

# The Secrets of Bone-In Pork Roast

A boneless pork roast sure is convenient. But is something important lost when those bones are cut away? We went out to the grill (and into the lab) to find out.

BY ADAM RIED

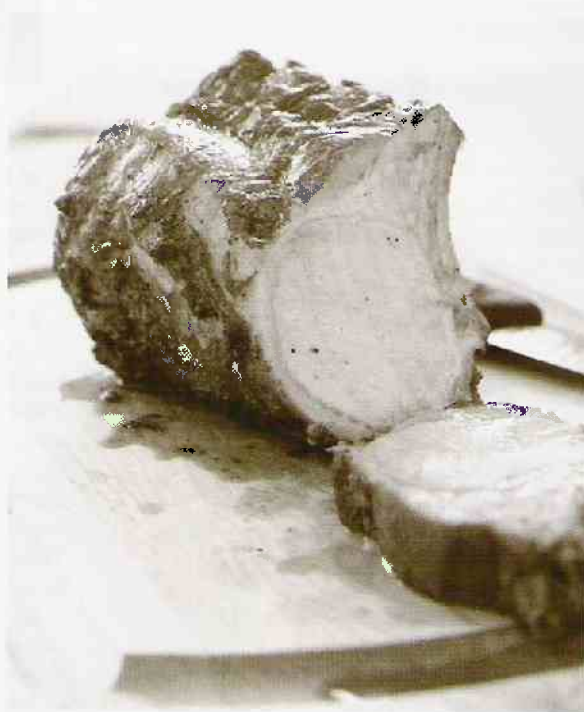
Most of us consider boneless pork roasts to be a welcome modern convenience, like automatic transmissions. Why deal with a clutch and a stick shift—or with bones—if you don't have to? I can't complain about the convenience of a boneless pork roast—little to no butchering on the front end, and fuss-free slicing at the table—but I also know that meat cooked on the bone just tastes better. Plus, for many people, gnawing on the bone is a satisfying way to finish off a meal.

With those reflections in mind, I decided to reacquaint myself with the pleasures of grilling a bone-in roast. I wanted a succulent, flavor-packed roast with a thick, well-browned crust and subtle smokiness. And while I figured out the best way to achieve those results, I also hoped to learn exactly why it is that bones make meat taste juicier and richer.

## A Good Ribbing

The obvious starting place was my supermarket butcher case, where I focused on tender, quick-cooking roasts from the loin section of the animal. From this region, I had my choice of three roasts: the blade-end (sometimes called the rib-end) roast, the center-cut rib roast, and the confusingly named center-cut loin roast. From all the taste tests done in our test kitchen over the years, I already knew that the center-cut loin roast offers the least impressive flavor of the three. So I narrowed my choices to the blade-end and center-cut rib roasts, settling on the center-cut roast for its great ease of preparation: Because the meat is a single muscle attached along one side to the bones, there is no need to tie the roast for a tidy presentation. (See “The Best Bone-In Pork Roast” for more information about the roast choices.)

I began by rubbing the meat with a generous handful of kosher salt and letting it rest in the refrigerator for six hours before starting the fire—a technique we



Scoring the fat on the roast helps the rendered drippings baste the meat during grill-roasting.

prefer to soaking the meat in a brine when our goal is a deeply browned, crisp crust. Next I built a modified two-level fire, banking all the coals on one side of the kettle. This leaves a cooler area where the meat can cook through slowly by indirect heat without risk of

burning the exterior. Then I threw the roast on the grates, covered the grill, and walked away.

A little more than an hour later, the roast's internal temperature measured 140 degrees (I knew it would rise to the requisite 150 degrees as it rested). I expected to pull the roast over to the grill's hot side for a quick sear before I took it off the grill, but to my delight the meat's exterior had already formed a thick mahogany crust.

## Flavor and Fire

Now that I'd picked the best cut and cooking method for the job, I moved on to consider possible tweaks to the flavorings—though, to be honest, I wasn't sure that the roast needed much improvement. The meat was tender and remarkably juicy and had plenty of rich, deep flavor. Even my dead simple salt rub enhanced the pork's taste without distraction.

But, being a skeptic and a perfectionist, I wanted to rule out all other options. So I set up a side-by-side test for my colleagues, pitting my plain salt-rubbed roast against identical specimens crusted with black pepper and a range of other spices and herbs. I also tested varying strengths of wood smoke. When the votes were tallied, my original intuition was confirmed: Simpler was better. My tasters opted for nothing more than a little sprinkling of black pepper just before cooking and a subtle tinge of smoke flavor. The latter was easy enough: I soaked one wood chunk, placed it on top of the hot coals, positioned the lid vents over the meat, and opened them halfway to draw smoke over the roast.

## SHOPPING The Best Bone-In Pork Roast

The three most common pork loin roasts offer markedly different results in terms of flavor and texture.

### TOP CHOICE: Center-Cut Rib Roast •

A cut from the center of the loin that contains mostly loin muscle (and sometimes a bit of tenderloin) attached to a neat row of curved rib bones.

**Pros:** Good flavor; easy availability; no tying necessary

**Cons:** None when cooked bone-in; tendency to dry out when boneless

### CLOSE SECOND: Blade-End Roast •

Also known as the “rib-end roast,” this cut from the shoulder end of the loin is a hodgepodge of small muscles.

**Pros:** Exceptionally rich flavor

**Cons:** Spotty availability; must be tied; tricky to slice cleanly

### DISTANT THIRD: Center-Cut Loin Roast •

A narrow section of loin muscle fused with a larger section of tenderloin, cut from the rear of the loin. The bones are mostly T-shaped vertebrae, not ribs.

**Pros:** Tender; decent flavor

**Cons:** Bone structure makes carving difficult; less flavorful than other options



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## Down to the Bones

My testing was nearly done, but I still wanted to know exactly what makes a bone-in roast so flavorful and juicy. I consulted our science editor as well as a number of unaffiliated meat scientists and experts, and several of them advanced similar theories about the enhanced juiciness and flavor of bone-in meat.

First, there is extra fat and connective tissue around the bones. As the roast cooks, that fat melts and bastes the meat while the connective tissues break down into gelatin, lending the meat perceived juiciness. (We score the fat on the surface of the roast for this reason.) Second, the bones act as insulation. Because they conduct heat poorly, they inhibit evaporation and moisture loss from the meat attached to them, keeping the meat around them juicier. Our science editor also pointed out that many of the flavor compounds in smoke vapor are fat soluble, and since there is extra fat in the roast—courtesy of the bones—the meat is likely to absorb and retain more flavor from the smoke.

But another, more intriguing theory, and one I had never heard before, credited the bone marrow. Two experts thought some of the flavorful compounds of the marrow might migrate through the porous bone and into the surrounding meat, though they knew of no experiments that proved it. This hypothesis seemed promising, so I asked our science editor to help the test kitchen devise an experiment to test it (see “Flavor from Bones?”). As it turned out, the theory held up.

With all the flavor and tenderness those bones provided, all that this roast needed was a simple orange salsa to provide a counterpoint to its richness. As the man once said, “If it ain’t broke, don’t fix it.”

### CHARCOAL-GRILL-ROASTED BONE-IN PORK RIB ROAST

SERVES 6 TO 8

**NOTE:** If you buy a blade-end roast (sometimes called a “rib-end”), tie it into a uniform shape with kitchen twine at 1-inch intervals; this step is unnecessary with a center-cut roast. For easier carving, ask the butcher to remove the tip of the chine bone and to cut the remainder of the chine bone between the ribs. For instructions on carving the roast, see page 31.

- 1 (4- to 5-pound) center-cut rib or blade-end bone-in pork roast, tip of chine bone removed (see note)
- 4 teaspoons kosher salt
- 1 (3-inch) wood chunk
- 1½ teaspoons ground black pepper
- 1 recipe Orange Salsa with Cuban Flavors, optional (recipe follows)

1. Pat roast dry with paper towels. If necessary, trim thick spots of surface fat layer to about ¼-inch thickness. Using sharp knife, cut slits in surface fat layer, spaced 1 inch apart, in crosshatch pattern, being careful not to cut into meat. Sprinkle roast evenly with salt. Wrap with plastic wrap and refrigerate for at least 6 hours, up to 24 hours.

2. One to 2 hours before grilling, submerge wood chunk in bowl of water to soak.

3. Open bottom grill vents fully. Light large chimney starter filled with charcoal (6 quarts, about 100 briquettes) and allow to burn until coals are fully ignited and partially covered with thin layer of ash, about 20 minutes. Empty coals into grill to cover one-third of grill with coals steeply banked against side of grill. Place wood chunk on top of coals, position cooking grate, cover, and heat until grate is hot and wood is smoking, about 5 minutes. Scrape grate clean with grill brush.

4. Sprinkle roast evenly with pepper. Place roast on grate with meat near, but not over, coals and bones facing away from coals. Open top vents halfway and cover grill, positioning vents over meat. (Initial grill temperature should be about 425 degrees.) Grill roast until instant-read thermometer inserted into thickest part of meat registers 140 degrees, 1¼ to 1½ hours.

5. Transfer roast to carving board, tent loosely with foil, and let rest for 30 minutes (internal temperature should rise to about 150 degrees). Carve into thick slices by cutting between ribs. Serve, passing salsa separately (if using).

### GAS-GRILL-ROASTED BONE-IN PORK RIB ROAST

Follow recipe for Charcoal-Grill-Roasted Bone-In Pork Rib Roast through step 2, substituting 2 cups soaked wood chips for wood chunk. Place soaked chips in 9-inch disposable aluminum pie plate and set on primary burner of grill (burner that will stay on during grilling). Position cooking grates over burners. Turn all burners to high and heat grill with lid down until very hot, about 15 minutes. Turn primary burner to medium-high and turn off other burner(s). Scrape grate clean with grill brush. Proceed with recipe from step 4, positioning roast on cooler part of grill, near, but not over, primary burner.

### ORANGE SALSA WITH CUBAN FLAVORS MAKES ABOUT 2½ CUPS

- ½ teaspoon finely grated orange zest, plus 5 oranges, peeled and segmented; each segment quartered crosswise
- ½ red onion, minced (about ½ cup)
- 1 jalapeño, stemmed, seeded if desired, and minced (about 3 tablespoons)
- 2 tablespoons juice from 1 lime
- 2 tablespoons minced fresh parsley leaves
- 2 teaspoons brown sugar
- 1 tablespoon extra-virgin olive oil
- 1½ teaspoons white vinegar
- 1½ teaspoons minced fresh oregano leaves
- 1 medium garlic clove, minced or pressed through garlic press (about 1 teaspoon)
- ½ teaspoon ground cumin
- ½ teaspoon table salt
- ½ teaspoon ground black pepper

Combine all ingredients in small nonreactive bowl.

## SCIENCE EXPERIMENT

### The Weirdest Roast Ever

We’ve long known that the fat and connective tissue that surround bones lend moisture and richness to bone-in meats, while the mere presence of bones slows cooking and limits evaporation of juices. But it seemed to us that there must be other reasons why bone-in meat tastes better than the boneless kind. So when two meat experts suggested that some flavor might migrate from the rich marrow at the center of bones through the porous bone itself and right into the meat, our curiosity was piqued. We devised a test to see if this theory made any sense.

## EXPERIMENT

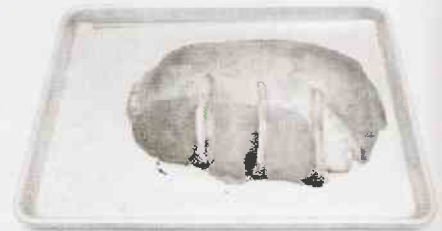
To fabricate a neutral flavored pork substitute, we made a big batch of mashed potatoes and seasoned it with 8 percent butter and 1 percent salt by weight, amounts that mimic the fat and salt found in our pork roast. Then we formed the potatoes into two equal-size, oblong shapes on a baking sheet. Next we scraped three pork rib bones clean of all fat and connective tissue, so that the only flavor would be from the marrow, and placed these bones over the top of one of the “roasts.” To create a control, we left the other mashed-potato “roast” alone. Then we cooked both of our imitation roasts in a 425-degree oven for 1½ hours. After a 20-minute rest, we compared the plain sample to the one with bones.

## RESULTS

A majority of tasters found that the sample cooked with bones tasted noticeably meaty.

## EXPLANATION

As bones are heated, they expel moisture, salt, amino acids, and nucleotides (the last two being responsible for the “meatiness” that tasters detected) from the richly flavored marrow. However, since those water-soluble flavor molecules must penetrate through a thick layer of bone to reach the meat, the diffusion process is slow and the amount of flavor contributed is not enormous. Nevertheless, when coupled with the considerable moisture- and flavor-enhancing benefits of the fat and connective tissue around the bones, the process certainly provides another good reason to opt for bone-in. —Dan Souza



### BONE-IN MASHED POTATO “ROAST”

Crazy as it sounds, our imitation roast proved that some flavor from the bone can migrate into the meat.