mystery science

Grades K-5
Mini-Lesson: “Why are pumpkins orange?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Doug! When most people picture a pumpkin, they picture something like this—the classic orange pumpkin, great for carving *jack-o'-lanterns*. But pumpkins come in a huge variety of different sizes, shapes, even colors. Now, check out this green pumpkin I found recently.

Someone named Sophia has a question about the classic orange pumpkins. Let's give her a call now.

[Video Call]
- Hi, Doug!
- Hi, Sophia!
- I have a question for you. Why are pumpkins orange?
- That's a great question.

Why are pumpkins like this orange? I mean, what makes them orange? Well, like many things, scientists discovered things are often the color they are because of the substances they contain when you look at them at the microscopic level. When scientists studied pumpkins up close, under a microscope, they found out that the reason pumpkins are orange is that they contain an orange-colored substance—especially in that dark orange color in their outer skin.

And what surprised scientists the most was that this substance is actually the same as the substance found in many other fruits and vegetables too. It's the same substance that makes carrots orange, cantaloupes, sweet potatoes, and many other fruits and vegetables with an orange color. In fact, because this orange-colored substance was first identified in carrots, it's named after them. We call it *carotene*.

But pumpkins don't start out orange. Remember, pumpkins grow on a plant, the pumpkin plant. As a pumpkin grows, you can see here, it actually starts out in life green-colored. It only turns orange as it gets ripe, or ready to be picked. So the real question is: why do pumpkins change in their color from green to orange? What do you think?

VIDEO 2

Pumpkins aren't the only thing that changes color as it gets ripe. Actually, lots of fruits change color like this. Like these strawberries, growing and turning red as they get ripe. Or this tomato too. This is a way of making it easier for animals to notice these fruits when they're ready to be eaten.

This is good for the plant growing the fruit because the fruit contains the plant seeds. Many plants are only able to spread and grow in new places because animals will pick their fruits, and so carry their seeds off to those new places like this monkey's doing here.

Pumpkins do contain seeds, so it's tempting to think this might be why pumpkins change color from green to orange. Maybe it's a way for the pumpkin plant to let animals know that the pumpkins are ready to be eaten. But, the big orange pumpkins you see every fall are not something that ever grew naturally in the wild.

It turns out, there didn't always used to be orange pumpkins. We, human beings, invented them. We think the original wild pumpkin probably looked more like this. Small, and splotchy in its color. A little bit of green, a little bit of yellow, a little bit of orange. But like most living things, no two wild pumpkins were ever exactly alike in their traits. Some were a little bigger than others. Some were a little more round. Some a little bit more green, and some a little more orange.

In ancient times, the native people living in North America selected and grew only those traits that they wanted. By selecting and growing only those pumpkins with more orange in them. Over time they developed a more and more orange-looking pumpkin. This became its own variety of pumpkin, different from the wild pumpkin.

People have done this for other pumpkin traits as well, not just orange color. So, that's why we have such a huge variety of pumpkins today. Pumpkins with warts and bumps, pumpkins with stripes, pumpkins of different shapes, even giant pumpkins.

All of these pumpkin plants that we grow do have a living thing that's responsible for spreading their seeds. But it's not animals, it's us. We pick them and keep planting them because we like how they look.

That's all for this week's question. Thanks, Sophia, for asking it!