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PROFILES

A MAN OF TASTE

A chef with cancer fights to save his tongue.

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The entrance to Alinea, a restaurant in the Lincoln Park neighborhood of Chicago, is unmarked. Visitors pass through gray metal doors, go down a narrowing corridor, and arrive at a set of doors that slide open automatically. The diner walks into Alinea just to the side of the kitchen, which lacks a big oven or hanging pots. Instead, there are gleaming low stainless-steel tables, ceiling lighting of the type found in a conference room, and gray area rugs. On the wall are large sheets of poster board covered with sketches, in black ink, of dishes that Alinea's chef, Grant Achatz, is thinking about adding to the menu. When I visited on a Tuesday evening in April, there was a drawing of what looked like a flag; in fact, it was a slice of Wagyu beef attached to a pair of chopsticks held up by a base. Another sketch depicted "edible string," made from corn silk or herb stems. In a third image, a sphere had been divided into three concentric layers: a core of strawberry, a middle of Niçoise olives, and a crust of white chocolate flavored with violet. Alinea is closed on Tuesdays, but Achatz, who is thirty-four, was working on new dishes—he tries to change his menu every season. He likes to come up with new culinary ideas late at night, when the restaurant is empty, sketching various "prototypes" on pads of paper. He later transfers these drawings to the large posters on the kitchen wall, so that his staff can look at them. That evening, one bore the words "Capture spring. What is it? New, Fresh, Ice, Sprouts, delicate, gradual."

Three sous-chefs had joined Achatz, who is a lean five feet nine—"Five feet ten, if you ask me," he says—and has a handsome face with red hair razored short. After the four men had changed into their



*Grant Achatz torching cinnamon.
Photograph by Ethan Levitas.*

long white chef's coats, they gathered around a table. They were focussing tonight on the dessert involving strawberries, Niçoise olives, and essence of violet. Achatz (his name rhymes with "rackets") had thought up the dish in March and, at first, wasn't sure how to combine the three ingredients, which, he explained in an e-mail, captured "the idea that, in certain red wines, people often smell strawberries with 'purple flowers' (a.k.a. violets) and olives." He had simply scrawled "Composed dessert?" near the exhortation to "Capture spring." Over the next few weeks, he came up with various approaches: a broth, a capsule, an aromatic bath. He works in the tradition of molecular gastronomy, which aims to take familiar foods and, using scientific techniques, give them new tastes and textures. Molecular gastronomists talk of "manipulating" ingredients rather than "cooking" them. For the dessert, Achatz finally settled on a ball the size of a jawbreaker: the three ingredients would be wrapped around one another. Achatz said in the e-mail, "The flavors are put together on the assumption that if they smell good together they will taste good together."

As the men talked, Achatz sometimes paused—his voice was hoarse—and opened a container that he kept with him, coated the heel of his hand with a white chalky liquid, cocked his head, and rubbed his hand along the inside of his mouth. The liquid was Lidocaine, a pain reliever.

Ten months ago, Achatz was given a diagnosis of tongue cancer. He was informed that if he did not start treatment immediately he would die. "You have Stage IV cancer," he remembers being told by a doctor at the University of Chicago Medical Center. "There is no Stage V." Doctors removed lymph nodes from his neck; a pink scar now extends from an inch below Achatz's left earlobe to an inch above the collarbone. He was also given twelve weeks of chemotherapy treatment, which made his hair fall out, and six weeks of radiation, which nearly swelled his throat shut, and caused the skin inside his mouth and on his face to peel. "They burned me so bad I had to wear a burn mask," he recalls. The therapy also destroyed his sense of taste. Although it is slowly returning—the process can take a year or more—he is in the precarious position of having to create and serve food that he cannot really taste.

That night, Achatz and his team wanted to figure out the balance of ingredients for the white-chocolate-and-violet outer layer of the new dessert. The filling was another puzzle: too much strawberry would overwhelm the salt in the olives; too much olive would mask the strawberry. The violet had to serve as a link between these two strong flavors—as a reverberation of spring.

After the white chocolate had been melted, Achatz stepped back and let his sous-chefs take over. One used a medicine dropper to add lavender into the beige liquid, while another stirred the drops in. Achatz was using lavender as a proxy that night, because the restaurant had not yet received its shipment of violet oil.

"How's it taste?" Achatz asked the three chefs.

"Not there yet, Chef," one said.

Achatz put his nose deep in the bowl. “More drops,” he said. He stood back again, his concentration intense.

One sous-chef added more lavender, while another took out a spoon and swiped a bit off the top of the mixture.

“Do you taste it yet?” Achatz asked him. He danced around his staff.

“Not really,” one answered.

More lavender. Achatz turned to another sous-chef and asked him to taste it. The sous-chef picked up the spoon put down by his colleague, flipped it, and loaded the handle end with a taste from the pot. “No,” he said.

Achatz put his nose into the bowl again. His staff kept adding drops and tasting. Finally, they said that the blend of white chocolate and violet had the right flavor.

“I can really smell it,” Achatz said.

The four men dipped chunks of strawberry coated in an olive mixture into a pan containing liquid nitrogen, flash-freezing them. Then they coated the balls in the flower-infused white chocolate, and put them in the freezer.

Afterward, Achatz and I sat down at one of the tables in his empty restaurant. He said that, if his ambitions were different, his condition might not matter so much—many successful chefs leave their menus mostly unchanged, season after season. But this is not a route that Achatz is willing to take. He noted that he had once worked for Thomas Keller, the celebrated chef of the French Laundry, in the Napa Valley. He said, “Thomas has his Oysters and Pearls”—a signature dish. “We just don’t do that. We develop dishes that we feel are great and then eventually replace them.”

Indeed, Achatz’s rising fame rests on his restaurant’s commitment to novelty. (“Alinea” is the word for the backward “P” symbol that proofreaders put at the beginning of a new paragraph.) So if Achatz can’t keep creating new dishes the restaurant will close, or, at the least, it will lose the central place it currently occupies among food enthusiasts. (Ruth Reichl, the editor of *Gourmet*: “Grant Achatz is redefining the American restaurant.”) And so Achatz is willing, while his body heals, to play an odd, new, dependent role in his kitchen. “For years and years and years, it was the opposite,” he told me. “My sous-chef was handing me food, and I was saying, ‘No, it needs more salt.’ ” He added, “Now I just have to trust them, to either confirm what I myself am perceiving or to tell me, ‘No, Chef, that’s not it.’ ”

Achatz comes from a family of restaurant owners. His relatives—some of them German, others French-Canadian—owned seven diners within a fifty-mile radius of St. Clair, Michigan, Achatz’s home town. When he was five, his parents made him a dishwasher at their establishment, Achatz’s Family Restaurant. He stood on a milk crate so that his hands could scrub the bottoms of the pots. By

the age of twelve, he was a cook on the line. “I was on the schedule, like a normal employee,” he says. Achatz’s Family Restaurant served basic food—eggs, roast chicken and potatoes, beef stew. The restaurant, he recalls, was “a social gathering place in the community, a place where everyone went after church on Sunday. And it did the most fundamental thing that food does—that is, nourish people.”

Such food did not lend itself to decoration. When Achatz was eleven, he added a sprig of parsley to an omelette plate. His father told him, “It doesn’t have to look good. It just has to taste good.” Undeterred, his son continued to experiment. One day, in 1988, when he was fourteen, Achatz was whipping potatoes in a Hobart mixer and his eye fell on some McCormick poultry seasoning. He remembers thinking, Hey, I wonder if I put some poultry seasoning in there what it would taste like. The whip of the mixer knocked the container out of Achatz’s hand, and the seasoning quickly spread throughout the potatoes. Achatz added milk and butter and put the potatoes on the steam table, hoping that no one would complain. They had to be thrown out.

Despite this mishap, mixing flavors was one of the aspects of cooking he liked most. “Since I’ve been ten years old, even eight years old, my life has been devoted to tasting and memorizing flavors,” Achatz says. “They are really burned in my brain.”

Over his father’s objections, he skipped college and enrolled at the Culinary Institute of America, in Hyde Park, New York. On one break from school, Achatz returned home and roasted emu for his parents and their friends. “We didn’t even know what it was,” his father recalls.

In 1995, the year after he graduated, Achatz went to work for Charlie Trotter, the owner of the eponymous restaurant in Lincoln Park, near where Alinea is today. (“I want to be like him,” Achatz remembers saying to himself. “I want to be the best.”) A year after that, he moved to Northern California to work at the French Laundry, under Keller, a cook’s cook who emphasizes fresh ingredients and combines them in often dazzling ways. Achatz still recalls his surprise at the Oysters and Pearls dish: “Caviar with pearl-tapioca pudding? Not only is it delicious, but who thinks of putting pudding with caviar? It was just mind-blowing.”

In 2000, Keller sent Achatz to visit El Bulli, a restaurant in Catalonia run by Ferran Adrià, one of the leaders of the molecular-gastronomy movement. “Thomas always looked at me during my tenure as kind of an idea guy,” Achatz says. At El Bulli, Achatz saw foaming foods and hot gelatins. Adrià was also known for serving meals in a fantastic manner. One season, peanut butter came to the table in a toothpaste tube; in another, diners were given a plastic ampule to squirt mushroom cream into their mouths. Keller, at the French Laundry, was more interested in what you could do with food rather than *to* food; Adrià made Achatz consider new possibilities. Soon after his trip, he sat down with Keller and told him, “I need to go. I need to do my own style, ’cause I’m thinking of food differently from the

way you need it and want it prepared here.” Keller wished him well.

In April, 2001, at twenty-six, Achatz applied to be the chef of Trio, a well-known restaurant in Evanston, Illinois, a suburb of Chicago. The owner hired him after he auditioned with a seven-course meal. He quickly became renowned in the food world for a dish called Truffle Explosion—the diner bit into a piece of ravioli and was greeted by a burst of intense black-truffle liquid. In 2002, the *Chicago Tribune*'s restaurant reviewer gave Trio four stars; a year later, the James Beard Foundation named Achatz its Rising Star Chef. A month or two after that, a tiny lesion appeared midway along the left side of Achatz's tongue.

The main risk factors for cancer of the “oral tongue,” as the forward two-thirds of the organ are called, are alcohol and tobacco. Achatz never smoked or drank heavily, but his life style wasn't exactly healthy. At Trio, he ate poorly, drank ten Diet Cokes a day, and worked long hours, sometimes as many as ninety a week. (When a local magazine featured Achatz and asked him to name “one thing that's overrated,” his response was “Sleep.”) He had also recently become a father: he and Angela Snell, a former events coördinator at the French Laundry, had moved to Chicago together, and had a son, Kaden, in 2001.

Cancer cells can grow wildly; they can travel through the bloodstream to find distant organs to colonize; they can take over blood vessels. But, as skillful as they are, they meet a remarkable opponent in the mouth, whose tissue is designed to withstand salivary acids, bacteria, fungi, and chewed food. “Our mouths are set up to tolerate a large amount of insults,” Joseph Califano, a head-and-neck surgeon at Johns Hopkins, says. “Evolution has created the cells lining the mouth to be extraordinarily resistant to tumors.” So at first Achatz's cancer, which may have emerged as early as 2003, had only marginal success in gaining a hold in his tongue.

The tongue's nerves rise close to the surface, and the lesion, as small as it was, exposed these nerves, which soon came in contact with Achatz's teeth. Achatz's tongue began to bother him. He felt it at night and when he put hot or sour foods in his mouth. One day, in April, 2004, Achatz, on his way to work at Trio, stopped in front of a mirror, opened his mouth, and stuck out his tongue. He saw the lesion—a white dot—which he at first took to be a canker sore. He made an appointment to see a dentist, who told Achatz to stop biting his tongue. “You're stressed, you're young, you're successful, you're stressed, you just had a kid, blah, blah, blah” is Achatz's summary of the diagnosis.

That month, Achatz began organizing a group of backers to invest in his own restaurant. He loved Trio, but since he was a teen-ager he had wanted his own kitchen. He found a partner, Nick Kokonas, a former derivatives trader who was a fan of the food at Trio, and they wrote up a business plan and started looking for money. Six investors soon joined Kokonas, who himself put in more than half a million dollars. The owner of Trio was devastated by Achatz's departure. He complained to the

Tribune, “What’ll I do without truffle ravioli? It’s like the memory of an old girlfriend.”

Achatz wanted his new restaurant to be different—no tablecloths or silverware waiting on the diners’ tables, and no rubber mats in the kitchen. His chefs would be so precise that they could work on carpeting. He planned to cook with Cryovac packets, a technique that uses vacuum-sealed containers to infuse meats and vegetables with seasonings; molecular-gastronomy advocates say that the method creates more flavorful food. So Achatz would need lots of hot water but hardly any ovens. He did not want a huge range from which he could command a kitchen brigade but, rather, a modular field where cooks could rotate in and out of different tasks as equals.

In all this, Achatz followed in the footsteps of the molecular gastronomists, who believed that the standard repertoire of cooking—the roasting, boiling, and sautéing that dominated the kitchen since the time of Auguste Escoffier—was out of date. Chefs like Ferran Adrià had noticed that a hundred years ago kitchens and science laboratories used the same techniques, but in recent years labs had pulled far ahead. Multinational food companies benefitted from the labs’ innovations, converting solid foods into sprays (the coating on Cheetos), and using nitrous oxide to aerate them into foam (Reddi Wip). The world’s best restaurants, Adrià and his ilk believed, needed to catch up with Nabisco.

Adrià’s influence was unmistakable when I ate at Alinea, in March. The meal was almost comically elaborate, involving twenty-four courses and costing three hundred and seventy-five dollars, with wine. The food starts off at the savory end of the spectrum, and slowly turns sweeter, concluding with coffee, in the form of crystallized candy. Most items could be eaten in a bite or two, but the procession took four and a half hours. I had liquefied caramel popcorn in a shot glass, and a bean dish that came on a tray with a pillow full of nutmeg-scented air. The plate of beans was placed atop the pillow, forcing the aroma out. I sampled a “honey bush tea foam cascading over vanilla-scented brioche pudding,” in the words of the young man who brought it. There was also a dish centering on a cranberry that had been puréed and then re-formed into its original shape. The berry was then prepared on a device called the Antigridle, which Achatz had helped design. The Antigridle froze the bottom of the berry but left the top soft.

A few dishes were merely fanciful; most were fanciful and delicious. My favorite was called Hot Potato, Cold Potato. A ball of potato, simmered in clarified butter and covered by a black truffle, had been skewered on a steel pin, along with a cube of Parmesan, butter, and chives. I slid these items off the needle, allowing them to fall into a bowl of cold potato soup. Then, doing as the server instructed, I tipped my head back and downed a soup that was two temperatures at once.

Achatz downplays the connection with Adrià. “It’s certainly not like we’re buying his cookbook and copying his food,” Achatz said. “We may utilize science in the kitchen, but it doesn’t appear in front of our guests. I consider what we do an art form, and art is in many ways the opposite of

science.”

The cancer made Achatz, always a thin man, thinner. He stands very still, and has a rabbit-like alertness—ears open, eyes peering, nose flared. He does not show much emotion, even when he talks about his sickness, so what he said next surprised me: “To me, I think we do a good job of evoking emotion through food, and that’s kind of our focus, our perspective. That’s our hope.” He mentioned that some diners cry during a meal at Alinea, brought back to their childhoods by the combinations of flavors and smells. The meal I had, Achatz reminded me, included liquefied hay in one of the soup dishes. Achatz hoped that the subtle taste would summon diners’ memories of long-ago hayrides. A goose dish on the Winter, 2006, menu came with a ramekin of orange peel, nutmeg, allspice, sage, and goose fat. The ramekin, which was heated, was meant to give off the smell that comes from opening the oven door on Christmas Day. Another creation, on the Fall, 2005, menu, had smoldering oak leaves surrounding poached pheasant breast. “The whole point of that aroma is not to flavor the food,” he said. “This is what happens to me personally when we set oak leaves on fire—I’m transported to my youth, raking the leaves in front of my house, jumping into the leaves, and setting them on fire.” He went on, “What we try to do is really search out that kind of emotional trigger.”

Achatz’s mouth continued to bother him, and in November, 2004, he went back to his dentist, who referred him to an oral surgeon. The surgeon took a tissue sample and sent it to a laboratory for a biopsy. The tissue came back without evidence of cancer. Everyone stopped worrying. (“Was it not there? Was it a geographical miss? Was the biopsy erroneous or misread? It could have been any of those things,” one of Achatz’s cancer doctors told me.)

Meanwhile, Achatz was ready to open Alinea. Things began with a bump: an opening-week Critic’s Notebook column, written by Frank Bruni, the principal restaurant critic of the *Times*, wondered why the bison had to be served atop a heated glass tube that wafted cinnamon scent in the diner’s nose (and that the server compared to a bong). He also mentioned that, when his dining companion broke off her dehydrated bacon from the tiny silver scaffold it hung on, a bit fell into her shoe. Bruni described the opening course, P. B. & J.—a single grape skinned and wrapped in peanut butter and brioche—as a “visually nifty riff.” He saw the science more than the heart, and wrote that he preferred Adrià’s restaurant in Spain. Achatz’s goal of reinventing cooking while conjuring Proustian memories seemed, to Bruni, contradictory. (The article did not please Achatz. Given Bruni’s well-known love of classic Italian food, Achatz asked me, “How can he possibly review Alinea?”)

Chicago prides itself on being a city with more daring restaurants than Manhattan—the city also has Moto, an Asian-inflected outpost of molecular gastronomy—and the home-town response was unequivocal. The *Tribune* exalted the very dishes that the *Times* suggested were contrived or showy, declaring the P. B. & J. opener “comfort food fit for the Museum of Contemporary Art.” One local

food enthusiast posted on a popular online food forum, eGullet, a photograph of every dish he ate at Alinea as well as the average number of bites each course required (4.14 bites per course; a hundred and sixteen bites over all).

Soon, Ruth Reichl, of *Gourmet*, came to Chicago. In 1997, when she had held Bruni's job at the *Times*, she had praised the French Laundry as "the most exciting place to eat in the United States." Achatz had been a sous-chef there at the time. *Gourmet* now anointed Alinea the best restaurant in America. In an essay, Reichl called Achatz a successor to Alice Waters and Wolfgang Puck, who helped define American cooking over the past three decades. She even claimed that Achatz had surpassed his mentor Thomas Keller in originality. "Achatz clearly thinks about cooking in a different way," she wrote, praising his "gorgeous, inventive, and delicious food."

Kokonas and Achatz went to the bank and gave out fifteen thousand dollars in tips to Alinea's cooks and crew. Achatz appeared on the "Today" show. The fifteen months that followed were a "swirl of energy and momentum," Achatz remembers. "It was just everything you could imagine." International hotel chains came to talk about opening branches of Alinea. Achatz signed a contract for a cookbook. He and Kokonas began making plans to open a restaurant in New York. During these months, he dealt with the ongoing sore in his mouth by placing a bumper of chewing gum between his teeth and his tongue.

By this time, Achatz and Snell had had a second son, named Keller, in honor of Achatz's mentor. They married in 2006, and almost immediately divorced. The pain in Achatz's tongue continued to bother him. He recalls the time: "I am certain that I am, like, biting my tongue because I am stressed, you know. Continue on, have another kid, open Alinea, sleep four hours a night, you know, drink more coffee than I eat food." In July, 2006, Achatz went to a new dentist, who fitted him for a top mouth guard.

Cancers are constantly reinventing themselves, and the cancer cells in Achatz's mouth that had been blocked for a long time finally found a way to progress. "The surrounding cells would, at first, be able to slow the cancer down," Anton Wellstein, a cancer researcher at Georgetown, says. "But, after a while, the cancer outsmarts them, having been selected over a long time to be very aggressive." The cancer cells in Achatz's tongue began to grow downward, dissolving the matrix that holds cells in place. The healthy cells floated apart, allowing the cancer cells to fill the spaces between them. Cancer cells also often recruit normal ones, to help them grow and survive. "The cancer certainly learned something new," Achatz's oncologist, Everett Vokes, told me.

Eventually, a tumor developed in Achatz's tongue. By the spring of 2007, it had swollen to the point that Achatz could no longer talk clearly. He lost a lot of weight and lived on soup. "It had to be liquid, and it had to wash down my throat," he remembers. He still showed up every day in the kitchen

and helped as best he could, avoiding hot and cold dishes, and those with a harsh texture. He pushed ahead on the cookbook and the idea of opening a New York restaurant, but the pain and impairment were becoming disabling.

In June, he called the dentist whom he had seen the year before, and asked for an adjustment to his mouth guard. The dentist told him to come in. Her files contain a note: “Patient is aware he is rubbing tongue but can’t stop.” She sent him to a periodontist. Achatz remembers the visit: “At this point, I can barely talk. I’m losing weight, ’cause I can’t really chew. Because when I rub my tongue on my teeth it hurts. I open my mouth and she looks at me and goes ‘*Woof*, this is obviously not a bite issue.’ ”

Achatz was referred to a new oral surgeon, who took another tissue sample. Achatz and Kokonas were by now nervous—Achatz looked sick. He was fifteen pounds lighter than his normal hundred and sixty. When Achatz learned that it could take a week to get the result of the biopsy, Kokonas called the surgeon’s office to speed things up. “Look, the guy’s a chef. He can’t taste,” he said. The oral surgeon’s partner, who had also examined Achatz, called back two days later. “Ten o’clock tomorrow, you have to come in,” he told Achatz. At the meeting, he told Achatz that he had tongue cancer. Kokonas, who was playing in a golf tournament in Michigan, wanted to rush down to Chicago to be by his friend’s side. Achatz said no: he was already headed back to work, and did not want to talk about the cancer. Kokonas left the tournament and drove home. That night, Achatz made him duck breast with morels in the kitchen at Alinea.

Three days later, a head-and-neck surgeon at Advocate Illinois Masonic Medical Center, not far from the restaurant, examined Achatz. He was surprised to see a man with advanced cancer show up for an appointment with his business partner. The doctor explained that the standard treatment would be to remove two-thirds of the visible portion of Achatz’s tongue and sew a piece of tissue, probably from his arm, onto the remnant. Achatz would have a natural-looking tongue, but it would have, at best, limited sensory function. He might even need a tube in order to eat. Achatz says he thought at first that the surgeon was joking: “I’m, like, C’mon, this is 2007. You guys don’t have this figured out by now? It’s, like, barbaric. C’mon, there’s got to be an alternative treatment.”

Achatz and Kokonas left the appointment stunned. Though it was only 10 A.M., they went down the street to a Mexican restaurant and ordered margaritas. Kokonas could already sense that Achatz was not going to let anyone cut out his tongue. Kokonas said, “Let’s attack this like we attacked the restaurant.” He began Googling, looking for an option other than surgery.

Kokonas, who is six years older than Achatz, treats him like a bright but impractical younger brother. After Achatz and Snell divorced, Kokonas became, as he says, his “support person.” So the diagnosis of cancer hit Kokonas more as a personal threat than as a business one. Though he was often on the verge of tears himself, he tried to cheer Achatz up. “You’re going to be the tongueless chef

who's still a genius!" he told him. "I'll just die," Achatz said repeatedly.

The two men briefly considered seeking treatment for Achatz in secret, but realized that news would inevitably get out to the restaurant world and, from there, to foodies and critics. "All these guys leave work and go to a bar and they're up there with the Trotter people and the Boka people," Achatz says, referring to Boka, a restaurant on the same street as Alinea which serves contemporary American food. "There's no way you can really keep it private." Soon afterward, Kokonas and Achatz told their employees, some of whom went into the alley behind the restaurant and cried.

Following the meeting with the surgeon from Advocate Illinois Masonic, one of the restaurant's investors arranged for Achatz to visit Memorial Sloan-Kettering Cancer Center, in Manhattan. Achatz explained to a head-and-neck surgeon there what he was worried about: "O.K., I get three-quarters of my tongue cut out, what's my quality of life? Can I talk? No. Can I swallow? No. Great! That sounds like fun for the rest of my life." When the surgeon did an imitation of how Achatz would sound with a reconstructed tongue, it made him even more upset. Achatz told the surgeon that he might refuse treatment, and, as he remembers it, the surgeon replied, "Well, you'll be dead in four months." (The surgeon's account is less pugilistic: he says that he informed Achatz that, without treatment, the cancer would "block his eating, and block his breathing, and it would take his life in a matter of months.")

Achatz still did not believe that he had explored every avenue of treatment. Recalling the visit to the Sloan-Kettering surgeon, he says, "I point-blank asked him, Are there *any* alternatives to surgery? And his answer was, looking me in the eye, no. . . . He was a surgeon, so, in his mind, what you do to cure cancer, you cut." The doctor says that when Achatz asked about alternatives to surgery he gave his honest opinion—he said that there were "no good ones." Both men agree that he told Achatz to drop everything, have surgery, and hope it would save his life.

Taste is the orphaned sense. Even among those interested in the field, it plays sidekick to smell. "Taste is a waste, the action's in olfaction" goes the quip. Few researchers study it, and when they do it is usually for the food industry. But such efforts are built on very little basic science. The bodily processes behind taste—how information begins in the taste buds and then is sent via nerves to the brain, to be merged with input from the eyes and the nose and formed into a conceptual whole—remain unclear. "With taste, believe it or not, we're still not actually sure how salty works," Marcia Pelchat, a researcher on food at the Monell Chemical Senses Center, in Philadelphia, says. "That just amazes me."

It is only in the past decade that the redoubtable "map of the tongue" has begun to fall out of circulation. The diagram, which dates to the early twentieth century and can still be found in some medical textbooks, places the taste buds for sweetness on the tip of the tongue, those for bitterness at the back, the ability to sense salt on the top edges, and sourness on the bottom edges. When Achatz

showed me what had happened to his taste buds, he explained it by making reference to the classic map, as did his surgeon. In fact, all the regions of the tongue are capable of recognizing sweet, salty, bitter, and sour flavors, as well as savory tastes, which had been left off the original map altogether. There is now speculation that there are receptors on the tongue's surface for other kinds of tastes. "There may be one for the metallic taste, the water taste, and the fat taste, and there may be other tastes as well," Leslie Stein, another researcher at Monell, told me.

But, however many kinds of tastes we can apprehend, they will never truly account for what we experience as flavor. The taste buds cannot detect nutty, buttery, or earthy tastes. They do not know beef from lamb. Researchers think that the role of taste in our evolutionary past may explain why it is such a blunt instrument. Our ancestors were hominids who spent much of their time in trees, as chimpanzees do. Their taste for sweet foods helped them find nutritious fruits, and their ability to sense bitter tastes helped them to avoid poisonous plants. But to find edible fruits and avoid toxic ones you don't need very subtle information: cover the bitterness of cyanide with sugar, and a person will happily drink it. Taste is an easily outwitted sense.

After I had dinner at Alinea, I made a note of the flavors I tasted, among them caramel, mint, cedar, cinnamon, smoke, vanilla, lemon, grass, iodine, pepper, grape, the cardboardy taste of hay, the carbonish taste of burnt toast, the cloacal undertone of ripe banana. I tasted these flavors, but my knowledge of them, it turns out, did not come primarily from information received by my tongue. Taste relies on other, more discriminating senses for help: our eyes and our nose do a lot of the work that we ascribe to our tongues. "We do know there's a lot of cognitive, top-down influences in taste," Pelchat, of the Monell Center, says. The nose can detect many thousands of odors, as opposed to the five or so tastes that the taste buds can discern. An orange jelly bean and a licorice one have the same taste, as do some apples and onions. A person needs to smell these foods, note their texture, or see them in order to distinguish between them. Some estimates put the amount of information that smell contributes to identifying flavors at eighty to ninety per cent, but no one really knows. (Food smells do not just reach the nasal receptors through the nostrils: they also go in through the rear of the mouth, a process called, unappealingly, "retronasal olfaction.")

All this might suggest that Achatz worried more than he needed to about losing his sense of taste: couldn't his eyes and nose alone keep the food at Alinea as good as it had been? To some extent, they did. One day in the kitchen, in the middle of a routine afternoon of food preparation, Achatz called me over and took down from a shelf a maple emulsion that went with a bean dish. Prepared by his cooks, it was dirty white. He added some maple syrup and sherry vinegar, which gave the pasty mixture a tinge of gray. "See, I can taste it just by looking at it," he said. "Just by looking at the color, I can tell that it doesn't taste right."

But, while smell and vision can supplement taste, nothing can replace it. “I can’t smell salt. I can’t smell sugar,” Achatz explained to me. “Those are the building blocks.” This may be why, in the nineteen-eighties, the British food writer Egon Ronay insured his taste buds with Lloyd’s of London, for hundreds of thousands of pounds. Indeed, the loss of taste can make those who suffer it feel disconnected from food. Achatz mentioned this problem when I first interviewed him, in February. At the time, he could taste nothing but sweet flavors. I brought up the obvious example of Beethoven, who composed his Ninth Symphony while deaf. Achatz answered, his hoarse voice rising, “He did it, but did he *enjoy* it? Sure, he wrote a great symphony when he couldn’t hear. I can cook right now and I can’t taste. So I enjoy it on a mental level. But do I wish I could taste my own creation and be satisfied with it? Sure I do.”

According to Paul Breslin, a Monell researcher who studies the effect of radiation therapy on taste, people who cannot taste at all often have to be coaxed or fed by tube, because they lose their desire for nutrition. As Breslin and a co-author note in a chapter for a recent textbook, “Taste is arguably the only external sensory system required for life.”

Flavors gain fullness by being experienced more than once: the better we know a flavor, the more likely we are to enjoy it. Our memories of taste closely approximate the actual experience of tasting, too. Various researchers have placed subjects inside functional-MRI scanners and asked them to imagine taste; the scientists found that the same areas of the brain—principally, the insular cortex—light up when a person tastes something as when he thinks about its flavor. In 2004, a Japanese research group, which had performed such a study, concluded in *NeuroImage* that “gustatory memories enable us to generate vivid perceptions of taste in the absence of peripheral gustatory inputs.” Achatz is right when he says, “Flavor is memory.”

In July, 2007, Achatz went to the University of Chicago, in the hope of joining a clinical trial that treated advanced head-and-neck cancer patients with chemotherapy and radiation. The protocol had been suggested by a surgeon at Northwestern, who realized that Achatz would never accept surgery. Early results of the Chicago trial have been promising. The prognosis for people with Stage IV head-and-neck cancer has not been good: for those with cancer like Achatz’s, survival rates after three years can be as low as thirty-one per cent. But under the University of Chicago protocol seventy per cent of patients are alive three years after treatment.

Still, the Chicago program has faced skepticism from the cancer establishment. Head cancer is ordinarily diagnosed by surgeons, and surgeons tend to believe in surgery. “He who finds the lesion owns the lesion,” Elizabeth Blair, a head-and-neck surgeon for the protocol, told me. But she and her colleague Everett Vokes, the oncologist, knew that the medical response to tongue cancer had gone largely unchanged in forty years, and felt that it was time for new thinking. She characterizes the

historic approach to head and neck surgery as “resect the unresectable. . . . You have to believe that what you’re offering is at least as good as the standard of care. Otherwise, it’s just human experimentation.”

Blair and Vokes met Achatz, and gave him a physical exam and reviewed some body scans that had been taken of him, which showed that the cancer was still limited to Achatz’s tongue and the lymph nodes of his neck. This allowed him to be enrolled in the protocol. Immediately, he started chemotherapy. Vokes gave him three anticancer drugs: paclitaxel and carboplatin, which interfere with the DNA replication of cancer cells; and cetuximab, an antibody designed to frustrate a growth-factor receptor in the same cells. Achatz tolerated the chemotherapy well, physically and emotionally. When his hair began falling out, he gave his young sons an electric razor and told them to shave it all off. At the beginning of the therapy, Achatz’s tongue was still so swollen that he could not eat most foods. To keep his spirits up, his girlfriend, Heather Sperling—an editor at StarChefs.com, which calls itself “the magazine for culinary insiders”—took him to the Gramercy Tavern, in New York. Michael Anthony, the chef there, whose own father had tongue cancer, prepared them a special nine-course dinner of pastas and other soft foods. Thomas Keller, who also has a restaurant in the city, Per Se, came by for dessert.

The tumor soon began to shrink under the pressure of the drugs. By September, it had become seventy per cent smaller, and Achatz could eat most foods again. During the chemotherapy, Achatz continued working twenty-hour days, and resisted suggestions to cut back. Elizabeth Blair thinks that this determination may have helped Achatz to get through his ordeal. She says, “He is young. He is very bright. He’s intense. He is a bit absent-minded about activities of daily living. He is not histrionic. He is not an obsessive about every little thing about his care. Probably he dissociates a little bit. He compartmentalizes.” (When I asked Achatz if his marriage was a casualty of his career, he said briskly, “No. You know, relationships fall apart. Who knows?”) Blair was surprised to find that, when Achatz came in for his chemo treatment, he brought in his laptop to work on the cookbook. “He never quit working,” she recalls. “Toward the end of radiation, when he had a lot of redness to his face and a lot of swelling, I said, ‘You probably are not going to want to give a lot of TV interviews.’ And he said, ‘Really?’ ”

As Achatz’s tongue returned to normal shape, he began to gain weight. But two months into the chemotherapy treatment the radiation therapy began. Radiation kills all cells, but it kills aberrant cells, including cancerous ones, more quickly. It also targets rapidly growing cells, and those inside the mouth are among the most dynamic in the body, with the cells on the surface of the tongue replacing themselves almost weekly. Achatz’s doctors had warned him that the radiation might affect his sense of taste. One day in early October, he picked up a Diet Coke and thought it tasted funny. He spat it out.

Looking down at the can, he was relieved to see that he had been holding a Diet Dr. Pepper. “It was the clue to the impending doom,” he says. Shortly afterward, Achatz was eating the afternoon meal that the cooks make for the staff, when he noticed that he couldn’t taste the sweetness of the basil in the tomato sauce, and that the sauce no longer tasted acidic.

Within a week, Achatz was unable to taste anything. He told me this story while we were sitting upstairs at Alinea. I asked him what this loss felt like. He stopped talking, put down his container of Lidocaine, and placed his hands over his eyes—it was like being blind. He explained, “You make yourself a vanilla milkshake. Grab some Häagen-Dazs vanilla, add whole milk. You think you know what it’s going to taste like, and it tastes like nothing. All you get is thick texture. You get vanilla because you can smell it, but there’s no sweetness. It’s bizarre.”

Achatz—unable to taste, his mouth raw—stopped eating again. He lost the weight that he had just gained back, and then lost some more, dropping to a hundred and thirty pounds. He lived on apple juice, protein supplements, and work. When Nick Kokonas suggested that he cut back on his hours to save his strength, he refused. “You don’t understand,” he told him. “If you take that away from me, then there goes the fight.”

Achatz had his last dose of radiation in November. His neck was bright red and there was a four-inch scar where Blair had cut out some of his lymph nodes. CT scans, a biopsy, and an examination showed that the cancer had not returned. Vokes and Blair were delighted. A favorable outcome for a famous chef would help give the protocol more credibility. “We are still considered controversial here,” Blair says.

Achatz was left at once hopeful and scared of a recurrence. “I always have this looming fear the doctor is going to pull the scan results up on the computer, to show me an image of me riddled with the stuff,” he told me. He couldn’t taste anything, but he was still determined to create new dishes for the winter menu. He dreamed up ideas when he was alone in the restaurant, a sheet of paper in front of him. Sometimes an idea was spurred by an image or a memory. A woman came into the Alinea kitchen to thank him for the meal she had just eaten. She wore dangling silver earrings with red beads. That night, Achatz decided that he would like to serve edible string with something red in it. “Cranberries would have been too obvious,” he says. He went into his kitchen with his *chef de cuisine*, Jeff Pikus, and worked on the string first. “We tried dipping chives in liquefied nitrogen to make them rigid,” he says. “We used corn silk. Nothing has really worked yet, so it’s back to the drawing board.”

He came up, too, with a capsule of pressed mango and soy with foie gras inside. This one did not present problems. “Mango, soy, foie gras,” he says. “Sweet, tart, salty, and fat. You know, it *is* that easy. That’s what people don’t understand.”

By the end of 2007, he could taste sweet flavors again. To celebrate, he went with Heather Sperling

to WD-50, a Manhattan restaurant in the molecular-gastronomy tradition, where the pastry chef, who had worked at Alinea, made them an eight-course meal of desserts. “It was awesome,” Achatz says. In succeeding weeks, Achatz survived on milk-shakes and ice cream. The evening that he worked on the layered ball of strawberry, Niçoise olive, and violet, he drank a half-quart container of milk mixed with maple syrup. “I have much more of a sweet tooth now,” he joked. He cannot yet drink Diet Coke, because his mouth cannot stand carbonation.

When irradiated, taste receptors usually disappear and reappear according to the importance that they had to our hominid ancestors: sweetness goes last and returns first. “Before you can be afraid of eating toxins, you have to *want* to taste food,” Paul Breslin, of the Monell Center, theorizes. When I met Achatz, in late February, his sense of the taste of salt still eluded him. Bitterness suffused all the fats and butters in his mouth. Day by day, he recovered more of his palate—soon salt was perceptible. The flavor prickled, he told me; it made his tongue feel the way a person’s legs feel when they fall asleep. If his recovery is like that of most patients, he will have most of his taste back within another year, but there is no assurance that he will ever have all of it, and the over-all statistics for Stage IV tongue cancer do not escape him. Most radiation oncologists believe that you can radiate tissue only once, so if the cancer recurs Achatz will have limited options. “Do you see me as a dead man walking?” he wrote me in an e-mail.

Because his ability to taste has come back over time, Achatz feels that he is understanding the sense in a new way—the way you would if you could see only in black-and-white and, one by one, colors were restored to you. He says, “When I first tasted a vanilla milkshake”—after the end of his treatment—“it tasted very sweet to me, because there’s no salt, no acid. It just tasted sweet. Now, introduce bitter, so now I’m understanding the relationship between sweet and bitter—how they work together and how they balance. And now, as salt comes back, I understand the relationship among the three components.”

The layered dessert ball is born of this rediscovery. The diner who bites the food is taking a voyage through Achatz’s lost time. At first, he will taste nothing, just inhale the odor of the violet. Next comes the sweetness of the chocolate, then the brininess of the olive, and then a return to sweetness: the strawberries.

Achatz hopes that, ultimately, the months he has spent without his sense of taste will make him a more creative chef. Regulars at Alinea praised the food that he prepared during his radiation treatment. This worried him; he thinks it suggests that he was cooking timidly. “Before, I would take more mental risks, and be able to check myself with my own palate,” he says. He has called off the planned restaurant in Manhattan and is focussing on Alinea. The dishes he has devised for the Spring, 2008, menu include squab candy bars, pea-and-smoked-salmon lollipops, and hot fava beans with banana-

and-lavender ice cream. “Bananas and lavender just seem, to me, to make a lot of sense,” he told me. “But I can’t really explain it.” He calls the menu “edgier.”

He knows that he will continue to need help from his sous-chefs, who are used to this arrangement by now. “I think more about what he would like than what I would like,” Jeff Pikus, who first began working with Achatz at Trio, told me.

Achatz believes that the dishes that the team at Alinea is producing are very good. But a doubt remains in his mind. What, exactly, are his customers tasting? “I can articulate it, and I can explain it,” he says. “But I wonder. When I close my eyes, I know what it should taste like, and I wonder how close it is to that. People love it, so I know it’s O.K. He did fine. But I wonder how far off it is for me.”



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