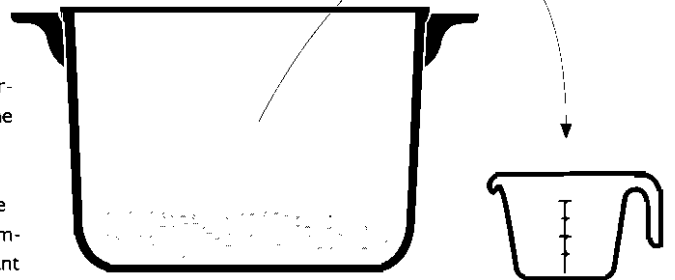


SCIENCE Less Fat, More Stable Sauce

The hardest part about making carbonara isn't coming up with the right ratio of egg whites to yolks to make a creamy, rich sauce; it's figuring out how to make a sauce that doesn't curdle, turn gritty, or tighten up into a glue—the usual problems as the pasta cools down. Some recipes get around the issues by adding lots of fat, which boosts the viscosity of the sauce and makes it more stable. We came up with a better, less cloying alternative: starchy pasta cooking water. Starch performs two functions. First, it coats the proteins in the eggs and the cheese, preventing them from curdling in the heat and clumping, respectively. Second, it combines with ovomucin, a protein in the egg whites, to form a network that is relatively resistant to temperature change, which means the sauce does not tighten up as it cools.

To take full advantage of the starch's effect, we concentrate it by cooking the pasta in half the usual amount of water and then add up to 1 cup of the starchy water to the sauce. The dressed pasta stays silky for a good 15 minutes. —C.R.



CREATE SUPER-STARCHY WATER
Boiling pasta in less water concentrates the starch.

RESERVE 1 CUP TO ADD TO SAUCE
Starch stabilizes the egg-based sauce

baffled. Why would a combination of whole eggs and pasta water create a smoother, more stable sauce than yolks and pasta water? The key turned out to be the relationship between the starch and ovomucin, one of 148 different proteins in egg whites. When ovomucin and the starch from the cooking water interact, they form a network that not only contributes viscosity but is also fairly stable and less responsive to temperature decline than a sauce made with just egg yolks. The starch was also coating both the egg and the cheese proteins, preventing the eggs from curdling and the cheese from clumping.

This information was encouraging and also gave me an idea about how to further boost the viscosity of the sauce—add more starch. I decided to try a trick we discovered when developing our recipe for Cacio e Pepe (January/February 2010), another of those minimalist Roman pasta dishes: cooking pasta in less water (just 2 quarts per pound of pasta rather than the typical 4) to produce a starchier liquid that in turn leads to a “creamier” sauce when tossed with the spaghetti. I did the same here, halving the amount of water that I used to cook the spaghetti

and then whisking $\frac{1}{2}$ cup of this super-starchy liquid into the eggs and cheese before combining the sauce with the pasta. It was a huge success. The sauce was rich and glossy and, what's more, held that consistency for a record 15 minutes. To ensure that the egg mixture thickened properly, I also made two small (but critical) tweaks to my technique. First, I warmed the empty serving bowl with the drained cooking water—another classic Italian pasta trick—to be sure that there was enough heat to “cook” the sauce. Second, I let the sauced pasta rest briefly and tossed it several times before serving; as the pasta cooled, the sauce reached just the right consistency.

Flavor Finessing

This carbonara sauce was already the best I'd had to date: stable and creamy but not cloyingly rich. What it lacked was the true egg flavor of the all-yolk sauce, so I made that my next goal. And while I was at it, my tasters reminded me, could I please amp up and even out the meaty pork flavor?

Since yolks were the key to eggy richness, I tried adding an extra one to my three-whole-egg formula, not knowing if the flavor of just one would suffice or how it would affect the holding time of the sauce. Fifteen minutes later, I was pleasantly surprised to see that the sauce was just as glossy and loose as the batch without the extra yolk. And the flavor? Custardy rich but not heavy.

As for the bacon, I was sure the $\frac{1}{2}$ pound I was using was plenty, but my tasters were right: Tossing bacon bits into the pasta didn't make for well-rounded pork flavor. The carbonara traditionalists among us also wished that the texture of the bacon could more closely mimic the satisfying chew of guanciale. I had ideas for addressing both issues. First, I cooked the bacon with a little water, which we recently discovered produces tender-chewy—not crumbly—pieces. Second, I caved on my resolution not to add extra fat—but just a little. Whisking a mere tablespoon of bacon fat into the sauce before tossing it with the pasta brought bacon flavor to every bite.

Finally, I'd nailed it: carbonara that was lush and rich with egg, bacon, and cheese but still light enough that my tasters didn't just eat a full bowl: They went back for seconds.

FOOLPROOF SPAGHETTI CARBONARA

SERVES 4

It's important to work quickly in steps 2 and 3. The heat from the cooking water and the hot spaghetti will “cook” the sauce only if used immediately. Warming the mixing and serving bowls helps the sauce stay creamy. Use a high-quality bacon for this dish; our favorites are Farmland Hickory Smoked Bacon and Vande Rose Farms Artisan Dry Cured Bacon, Applewood Smoked.

- 8 slices bacon, cut into $\frac{1}{2}$ -inch pieces
- $\frac{1}{2}$ cup water
- 3 garlic cloves, minced
- $2\frac{1}{2}$ ounces Pecorino Romano, grated ($1\frac{1}{4}$ cups)
- 3 large eggs plus 1 large yolk
- 1 teaspoon pepper
- 1 pound spaghetti
- 1 teaspoon salt

1. Bring bacon and water to simmer in 10-inch nonstick skillet over medium heat; cook until water evaporates and bacon begins to sizzle, about 8 minutes. Reduce heat to medium-low and continue to cook until fat renders and bacon browns, 5 to 8 minutes longer. Add garlic and cook, stirring constantly, until fragrant, about 30 seconds. Strain bacon mixture through fine-mesh strainer set in bowl. Set aside bacon mixture. Measure out 1 tablespoon fat and place in medium bowl. Whisk Pecorino, eggs and yolk, and pepper into fat until combined.

2. Meanwhile, bring 2 quarts water to boil in Dutch oven. Set colander in large bowl. Add spaghetti and salt to pot; cook, stirring frequently, until al dente. Drain spaghetti in colander set in bowl, reserving cooking water. Pour 1 cup cooking water into liquid measuring cup and discard remainder. Return spaghetti to now-empty bowl.

3. Slowly whisk $\frac{1}{2}$ cup reserved cooking water into Pecorino mixture. Gradually pour Pecorino mixture over spaghetti, tossing to coat. Add bacon mixture and toss to combine. Let spaghetti rest, tossing frequently, until sauce has thickened slightly and coats spaghetti, 2 to 4 minutes, adjusting consistency with remaining reserved cooking water if needed. Serve immediately.

TECHNIQUE | WARM THE BOWL

To help the sauced pasta stay creamy longer, warm the mixing bowl (and the serving bowls).



Drain the cooked spaghetti in a colander set in a large serving bowl. The water will heat the bowl, and some of it can be reserved for the sauce.