mystery science

Grades K-5
Mini-Lesson: “How is butter made?”

VIDEO TRANSCRIPT

VIDEO 1

Hey, it's Danni! People make sculptures out of many different things. For example, you might have made a sculpture out of clay before. But check these sculptures out. They aren't made out of clay. These sculptures are made out of something much more surprising, and it's something that you might have even eaten before. Can you tell what these sculptures are made of? It's butter! I'm serious. People make sculptures out of butter. So cool. Someone named Lola is curious about butter. Let's give Lola a call now.

[Video Call]

- Hi, Danni.
- Hi, Lola.
- I have a question for you.How was butter made?
- Oh, that's a great question.

While you probably haven't made any sculptures out of butter, maybe you've put it on your pancakes at breakfast, or maybe onto bread at dinner, or maybe even made pies or cookies with it. Yum. But where does butter even come from? Legend has it that thousands of years ago in Africa, a traveler had a bag of milk hanging from his horse. After traveling a long way, he got really thirsty and reached for the bag to take a drink. And that's when he discovered something amazing. Some of the milk had turned into butter. Okay, we're not sure if the legend of the

traveler discovering butter is true, but it very well could be. Because believe it or not, a similar thing can happen even today. Milk can turn into butter when you put it in a big bag and do this. And it can turn into butter when you put it in a machine like this one. Or this one. It can even turn into butter when you put it in a jar and do this. And those aren't the only ways. There are lots and lots of ways you can turn milk into butter, but they all have one thing in common. Have you noticed what it is? Before I go on, I'm curious. What do all these ways to make butter have in common?

VIDEO 2

I'm not sure how you answered, but I bet some of you might have said shaking. All these ways are shaking the milk, whether it's on a bumpy horse ride like the traveler or in one of those churning machines. If you take the cream from milk and shake it a bunch, you end up with water and butter—and here's why. Milk is mostly made out of water, but it also has other stuff in it, like this. See those little circles? Those are tiny pieces of something called fat. And to make butter, you need to separate those fat pieces from the water part of the milk. And you can do that by shaking it. See, when you shake milk, all the pieces of fat begin to stick together in clumps. Kind of like tiny pieces of clay would stick together if you balled it up. But here's the thing: when you first start shaking the milk, air bubbles get trapped in there too. Those air bubbles make the milk all fluffy, like this. You probably recognize this stuff: it's whipped cream. Now, whipped cream can be used as a topping on ice cream sundaes—but if you want to make butter, you've got to be patient and keep shaking and shaking and shaking until all the pieces of fat separate from the water and turn into this: butter! It's that simple. You can even make it at home. Now, most kinds of milk at the store won't work all that well, but there is a special kind called heavy cream that works great. Just put the cream in a jar, start to shake, shake, and shake…and if you shake

it long enough, that cream will eventually turn into butter. So cool. So, in summary, whether you shake it in a jar at school or at home, or in a modern spinning machine like this one, butter is made by shaking the cream from milk. When you shake milk, the pieces of fat in it begin to separate from the water and clump and clump and clump together until it turns into butter. That's all for this week's question. Thanks, Lola, for asking it.