



## Profile

# Engineering Flavors and Bridging Cultures

As the winner of a February 2012 episode of the Food Network's *Cupcake Wars*, Winnette McIntosh Ambrose, a National Institute of Health scientist specializing in vision research, demonstrated that inspired chemical engineers can succeed in any realm — when they bring the right ingredients to the mix. For McIntosh Ambrose — who is also a pastry chef and owner of The Sweet Lobby, a Washington, DC, boutique bakery — these ingredients include ample measures of family influence, global perspectives, and an ineffable quantum of taste.

“My culinary perspective is influenced by my upbringing, where I was exposed to a multitude of flavors,” she says.

Born and raised in Trinidad and Tobago, Winnette says that her parents instilled in their children a sense of possibility. “They encouraged us to be limitless in our thinking — no dream was too big or pursuit too lofty.”

Winnette gravitated toward science, and at the age of 16 she won a national inventor competition by creating a novel line of chemical derivatives combining the best of the local coconut and urea industries. This helped her to secure a scholarship to MIT. Meanwhile, her uncle, an ophthalmologist, inspired her to “appreciate how much physicians rely on tools and technology, drugs and devices to help patients.” She decided to be part of that process.

Before she left Trinidad for MIT, however, baking was not an interest. “I told my mother that I ‘would have no time to cook,’” she recalls. Only after leaving home did she realize how much her mother’s cooking — “featuring simple ingredients and a multitude of spices and seasoning” — had shaped her palate, particularly her appreciation for flavor balance.

When it comes to creativity in food presentation, though, Winnette credits her aunt Marlene, who in the 1960s hosted Trinidad’s first television cooking program. “Auntie Marlene used nuts on salads and paired cheese with fruit. As a young girl in Trinidad, this seemed so exotic. So, I like to say I inherited the ‘flavor’ from my mom and the ‘flair’ from my aunt.”

While doing undergraduate work on tissue engineering in Robert Langer’s MIT lab, Winnette spent a semester in Paris. There, she became mesmerized by French *pâtisserie*, and began teaching herself how to bake. “I liked the challenge of creating my own incarnations of the works of art I saw in the shops in Paris.” She has been developing her own recipes ever since.

After MIT, she got a taste of real-world biomedical engineering, working on medical implants at Guidant Corp. in Boston, MA. In 2009, she earned a PhD at Johns Hopkins Univ., where she focused on corneal tissue engineering. Today, as a postdoctoral fellow at NIH, she applies these

biomaterials-based techniques to retinal reconstruction.

Still, Winnette’s fantasy of making a profession out of baking remained, and in June 2011 she teamed up with her younger brother, Timothy (also an MIT chemical engineer and her *Cupcake Wars* partner), to open The Sweet Lobby. Venturing into the commercial realm, Winnette “experienced first-hand what every brick and mortar entrepreneur does: escalating costs, construction nightmares, regulatory shenanigans ... to convert an old building to a modern, code-compliant commercial kitchen.”

She begins a typical day by checking in at the bakery, where Timothy is general manager. She then takes the DC Metro to the NIH lab. Most evenings, she returns to the bakery to spend time with customers.

Winnette says that she runs her kitchen like a research lab. “I give each of my bakers a notebook, and encourage methodical experimentation,” she says. “This means careful recording of formulation and baking parameters and noting observations. Much in the kitchen can be modeled mathematically, especially our more labor- and technique- intensive treats like macarons.”

Such rigor is evident on her *Cupcake Wars* episode, where Winnette exhorts her assistants to “work fast, work neat.” The program is presented as a rivalry between bakers, and edited to ramp up the intensity of “the world’s ultimate cupcake faceoff.” Winnette wowed the judges with innovative creations including a fresh ginger five-spice cupcake filled with red bean mousse, topped with lychee buttercream and ginger caramel.

Pushing the envelope of flavor combinations is one of the reasons Winnette got into the food profession. One popular French macaron flavor at the Sweet Lobby features goat cheese with caramelized pear, while another combines olive oil, walnut, Pecorino cheese, and white chocolate.

Visiting different countries and sampling a diversity of foods serves to broaden our perspectives on what is possible in the kitchen, says Winnette. “For me it is about building flavors and bridging cultures ... and developing an understanding of how flavor combinations work and taste, before you even turn on the stove.”

Winnette notes that, aside from the chemical interactions that create our sensory impression of taste, each of us has his or her own unique interaction with food and flavor.

“The sense of taste is such a wonderful part of our existence,” she says. “I’m a proponent of the global mix — that is, incorporating flavors from all over the world in your everyday food. This is one way to keep our taste buds from becoming saturated with ‘same’ and more able to truly appreciate and taste.”

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