mystery science

Grades K-5
Mini-Lesson: “How do bees make honey?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Doug! Honey—that sweet, delicious stuff that just tastes so good! There's nothing quite like honey, is there? Syrup is similar in color, and it's sweet, but it tastes different.

Someone named Linda has a question about honey. Let's give her a call now.

[Video Call]
- Hi, Doug!
- Hi, Linda!
- I have a question for you. How do bees make honey?
- That is a great question.

The fact that bees make honey is something most of us hear about, but it's not something most of us have actually seen for ourselves. So for a lot of people, including adults I talk to, the whole thing is kind of fuzzy, maybe a little confusing, even. Something about flowers, and then they come back to a hive, and, well…something happens. It almost seems like a secret recipe. What is it that bees are doing in that hive?

Figuring this out isn't easy. It's not like bees can tell us, and bees are really kind of secretive. They live in a hive. We can't just pop our heads in there and check it out. Plus, they've got those

stingers. They really wouldn't be happy about that if we did. But there is a way to get inside a beehive and see what's going on. Can you guess?

VIDEO 2

Well, one possibility might be to wear a bee suit, where you can't get stung, and then use tiny lenses and cameras to look inside the hive. And that is one thing we can do. In fact, even easier than that, many bees are willing to live in hives constructed by people. So if you make clear sides, you can actually watch what they're doing.

By creating these see-through hives, scientists have been able to carefully observe what bees do and have unlocked the secret of how bees make all that sweet, delicious honey.

If you watch a hive, you'll see bees coming and going. You might know that bees are very busy, flying around from flower to flower, then coming back to the hive. But what are they doing?

Watch as a bee lands on a flower. You'll see it has a little tongue right there. You see that? Here's another video where you can really see the tongue, this one on a bumblebee. Inside of every flower is a tiny pool of sugar water that's made by the plant. This is what's called nectar. It's such a tiny amount to us, it's hard to even notice, but on flowers like this one called honeysuckle, you can actually taste it.

It's nothing like honey at this point. It's clear, it's very runny, and only just a tiny bit sweet. But it turns out that bees aren't slurping it because they're thirsty. When they do this, the nectar goes into a special honey stomach for storage.

Once a bee gets back to the hive, things start to get a little weird. They spit it out again and pass it to other bees who spit it out, and, in turn, pass it to other bees. And they do this a few times. This part might seem really gross, and scientists were confused by it at first.

But by studying the bodies of bees, scientists were able to figure out that inside the honey stomach, bees have a special liquid called an enzyme that—as it mixes with the nectar—makes it thicker and stickier, more and more like honey. So, by passing it back and forth like that, bees are adding more and more enzymes to the nectar. This is what turns nectar into honey.

Once they've done this enough times, they store the liquid honey in little containers they make out of wax. This is called the honeycomb.

Why are bees doing all this? It's not for us. They make all of this honey to feed their babies. For that reason, it might seem mean of us to take honey away from them, but almost all of the honey that gets sold in stores doesn't come from wild bees. Instead, people raise bees on farms, just like other farm animals. The bees on farms make much more honey than their babies need, so farmers collect that extra honey and sell it to people.

So, in summary, bees make honey by collecting a sugary water called nectar from flowers and then allowing that nectar to mix with a special substance inside one of their stomachs.

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