Meet an Ice Cream Scientist

A chat with Maya Warren

by Tracy Vonder Brink and Zia

Dr. Maya Warren is a food chemist. She helps to create new ice cream flavors. We asked her what it's like to be an ice cream scientist.

Did you always dream of becoming an ice cream scientist?

I did not even know being an ice cream scientist was possible until I was in college. When I was growing up, I wanted to be a chemistry teacher, because I loved making things like slime. But I LOVE ice cream. And there is so much chemistry in food, especially ice cream! So I decided to follow my heart and use my chemistry to help make ice cream.

One big job for food scientists is to figure out how to make lots of ice cream in factories.

How is today's ice cream different from ice cream in the past?

Modern ice cream is still made from the same ingredients: milk, cream, and sugar. The big difference is how it is frozen. In the past, ice cream had to be frozen using ice and rock salt (I sometimes still do this at home for fun). This often left large ice crystals that you could feel with your tongue. It also took at least half an hour for the ice cream to be ready. Now big machines can mix and freeze a batch of perfectly smooth ice cream in a few minutes. Ice cream factories also sometimes add thickeners to help ice cream stay creamy for a longer time in the freezer.

What's the difference between ice cream, ice milk, and frozen custard?

In the USA, ice cream has to have at least 10% milk fat—that means lots of cream, not just milk. Ice milk only has to have one-fourth as much, 2.5% milk fat. (Ice milk is often labeled low-fat ice cream.) Frozen custard, which is also called French ice cream, has egg yolks cooked in to thicken it.

Chemistry is all about how things combine and change—just like cooking.

How do you make ice cream for people who can't drink milk?

It's the same process, just with different ingredients. We're lucky that the oils in coconut, soy, and other non-dairy milks can mimic milk fat pretty well. These oils combined with other ingredients can make a nice, smooth non-dairy ice cream.

Why can't you re-freeze ice cream after it's melted?

If you have ever tried to re-freeze melted ice cream, you probably discovered that it is never as creamy as it was before it melted. That has a lot to do with the structure of ice cream. Ice cream is made up of air cells, ice crystals, bits of fat, milk solids, and sugar that's soaked up a lot of water. When the ice cream melts, the ice crystals turn into water, and the tiny air bubbles inside collapse. If you don't churn the ice cream again to get the air bubbles back, the water freezes into larger ice crystals, and the re-frozen ice cream tastes grainy and rough.

Is there anything you can't put in ice cream?

Believe it or not, you can put pretty much anything in ice cream, in small amounts. The question is "Will it taste good?" And that is up to you to decide. I've had ketchup ice cream, and I did not go back for seconds!

How do you invent new flavors?

New flavors are tons of fun to come up with! I get ideas from all over—from grocery stores, restaurants, snacks, and by talking with kids. I ask myself, how would that taste with ice cream? Would people like it? Then I get to work. For example, how about a cereal ice cream? It should taste just like eating cereal and milk. To get the flavor just right, I might add a bit of salt so it's not too sweet and to bring out the cereal taste.

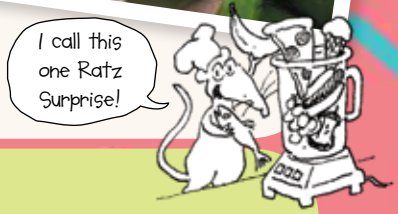
What's your favorite flavor?

I really love cookies & cream, and ice cream made with Captain Crunch cereal...soooo delicious!

Would you try ketchup ice cream? How about avocado?

What's the weirdest thing you ever put in ice cream?

I have made chicken and waffle ice cream...it was super odd, but believe it or not, some people actually liked it.



What's the best thing about being an ice cream scientist? Besides all the free samples?

I love that I study a science that people can relate to. It is really fun to inspire people of all ages to follow their dreams. After all, if I can be an ice cream scientist, you too can be anything you want to be!

Thanks for sharing your fun job!