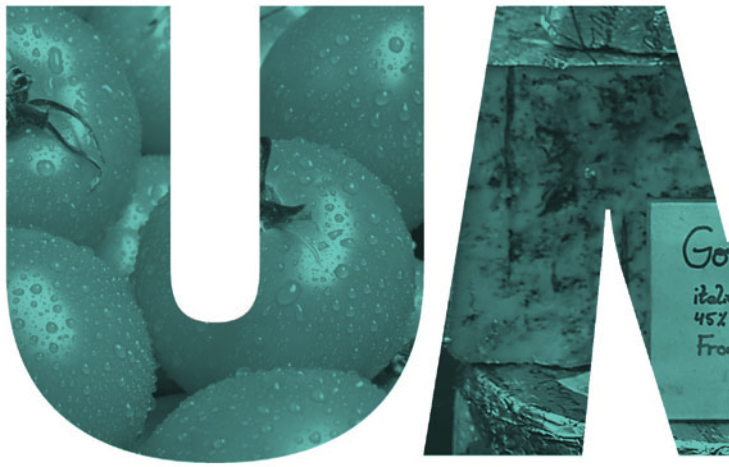
by Rowan Jacobsen



A Taste by Any Other Name

Umami Comes West

I've always struggled to explain to the uninitiated my weakness for certain foods. Raw oysters, for example. What do they taste like? Hard to say. I usually trot out some bromide about the essence of the sea, wet rocks at low tide, leaving my audience more skeptical than ever.

Then there are tea, anchovies, tomatoes, Gorgonzola — love 'em or leave 'em. I love 'em. And at last I and the other anchovyheads out there have scientific proof that we aren't deranged. Those foods I've mentioned — oysters, tea, cured fish, ripe tomatoes, aged cheese — are burgeoning with umami, the "fifth taste."

It's hard for Westerners to say *umami* without feeling silly, but the word has been common in Japan for centuries. Literally, it means "the essence of deliciousness," and it's used to describe any food at its height of perfection. As such, it was the word chosen in 1907 by a food chemist named Kikunae Ikeda to evoke the elusive tastiness of a bowl of dashi (dried-kelp-and-fish broth), which has a taste separate from the standard quartet of sweet, sour, salty, and bitter. The word stuck and was adopted by the rest of the world.

Umami is a vague term. It's as if a Frenchman had discovered this indescribable fifth taste and named it *je ne sais quoi*. But we know the *quoi:* it's an amino acid called glutamate. When Dr. Ikeda put his kelp to the rack, he discovered it was loaded with glutamate — so much, in fact, that pure white crystals of the stuff appeared on the kelp as it dried. And sure enough, although glutamate had little discernible flavor of its own, any food to which it was added tasted more deli-

cious to people. No fool, Ikeda quickly patented the stuff in a convenient form called monosodium glutamate, and an MSG empire was created.[1]

MSG has taken a bad rap. It's effective as a taste enhancer, but by the 1970s many second-rate restaurants had a heavy hand with the MSG, and it was blamed for "Chinese Restaurant Syndrome" — symptoms of headaches, dizziness, and nausea after eating food to which large quantities of MSG have been added. Chinese Restaurant Syndrome has been debunked, and MSG now has a fairly clean bill of health, but it is still virtually synonymous with "artificial food additive."[2]

In the West, the umami breakthrough came in 2000 when researchers identified human taste buds designed to respond to glutamate. Other previously known taste buds responded to either salt, sour, sweet, or bitter. A fifth taste was revealed. Soon other amino acids were found that triggered the umami taste buds. Then a related group of proteins, the nucleotides, were found to do the same thing.

Since then, a whirl of umami activity has kicked up, and if I read the winds correctly, it will build into a full gale in the coming years. Already we have the Umami Café in New York, The Umami Information Center in London, the Society for Research on Umami Taste in Japan, and the US publication of *The Fifth Taste: Cooking with Umami* by David and Anna Kasabian. *The Fifth Taste* explains the science and history of umami in 34 pages, then presents about 60 recipes from chefs, some famous, using umami-rich ingredients. We get Steve Raichlen's Wood-Grilled Rib Steak with Shiitake-Wine Sauce; Rick Bayless's Whole Fish Braised with Tomatoes, Capers, Olives, and Herbs; and Nobu Matsuhisa's Spicy Sour Botan Shrimp. These seem like fine recipes, but what connects them? They all taste of umami, but you might as well say, "They all taste delicious." They all have salt in them, too, and saltiness is essential to their appeal, yet no one is rushing to publish *The Fourth Taste: Cooking with Salt*. Good cooks already instinctively work with umami, even if they don't use that term, and understanding umami probably won't change their practices much.[3] But it will certainly help them comprehend why they like what they like.

The Fifth Taste does a nifty job of explaining the science of umami, with which every serious cook should have a passing familiarity. Protein is built from amino acids, and of them glutamate is the most common. Complete protein molecules don't trip any of our five tastes — lay a piece of plain chicken breast on your tongue and the taste comes not from the protein

1. And still thrives. Ajinomoto, the corporation Ikeda founded, today has factories throughout Asia churning out mountains of MSG and other umami food additives.

2. If you want to cause a kerfuffle, walk into your local natural foods store and point out the MSG on their organic seaweed.

3. On the other hand, many are the bad cooks who could benefit from the simple present of a $3 bottle of fish sauce.

but from trace salts and sugars in the meat — yet if you break those same protein molecules into their amino acids, they lock right onto your umami taste buds and drive you wild. The trick, then, is to come up with some way to damage the protein so it falls apart into glutamate and other amino acids. A not insignificant amount of the world's culinary heritage is devoted to ways of doing precisely that. Fermentation does it, when bacteria attack the protein. Smoking and curing and dry-aging do it. Microbes break down milk protein during cheesemaking. And, of course, intense or prolonged heat does it, as in grilling or roasting.[4]

What's most fascinating about the umami phenomenon is that every major culinary culture has hit upon its own way of creating the taste. The Japanese have seaweed and miso. The Chinese have soy sauce and tea. Southeast Asia has fish sauce and Korea has kimchi. The ancient Romans ladled *garum* (fermented fish sauce) over everything, and modern Italians have anchovies and Parmigiano Reggiano[5] and prosciutto. The French have all sorts of aged cheeses. Scandinavians have smoked salmon and pickled herring. Eskimos have a kimchi-like seagull preparation. The Maya have cocoa. The British have Worcestershire sauce (which contains anchovies). The Australians, God help them, have learned from the British and love Vegemite. And the Americans . . . well, the Americans have ketchup, whose name derives from the Indonesian *kecap* (fermented and sweetened bean-and-fish paste). It is a long way from *kecap* to ketchup, but tomatoes do have the highest glutamate levels of any terrestrial vegetable. (Sea vegetables are higher.)

What all the above concoctions have in common is a savory quality that is the essence of umami. Separate the savoriness of these foods from the saltiness that so often accompanies it, and is enhanced by it, and you zero in on the taste of umami. The authors of *The Fifth Taste* suggest sipping a glass of saltwater, then sipping the same glass to which a pinch of MSG has been added. Not only will the second sip taste saltier, but it will also have a savory taste — umami.

That sounds like a pretty fun evening, but there are more rewarding ways to recognize savoriness. You might make chicken broth with no salt. Or cook one pot of rice in salted water and another in water flavored with fish sauce. Best of all, you could make a pot of dashi, the Japanese stock that is the purest expression of umami. Dashi has but two ingredients: kelp and bonito flakes,[6] two powerhouses of the umami world. Briefly simmered, the kelp and bonito impart savoriness to the water and little else; dashi is uninteresting on its own, but it's brilliant as a base for soups and sauces.

Dashi also represents a more sophisticated application of umami principles, because it utilizes both sides of the umami coin: amino acids and nucleotides. MRI images show that the taste-receptor part of our brain sparks when we encounter amino acids or nucleotides, but lights up like a pinball machine when we taste them in combination.

Because of this synergistic effect, the nucleotides are called *synergizing umami*. Bonito flakes and mushrooms are the champs, but dark-fleshed fish and most other animal meats are decent sources, too. Pork is higher than red meats, and cured pork is particularly high, which helps explain why a little bacon or ham is essential to so many soups and sauces (and why mushrooms make a fair substitute). It also canonizes the ham-and-cheese sandwich as an umami classic.

It would be easy to get carried away with this stuff. Choose a basic umami item from Column A (cheese, beans, tomatoes, shellfish, soy sauce, seaweed) and a

4. Some researchers have referred to our taste for umami as "a taste for protein," but it's not that simple. It's the taste for *broken-down protein,* which leads to some evolutionary questions. We know that other primates have umami taste buds. Do tigers? Do rabbits? If diehard carnivores and herbivores don't gravitate toward umami as we do, did *Homo sapiens* evolve to specialize in protein that's been *sitting around for a while?* (Do vultures have umami taste buds?) One possible advantage: protein that's been stewing in the Serengeti sun for a week is a lot less likely to whack you when you nibble on it. Or maybe our ancestors who developed a taste for cooked or fermented meat (but not actually rotten meat, which is bitter and sour) were less likely to get sick from their food.

5. Some of the tiny white crystals in Parmigiano Reggiano are, in fact, pure umami, in the form of the amino acid tyrosine.

6. Also known as *skipjack* in English and *katsuo* in Japanese, bonito is related to tuna and mackerel. The Japanese not only use fresh *katsuo* as a sushi fish, but also salt, smoke, and dry it into rock-hard chunks, which are shaved into flakes that add a savory smokiness to dishes.

synergizing umami item from Column B (mushrooms, smoked or cured meats and fish, pickles, aged vinegars, yeast) and presto, dinner is ready. The opportunity for cross-cultural Frankenfoods is high (tomato sauce with bonito flakes, anyone?), as is the risk of losing track of why we enjoy food. The interplay of taste, aroma, texture, and visual appeal is irreducible. Umami is just one instrument in the orchestra; it sounds lousy in solos but improves the rest of the orchestra. Understanding how an oboe enriches a symphony is important knowledge for any composer, but it would be absurd to choose your music based on minutes of oboe time.[7] And just as there are plenty of pieces of music that sound great despite the lack of oboes, umami isn't essential to food enjoyment: two of the only foods that the authors of *The Fifth Taste* single out for being devoid of umami are fruit and butter — no slouches as far as deliciousness goes.[8]

Yet, as one of our five basic tastes, umami should be a part of every flavor consideration. The *umaminess* of a dish needs to be evaluated right along with the sourness and sweetness. It's a question of balance and variety. Whenever a soup or sauce "needs something," chances are that something is umami — and, chances are, a Western cook will mistakenly add salt instead. And therein lies the real benefit in the current umami wave: by putting a name to this subtle phenomenon, we make it more real. We can perceive it, think about it, play with it, and realize when it's needed. We can understand what anchovies and soy sauce have in common, and by understanding that, can appreciate their differences.

But umami isn't always desirable. For instance, it clashes with tannic wines. Tim Hanni, who runs the Napa Valley company WineQuest, which trains sommeliers to pair food and wine, believes umami is the key to understanding why certain combinations don't work. "Foods high in umami seem to increase our sensitivity to bitterness in wines and create a metallic taste. This is true with many soup and sauce stocks; strong, oily fish; oysters; and many dried or preserved foods, including caviar. . . . Soft-ripened blue cheese is a classic example of this phenomenon." Saltiness or acidity in food will moderate bitterness; still, it usually makes more sense to pair high-umami foods with white wines, low-tannin reds like Beaujolais, or even sake.[9] On the other hand, David Kasabian notes that "Every taste test I have conducted and real-world meal I have eaten indicates to me that umami softens bitterness. Get yourself a soft old red Bordeaux and drink it with a dish of braised kale (which is plenty bitter) and see how it smoothes out the bitterness." As with any other taste, judicious use of umami brings certain dishes to life, overuse leaves them unbalanced.

Which is why I'm thrilled to have been given this missing piece of the flavor puzzle, but nervous that myopic enthusiasm is turning umami into something it's not. Lately, it seems to be morphing into some sort of vitamin. People seek their daily "umami kick" the way they tried to score omega-3s last month. Websites list the umami content of foods as if it were a contest.[10] But that's putting the cart before the horse. Food is about more than glutamates and nucleotides; Umami isn't an end in itself. Otherwise you might just as well get out the MSG shaker.

7. Breast milk, for example, is off the charts in umami content. Perhaps the Umami Café will be serving some soon.

8. Even raw fruit, however, can benefit from umami. The Japanese make an umami-rich miso dip to enhance apples' sweetness, and the Italians put drops of balsamic vinegar on strawberries for much the same reason.

9. If you're wondering whether wine has umami of its own, join the club. Even the experts disagree. Fruit is notoriously low in umami, yet yeast (like other fungus) is high in synergizing umami and generates more umami during fermentation. Some claim that contact with wood barrels creates umami, or that umami content rises as wines age. The sake-umami connection is more established. David Kasabian says, "Rice has roughly 7 to 10 percent protein. Given the chance to break down in fermentation, that's more than enough for plenty of umami." Some high-end sakes actually list their amino-acid content on their labels. And since the taste of sake is subtle — Harold McGee in *On Food and Cooking* refers to it as "perhaps the purest expression of the flavor of fermentation itself" — it could be that its umami content is more central to its pleasure.

10. I'll save you the trouble. Glutamate content in mg/100 g: oysters 137, tomatoes 140, squid 146, green tea 668, Parmigiano 1200, nori 1378, kelp 2204. Synergizing umami content in mg/100 g: pork 122, dried shiitake mushrooms 156, tuna 188, dried bonito flakes 687. (Source: Umami Information Center, www.umamiinfo.com.)