, Fries, & Shakes**, and owner of nine restaurants, among them three locations of Bobby's Burger Palace. He's a minimalist. His patties are nothing but chuck, and he sprinkles salt and pepper on the exterior just before cooking. He once told me "I don't put anything in my burgers like onion, eggs, breadcrumbs, anything. That's meatloaf." And that's harsh! But I agree.

On the other side is James McNair. Nobody has tasted more burgers than McNair, Honorary Chairman and Head Judge of

Sutter Home Winery's **Build a Better Burger Contest**, founded in 1990, and by far the biggest and most important burger competition in the world, with \$50,000 prize going to the best beef burger, and \$10,000 to the best "alternative" burger (pork, salmon, turkey, etc.). McNair is also the author of two books on burgers that are still available, **Build A Better**

**Burger:** Celebrating Sutter Home's Annual Search for America's Best Burgers, and his most recent, co-authored by Jeffrey Starr, **Burger Parties:** Recipes from Sutter Home Winery's Build a Better Burger Contest. He told me "To incorporate flavor into every bite, thoroughly mix seasonings into the ground ingredients. Contrary to popular culinary myth, salting ground meat a few minutes before cooking will not draw out the moisture and create a dry burger. For our tastes, one teaspoon of kosher or coarse sea salt to every pound of meat is a perfect ratio, but if you're adding other salty components, reduce the amount of salt you use."

McNair's assertion is contested by the AmazingRibs.com science advisor **Prof. Greg Blonder** who did a study of what happens to burger meat when you mix in salt. It helps retain just a little water, but fat is where most of the juicy sensation comes from. The real impact is on texture. You get a baseball.



But there should be no rules in the dining room or the kitchen, so I say there's room in the firmament for what I call the Homestyle

Burger. It's the burger Granny made, with chopped onions, peppers, and more.

### KENJI'S MIX-INS

J. Kenji Lopez-Alt is an MIT grad, a chef and an Editor at SeriousEats.com, and he knows *a lot* about burgers. He has done some fascinating experiments with them and as a result has convinced me not to mix salt into patties. Does he put anything in his burgers? The answer is surprising, but not really when you think about it: "I add a bit of anchovy to the meat before grinding at home, about half a filet per burger... anchovy is just a seasoning, like salt and pepper, a flavor enhancer. It doesn't change the actual flavor of the burger the way something like Worcestershire sauce or onions do, it just adds a bit of umami that makes the beef "beefier," if you know what I mean. I could probably get the same results using powdered MSG, but people seem a bit queasier about MSG than anchovies."

Umami, in case you are not familiar with the term, is the savory flavor produced by glutamates found in anchovies, **soy sauce**, aged parmesan cheese, mushrooms, and meats.

**Don't believe all the scary stuff you read about MSG.** It has never been proven *in lab conditions* to cause any headaches or illness, and nobody in China gets sick from MSG. Glutamate is found naturally in many foods.

### MATCH THE SHAPE TO THE STYLE

Whether you grind your own and buy ground meat, keep it well-wrapped and refrigerated until you're ready to make burgers. Food safety is paramount throughout the entire process of buying, grinding, shaping, and cooking burgers because any surface contaminants get ground through the entire batch.

Shaping depends on the style of burger you're making. For pub-style or **Steakhouse Steakburgers**, some prefer a thick, mounded burger so the interior stays juicy and doesn't overcook. Others like a flatter burger so there's a stable shelf for toppings. Either way, ground meat will swell up slightly in the center during cooking.

**For puffy steakburgers:** Gently shape the raw meat into flat or disc-shaped patties that taper to the edge.

**For flatter steakburgers:** Make a slight depression in the center of the patties when shaping. It will swell and form a flat surface as the burger cooks.

**To fit the buns:** Make your raw patties about 1/2" wider than the bun. Meat shrinks during cooking, and a slightly bigger raw patty will cook down to fit the bun better. About 4 1/2" inches wide is perfect for a 4-inch bun.

**Use a light hand:** When forming patties, don't pack them too tight. You want some air pockets in there where juices can collect. Gently shape the meat, patting around the edges to round them out. That's why they call them "patties" not "pressies."

**For diner burgers:** Just shape your burger meat into balls instead of patties. You'll flatten them out on the griddle to make smashburgers, the type usually served in diners. Now these are pressies!

## KEY CONCEPTS OF COOKING HAMBURGERS

The way to get your burgers done properly is the same way you get to Carnegie Hall: Practice. Practice. Practice. You may have to experiment three or four times to perfect your technique. But you'll get it, and then all who know you will prostrate themselves in your path.

The secret to any experiment is to change only one variable at a time and take notes or keep a **cooking log**. For example, if you are cooking with charcoal, count the briquets so you can use the same amount every time. If you are using gas, use the same settings every time. But remember, wind and air temp will influence the cooking. If you cook in a frying pan, use the same pan every time. A black cast iron pan will produce different results than a shiny stainless steel pan. If you oil the pan with beef fat, do the same thing every time. Butter and cooking oil have different heating and flavor characteristics.

Most importantly, at the experimental stage, never vary the thickness of your burger or the temp at which you cook it. Then you will get a sense of how long it takes to get it done to your liking, and you can learn the color of the outside and the feel of the meat that tells you when the inside is ready. As you approach perfection, you can fine-tune cooking temp and thickness.

To achieve Burger Zen Master status, you must understand some basic concepts of **meat science**. A short recap of germane points:

The perfect burger has two parts, the exterior, and the interior. You want the exterior as dark as possible, but not black, and you want the interior juicy and safe. You want beefy flavor unmasked by condiments and mix-ins.

**The exterior.** The surface is significantly impacted by the cooking method. If the meat is cooked on a hot griddle, as it is in most diners, the surface is in direct contact with the heat and it cooks by **conduction**, browning evenly across the surface. If it is cooked on a grill, most of the meat cooks by **radiant heat**. The small amount of surface where the meat is in contact with the grates cooks by conduction.

First, generously season the exterior of the burger with salt just before cooking. Then spread a thin layer of oil on the exterior. If

you oil the patty you make it harder for moisture to escape, plus the oil transmits heat faster to the meat, so you don't need to oil the griddle, pan, or grates. Fat helps the **Maillard reaction** and **caramelization**, two chemical changes that create dark brown color, crunchy texture, and a deeper, richer, sweeter flavor.

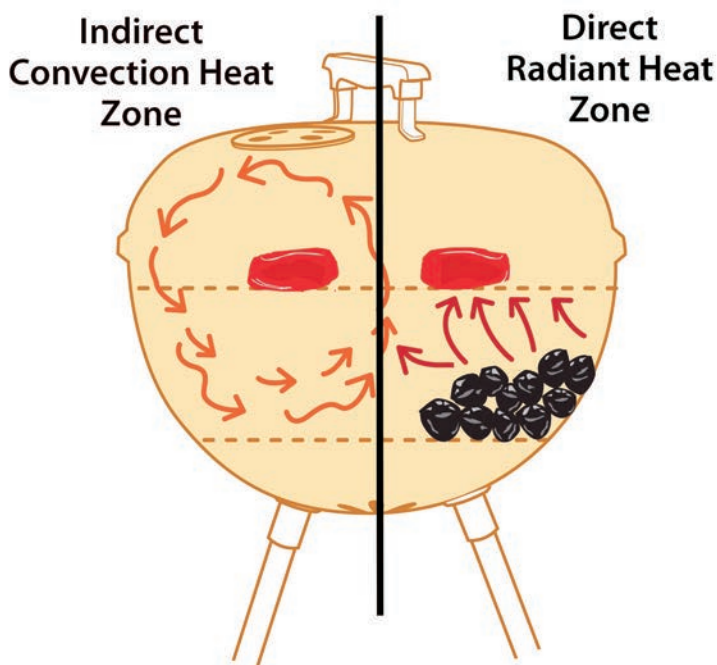
**The interior.** The center of the burger doesn't care much about which method of cooking you use because it cooks by heat conducted from the exterior. As the surface gets hot, moisture and fats transfer the heat like a bucket brigade from the outside in. You cannot tell by the color of ground meat if it is cooked safely. Some burger interiors turn brown as low as 130°F, so a brown burger can still be rare.

**Size matters.** There are two very different cooking methods depending on whether you are doing thick Steakhouse Steakhurgers or thin Diner Burgers. For details, see the recipes below for **Steakhouse Steakhurgers** and **Diner Burgers**.

**Making lots of burgers?** If you are making lots of burgers the famous chef Heston Blumenthal of **The Fat Duck** in the suburbs of London, England, recommends a process like this:

Gather the strands as they come out of the meat grinder and lay them parallel on a sheet of aluminum foil in a strip. Stack the strips until they are about 5" high and 5" wide. Roll the foil so they form a log about 4" in diameter. Twist the ends like a Tootsie Roll. Toss in the freezer for about 15 minutes to firm it up. Then, with a serrated knife, slice the roll right through the foil into 3/4" disks. Then remove the foil. You will have a loosely packed patty with the grain running top to bottom with lots of air pockets.

## USE THE 2-ZONE SETUP



2-zone cooking is the most important concept to grasp for cooking burgers. A cooler zone allows you to gradually bring the interior up to a safe (160°F) but not overdone temperature. And a hot zone gives you the firepower to sear and brown the exterior for a beautiful, flavorful mahogany crust. Known as the **Reverse Sear**, this technique works on charcoal grills, gas grills, griddles, and smokers. And it works for burgers, steaks, and bigger roasts. Here's a quick overview. For more details, [check out this article on the reverse sear](#).

To set up a charcoal grill for **2-zone cooking**, simply pile pre-heated charcoal briquets on one side of the grill's charcoal grate to create a hot (direct) infrared heat zone on one side and a cool

(indirect) convection airflow zone on the other. *Place a digital thermometer probe just above the cooking grate on the indirect side so it feels the same temperature as the meat.* The indirect side should ideally be about 225°F. Try to keep it under 250°F.

It's the same set up on a gas grill, but you just leave the burners off on one side (the cooler, indirect heat side) and crank them to high on the other side (the hot, direct heat). On a griddle, set one side to low and one to high. Start on the low side and move to the high side. Unless, of course, you're making smashburgers. In that case, crank all the burners to high for a great sear!

If you're adding smoke, place wood chips or pellets on the coals or, if you are using gas, in a packet or aluminum pan as close to the hot burner as possible.

The 2-zone setup gives you flexibility. Not every burger cooks at the same rate. Some guests might want them medium-rare and some well-done. With the 2-zone setup, you can move patties from side to side as needed. Getting some nasty flare-ups? Move the burger from the sear zone to the cool zone. Need to hold the burgers for a minute? Put them on the far side of the cool zone.



**MYTH: NEVER SQUISH A BURGER WITH YOUR SPATULA WHILE IT IS ON THE GRILL**

**BUSTED:** When we squish a burger on a grill, melted fat, meat juices, and seasonings that hit flame or glowing coals vaporize and land on the burger and flame jumps up to sear the meat. This is good. The problem is that if you have a burger that is 20% fat, the common blend, a few squishes results in a hard dry patty. The way to combat this is to up the fat content of the raw burger to 30%. Now when you squish you can afford to lose some fat. This, however, causes another problem: 30% burgers might break or crumble when squished. So cook them on a grill topper so the juices can drip through.

## HOW TO COOK SAFE BURGERS



Undercooked ground meat and sausage can kill. It can happen to you or someone you love. In 1993, four children died from hamburgers contaminated by the virulent bacteria pathogen *Escherichia coli* O157:H7 purchased at Jack in the Box restaurants. According to health officials as many as 70,000 Americans fall ill from E-coli O157:H7 each year, most of them as a result of tainted hamburger meat. According to USDA, “the very young, the very old, and those with immune systems that have been weakened by cancer, kidney disease, and other illnesses are most at risk and vulnerable to illnesses associated with contaminated food.” If someone shows symptoms of illness, do not hesitate. Get to the emergency room in a hurry.

We’ll call this common bug E-coli for short from now on, although there are many other strains of E-coli that are harmless. In addition to E-coli, *Salmonella*, *Campylobacter jejuni*, *Listeria monocytogenes*, and *Staphylococcus aureus*, can be found in ground beef and can cause illness. They cannot be seen or smelled. There are also spoilage bacteria that are harmless to humans, but deteriorate the meat’s quality.

In meat, E-coli comes from fecal matter in the intestines of the cow. It gets on the surface of the meat during butchering from (1) fecal matter that is on the hide because feed lots are crowded with cattle and their waste, (2) fecal matter in the intestines if they are accidentally sliced open during butchering, (3) fecal matter that spilled from intestines onto the floor of the slaughterhouse or butcher shop, or (4) from knives, grinders,

other equipment, other meat, or hands that have come in contact with fecal matter.

E-coli O157:H7 is primarily a problem in ground meats, not steaks. It is found only on the surface of the steaks. They do not work their way into the muscle or fat far beyond the surface. They die rapidly when you cook a steak's surface past 160°F, even if the interior is red rare. Even if your grill is at a low 225°F, the exterior of a steak will hit 160°F fairly quickly and be safe. The problem arises when meat is ground. Then the outside gets inside and rare burgers or medium rare burgers carry risk with them because they are not cooked to 160°F. Because grinding is how the bug gets into the meat, E-coli is a problem for all ground meats and sausages unless they have been pre-cooked like hot dogs or treated with preservatives.

If the butcher's grinder is not in a cool room, contamination on it can grow rapidly (E-coli doubles in 20 minutes). Then we have to hope that the butcher's grinder is kept clean. They are usually old and the older models are hard to clean properly, with lots of nooks and crannies for contamination to hide in. Then it goes into an open-top display case and can sit there for hours, and the trays on the bottom may be there for days. They then sit in uncalibrated home refrigerators for days sometimes.

Industry and government inspection for E-coli is not very thorough. The detection process is expensive, there are not enough inspectors, and USDA inspects only meat headed for interstate commerce. Some meat is inspected by state inspectors, and most is not inspected at all. If your trusted grocer is sold contaminated meat and grinds it, it can contaminate the grinder and all the meat ground that day. *Knowing your butcher is not a guarantee of safety.*

It is important to remember that "sell by" dates are no guarantee of safety. USDA recommends that you store ground meat at 40°F

or lower and that you cook or freeze it within two days after purchase. E-coli does not reproduce at cold temps.

Now here's an interesting question: Some fast food joints promote the fact that their burgers are never frozen. So which would you rather eat, a burger that is frozen right after grinding and shipped to a franchise three states away, or a burger that is not frozen and shipped three states away?

You can read more about E-coli, how it gets into hamburgers, and the nature of the problem in **an excellent and frightening article in the New York Times**.

#### ARE RARE AND MEDIUM RARE BURGERS OVER-RATED?

Food safety experts want us to cook ground meats to at least 160°F to kill bacteria. Burger fiends want them red in the center, which means they are risky.

There is good reason to serve rare to medium rare *steaks*. Steaks are tougher and drier when cooked to medium well or well done. But the quest for rare burgers may be wasted effort. If trimmed and ground properly, ground beef is never tough. *It has been pre-chewed by the grinder*. If cooked properly and you use a high fat blend, it will remain juicy. Even at 160°F.

But what about flavor? The fact is that browned ground beef has more flavor. Browning is the result of chemical reactions and the result is more flavor. If you've ever tasted raw ground beef or steak tartare, think back to what it tasted like. Compare that to your taste memory of a well-seared burger. Which had more flavor? Which would you rather eat, uncooked ground beef, or browned ground beef?

## IF YOU MUST HAVE MEDIUM RARE BURGERS, THERE ARE FOUR WAYS

To kill bugs in burgers, according to USDA and every book on the subject, you need to take the inside above 160°F. That's well done. To tell the temp of the burger, there is no substitute for a **good digital instant read thermometer**.

But the 160°F guideline is a simplification. The truth is that pathogens start croaking at about 130°F. At that temp, however, it takes a long time to kill them. Ground beef held at 130°F in the center for 121 minutes is considered pasteurized and sterile (10<sup>7</sup> kill rate). The time gets lower as the temperature goes higher. So beef held at 140°F degrees will be sterile in just 12 minutes, while at 160°F degrees, pathogens are destroyed in just 7.3 seconds, hence the USDA guidelines for the consumer. Take it up to 160°F for as little as 7 seconds and you're safe.

### **Center Temp - Time to Pasteurize**

130°F - 121.0 minutes

135°F - 38.3

140°F - 12.1

145°F - 3.8

150°F - 1.2

155°F - 23.0 seconds

160°F - 7.2

165°F - 2.3

If you want medium rare burgers, there are some options.

**(1) Buy irradiated beef.** My study of the subject tells me irradiated beef is perfectly safe and healthy. But it is hard to find because a lot of people are scared of radiation in all forms

(except when they get their teeth and bones X-rayed, and that's a *LOT* higher dosage). Click this link for **more information on irradiation from the National Institute of Health**.

**(2) Pasteurize the meat.** Food scientists say that if you dip a piece of steak in boiling water (212°F) for 10 seconds before **grinding it yourself**, it is made safe. I have tried it, and although the exterior turns gray, it grinds well and makes fine flavorful rare patties.

**(3) Sous vide.** You can also have rare burgers by using the *sous vide* method of slow cooking the patties in a vacuum bag in an immersion bath of 131°F water for two hours.

**(4) Perfect control.** If you had a really accurate thermometer and perfect control over your grill temp, you might be able to grill a big fat burger at, say 225°F, and when it hits say, 125°F internal temp, dial the heat back to 135°F, hold it there for 40 minutes, and then sear the exterior on high heat for flavor.

#### ASK YOURSELF THIS FIRST

If you use a high fat blend and patty and season it properly, if you add condiments, onion, lettuce, tomato, and a buttered bun, most people cannot tell the diff between a 135°F burger and a 160°F burger if they are blindfolded.

If you do not have sterile meat, and you are healthy and not too young or old or immune compromised, you can take the risk of eating a rare burger. Go ahead and roll the dice. Probably safer than riding in a NY cab. But if your kids or granny can't tell the diff, why risk it?

#### BUILDING A BETTER BURGER

On a **Steakhouse Steakburger**, this burger fan keeps the toppings simple. But if I'm having a cheeseburger, I go for a

sharp cheddar, thick smokey bacon, **caramelized onions**, and **Meathead's Burger Glop**. Your favorite toppings and bottomings are up to you. But keep in mind, the way you stack your burger can make or break the eating experience. To avoid a mushy bun think in layers:

- Bottom Layer: If you're adding lettuce, put it on the bottom bun to create a barrier against juices.
- Middle Layer: Add the burger or cheeseburger next along with bacon, onions, pickles, or other veggies.
- Top Layer: Finish with your sauce and a sturdy top bun.
- Stack It: For stacked diner-style burgers, layer them up with cheese in between.
- Stick It: For super-tall burgers, keep them from falling apart them with a toothpick or skewer.

# HOW DO GRILLS AND SMOKERS WORK?



1) Direct Heat Charcoal



2) Indirect Charcoal



3) Lid Off Charcoal



4) Flat Top



5) Direct Heat Gas



6) Indirect Heat Gas



7) Lid Off Gas



8) Infrared Gas

To cook juicy, well-seared burgers, it helps to know how outdoor cookers work. Gas and charcoal grills have a lot in common even though they use different fuels. Both cook food by generating energy that we refer to as heat.

*Inside a grill there are three types of energy: Conduction, infrared radiation, and convection airflow.*

**Conduction** is the most concentrated energy and a basic example is food in contact with hot metal. Conduction from hot metal is what creates grill marks on the food.

**Infrared radiation** (IR) usually comes from flame or glowing embers directly below the food. This concentrated form of energy packs a wallop and helps sear foods and get dark crusts in a hurry.

**Convection** airflow is the relatively gentle warm air circulating inside the grill, especially when the lid is down.

It is important to think of these as energy rather than temperature. As an example, turn your indoor oven to 200°F and stick your arm in there. You can do this. It won't burn your hair off. Now touch the metal grates. When you get back from the hospital you will understand that, although the air and the grates were both 200°F, they held and delivered vastly different levels of energy.

Infrared is altogether different. Stand under a tree on a sunny 90°F day. Sweaty hot, but the shade protects you from the ultraviolet radiation (UV). Now step into the sun. It burns! Although UV and IR are different wavelengths, they are both forms of radiation. When you place food directly above hot coals or gas flames, you are subjecting it to IR. It is like putting it in the sun. Hot! You can put a thermometer there but it is misleading because IR is best measured in calories, not degrees of temperature. We refer to IR as Warp 10, a dumb Star Trek reference.

Then there is smoke, which we think of as a spice or flavoring element. Some of it comes from charcoal (gas has no flavor), but when charcoal is fully engaged it doesn't produce a lot of smoke. Some of it comes from vaporized drippings of juices, fat, and spices. But the most flavor comes from burning wood. We'll discuss this in more detail below.

Once you understand these basics of heat transference you can use them to your advantage. And you thought you left physics behind in high school. To learn more about the chemistry of what happens inside the meat when it is cooking, read Meathead's article on **basic meat science**.

Looking for a new outdoor cooking rig? **Here's a web page with a lot of info, videos, and links on how to select a grill or smoker.**

## CHARCOAL GRILLS

**Charcoal grills** are the most versatile all-purpose outdoor cooker. When set up properly, the good ones can do both high temperature infrared searing, low temperature convection air roasting, and smoking. Their main advantages are that charcoal generates more energy than most gas burners and you can capture more smoke because you have more control over airflow. Gas grills have large permanently open vents so you can't easily contain the smoke, but they can do a respectable job. You just need to burn through a lot more wood.

*If you are using a charcoal grill, set it up for **2-zone cooking**. This is the secret to keeping the temperature down so you don't shrink the proteins and make a dry, tough burger. We consider 2-zone cooking an essential skill.*

To set up your grill for **2-zone cooking**, simply pile pre-heated charcoal briquets on one side of your grill's charcoal grate to create a hot (direct) infrared heat zone on one side and a cool (indirect) convection airflow zone on the other. *Place a digital thermometer probe just above the cooking grate on the indirect side so it feels the same temperature as the meat.* A probe in the dome does you no good unless you plan to eat the dome.



Intake dampers (on the bottom) are more effective at controlling the temperature than the exhaust dampers at the top of the grill because the bottom dampers reduce the supply of oxygen to the coals. So monkey with the intake dampers to control temperatures. Take your time getting the temperature right and try to maintain that temperature throughout the cooking process. [Click here for more info about how to \*\*calibrate your grill\*\*.](#)

Cooking at 225°F will allow the burger to cook low and slow without getting the proteins knotted in a bunch. It's a magic temperature that creates a silky texture, adds moisture, and keeps the meat tender. If you can't hit 225°F, get as close as you can. Practice without food.

While lump charcoal is an option, we prefer briquets because they give us more control over the heat and we are control freaks ([read our article on charcoal to see details](#)). Absolutely do not use the instant igniting stuff that has solvent in it.



**Chimney starters** are by far the best way to start charcoal, especially for long slow cooking where the smell of the solvent in charcoal starter fluid can ruin the taste of the meat. **Read how to start a charcoal fire here.**



If you are shopping for a grill that can also smoke, a great inexpensive solution is the **good old fashioned Weber Kettle**. A stripped down model still costs less than \$150.



With the addition of a device called the **Slow 'N' Sear** for about another \$100, you get a system that can both grill and smoke superbly. The device limits the grill's cooking capacity, but there's still plenty of room for an 18-pound turkey. This accessory corrals all the hot coals behind a water reservoir on one side; the food goes on the cooler, indirect side to smoke-roast at the perfect temperature. When you want to sizzle on the sauce (or sear a steak) you place it right above the glowing coals.



Another favorite of ours is the **Portable Kitchen 360** (a.k.a. PK 360) for about \$800 (above). Its rectangular shape makes it easy to set up in 2 zones and the coals are set close to the cooking grate, making it superb for searing steaks.



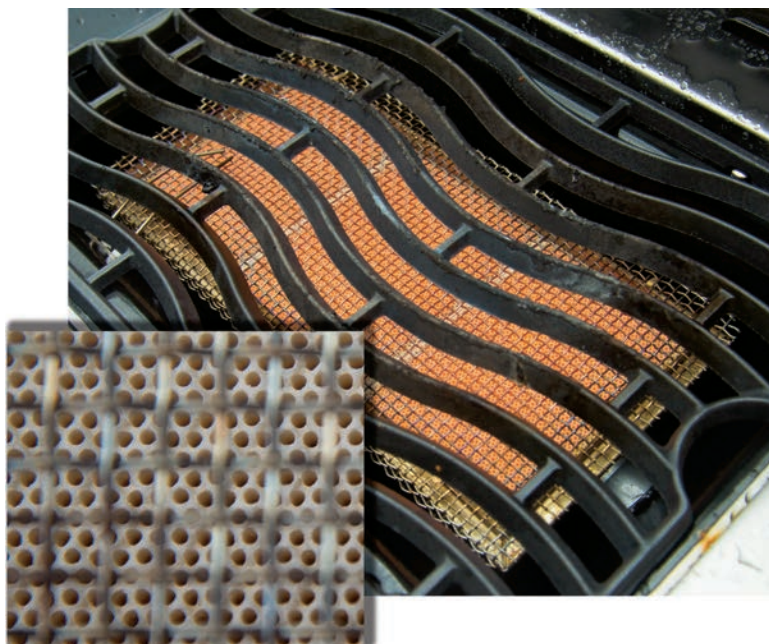
Our all-time favorite is the **Hasty Bake 357** (above) for about \$3,600. It has all the bells and whistles and best of all, you can raise and lower the charcoal grate to control heat. Hasty Bake makes less expensive models you should consider if you fainted when you saw that number.

[Click here to have a look at our top rated charcoal grills.](#)

## GAS GRILLS

If you are using a **gas grill** you can easily create a 2-zone cooking set-up. Most gas grills come with more than one burner nowadays because the concept of indirect cooking is becoming better known. With two or more burners, you can adjust the heat in certain zones by turning one or more dial higher than the remaining one or two dials. For example, in the graphic below you can turn the two burners on the right to medium, medium-high, or high heat while leaving the two burners below to the bird off. You will need to play with the settings to get the desired temperature as every grill varies.

When shopping for a gas grill, the more burners the better. You will appreciate the real estate and the ability to control temperature. Since none of them allow you to control airflow, there isn't a real significant difference between gas grills when it comes to smoking. The big difference among gas grills is their ability to sear at high temperatures. Unfortunately, most gassers just don't generate enough IR to do a great job of searing. A few come with sear burners, but even they are usually anemic. The best sear burners are made of ceramic honeycombs like this one:



For a propane grill, make sure you have a spare tank. Don't risk running out. Natural gas grills never run out because they are connected to the household gas supply.

**[Click here for a look at our top rated gas grills.](#)**

## GRIDDLES



Griddle grilling is arguably one of the hottest sectors of the outdoor cooking market, with several big-name manufacturers now offering up premium backyard griddle units.

And with good reason. Flattop griddles have long been the most valuable player in a diner and many high-end restaurants. Think of it as a giant skillet with multiple heat zones. Chefs around the world love their griddles (a.k.a. flattops or planchas) because they can manage several orders simultaneously: burgers in one heat zone, hash browns in another, eggs in another. Or you can flood the griddle with burgers and do a slew at a time. Great for parties! They also offer excellent temperature control, and boy, can they create a great brown **Maillard** surface. But the real thrill, in my opinion, is the seemingly endless number of dishes you can create thanks to its versatility!

We've kicked the tires on about a dozen griddles, and given them thorough reviews and ratings, all searchable **our handy BBQ gear review database here**. Total square inches of cooking space is what you're looking for. For our calculations, a burger is 4 x 4" with 1/2" on all sides. These numbers apply to charcoal and gas grills too!

Small: Under 320 sq. inches (up to 15 burgers)

Mid-Size: 321-640 sq. inches (up to 30 burgers)

Large: 641-1,500 sq. inches (up to 72 burgers)

**Read the reviews** and find the perfect one!

## SMOKERS

Most smokers cook food entirely with indirect convection airflow. The fire and its infrared energy is away from the food. A few smokers use direct heat but the coals are kept 2 to 4 feet below or to the side. If you can sear directly over the heat in your smoker, it's an ideal 2-zone setup because you can start your burgers at 225°F, bring them up to about 135°F while they take on smoke, and then sear the snot of them over direct heat until they brown, crisp, and reach a safe interior temp of 155°F.

There are many different types of smokers ranging from about \$200 to \$20,000+. Selecting one is a whole other book so let us refer you to **some articles and videos** on [AmazingRibs.com](http://AmazingRibs.com), and our **searchable database of hundreds of smokers** tested by the world's only full-time grill and smoker tester, our very own Max Good. (We don't sell anything, but we do link you to places to buy.)



If you are just getting started and have a limited budget, we recommend the charcoal burning **Pit Barrel Cooker** (above) for

about \$350 delivered to your door fully assembled and ready to go. It accommodates the holiday bird handily.



The 18 inch **Weber Smokey Mountain** (above) is another great choice for about \$330.

**Here's a list of our favorite charcoal fired smokers.**

An excellent choice, but a bit more expensive, would be one of the many high-tech pellet smokers with precision digital temperature controls. They burn small pure sawdust pellets about the diameter of a pencil and function as thermostatically

controlled outdoor ovens with smoke. Just set the temperature and walk away.



Small portable pellet smokers start at about \$400, and full-size smokers about the size of a gas grill start at about \$700.

**Here's a list of all our top-rated pellet smoker models.**

For the very best smoke flavor, **we are partial to log burners.** The good ones are not cheap. They start at about \$800, so please don't be suckered into buying the cheap offset smokers at the big box hardware stores. Below is one of my faves, the Lang reverse flow. Beware, log burners require constant tending and skill. Beginners will make mistakes and ruin a few meals. **Click [here](#) to learn more about offset smokers.**



The odd looking thing below is a **Karubecue**. It employs a number of brilliant innovations that make it the best backyard log burner on the market. It costs about \$1,440 at press time.



The best smoker is a dedicated smoker, but it is not hard to convince a charcoal or gas grill to do it very well, thank you. All you need to do is use a 2-zone set-up and *throw hardwood, fruitwood, or nutwood on the flames and let it burn*. That's right, let it catch fire and burn. You won't see a lot of smoke, but that's what you want. The truth is that billowing white smoke from smoldering wood does not taste as good as "blue smoke," smoke whose particles are so small they don't diffract much light, so the

smoke is thin, pale blue, and practically invisible. Those flames are combusting impurities that impart undesirable flavors. Let it burn!

Never use any kind of pine or sappy, soft wood unless you want meat that tastes like turpentine. Never use construction lumber because it is often treated with poisonous chemicals to discourage rot and termites.

**Click here for a list of our favorite “stick” burners.**

## ABOUT WOOD

Charcoal is not a very good source of smoke. When you first light charcoal it produces an acrid smoke. When it is fully ignited and has a thin coat of white ash, charcoal produces little smoke. That is when you add real wood.

We don't care what you have read, there is no need to soak wood before adding it to a charcoal or gas grill. First of all, it doesn't absorb much water. That's why they build boats from wood! Secondly, all that billowy white smoke is really steam because the wood cannot combust until the water on the surface of the wood evaporates at 212°F. Then the wood can go up in temperature to 500°F+ where it can combust. At that point, it burns with a bright blue and orange flame, making clean blue smoke with few impurities. Invisible “blue” smoke from burning wood tastes better than billowing white smoke from smoldering wood.

Do not overdo it on the wood as too much can result in a bitter and overpowering ashtray smoke flavor in your food. If the result isn't smoky enough for you, add more the next time you cook.

Don't obsess over which wood to use either. The differences are subtle and you should concentrate first on getting quality meat,

trimming it, salting it, rubbing it, temperature control, and sauce management. Wood theory is a book length topic unto itself, so if you want to know more and learn why we tell you not to obsess over wood types, [click here to learn about combustion and the different kinds of wood and smoke](#).

On charcoal or gas cookers, start with 4 to 8 ounces by weight of **chunks, chips, or pellets** for a mild smoke flavor that complements the meat and seasoning without overwhelming. No matter how much food you are cooking, 8 ounces should be enough. You don't have to be precise, just measure it in some fashion so you have a baseline for your next cook. Then you can add or subtract if you wish.

For a gas grill, there are a variety of wood chip boxes, **smoker pouches (like Mo's steel mesh pouch pictured)**, and wood pellet smoker tubes that you can use, but a simple disposable aluminum pan sitting on top of the burners works fine. Just poke some holes in the bottom.



## OTHER BURGER TOOLS

You don't need much in the way of equipment to make great

burgers. It's mostly in the meat and the technique. But two standard outdoor cooking tools will help tremendously.



**Invest in decent thermometers.** A digital remote thermometer will help you hit your target cooking temperatures in your cooker. And an instant-read type will make sure you've hit a safe 160°F internal temp in your burgers. This ThermaPro TP-15 Instant Read Thermometer won our Platinum Medal and sells for less than \$15 on Amazon. **Click this link for a buying guide to thermometers with more than 150 test results from our on-staff electrical engineer.**



**Buy a sturdy spatula.** You want one wide enough to handle a 5" diameter burger, sharp enough at the front edge to get under the meat without ripping it, and stiff enough to handle at least a half pound of meat. If you're making smashburgers, the spatula's blade needs to be especially sharp and beveled at the edges to get under the meat, and the shaft leading up to the handle must be stiff enough to withstand the aggressive force of pressing on the burgers. Griddlers might also consider a diner-style spatula with a slightly longer blade to use like a bench scraper when frying and moving around veggies and such. Tongs are often bundled with grill spatulas, and they're handy to have as well. **Here's a buying guide with reviews and ratings of our favorite spatulas and tongs.**



**Grill gloves help.** Skin burns are nasty. Especially if you're griddling and there's burger grease splatting everywhere. Pick up a pair of gloves like these leather welder's gloves to protect yourself from flames and hot grease. **Here's a buying guide with reviews and ratings of our favorite heat-resistant gloves.**

THE (GREASE-STAINED) CHEAT  
SHEET



*“Good wine, good meat, thank God, let’s eat.”*

*Prayer said at many dining tables*

**A**nd you thought you could just throw a couple frozen patties on your gas grill! As you’ve seen, reaching burger nirvana takes a bit more finesse. It will take some practice. We’ve thrown a lot at you, so here’s a quick summary. This cheat sheet comes, in part, from my newest book, *The Meathead Method: A BBQ Hall of Famer’s Secrets and Science on BBQ, Grilling, and Outdoor Cooking with 114 Recipes*. *The Meathead Method* is a toolbox to elevate all your cooking, outdoors and indoors. It show you how to use out-of-the-BBQ-box ingredients like black garlic, gochujang, yuzu, miso, zhug, and tare sauce with innovative recipes and many more techniques than we’ve discussed here. **Read more about The Meathead Method and buy the book here.**

## BURGER MEAT

- Avoid buying meat labeled “hamburger” or “ground beef.” They are substandard quality.
- Don’t bother with Wagyu for burgers. Wagyu’s great benefit is tenderness and fat. A burger is ground. You can’t get much more tender than that. And in a burger, you can control the fat. If you can get it, however, wagyu fat is nice for mixing into your burger blend.
- Freshly ground meat is better than frozen.
- You can ask your butcher to grind it for you or, better yet, grind it yourself.
- Choose a flavorful cut of beef (or blend) like chuck, short ribs, flank, skirt, and/or brisket. Aim for a ratio of 80/20 to 70/30 (80% meat/20% fat to 70% meat/30% fat). Ground chuck is a good all-around choice at about 20%

fat. But for the most flavorful, juiciest burgers, regardless if the cuts in your blend, add enough fat to make it 30%.

- You can add butter, but beef fat is better. You want fresh white fat, not yellow fat. You can also use beef fat to coat your griddle or pan if you are making smash burgers.
- Don't grind it too fine. Many recipes say grind twice. Don't do it. You want to leave sections of muscle intact for moisture retention and texture.

## PORTION SIZE

- Fast-food burger: 3 to 4 ounces
- Pub burger: 5 to 7 ounces
- Steakhouse burger: 8 ounces or more
- 5 to 7 ounces is the ideal weight for grilled burgers

## MIX-INS

- Do not mix salt into the patty. It compacts the meat and makes it tougher. But absolutely do sprinkle salt on the surface just before cooking.
- Consider other mix-ins. Chop some onion or bacon and mix it with the meat. They bring moisture, flavor, and sweetness. Keep in mind that bacon brings some salt.
- I like to mix in MSG (monosodium glutamate): 1/2 teaspoon of Ac'cent or Aji-no-moto per pound of meat. It amplifies flavor.
- If you wish, you can mix in unsalted seasonings like garlic powder. But don't go crazy with mix-ins. You want a beef burger, not meatloaf.

## SHAPING

- For smashburgers, just shape the meat into balls, then smash them flat on the griddle.
- For raw patties, don't pack the patty tight. You want air pockets where juices can hide.
- Keep the patties cold until you are ready to cook.

## THE GRILL OR GRIDDLE

- For the best combination of smoke flavors and seared meat flavors, use a smoker, charcoal grill, or gas grill with a 2-zone setup.
- If you're buying new equipment, plan on getting enough surface area to handle food for a party. Here's how many burgers fit on small, mid-size, and large grills and griddles. Divide by 2 to see how many burgers you can handle in a 2-zone setup.

**Small:** Under 320 square inches (up to 15 burgers)

**Mid-Size:** 321-640 square inches (up to 30 burgers)

**Large:** 641-1,500 square inches (up to 72 burgers)

## COOKING

- Use the 2-zone cooking system. This method makes it easier to A) cook the burger interior to safe doneness temperature and B) sear the exterior for superior flavor. To create 2 cooking zones, have one side of the grill hot with direct heat below, the other not so hot with no flame below. This gives you temperature control. You can

move the burgers from the hot side to the cooler side.

Steakhouse burgers can be **reverse seared**.

- With the 2-zone setup, start your burgers at 225°F in the indirect heat zone, bring them up to about 135°F internal temperature, and then sear the snot out of them over direct heat until they brown, crisp, and reach a safe interior temp of 155°F.
- For smoke flavor, give your burger 15 minutes on a smoker or in a cloche with a smoking gun at its lowest possible temperature before searing.
- If you have a 20% fat burger blend, throw a chunk of beef fat on the flame or coals. It will vaporize and flavor the meat.
- If you have a 30% fat blend, press it with a spatula during the searing phase for a better sear and more flavor from fat dripping onto the coals.

## DONENESS

- All burgers have something in common: Because of the risk of contamination from the surface of the meat being ground up and mixed into the center, they all must be cooked to 155°F minimum unless the meat has been pasteurized.
- Cooking burgers to less than 155°F is a health risk. But you can eat a medium-rare burger safely if you buy irradiated meat or buy a steak and some fat and dunk them in boiling water for 20 seconds or so to pasteurize, then grind a 30% fat blend yourself.

## BUILDING THE SANDWICH

- Butter and toast your buns over medium direct heat. I prefer brioche buns.

- Add cheese to the burger just before it's done so it melts.
- Use quality condiments, but don't hide the beef flavor with a lot of junk.
- Avoid mushy buns by putting lettuce on the bottom, followed by the burger, other toppings, sauce, and the top bun.
- It will take several practice runs to get your technique down. Be patient and persistent. Get it right and you are a hero.

PART II  
BURGER RECIPES



Here are some of our favorite recipes for burgers done every which way: Seared over charcoal, grilled with gas, griddled,

smashed, smoked, and stuffed. We included some of our favorite burger sauces, seasonings, toppings, bottomings, cheese, buns. It helps to get familiar with some of the conventions we use across all our recipes. Notice that many ingredients have links to articles with more info about them.

**Tinkering.** We know you like to tinker. *Do us and yourself a favor, try our recipes our way with no changes the first time.* You will then have a memory of what the recipe is *supposed* to taste like.

If the recipe calls for regular old fashioned granulated white sugar, don't use brown sugar. If it calls for boring old distilled white vinegar, don't reach for the cider vinegar. We worked very hard to perfect and test these recipes and some substitutions just don't work. After you've tasted the dish the way we intended it to taste, then the next time you make it, riff on it however you want. Here are some key steps to creating a successful dish.

**Timing.** Prep times include all the washing, measuring, chopping, and peeling. Cooking times are our best guesstimates based on our tests, but keep in mind, this is food, not a widget, and two seemingly identical burgers may cook at different rates. No two cookers are exactly alike. Weather, humidity, and wind also impact outdoor cooking times. **Click here to read more about what influences cooking time.**

**Wood.** We have not specified precisely how much wood you will need or what type of wood to use for smoking because the strength and flavor of wood depends on many variables, including the nature of your cooker and your preferences. Go easy at first. A meal is never ruined by too little smoke. We strongly recommend that you use the same wood and fuel for a year until you have all the other variables under control. **Here's a good article on combustion, smoke, and why you shouldn't worry about what type of wood to use.** Measure wood and keep records with a cooking diary (**you can download one here**).

**2-zone almost everything.** It bears repeating: For most recipes on a grill, we recommend **2-zone cooking**. *The indirect convection heat zone is for slow roasting and smoking.* It is cooler and acts as your safe zone when burgers finish early or if they are cooking too fast. Whenever cooking over indirect heat, we always specify an air temperature, usually 225°F or 325°F. You need a good digital oven thermometer with a probe placed on the cooking surface near the food. A built-in dial-style thermometer in the dome cannot be trusted.

*Over the direct infrared radiant energy zone, we want lots of power for searing. “Give ‘er all she’s got, Scottie.”* For searing, we usually do not specify the temperature because most cooking thermometers cannot go high enough and infrared radiant energy is best measured in calories rather than temperature. Moreover, the direct radiant heat side is usually only being used for searing and browning the surface. The food isn’t there for long. We sometimes call cooking by direct infrared radiant heat Warp 10 in homage to Star Trek.

**Lid position.** Almost all the recipes in this book require you to cook, roast, bake, and smoke with indirect convection heat with the lid down. In most cases when we ask you to sear, the food is over direct infrared radiant heat, and the lid is up.

**Some recipes call for cooking in a pan or pot.** You can do that on the direct heat side or on your side burner, or, horrors, indoors. We strongly recommend that you have a frying pan and a sauce pan set aside just for outdoor cooking. You can cook with your best expensive pots and pans, but sometimes they fall, or get scorched, and we don’t want to risk the wrath of a spouse by ruining a wedding gift.

**Salt.** We use Morton Coarse Kosher Salt. No Morton did not pay us. Different salts have different grain size and that can influence salinity when measured by volume (teaspoons, tablespoons, cups) rather than weight. We wanted to standardize on one salt,

and the grain size of Morton Coarse Kosher Salt makes it easy to pinch and scatter. If you substitute table salt, cut the quantity in half since it is more concentrated. **Click here to learn more about the science of salt and see a conversion calculator for different salt types.**

**Black pepper** is always best when ground fresh. Ditto for other spices that start out as seeds.

**Butter** is usually unsalted in our recipes. We prefer to control the salt content precisely without the wild card of an unknown quantity coming from the butter. That said, if you use salted butter, there is so little that the recipe will probably turn out fine, especially if you cut back a tad on other salt.

**Eggs** are large.

**Flour** is all-purpose flour.

**Fruits and vegetables** are medium size, and they should always be fresh and scrubbed with cool water.

**Garlic powder** is pure garlic powder, never garlic salt, which has salt in it. You should control salt separately.

**Mayonnaise.** Never substitute Miracle Whip for mayonnaise. The chemistry is very different. Among other things, Miracle Whip has two kinds of sugars, mayo has none.

**Milk** is whole milk. You can get away with 2% in many cases, but not skim milk, soy milk, almond milk or any other substitutes. If we call for half-and-half or cream, it is because we think the fat is important to the chemistry. You can probably substitute one for the other, but don't use milk.

**Sugar** is granulated white sugar. Sugar is a common ingredient in spice blends and sauces because it is a flavor enhancer, it helps browning, and it encourages crust formation. When we want brown sugar, we will call for it.

**Ingredients** are listed in the order in which the recipe calls for them. If you see the term “divided” it means that the ingredient will not be used all at once.

**Mise en place.** Always practice *mise en place* (i.e. putting everything in its place). Gather all your ingredients and chop, slice, and dice before you apply heat to anything. You don’t want to be scrambling to chop an onion while things are cooking in the pan. This is a vital foundation level concept.

**Watch This.** Here’s a fun video of how you can safely serve medium rare burgers.





## THE PERFECT PATTY SIMPLIFIED



Take all of the guesswork out of cooking the perfect burger. Think of this as a blueprint. From here, the sky's the limit.

**Makes.** 2 steakhouse burgers and 4 diner burgers

**Takes.** 20 minutes prep, 10 minutes cooking

1 pound ground steak, 20 to 30% fat

1/4 teaspoon freshly ground black pepper

1/4 teaspoon onion powder

1/4 teaspoon garlic powder (not garlic salt)

**2 buns**

1/2 teaspoon **Morton Coarse Kosher Salt**

### **Your choice of toppings and bottomings**

***About the meat.** My favorite is ground short ribs. If you can get it boneless, you still need to remove the silverskin just below the top fat cap. It is more common bone-in, so you need to buy almost double what you need because you need to remove the silver skin, the bones, and the leathery cartilage wrapped around them. If rib meat is not available, go for chuck at least 20% fat, I prefer 25-30%.*

**1 | Prep.** For Steakhouse Steakburgers, put the meat in a bowl, sprinkle in the spices and stir it with a fork to keep it fluffy. For Diner Burgers or smash burgers you can mix them by hand and pack them tight.

**2 | Forming the patties.** Learn to make uniform sized burgers every time so you can get a sense for how long it takes to cook them properly. Do not use cold water on your hands as is popularly advised. We don't want wet meat which can also retard crisping.

Steakhouse Steakburgers go around 8 ounces each and pack them loosely with your hands so there are pockets to hold the juices.

For Diner Burgers, about 4 ounces each, cooked on a griddle or in a pan for maximum surface browning you need to pack them a bit tighter. Make 4 ounce balls and chill them in the fridge for 30 minutes or more. The cold center will help keep them from

overcooking. If you wish, you can use an ice cream scoop. They have numbers on them. A #8 holds 4 ounces. Two scoops and you've got a Steakhouse Steakburger.

3 | Toast the buns.

4 | Salt the patties just before you put them on the grill.



# THE ULTIMATE STEAKHOUSE BURGERS



Create the best thick juicy crispy steakburger you ever tasted.

**Makes.** 2 burgers

**Takes.** 30 minutes prep, 40 minutes cooking

1 pound loosely ground short rib meat or chuck steak or a blend,  
20 to 30% fat

1/4 teaspoon freshly ground black pepper

1/4 teaspoon onion powder

1/4 teaspoon garlic powder (not garlic salt)

1 ounce of finely raw chopped bacon

1/2 teaspoon **Morton Coarse Kosher Salt**

**2 buns**

2 iceberg or Romaine lettuce leaves, cold

2 slices of raw Vidalia, Walla Walla, or red onion, about 1/8"  
thick, broken into rings

2 slices of a wide tomato

2 tablespoons **Meathead's Burger Glop**

**1 | Prep.** Get a pad and a pencil and keep it nearby so you can take notes until you have the process mastered. Prepare the toppings and bottomings and have them ready but keep them cold in the fridge. When you are cooking, you want to be focused on the meat, not fussing around setting the table.

Mix the black pepper, onion, and garlic powder, and chopped bacon in a small bowl. No salt yet. It can compress the meat and we want it loose to hold the juices. Spread the meat out on a plate and sprinkle the spices onto the meat distributing it evenly. Mix it in. Gently form balls of meat about 2" across and weigh them. Adjust to 8 ounces each. Try to smooth over deep crevices. Deep cracks allow heat to penetrate to the core too quickly. Gently press them into disks about 4" wide. The burger should have air pockets for juices to gather and to keep it tender. Don't use a hamburger press.

**2 | Fire up.** Set up your grill for **2-zone cooking**. The indirect side should ideally be about 225°F. Try to keep it under 250°F. On a charcoal grill, push all the coals against one side of the grill and raise them up. I like to get the coals about 1" below the food grate. The **Hovergrill** is a great way to get the coals up high on a Weber Kettle. You can also use bricks to raise the lower charcoal grate. On a gas grill, turn one or two burners on high and leave the others off. Locate the spot on the surface where the temp is close to 225°F. That's where the meat will go. When the food grate is hot, clean it well with a **brush or another tool**.

**3 | Cook.** Place wood chips or pellets on the coals or, if you are using gas, in a packet or aluminum pan as close to the hot burner as possible (read my article on **The Science of Wood**). Place the burgers on the indirect side. If you are cooking bacon to place on top, put 2 strips per burger on the grill in the indirect zone near the burgers. Close the lid and leave everything alone. Cook about 10 minutes.

Put on a heat resistant glove and push the tip of your thermometer in the side, go past the center, and slowly back it out. The lowest temp is the one that counts. Check all burgers. You may discover that one is moving faster than the other. At about 105°F (41°C), turn the burgers over, cook another 10 minutes and poke it gently again. Notice how it has stiffened.

I like to **butter and toast my buns**, so now's the time to put them on the indirect side. Do not walk away. They can go black in a hurry. When they are done, you can set them aside.

When the burgers are about 20° below the temp you want (**see my award winning Food Temperature Guide**), sprinkle them generously with salt and move them to the direct zone. If you are on a gas grill, crank it to Warp 10. If necessary take the meat off while the hot side heats up, lid down. Flip the meat every minute, acting like a human rotisserie, so all the energy is expended on one surface at a time, not on cooking the interior.

The interior will warm, but not too much. Remove the burgers when the interior reaches 5° below the desired temp. Don't overcook them while waiting for the second side to be perfect. I know that frequent flipping flies in the face of every cookbook but it is a simple matter of physics and food scientists have proven this.

**4 | Serve.** To prepare the burgers, spread **burger glop** on the bottom so it can help hold the burger in place. Remember, you have only two fingers on the bottom and eight on top, so you want to put the slippery stuff on top. The glop will also help keep the juices from destroying the bun. Add the burger patty and any toppings then crown with the top bun.

Grasp the sandwich with both hands, and no matter what Momma told you, put both elbows on the table. Push your chair back a few inches so you are leaning forward over the bowl. Try to keep the juices off your shirt.

## DINER BURGERS



Diner Burgers are small disks, 4 ounces (quarter pounders) or less, as opposed to big thick Steakhouse Steakburgers. This style of pressed burger has also become known as a smash burger.

**Makes.** 4 burgers

**Takes.** 30 minutes prep, 6 minutes cooking

1 pound finely ground chuck steak or short rib meat, at least 20% fat

1/4 teaspoon freshly ground black pepper

1/4 teaspoon onion powder

1/4 teaspoon garlic powder (not garlic salt)

1 tablespoon beef fat, bacon fat, or vegetable oil

#### 4 **hamburger buns**

2 tablespoons butter

4 slices of American cheese

4 thin slices of sweet onion

4 leaves of crunchy lettuce

#### **Meathead's Burger Glop**

**1 | Prep.** Place the meat in a large mixing bowl. If you are grinding the meat yourself, use the smaller holes on your grinder, or grind the meat twice so that the burgers are compact and hold together well.

Mix in the pepper, onion powder, and garlic powder in a bowl using a fork or your hands. Pack the meat into a ball about 2-inches (51 mm) across. A #8 ice cream scoop is 2.75-inches when leveled, holds just about four ounces. Use a scoop or a kitchen scale or a ruler until you can make the right size balls blindfolded. Then put them in the fridge for about 20 minutes before cooking so the center does not cook as quickly.



**3 | Fire up.** Preheat a griddle or heavy frying pan to about at least 350°F. We want it well above 300 to 310°F.

**4 | Cook. Toast the buns.**

**5 | Melt** some beef fat, bacon fat, or pour some vegetable oil on the griddle. You want just a thin coat. Do not use butter. It has too much water in it. When the oil begins to smoke, add the burger balls, and press down with a solid spatula so there is good contact between the meat and the surface and so the edges are jagged. There are even burger smashers you can buy.



A slotted spatula will not do the job. You need to smash the burger soon after the patty goes on, and not again until you flip. We don't want to squeeze out hot juices. After smashing, quickly work the spatula or a spoon along the edges, pressing down so they are ragged, thin, and make good contact with the surface. We're going for brown edges here. Sprinkle the top side with salt. Leave the lid open and back away. Don't touch the burgers for about 3 minutes. Maybe 5 minutes, depending on how hot your pan gets. You want them in intimate contact with the surface.

Now it will take you a couple of tries to know exactly when to flip, so at first you may have to peek. The bottoms should be dark brown. If they are, gently work a clean spatula under the

burgers, pressing on the griddle to make sure you don't leave brown bits behind and that they don't break apart. I sharpen my spatula on a grinder to make sure the edges don't leave brown bits behind. Flip the burgers and press them into max contact with the surface. No need to salt if you salted the other side. If you are making a **cheeseburger**, place the cheese on now and close the lid on the grill. If you are working indoors, place a mixing bowl, pie pan, pot, or disposable aluminum pan over the burgers to speed the melting of the cheese. Check the color of the bottom after 2 minutes. Don't take them off until the surface is right, even if you fear the interior is overcooking. If you got 20 to 30% fat meat and you didn't cook too hot, they'll be juicy.

**6 | Serve.** Once they are fully cooked, place each patty on a bun along with onion and lettuce, then dress with **Meathead's burger glop** before serving.



## OKLAHOMA SMASHBURGERS



During the Depression, meat was too expensive to be consumed casually, so, legend has it, Ross Davis of the Hamburger Inn on Route 66 in El Reno, Oklahoma, came up with a Nobel Prize-worthy innovation. He decided to beef up his 3-ounce burger by griddling it on a mound of onions. This not only saved money,

but the caramelized onions make the meat surprisingly tasty. Not to mention the crispy edges on the patty. Although the original Hamburger Inn in El Reno closed, Sid's Diner, Johnnie's, and Robert's Grill (since 1926) have carried on the tradition. In about 1938, a second location of the Hamburger Inn opened a two-hour drive south in Ardmore and is still going strong. You can do this the traditional way on a griddle or, if you don't have a griddle, you can do this in a frying pan. It spatters, so put the frying pan on the grill.

*Note: This recipe is from [The Meathead Method: A BBQ Hall of Famer's Secrets and Science on BBQ, Grilling, and Outdoor Cooking with 114 Recipes](#). You can [read more about the book and buy it here](#).*

**Makes.** 2 burgers

**Takes.** 20 minutes to prep, 20 minutes to cook

**Special tools.** Big heavy flat spatula with a sharp edge. Have some parchment paper on hand to put between the spatula and the burger to keep the meat from sticking to the spatula.

1 stick (4 ounces) butter

1/2 pound coarsely ground beef chuck (80% lean)

1/2 pound yellow or white onions

2 old-fashioned hamburger buns

2 tablespoons beef fat, clarified butter, bacon fat, or vegetable oil

1/2 teaspoon **Morton Coarse Kosher Salt**

1/2 teaspoon medium-grind black pepper

2 American cheese singles

8 dill pickle chips

**1 | Prep.** Take the fat out of the fridge and let it come to room temperature. Divide the beef into 2 equal portions and make them into 4-ounce balls. Peel the onions, slice them in half, cut off the ends, and then slice the onions as thin as possible. If you have a mandoline, use it. Divide the onions into two piles, each about 3 ounces.

**2 | Fire up.** Fire up the griddle to about 375°F as measured with an infrared gun. If you don't have one, a few drops of water on the griddle should dance around and vaporize rapidly. You will need to work fast, so make sure you take all the ingredients and tools out with you.

**3 | Toast the buns.**

**4 | Cook the burgers.** Put 1 tablespoon of beef fat for each burger about 6 inches apart on the griddle. When it has melted, place the underside of your spatula in the fat so it is greased on one side. Slap each ball of meat onto the oiled metal, and pile the onions on top so you can't see any meat. Smash down on the onions and meat with the spatula until each patty is about 4 inches in diameter. Tilt the spatula and work the edges so they are as thin as possible. If some onions hang over, that's OK. Sprinkle the salt and pepper on top. Let the patties cook for a few minutes until the edges turn browned and crispy. If the burgers cling to the spatula place a square of parchment paper over them.

**5 | Flip the burgers.** Work the spatula gently under the edges of the patty all around, pressing hard against the griddle until the burger lifts free. Try not to leave any of that hard-earned Maillard behind. Flip the burgers so the onions end up underneath. A second spatula comes in handy to help with this, or just place your hand on the onions to hold them in place. They're not too hot. Place the top buns on top of the meat and leave them there for a minute until they steam and warm and absorb onion and beef aromas.

**6 | Add the cheese and serve.** Lift the buns, place the cheese on the burgers, and if you have a dome or a pan, place that over the burgers to help melt the cheese. Otherwise just close the lid. When the onions are good and caramelized and the cheese is melted, place the bottom buns on top of the cheese, and then flip the burgers onto the bottom buns cheese side down. Add the pickle slices on top of the onions, then place the top buns on, and slide the whole thing onto serving plates. Some folks in Oklahoma put mustard on their burgers, but that masks the meat and onion flavors too much for me.

## JALAPEÑO BACON CHEDDAR BURGERS



Experience a flavor explosion with this recipe for a Cheddar cheeseburger topped with candied jalapeños, bacon, and French fried onions on a pretzel bun slathered with balsamic ketchup.

**Makes.** 2 burgers

**Takes.** 15 minutes prep, 1 hour cooking

### *Balsamic Ketchup*

1/4 cup ketchup

2 tablespoons **balsamic vinegar**

1 tablespoon brown sugar

### *The Burger*

1 pound ground chuck

1 teaspoon **Morton Coarse Kosher Salt**

2 slices sharp cheddar cheese

### **Candied jalapenos**

Crispy fried onions such as French's French Fried Onions

4 slices thick sliced bacon, cooked

2 hamburger buns, preferably pretzel rolls

**1 | Prep.** For the balsamic ketchup, combine the ketchup, balsamic vinegar, and brown sugar in a small bowl and blend well. Set aside until ready to use.

Divide the meat into two 8-ounce portions. Gently form the meat into patties. Season both sides of the patties with salt.

**2 | Fire up.** On a charcoal grill prepare it for indirect cooking by placing a chimney full of pre-heated charcoal briquets on one side of the grill's charcoal grate in order to create direct and indirect cooking zones. Adjust the grill vents to bring the temperature to about 225°F on the indirect side. Add 2 to 3 chunks of your favorite smoking wood to the charcoal for flavor. On a gas grill, adjust the temperature knobs so that one half of

the grill is off and the other half is heated enough to maintain a temperature of approximately 225°F on the indirect side.

**3 | Cook.** Place the burgers on the indirect side of the grill, positioning the vent directly above the burgers in order to force the smoke over and around the meat. Cook the patties for about 10 minutes.

When the burgers are about 20° below the final doneness temp you want get ready to move them to the direct-heat zone. If you are on a gas grill, crank it up to high. On a charcoal grill, you may want to add more pre-lit coals. If necessary, take the meat off of the grill and close the lid while the hot side heats up.

Put the burgers on the direct heat side to brown them. Leave the lid up so the heat is concentrated on one side of each burger. If the fire flares up, move the burger to another spot. Flip the meat every minute to form a nice crust on both sides.

When the interior reaches 5° below the desired doneness, add a slice of cheese to each burger, and let them cook until the cheese melts, approximately 2 minutes.

**4 | Serve.** To assemble the burgers, place each patty on a bottom bun and top with jalapeños, crispy fried onions, and bacon. Spread the balsamic ketchup on the top buns before placing on the burgers. Serve immediately.



## BOURBON BACON JAM BURGERS



*By Clint Cantwell,*

Ordinary bacon cheeseburgers have got nothing on our bacon jam burger! If you've never had bacon jam, get ready for flavor bliss! Much like the highly popular candied bacon craze, bacon jam highlights the way in which sweet and savory flavors combine for a taste that is truly special.

**Makes.** 2 burgers

**Takes.** 15 minutes prep, 1 hour cooking

### *Bourbon Bacon Jam*

- 1 pound bacon
- 1/2 cup diced sweet onion
- 1/2 cup brewed coffee
- 1/4 cup bourbon
- 1/4 cup cider vinegar
- 1/4 cup brown sugar, packed
- 1/4 cup pure maple syrup

### *The Burger*

- 1 pound ground chuck
- 1 teaspoon **Morton Coarse Kosher Salt**
- 4 slices baby Swiss cheese
- 2 hamburger buns, preferably **brioche**
- Lettuce (optional)
- Sliced tomato (optional)

**1 | Cook.** To prepare the bourbon bacon jam, cut the bacon into 1-inch pieces. Cook the bacon in a large skillet over medium-high heat, stirring frequently until the fat is rendered and the bacon is browned. Remove the bacon from the skillet and place on paper towels to drain. Remove all but one tablespoon of the bacon grease from the skillet. Add the diced onions and cook until they are soft and translucent. Add the coffee to the skillet and use a spoon to scrape the browned bits from the bottom of the pan. Add the bacon, bourbon, vinegar, brown sugar, and maple syrup to the skillet. Reduce the heat to low and simmer until the mixture is thick like a syrup, approximately 15 minutes.

Transfer the mixture to a blender or food processor and pulse until coarsely chopped. Use within an hour, or the jam can be refrigerated in an airtight container for up to four weeks.

**2 | Fire up.** Prepare a grill for indirect cooking by placing a chimney full of pre-heated charcoal briquets on one side of the grill's charcoal grate in order to create direct and indirect cooking zones. Adjust the grill vents to bring the temperature to about 225°F on the indirect side. Add 2 to 3 chunks of your favorite smoking wood to the charcoal for flavor. On a gas grill, adjust the temperature knobs so that one half of the grill is off and the other half is heated enough to maintain a temperature of approximately 225°F on the indirect side.

**3 | Prep.** Divide the meat into two 8-ounce portions. Gently form the meat into patties that are approximately 1/2-inch wider than the bun to allow for shrinkage during the cooking process. Season both sides of the patties with kosher salt.

**4 | Cook again.** Place the burgers on the indirect side of the grill. Cook the patties for about 10 minutes.

When the burgers are about 20° below the final doneness temp you want (see [AmazingRibs.com](http://AmazingRibs.com)'s award winning Food Temperature Guide), get ready to move them to the direct-heat zone. If you are on a gas grill, crank it up to high. On a charcoal grill, you may want to add more pre-lit coals. If necessary, take the meat off of the grill and close the lid while the hot side heats up.

Put the burgers on the direct heat side to brown them. Leave the lid up so the heat is concentrated on one side of each burger. If the fire flares up, move the burger to another spot. Flip the meat every minute to form a nice crust on both sides.

When the interior reaches 5° below the desired doneness, add two slices of baby Swiss cheese to each burger and let them cook until the cheese melts, approximately two minutes.

**5 | Serve.** To assemble the burgers, place each patty on a bottom bun and, if desired, add lettuce and/or sliced tomato. Spread a thick layer of bourbon bacon jam on the top buns before placing on the burgers. Serve immediately. Note that any remaining bacon jam can be used for grilled cheese sandwiches, on crostini, and more.

## UMAMI BOMB BURGERS



*By Max Good*

Our equipment guru, Max Good, the world's only full-time grill and smoker tester, created this one. Ingredients like bacon, Parmesan cheese, and Ac'cent amp up the savory umami taste in this burger recipe.

**Makes.** 4 burgers

**Takes.** 1 hour prep, 5 minutes cooking

*Bacon BBQ Sauce*

8 slices bacon, cut into 1" pieces

1 cup tomato based mild BBQ sauce such as my own **Black Swan Sweet Cognac Sauce**

2/3 cup prepared mayonnaise

3 tablespoons grated parmesan cheese, preferably Parmigiano-Reggiano not the tasteless sawdust in a green tube

1 1/2 tablespoons Dijon mustard

*Vegetables and Buns*

16 crisp cold **bread and butter** sweet pickle chips

1/2 tablespoon crushed red pepper flakes

4 leaves bibb lettuce, washed

4 slices red onion, about 1/8" thick

4 slices ripe tomato, about 1/4" thick

4 Kaiser or **brioche buns**

*Meat*

2 pounds ground meat (such a beef chuck and/or short rib at 20% to 30% fat)

2 teaspoons **Morton Kosher Salt**

1/2 teaspoon **MSG** (Ac'cent)

*About the MSG. Produced commercially since the early 1900s, MSG has gained popularity throughout the world as a flavor enhancer. Some people believe it causes headaches, but it has never been proven. **Read more about the science of MSG here.***

**1 | Prep.** Make and prep all the toppings ahead of time, including the Bacon BBQ sauce, Umami Mayo, the veg, and the toasted buns. You want everything ready, so the burgers can be assembled as soon as the meat is finished cooking.

For the bacon BBQ sauce, begin by cooking the bacon in a covered pan over low heat until crisp, 5 to 8 minutes. Remove the bacon with a slotted spoon or tongs and drain on paper towels. Discard the grease from the pan and quickly wipe out the pan with paper towels. Return the bacon to the pan and pour in the BBQ Sauce. Heat the bacon and sauce over low heat, until heated through, about 5 minutes. Stir now and then to prevent any sticking. Cover the pan and leave the bacon sauce on the stove.

For the umami mayo, whisk together the mayo, Parmesan, and mustard. Cover and refrigerate until needed. You can also make the mayo up to 2 days ahead.

To make the spicy sweet pickle chips, combine the pickle chips and red pepper flakes in a bowl, stirring thoroughly. Cover and refrigerate until needed. You can also make these up to 2 days ahead.

Prep the lettuce, tomato and onion, cover and keep them in the fridge until needed, up to 2 hours.

Divide the meat into four 8-ounce (227 g) portions. Gently form the meat into patties that are approximately 1/2-inch (1.3 cm) wider than the bun to allow for shrinkage during the cooking process. Sprinkle salt and MSG on each side. Cover and refrigerate until ready to cook.

**2 | Fire up.** Prepare a grill for **2-zone cooking** by placing a chimney full of pre-heated charcoal briquets on one side of the grill's charcoal grate in order to create direct and indirect cooking zones. Adjust the grill vents to bring the temperature to about 225°F on the indirect side. Add 2 to 3 chunks of your favorite smoking wood to the charcoal for flavor. On a gas grill, adjust the temperature knobs so that one half of the grill is off and the other half is heated enough to maintain a temperature of approximately 225°F on the indirect side.

**3 | Toast the buns.** Lightly toast the inside of the buns over direct heat for 1 to 2 minutes. Remove and slather 2 to 3 tablespoons Umami Mayo inside both the top and bottom buns. Put the bottom buns on a serving platter and the top buns off to the side. On each of the bottom buns, place 1 slice of red onion topped with 4 spicy sweet pickle chips.

**4 | Cook the burgers.** Place the burgers on the indirect side of the grill. When the burgers are about 20° below the final doneness temp you want (**see [AmazingRibs.com](http://AmazingRibs.com)'s award winning Food Temperature Guide**), get ready to move them to the direct-heat zone. If you are on a gas grill, crank it up to high. If you have a pellet cooker or another grill that doesn't have enough radiant heat to sear, put a cast iron pan or griddle in there: when the griddle collects a lot of heat, it can do the job.

Put the burgers on the direct heat side to brown them. Leave the lid up so the heat is concentrated on one side of each burger. If the fire flares up, move the burger to another spot because flare ups can deposit bad-tasting soot. Flip the meat every minute, acting like a human rotisserie, so all the energy is focused on one

surface at a time. The interior will warm, but not too much. Remove the burgers when browned and the interior reaches 5° below the desired doneness temperature. Don't overcook them while waiting for the second side to be perfect. If one side is paler than the other, that's acceptable.

**5 | Serve.** When the burgers reach the desired internal doneness, place one patty on each of the pre-assembled bottom buns. Give each burger a grinding or two of coarse ground black pepper. You salt fiends should hold off on "salting to taste" because these babies pack quite a savory wallop as is. Top each patty with a generous spoonful of Bacon BBQ sauce, 1 slice of tomato, 1 piece of lettuce and an umami mayo slathered top bun. Whammy!



## PIMENTO CHEESE BURGERS



Popularized in Columbia, South Carolina, home of the University of South Carolina Gamecocks, and found on menus throughout the South, this cheeseburger is defined by a rich and creamy spread called pimento cheese, comprised of cheese

(either cheddar or processed cheese), mayonnaise, and **pimentos**. For this particular twist on the pimento cheese burger, we begin with ground chuck that has been grilled to perfection using the reverse sear technique. For the pimento cheese, we add smoked cheddar cheese for additional depth as well as cream cheese for extra creaminess. Combine the patty and pimento cheese on a buttery brioche bun and you've got a burger that would make any Gamecock proud!

**Makes.** 2 burgers

**Takes.** 10 minutes prep, 25 minutes cooking

8 ounces shredded cheddar cheese, about 2 cups

4 ounces softened cream cheese

1/3 cup mayonnaise (preferably **Duke's**)

4 ounce jar pimentos, drained and diced

1/4 teaspoon freshly ground black pepper

1/4 teaspoon onion powder

1/4 teaspoon garlic powder (not garlic salt)

1 pound ground chuck

1 teaspoon **Morton Coarse Kosher Salt**

2 buns (I prefer **brioche hamburger buns**)

**1 | Prep.** Combine the shredded cheddar, softened cream cheese, mayonnaise, and diced pimentos in a medium sized mixing bowl. Blend well. Refrigerate until ready to use.

For the spice mix, combine the black pepper, onion powder, and garlic powder in a small bowl. Do not add the salt yet. It can

compress the meat and we want the meat loose to hold the juices.

Spread the meat out on a plate and sprinkle the spice mix onto the meat distributing it evenly. Divide the meat into two 8-ounce portions. Gently form the meat into patties that are approximately 1/2-inch wider than the bun to allow for shrinkage during the cooking process.

**2 | Fire up.** Prepare a grill for indirect cooking by placing a chimney full of pre-heated charcoal briquets on one side of the grill's charcoal grate in order to create direct and indirect cooking zones. Adjust the grill vents to bring the temperature to about 225°F on the indirect side. Add 2 to 3 chunks of your favorite smoking wood to the charcoal for flavor. On a gas grill, adjust the temperature knobs so that one half of the grill is off and the other half is heated enough to maintain a temperature of approximately 225°F on the indirect side.

**3 | Cook.** Place the burgers on the indirect side of the grill and sprinkle the tops with salt. Cover the grill and cook the patties for about 10 minutes.

Push the tip of a rapid-read thermometer into the side of both burgers. Sprinkle with salt and flip often. When the burgers are about 20° below the final doneness temp you want (**see [AmazingRibs.com's award winning Food Temperature Guide](#)**), get ready to move them to the direct-heat zone. If you are on a gas grill, crank it up to high. If necessary, take the meat off of the grill and close the lid while the hot side heats up. If you have a pellet cooker or another grill that doesn't have enough radiant heat to sear, put a cast iron pan or griddle in there—when the griddle collects a lot of heat, it can do the job.

Remove the burgers when browned and the interior reaches 5° below the desired temperature. Don't overcook them while

waiting for the second side to be perfect. If one side is paler than the other, that's acceptable.

**4 | Serve.** Set the bottom of each bun on a plate and top each one with a burger patty. Add smoked pimento cheese to each patty and crown it with the top bun. Serve immediately.

## FRIED GREEN TOMATO BURGERS WITH COMEBACK SAUCE



*By Clint Cantwell*

Put a little south in your mouth with our delicious fried green tomato burgers with comeback sauce from the AmazingRibs.com President, Clint Cantwell.

**Makes.** 2 burgers

**Takes.** 15 minutes prep, 1 hour cooking

*Comeback Sauce*

1/2 cup mayonnaise

3 tablespoons jarred chili sauce

2 tablespoons ketchup

1/2 tablespoon lemon juice

1 teaspoon Worcestershire sauce

1/2 teaspoon hot sauce such as Louisiana or Crystal

1/2 teaspoon granulated garlic

1/2 teaspoon onion powder

1/2 teaspoon ground mustard

1/2 teaspoon paprika

*Fried Green Tomatoes*

1 cup all-purpose flour

2 teaspoons **Morton Coarse Kosher Salt**

3 eggs

2 cups panko breadcrumbs

2 large green tomatoes

Canola oil

*The Burger*

1 pound ground chuck

1 teaspoon **Morton Coarse Kosher Salt**

## 2 hamburger buns

**1 | Prep.** To make the comeback sauce, combine the mayonnaise, chili sauce, ketchup, lemon juice, Worcestershire sauce, hot sauce, garlic powder, onion powder, ground mustard, and paprika in a small bowl and blend well. Cover and refrigerate the sauce until ready to use.

For the fried green tomatoes, cut each tomato into 1/4-inch slices. Combine the flour and salt in a shallow bowl and stir to combine. Beat the eggs in a second shallow bowl and add the panko breadcrumbs to a third shallow bowl.

**2 | Cook.** Add 1 inch of canola oil to a skillet then place over medium-high heat. Dredge the green tomato slices in the flour, then the beaten egg, and finally in the panko breadcrumbs. Working in small batches, fry the coated green tomato slices, flipping once until golden brown, approximately 2 minutes per side. Remove the fried green tomatoes from the oil and place them on paper towels to drain.

**3 | Prep again.** Divide the meat into two 8-ounce portions. Gently form the meat into patties that are approximately 1/2 inch wider than the bun to allow for shrinkage during the cooking process. Season both sides of the patties with kosher salt.

**4 | Fire up.** Prepare a grill for indirect cooking by placing a chimney full of pre-heated charcoal briquets on one side of the grill's charcoal grate in order to create direct and indirect cooking zones. Adjust the grill vents to bring the temperature to about 225°F on the indirect side. Add 2 to 3 chunks of your favorite smoking wood to the charcoal for flavor. On a gas grill, adjust the temperature knobs so that one half of the grill is off and the other half is heated enough to maintain a temperature of approximately 225°F on the indirect side.

**5 | Cook again.** Place the hamburger patties on the indirect side of the grill. Cook the patties for about 10 minutes flipping often.

Push the tip of a rapid-read thermometer into the side of both burgers. When the burgers are about 20° below the final doneness temp you want (**see [AmazingRibs.com](http://AmazingRibs.com)'s award winning Food Temperature Guide**), get ready to move them to the direct-heat zone. If you are on a gas grill, crank it up to high. On a charcoal grill, you may want to add more pre-lit coals. If necessary, take the meat off of the grill and close the lid while the hot side heats up.

Put the burgers on the direct heat side to brown them. Leave the lid up so the heat is concentrated on one side of each burger. If the fire flares up, move the burger to another spot. Flip the meat every minute to form a nice crust on both sides.

**6 | Serve.** To assemble the burgers, place each patty on a bottom bun and top with a fried green tomato. Spread comeback sauce on the top buns before placing on the burgers. Serve immediately with additional fried green tomatoes and comeback sauce.

## MU SHU PORK BURGER



*T*hese wonderfully flavorful and juicy burgers contain most of the same ingredients found in the Chinese restaurant classic, Mu Shu Pork (also spelled Moo Shu Pork).

In restaurants it is made from shredded pork, scrambled eggs, wood ear mushrooms, day lily buds, ginger, garlic, green onions, and served on tortilla-like Chinese pancakes slathered with rich, sweet, hoisin sauce, and rolled up like a burrito. Here I have deconstructed and reconfigured it as a colorful, flavorful, better burger. You can also make a fun sausage with this recipe.

**Makes.** 4 burgers

**Takes.** 1 hour

### *For the burger*

$\frac{3}{4}$  pound ground pork muscle

$\frac{1}{4}$  pound ground pork fat

½ cup unseasoned bread crumbs

¼ cup onion, chopped fine

¼ cup carrots, peeled and shredded with a peeler or box grater

1 raw egg

3 tablespoons fresh ginger, peeled and grated on the small holes of a box grater

2 tablespoons hoisin sauce

1 tablespoon sesame oil

1 teaspoon crushed red pepper flakes (more if you like things hot)

### *For the Mouth*

6 good quality buns, brioche would be nice, kaiser will work fine

1 large sweet red bell pepper

4 teaspoons hoisin sauce

2 teaspoons white sesame seeds

4 leaves Romaine lettuce, chopped (or another crunchy lettuce)

¼ cup scallions, chopped on a bias

*About the ginger. This is an important flavor so use fresh ginger, not ground.*

**1 | Mix** the burger ingredients thoroughly in a large bowl. Form into 4 patties about ¾ inch (1.9 cm) thick or stuff into casings.

Wash your hands thoroughly after handling the raw meat and egg mixture.

**2 | To make burgers:** Prepare a grill in a 2-zone setup and clean the grates well. Clean grates is important because these burgers are not as firm as regular hamburgers and they will stick to dirty grates.

**3 | Slice** the bell pepper in half, discard the seeds and stem, and wash. Place the two halves skin down over the hot part of the grill and close the lid. Cook until the skin blackens and blisters, about 5 minutes. Remove the pepper, put it in a bowl, and cover it with a plate so the steam will loosen the skin. Peel the skin and cut the roasted meat into thin strips.

**4 | Brush** oil on the burgers so they will not stick. Place the patties on the grates on the indirect side. Cook the burgers with the cover on until they hit about 145°F (62.8°C), then move to the direct side and leave the lid up while you sear. Gently flip the burgers every 2 minutes being careful not to allow them to break apart. Remove when internal temperature of the burger is 160°F (71.1°C). If the coals flare up or the meat begins to char, move the burgers to the indirect zone.

**5 | Buns.** While the burgers are cooking, toast the cut side of the buns over the middle between the direct and indirect zone, watching them carefully so they do not burn. Remove them and spread the chopped Romaine on the bottom halves of the buns, and the red pepper strips on top of the lettuce.

**6 | Serve.** When the burgers are done, set them on the lettuce and peppers, spread 1 teaspoon of hoisin sauce on top, sprinkle them with sesame seeds and scallions. Put the top of the bun next to the colorful burger and serve.



## PORK SATAY SLIDERS WITH PEANUT SAUCE AND ASIAN SLAW



*By Clint Cantwell*

Ground pork patties and spicy peanut sauce come together in this mouthwatering recipe for pork satay burger sliders. Perfect for parties.

**Makes.** 8 slider-size burgers

**Takes.** 10 minutes prep, 20 minutes cooking

### *Asian Slaw*

3 tablespoons rice vinegar

1 tablespoon fresh lime juice

2 teaspoons brown sugar

1/4 cup fresh cilantro

1 teaspoon **toasted sesame oil**

1/4 teaspoon **Morton Coarse Kosher Salt**

1 red bell pepper

1 10-14 ounce package shredded cabbage

### *Thai Peanut Sauce*

1/4 cup peanut butter

2 tablespoons **hoisin sauce**

1-1/2 tablespoons brown sugar

1 tablespoon soy sauce

1 tablespoon fresh lime juice

1 tablespoon water

1/2 teaspoon Sriracha (more if you prefer a spicier sauce)

### *The Burgers*

1-1/2 pounds ground pork

1-1/2 teaspoons **Morton Coarse Kosher Salt**

8 slider buns

***About the rice vinegar.** At 4% acetic acid, rice vinegar is less strong and acidic than most commercial white vinegars and cider vinegars, which often contain 6% acid or more. Most good groceries sell rice vinegar either plain or seasoned. Get the plain for this recipe. If you must use white vinegar or cider vinegar, add a couple of tablespoons more water to cut the acidity.*

***About the toasted sesame oil.** There is no substitute for this amazing aromatic extract from toasted sesame seed. If you see clear or yellow sesame oil, keep looking. The toasted stuff is dark amber to brown in color. Most groceries stock it.*

**1 | Prep.** For the Asian slaw, begin by roughly chopping the cilantro. Next, combine the rice vinegar, lime juice, brown sugar, cilantro, sesame oil, and salt in a small bowl and whisk until fully combined. Remove the stem and core from the red bell pepper then thinly slice. Add the bell pepper and shredded cabbage to a medium sized mixing bowl. Add the liquid mixture to the bowl and toss until the cabbage and bell pepper are completely coated with liquid. Refrigerate the Asian slaw until ready to use, or up to 8 hours.

For the Thai peanut sauce, combine the peanut butter, hoisin sauce, brown sugar, soy sauce, lime juice, water, and Sriracha in a small bowl and blend well until all of the ingredients are combined. Use immediately or refrigerate for up to 1 day.

For the burgers, divide the meat into eight 3-ounce portions. Gently form the meat into patties that are slightly wider than the buns to allow for shrinkage during the cooking process. Season both sides of the patties with kosher salt.

**2 | Fire up.** Prepare a grill for indirect cooking by placing a chimney full of pre-heated charcoal briquets on one side of the grill's charcoal

grate in order to create direct and indirect cooking zones. Adjust the grill vents to bring the temperature to about 225°F on the indirect side. Add 2 to 3 chunks of your favorite smoking wood to the charcoal for flavor. On a gas grill, adjust the temperature knobs so that one half of the grill is off and the other half is heated enough to maintain a temperature of approximately 225°F on the indirect side.

**3 | Cook.** Place the slider patties on the indirect side of the grill. Cook the patties for about 10 minutes flipping often.

Push the tip of a rapid-read thermometer into the side of the patties. When the slider patties reach 125°F get ready to move them to the direct-heat zone. If you are on a gas grill, crank it up to high. On a charcoal grill, remove the lid and fully open the bottom vents. If necessary, take the meat off of the grill and close the lid while the hot side heats up.

Put the slider patties on the direct heat side to brown them. Leave the lid up so the heat is concentrated on one side of each burger. If the fire flares up, move the burger to another spot. Flip the meat every minute to form a nice crust on both sides and continue to cook until they reach 145°F. If necessary to prevent burning, move the burgers to the indirect side to finish cooking.

**4 | Serve.** To assemble the sliders, place each patty on a bottom bun and top with the Asian slaw. Spread some Thai peanut sauce on the top buns before placing on the burgers. Serve immediately.

## LAMB BURGERS WITH TZATZIKI SAUCE



If you are a fan of traditional Greek gyros then this ground lamb burger recipe is for you. Tzatziki sauce and pita bread make it special.

**Makes.** 4 burgers

**Takes.** 15 minutes prep, 10 minutes cooking

### *Tzatziki Yogurt Sauce*

1/4 cup plain yogurt (the thick Greek or strained kind is best)

3 tablespoons sour cream

2 pinches **Morton Coarse Kosher Salt**

1 pinch ground black pepper

1/4 teaspoon dill, dried or fresh

2 tablespoons chopped fresh chives

1 tablespoon chopped fresh mint leaves or cilantro

1/2 teaspoon honey

### *Lamb Burgers*

1 1/2 pounds ground lamb

1 tablespoon vegetable oil

1 teaspoon **Morton Coarse Kosher Salt**

1/2 teaspoon ground black pepper

1/2 teaspoon garlic powder

4 pita pockets

2 medium tomatoes

1/2 cup shredded lettuce

1 small red onion

1/4 cup chopped cucumbers

**1 | Prep.** For the tzatziki sauce, stir together all the ingredients in a small bowl. You can use it immediately, but if you leave it in the fridge a few hours the flavors have a chance to mingle more. Thinly slice the onion.

**2 | Fire up.** Prepare your grill for hot direct heat.

**3 | Prep again.** Form the meat into patties about 4 to 6 ounces each, 1/4 to 1/2" thick and shaped like a football so they will fit neatly into pita halves. Coat them with the oil, and then with the spices. That may seem like a lot of spices, but we want to form a nice crust.

**4 | Cook.** Put the burgers on the grill, close the lid, and stand there. Sing *Mary Had a Little Lamb* four times or about four minutes, then check the underside. You want it dark, but not black. Cook the burger until it hits a safe temp of 160°F (71°C). Toss the pitas on the grill for 30 to 60 seconds on each side, enough to warm them.

**5 | Serve.** Serve the burgers by cutting the pitas in half. Press the sides gently to pop open the pocket. Spoon about a tablespoon of sauce in, put some chopped tomato, lettuce, onion, and cucumber in, squeeze the burger in on top, and slather more sauce on the burger. Make sure everyone has plenty of napkins.



## SALMON BURGERS



If you've never tried seafood sausage then you don't know what you're missing. We have enjoyed making our own, both as a cased sausage and as a burger patty, and frankly, we like it better as a patty. The secret ingredient is the rolled oats. They hold it together. Once formed, we like to grill it then serve on a toasted bun smeared with some mayo flavored with garlic or sesame oil topped with some crisp lettuce, tomato, and a thin slice of red onion. It's absolutely delicious and will be a welcome surprise at your next grilling party. Also try it as meatballs with pickled carrots and jalapeños for Banh Mi sandwiches or in ramen soups.

**Makes.** 6 burgers

**Takes.** 1 hour, 30 minutes prep, 30 minutes cooking

### *Fish Rub*

1 tablespoon dried chives

1 tablespoon dried tarragon

1 tablespoon dried parsley

1 tablespoon dried chervil

1 tablespoon freshly ground dried green peppercorns

1 tablespoon dried lemon zest

1 teaspoon garlic powder

### *The Salmon Burger*

1 pounds raw fresh boneless skinless salmon

1/2 cup rolled oats

1 medium carrot

1 small onion

1 lime

2 tablespoons chopped onion

1 tablespoon fresh mint or basil

1/2 teaspoon chipotle powder or other ground hot chile

1/2 teaspoon **Morton Coarse Kosher Salt**

1/2 teaspoon ground black pepper

5 teaspoons olive oil for brushing on the patties before they go to the hot side of the grill

### *Serving*

6 **buns**

4 tablespoons mayonnaise

1 teaspoon brown toasted sesame oil

1 large tomato

6 leaves lettuce

1 large onion

*About the salmon. Don't use canned salmon, fresh only. It won't hold together if you use canned.*

**1 | Study.** Before making this ground fish mixture.

**2 | Prep.** Shred the carrot on the large holes of the box grater. Peel and chop the onion fine. Chop the mint fine.

For the toppings, mix the mayo and sesame oil together and put them in the fridge. Slice the tomato and onion.

Slice the fish into cubes removing all bones. Place it on a plate or pan in the freezer, along with the grinder parts that will contact

the meat. Leave it there for about 20 minutes until it is firm but do not let it freeze. This makes grinding easier.

Grind the meat with a 1/4-inch die or you can do this in a food processor. Don't overgrind. Leave it a bit coarse. If you don't have a grinder, you can use a food processor but don't turn it to pulp.

Mix in 1 teaspoon of the Fish Rub and the rest of the burger ingredients except the olive oil.

**3 | Taste.** Pinch off a tablespoon of the sausage and cook it in a frying pan, let it cool and taste to see if the seasoning is to your taste. Add more salt or chile if you wish. Form it into patties.

**4 | Chill.** Put the patties in the fridge for about an hour to chill them. This helps keep them from crumbling. You can then store it in the fridge for a day at the most, or in the freezer for about a month.

**5 | Fire up.** Light your grill for **2-zone cooking** and shoot for about 225°F in the indirect zone. Grill the cut faces of the buns until they turn amber.

**6 | Smoke.** Throw some wood on the direct zone and get some smoke rolling. Put the burgers on the indirect side and let them slowly come up to about 120°F. This will firm the surfaces so when you move them to the direct heat side they won't stick to the grates.

**7 | Sear.** Move them to the direct infrared zone and sear them on both sides. Take them off at 130°F.

**8 | Serve.** Slather the sesame mayo on both sides of the bun, top with the burger, lettuce, tomato, and onion.

PART III  
MORE TOPPINGS &  
BOTTOMINGS





# THE SCIENCE OF HAMBURGER BUNS



The hamburger bun deserves more love than it gets. It serves multiple functions. Here is the job description for the Ultimate Hamburger Bun:

- Freshly baked

- Not so strong a flavor as to outshine or dull the flavor of the beef
- Firm enough to hold together when wetness attacks it
- Soft enough that you don't squeeze out the meat juices when you bite
- Large enough to reach the edges of the patty, usually 4 to 4 1/2"
- Squishy enough to form fit around its payload so things don't fall out

A good grocery store hamburger bun will do if it is fresh, but you can set your burgers apart with something a little better. What you don't want is a bread so hard or crusty that you have to tear it with your teeth, like ciabatta or bagels. Let's give props to Mickey D's for popularizing the sesame seed bun with its interesting texture and flavor. The strangest bun I've seen, and frankly, just the thought of it turns my stomach, is the donut bun. You heard me, some goofballs have decided to place their beef between two glazed donuts. That is simply wrong, man.

One of the best buns I've ever had was at **Zingerman's Roadhouse** in Ann Arbor, MI. James Beard Award winning Chef Alex Young takes a house-made onion roll and soaks the cut sides with clarified butter. Not a light coat, a lot. It then goes down on a medium hot griddle, and stays there until it is deeply toasted, and I mean deeply. The brown is well beyond the surface, perhaps 1/8" thick. When you bite into this burger the bun makes an audible crunch.

My favorite storebought bun is one a local baker sells. It is eggy and brioche-like. One important step is to warm the buns, or better still, add texture to the sandwich by toasting them. Cold rolls right from the fridge are a turnoff. 20 secs in the microwave will make them warm and soft. If you're at the grill, you can put them on the warming rack, and help them steam by covering them in a foil tray.

My favorite treatment is to melt two tablespoons of butter per bun, paint it on the cut sides all the way to the edges because the edges tend to burn, and then toast it so it is golden and crunchy. You can toast them in a pan or on a griddle before the meat goes in, on the grill grates, under the broiler, or in your toaster oven. Watch carefully because they can burn quickly. If you are afraid of vampires, mix a little garlic powder in the melted butter. I'm often warding off vampires.

Brian "Breadhead" Foreman created a wonderful Brioche Hamburger Bun recipe for us. **Click here for the recipe.**

The pretzel bun, a more modern invention, has its place too. Here's a quick rundown of bun types and what to choose when.

- Brioche Bun: Soft and buttery, perfect for indulgent Steakhouse burgers.
- Potato Roll: Slightly sweet, slightly yellow in color, great for holding up to juicy patties.
- Classic Burger Bun: Plain white flour and very squishy. Perfect for diner-style burgers, a.k.a. smashburgers.
- Pretzel Bun: Dense and flavorful with a malty taste, ideal for sturdy burgers and gourmet burgers.
- Slider Bun: For smaller (2 to 3-ounce) burgers. Hawaiian buns are a little sweet and they are great for this.

Melt about 2 tablespoons of butter and paint the cut sides of the buns with it, all the way to the edges. Place the buns, cut-side down onto the hot metal, press them down with the spatula and put a dinner plate on top of them so they make good contact with the surface, and cook until the bread turns golden. Yes, the tops will be smushed, but the butter will brown and get a nutty taste, and the edges of the buns should be extra crispy. Then remove the buns and wipe the griddle with a paper towel.

## THE SCIENCE OF CHEESEBURGERS



The cheeseburger is perhaps the hamburger's apotheosis, a beautiful combination of meat and cheese.

In 1924, according to his obit in TIME magazine, 16 year old **Lionel Clark Sternberger** "experimentally dropped a slab of American cheese on a sizzling hamburger while helping out at his father's sandwich shop in Pasadena, thereby inventing the cheeseburger."

Thank you Mr. Sternberger for a great taste combo and an American icon.

A cheeseburger can be crafted from practically **any other hamburger style** with the simple addition of cheese, and many cheeses will do. There are only two important guidelines:

- 1) The cheese must be melted. It cannot be cold or hard.
- 2) The chosen cheese must enhance the composition of the sandwich, not clash with it. There are three ways to go with adding dairy to your cow: Melting cheese, spreading cheese, or stuffing with cheese.

How to add the cheese

If you're stuffing a Jucy Lucy with cheese, it's as simple as folding a slice of good ol' American in half, then in half again and sandwiching it into a burger patty. Take care to seal the edges so it won't leak. You can experiment with other cheeses, but avoid a thick, hard aged cheddar or Swiss, which may not melt properly by the time the meat is done.

Unless you're stuffing, whatever cooking method you use, the cheese is the last thing to go on. Most of the cheeses below melt quickly, within 2 minutes. So you should only apply it after one side is finished cooking, when you are within 2 minutes of finishing the other side.

If you are grilling your burger, lay the cheese on top, and then close the lid so the cheese will melt. Depending on the cheese, 2 to 3 minutes should do it. Be careful not to overcook the meat while melting the cheese. You might even want to move the patty off direct heat while you melt the cheese. Another trick is to cap the burger like they do in some diners. Just add the cheese, put a metal mixing bowl or baking pan over the burger, and it should melt in as little as 30 seconds. A coffee can or baking pan will work fine.

If you are cooking the burger in a frying pan, put the lid on, but not tight. Leave a good sized crack so steam can escape.

Speaking of which, a splash of water creates steam under the hood and helps melt the cheese faster. If you don't have a lid, cover the pan with a metal baking pan or cookie sheet.

On a griddle, use a metal bowl or pan to trap the heat and melt the cheese. Another bonus of a frying pan or griddle: frico. Once the cheese melts down the side of the meat, it hits the hot metal slab, browning and crisping up into the most delicious skirt of lacy, fried cheese, or "frico" as the Italians call it. Be sure your spatula captures the frico along with the burger so you can served it all right on the bun.

Pro tip: if you're making a stacked diner burger, put the cheese between the patties.

Under a broiler, pull the burgers out, lay on the cheese, and slide it back under the broiler, about 2" below the heat source. Leave the door open and stand there and watch, because it can melt *quickly*. As soon as it starts to bubble, you're done.

Here's another trick. If you are using caramelized onions, sautéed mushrooms, or even raw onion, put them on before the cheese. As the cheese melts it will help anchor the toppings in place so they don't fall off as easily.

## CHEESES FOR MELTING

The issues surrounding the selection of a cheese are: Taste, meltability, color, and cooking method.

The prototypical American cheeseburger has a slice of bright yellow American cheese or cheddar. My fave is sharp cheddar for flavor and tradition. Better still, a smoked cheddar.

But there's no reason why you can't use another melting cheese. Smoked gouda, Muenster, jack, pepper jack, brie, provolone,

cambozola, Swiss, and havarti are good choices. Just don't mask the meat with too much. Slice it 1/8" thick (or grate it and pile it on 1/4" thick because there's a lot of air in grated cheese). Add more if you wish, but remember, the thicker the cheese, the longer it takes to melt, so factor that into your cooking time.

Gruyere is nice but it doesn't melt well, so grate it first. Crumbled blue cheese is popular, although it doesn't melt well either. It is especially good if you can put it under a flame to broil and brown it a bit, and I like it best on top of thin apple slices and **caramelized onions**.

#### CHEESES FOR SPREADING

Another approach is to use a spreadable cheese that doesn't need to be melted. It can go on the underside of the bun top, or right on the patty in a blob so it can spread with heat and pressure from the bun.

Pimento cheese spread is very popular in the South, particularly South Carolina and Georgia. My faves are my **home-made boursin** (laced with garlic), or herbed fresh chèvre (herbaceous and tangy). The **Cherry Cricket** in Denver is famous for their Cricket Burger with a slab of cream cheese and some minced jalapeño on top.

Other options include cheddar spread with port wine, blue cheese spread, beer cheese, or amp it up by mixing cream cheese with chili sauce or horseradish. Or try the chèvre with a balsamic reduction instead of ketchup.

#### **Cheeseburger in Paradise by Jimmy Buffet**

*Tried to amend my carnivorous habits.*

*Made it nearly 70 days.*

*Losin' weight without speed, eatin' sunflower seeds,*

*Drinkin' lots of carrot juice and soakin' up rays.  
But at night I'd have these wonderful dreams:  
Some kind of sensuous treat.  
Not zucchini, fettuccine, bulgur wheat,  
But a big warm bun and a huge hunk of meat.  
Cheeseburger in paradise!  
Heaven on earth with an onion slice.  
Not too particular, not too precise.  
I'm just a cheeseburger in paradise.  
Heard about the old time sailor men,  
They eat the same thing again and again:  
Warm beer and bread they say could raise the dead.  
Well, it reminds me of the menu at a Holiday Inn.  
Times have changed for sailors these days.  
When I'm in port I get what I need.  
Not just Havanas or bananas or daiquiris,  
But that American creation on which I feed!  
Cheeseburger in paradise!  
Medium rare with mustard'd be nice.  
Not too particular, not too precise,  
I'm just a cheeseburger in paradise.  
I like mine with lettuce and tomato,  
Heinz 57 and French fried potatoes.*

*Big kosher pickle and a cold draught beer.*

*Well, Good God Almighty, which way do I steer*

*For a cheeseburger in paradise?*

*Makin' the best of every virtue and vice,*

*Worth every damn bit of sacrifice,*

*To get a cheeseburger in paradise.*

*To be a cheeseburger in paradise.*

*I'm just a cheeseburger in paradise!*



MEATHEAD'S BURGER GLOP



Many restaurants have their own "Secret Sauce". A typical blend is made of ketchup, mayo, mustard, and perhaps sweet-sour pickle relish. In the Pacific Northwest there is a popular sauce called "Goop" made with mayo, mustard, sour cream, and pickle relish. McDonald's is famous for its Big Mac with its "Special Sauce." Check out that recipe after this one. This is my favorite Hamburger Sauce, which I call "Glop". I've been known to use it on both burgers and fries. It's got a mild kick.

**Makes.** 1 1/4 cups

**Takes.** 5 minutes prep

1/2 cup mayonnaise

1/2 cup **Kansas City Style Barbecue Sauce** or ketchup

3 tablespoons yellow ballpark style **mustard**

1 tablespoon hot sauce (I use **Tabasco Chipotle**)

1/2 teaspoon **Morton Coarse Kosher Salt**

1/4 teaspoon garlic powder

**1 | Prep.** Whisk everything together in a bowl until smooth then take the day off. Obviously nothing is set in concrete about this recipe. You can vary the ingredients to your taste or doctor them with other ingredients. But start with this and then add what you like. Write it down, and do it again. Don't worry about the hot sauce. It gets lost on the burger. Add more if you wish. Just don't make it so hot you can't taste the beef.

## BIG MAC SPECIAL SAUCE



Chef Mike Haracz, an R&D chef for large corporations and former corporate chef for McDonald's shared this recipe which he claims is very close to the recipe for Big Mac Sauce. He says there is no ketchup in the blend.

**Makes.** 1 1/2 cups

**Takes.** 5 minutes prep, 30 minutes chilling

1 cup mayonnaise

1/4 cup sweet pickle relish

2 tablespoons Dusseldorf mustard

1 teaspoon white wine vinegar

1 1/4 teaspoons paprika

1 teaspoon onion powder

1 teaspoon granulated garlic

1/8 teaspoon ground white pepper

***About the mustard.** Dusseldorf mustard is similar to Dijon mustard but usually a bit darker in color and stronger in flavor. Some are from Dusseldorf, Germany, and some are made in the U.S. Koops is a popular brand. If you don't have it or can't find it, you can use Dijon in this recipe if you wish.*

***About the garlic.** Granulated garlic has larger particles than garlic powder, so if you use the powder, cut the amount to 3/4 teaspoon (25% less).*

***About the vinegar.** Feel free to use distilled white vinegar or rice wine vinegar. But I wouldn't recommend cider vinegar.*

**1 | Mix.** Whisk all the ingredients together in a small bowl.

**2 | Chill.** Cover and refrigerate for 30 minutes before using. Leftovers will keep covered and chilled for a few days.

## NEW MEXICO GREEN CHILE SALSA FOR BURGERS



Elevate your cheese burger game with a serious dose of this smoky, fire roasted hatch chile salsa. It's pretty close to the real thing. The recipe was inspired by the toppings made by Bobby Olguin at the legendary **Manny's Buckhorn Tavern** in San Antonio, New Mexico, established in 1943, **Owl Bar & Café**, a

short walk from Manny's in San Antonio, and my fave, **Santa Fe Bite** in Santa Fe owned by John and Bonnie Eckre.

**Makes.** 4 cups

**Takes.** 1 hour prep, 10 minutes cooking

3 green Hatch New Mexico #20, or Hatch New Mexico 6-4 peppers, or Anaheim peppers

1 green jalapeño pepper

1 green poblano pepper

1 tomatillo

1 medium onion, peeled, and sliced in half

2 tablespoons of olive oil

2 large garlic cloves

2 tablespoons cilantro leaves

1/2 teaspoon **Morton Coarse Kosher Salt**

2 pinches ground black pepper

1 tablespoon lime juice

***Want more heat?** Add another jalapeño, or substitute 2 serranos for the jalapeño, or add a few splashes of green hot sauce. But taste it first.*

***About the lime juice.** You can substitute lemon juice or cider vinegar, but I prefer lime juice for its brightness.*

***Want more flavor?** Throw some wood chips onto the coals or into an aluminum pan resting on top of your gas burner when you are grilling the peppers, tomatillo, and onion.*

**1 | Prep.** Split the peppers in half lengthwise, cut off the stems, and remove the seeds. Leave in the veins because that's where the heat lives. But don't worry. New Mex, Hatch, or Anaheim peppers aren't very hot.

**2 | Fire up.** Prepare a grill for high heat cooking.

**3 | Cook.** Place the chiles on the grill over medium high or high direct heat, skin side down until the skin blackens and blisters, about 5 minutes. If you're working indoors, you can put them under the broiler skin side up or if you have a gas stove, hold them over a burner with an open flame with tongs (and an oven mitt). When the skin is black, put the peppers in a bowl and cover them with a dinner plate so they will steam. The steam will help loosen the skin. After about 5 minutes, open the bowl and when the peppers are cool enough to handle, slip on some rubber gloves and peel off the skins. If a little char remains, don't sweat it. If you work bare handed, wash thoroughly with soap and avoid touching any moist part of your body, or your lover's. You can skip the process of skinning the peppers, but if you do it is especially important to blend them well in step 3 to break down the skins.

While the peppers are grilling, put the onions cut side down on the grill until they have nice grill marks. Roll them over and grill until the round side is charred. Discard the burned layer. While the onions are grilling, cut the tomatillo in half and roll around on the grill until soft, but don't let it burn.

Coarsely chop the peppers, onions, and tomatillo. Chop the garlic fine or smush it in a garlic press and keep the separate from the other ingredients. Warm the oil over medium high heat in a frying pan, add the garlic and cook for about 2 minutes, just enough to soften it. Now peeled peppers, onions, tomatillos, salt, and pepper. Be careful not to lean over the pan. That's pepper spray, man.

Add 1/4 cup of water and cook until it is mostly evaporated and the salsa is getting thick.

Dump the whole thing into a blender, add the lime juice, cilantro, and pulse until it is a pulp, but not quite smooth. Taste and adjust the salt, pepper, cilantro, and juice to your preference. If you want it hotter, a few splashes of green hot sauce will do the job. You can put this in a clean jar and keep it in the fridge for up to 2 weeks.

**4 | Serve.** Place the hatch chile salsa in a bowl and serve with chips or, even better, top your favorite cheeseburger for an authentic New Mexico hatch chile cheeseburger experience.

## CARAMELIZED ONIONS



Mahogany colored caramelized onions are a wonderful sweet and savory ingredient in French Onion Soup and as a topping for burgers, ribs, brisket, **caramelized onion pizza**, chops, steaks, hotdogs, baked potatoes, your lover... Here's the best way to make them. This recipe makes enough for topping 6 burgers (or other sandwiches), for topping 6 baked potatoes, or for topping a 12" pizza.

**Makes.** 1 cup

**Takes.** 5 minutes prep, 40 minutes cooking

2 cups sliced sweet onions such as Vidalia, Walla Walla

3 tablespoons unsalted butter

2 pinches salt

***Options.** If you are using regular white or yellow onions, you can sweeten them with a pinch of sugar.*

*Add a pinch or two of hot pepper flakes when you add the onions to the pan. Just because you can.*

*When the onions are mostly brown, add 1/2 teaspoon of inexpensive **balsamic vinegar**. This amps up the sweetness, and balances it with some tartness. Cook another 10 minutes until the vinegar is fully absorbed.*

*When the onions are ready, add 2 teaspoons of fresh rosemary, thyme, or oregano and cook for 5 minutes. If you use dried herbs, add them before the onions turn brown so the herbs can absorb some moisture and give up more of their flavor.*

**1 | Prep.** Peel the onions and cut them into 1/8 to 1/4" slices (I wear swim goggles to keep from crying). Separate them thoroughly.

**2 | Cook.** Get a large frying pan or griddle. It is important that you spread the onions out over a large surface, so don't do this in a saucepan or a small frying pan. And non-stick is best. Over a low heat, melt the butter, stir in the onions til coated, and add the salt. Cover for 15 minutes so they can steam with their internal moisture. Uncover, turn the heat up to medium, and let them cook, stirring every 5 minutes or so, until they are brown all over but not burned. The idea is to slowly extract most of the moisture, burn off the acrid stuff that makes you cry, and turn the copious natural sugars to caramel.

Add the sugar, balsamic, pepper flakes, and herbs at tis time if you are using them.

**3 | Serve.** Use immediately or keep in the fridge for a week or two.



# CANDIED PICKLED JALAPEÑOS



Add some sweet heat to burgers, hot dogs, pulled pork, nachos, quesadillas, cornbread, and much more with this recipe for Cowboy Candy, a.k.a. candied jalapeños. This recipe is a refrigerator pickle, so all jars must be stored in the fridge. When you are done, save the syrup: it's got so many uses.

**Makes.** 1 (12 ounce) jar

**Takes.** 15 minutes prep, 20 minutes cooking

**Equipment.** 12-ounce glass jar with lid

1 pound fresh green jalapeños, serranos, or other medium spicy chiles

2 cups white granulated sugar

2/3 cup distilled vinegar

1/2 cup water

1/2 teaspoon **Morton Coarse Kosher Salt**

***About the vinegar.** I prefer this with white vinegar than with cider vinegar. [Click here for more about vinegars.](#)*

**1 | Prep.** Wear disposable gloves when cutting and handling hot peppers and safety glasses are not a bad idea. Think you're a tough guy and don't need the protection? Do it barehanded and then go take a leak. Then, while you're crying, wipe your eyes. But for goodness' sake, don't make love for 24 hours unless you've worn gloves. Once your protection is in place, thoroughly wash the jalapeños, cut off the top stem of each pepper, scoop out the seeds with a knife, small spoon, or potato peeler, then slice them into 1/8 inch rings, unless you are afraid they will be too hot. In this case, get a knife and reach down into the pepper with it and scrape off the white veins. They hold most of the

heat. The seeds have some of the capsaicin, but not as much. Then rinse out the cavity and slice into rings.

**2 | Cook.** Cook the sugar, vinegar, salt, and water in a saucepan over medium heat until it boils and stir until all the sugar has dissolved.

Before you proceed, beware. When you add the peppers to the hot syrup they will off-gas capsaicin, a.k.a. pepper spray, almost the same stuff the riot police use. It can really fill the house with pepper gas. Please do not hover over the pan, and remember to turn on the overhead fan on your stove. I do the cooking outside on my grill or the side burner. I have found that an N95 surgical mask helps.

Now add the peppers and the liquid will stop boiling. Wait for it to boil again, then turn it off after about 30 seconds. This will pasteurize the peppers.

**3 | Bottle it.** While the syrup is hot, use a slotted spoon to move the peppers into a very clean 12 ounce jar. Pack them in tight and pour in the syrup. Poke around with a fork until the air is gone, tighten the lid, and refrigerate. Keep refrigerated.

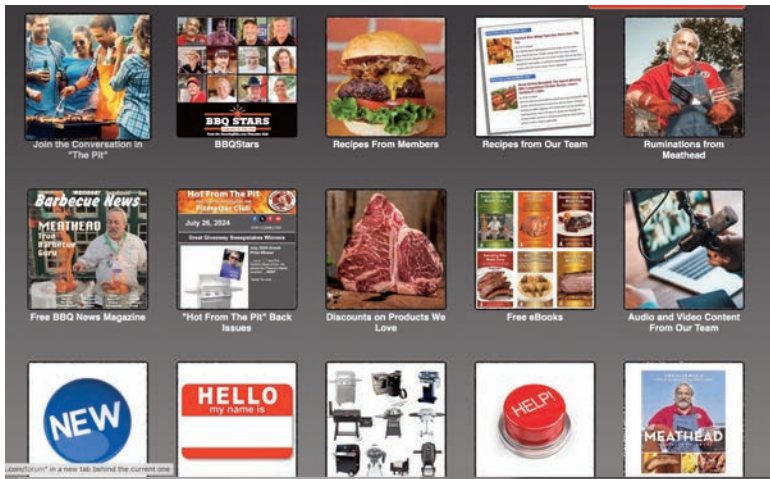
**4 | Serve.** After a few hours the jalapeños will start losing the bright green color and the peppers and the syrup will swap their fluids. You can dig in then, but if you wait a few days, you will be rewarded for your patience.

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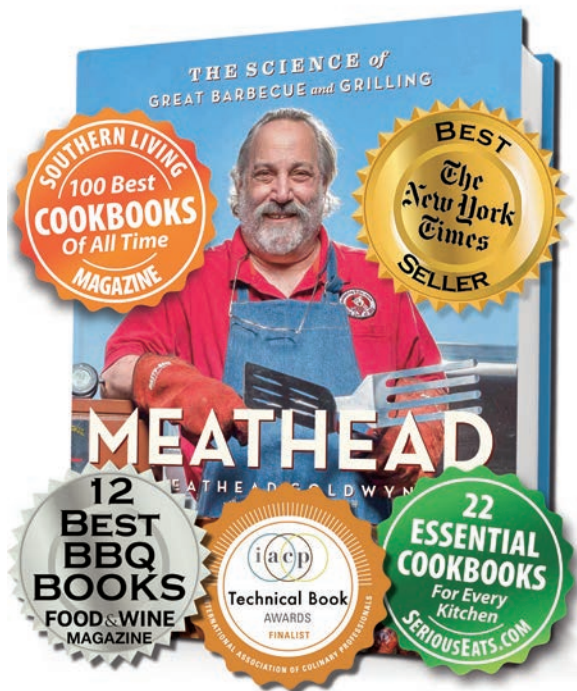
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# MEATHEAD, THE SCIENCE OF GREAT BARBECUE AND GRILLING



*“This is the book barbecue nerds have been waiting for. Good news for anyone who, like me, longs to understand the science of grilling and barbecue — the thermodynamics of heat transfer, the chemistry of the smoke ring, and what makes a char-grilled steak so f\*ckin’ delicious. And notice I said “understand,” not just “read about,” for Meathead’s gift lies not just in factual accuracy, but in being able to distill complex subjects to their most essential, applicable core in a manner that is a genuine pleasure to read. You’ll laugh out loud at his metaphors. You’ll see conventions challenged, techniques elucidated, and myths busted, and you’ll have a wildly fun time in the process.”*

*J. Kenji Lopez-Alt is the Managing Culinary Director of [SeriousEats.com](http://SeriousEats.com).*

Clearly I am a net head. In fact, I first started publishing online in the 1980s, long before anyone ever typed www on purpose. We launched [AmazingRibs.com](http://AmazingRibs.com) in 2005 and since then we have built it into the largest and most popular BBQ and grilling website in the world. But print is not dead yet! Humans are linear learners and learning is so much easier from a book with a beginning, middle, and end than by jumping around from link to link. If you doubt it, may I present a stack of dead tree slices that proves it: “Meathead, The Science of Great Barbecue and Grilling” co-authored by Yours Truly, Meathead and Prof. Greg Blonder, PhD, with a Foreword by J. Kenji Lopez-Alt. It was named one of the “100 Best Cookbooks of All Time” by *Southern Living* magazine and was a *New York Times* Best Seller. You can order now with the buttons below.

With 400 pages and more than 400 of my photographs plus color illustrations, there is new material and new recipes not on this website, and the whole thing is organized so that you can sit down in an easy chair and flow from start to finish. The first half of the book emphasizes concepts, science, technique, tips, and tools. The second half is 118 recipes demonstrating the concepts.

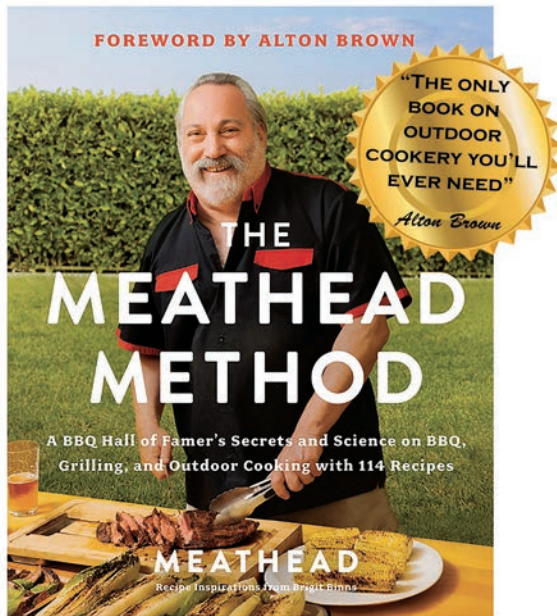
Along the way we shatter the myths that stand in the way of perfection. To become a pitmaster or grillmaster, or even if your goal is to simply improve your cooking, nothing is more crucial than understanding the science behind the interaction of food, fire, heat, and smoke. The price can easily be justified if it keeps you from messing up one dinner. Prof. Blonder and I are very proud of this book and I know it will make you, or someone who gets it as a gift, a better cook, indoors or out. But wait! There's more! When you buy the book you get a free 90-day membership in our Pitmaster Club!

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