

# Why does popcorn jump and pop? Scientists search for the answers

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In this image taken on Jan. 28, 2013, Stovetop Popcorn Many Ways is shown served in a bowl in Concord, New Hampshire. Photo: AP Photo/Matthew Mead

Popcorn is easy to make in the microwave. But did you know that science can explain why the kernels jump and pop?

Two scientists from France wanted to learn more about what exactly happens when we cook popcorn. The scientists, Emmanuel Virost and Alexandre Ponomarenko, believe that popcorn is a special food. So, they studied the snack very closely to learn more.

Scientists who study food have done experiments on popcorn in the past. These scientists studied how to make better popcorn. Virost and Ponomarenko tried something different. They wanted to figure out why popcorn acts and tastes like it does.

## **Only One Kind Of Corn Pops**

Popcorn has a scientific name: *Zea mays everta*. It is the only type of corn that actually pops. Popcorn kernels are rounder than other corn. The seeds are covered in a thin layer, like a shell.

When the kernel gets very hot — above 212 degrees Fahrenheit — the water inside the seeds heats up. It hits its boiling point. Then it turns to steam, which is a type of gas. The steam pushes against the sides of the kernel with great pressure. Then it gets hotter. Pretty soon, the shell cannot take the pressure and it explodes.

The kernel turns into the white flake of popcorn that you eat. After it pops, the fluffy corn is much bigger and lighter than the kernel was.

## **Special Cameras Focus On Popcorn**

Virov and Ponomarenko used special cameras to capture the different steps of the popping. The cameras took thousands of pictures each second. The scientists put the cameras next to a hot plate. The plate was used to heat up the kernels. They turned the heat up and watched the kernels pop.

It took a long time to understand what was going on with the hot kernels. They watched the popcorn pop into the air. It was like a gymnast doing a somersault.

The scientists also checked the temperature. They wanted to know exactly how hot it needs to be for popcorn kernels to pop. They put some kernels in an oven. Then, they slowly turned up the temperature. They waited to see how hot it needed to get before most of the kernels popped. Almost all of the kernels popped when the heat reached 356 degrees Fahrenheit.

## **Microphones Hear The Pop**

Finally, they wanted to learn about the sound that popcorn makes.

They used microphones to study the sounds. The special microphones are able to hear very quiet noises. They put the microphones next to the hot plate, where the kernels were heating up. The microphones and cameras were set up to work together. The scientists wanted to see exactly when the sounds happened.

They waited for the kernels to explode. They were waiting to hear the pop-pop-pop noise. The experiment showed that the water vapor inside the kernel makes the sounds.

Sometimes at the end of the day's experiment, the team would celebrate by eating the popcorn together.

## Quiz

- 1 Read the sentence from the article.

*The scientists, Emmanuel Virof and Alexandre Ponomarenko, believe that popcorn is a special food.*

Which sentence from the article shows that popcorn is a "special food"?

- (A) Popcorn kernels are rounder than other corn.
  - (B) It is the only type of corn that actually pops.
  - (C) The steam pushes against the sides of the kernel with great pressure.
  - (D) Then it turns to steam, which is a type of gas.
- 2 Which sentence explains how the cameras were able to capture the fast-moving pop of popcorn?
- (A) Virof and Ponomarenko used special cameras to capture the different steps of the popping.
  - (B) The cameras took thousands of pictures each second.
  - (C) The scientists put the cameras next to a hot plate.
  - (D) They watched the popcorn pop into the air.
- 3 Which paragraph from the first half of the article BEST summarizes the article as a whole?
- (A) Popcorn is easy to make in the microwave. But did you know that science can explain why the kernels jump and pop?
  - (B) Scientists who study food have done experiments on popcorn in the past. These scientists studied how to make better popcorn. Virof and Ponomarenko tried something different. They wanted to figure out why popcorn acts and tastes like it does.
  - (C) Popcorn has a scientific name: *Zea mays everta*. It is the only type of corn that actually pops. Popcorn kernels are rounder than other corn. The seeds are covered in a thin layer, like a shell.
  - (D) The kernel turns into the white flake of popcorn that you eat. After it pops, the fluffy corn is much bigger and lighter than the kernel was.

4 Which sentence from the section "Microphones Hear The Pop" supports the main idea of the article?

- (A) They put the microphones next to the hot plate, where the kernels were heating up.
- (B) The scientists wanted to see exactly when the sounds happened.
- (C) The special microphones are able to hear very quiet noises.
- (D) The experiment showed that the water vapor inside the kernel makes the sounds.

## Answer Key

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