

# NASA scientists work hard to keep space food options varied and tasty

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Image 1. NASA astronaut Scott Kelly corrals the supply of fresh fruit that arrived on the Kounotori 5 H-II Transfer Vehicle (HTV-5.) August 25, 2015, in space. Photo by: NASA

Neil Armstrong may have taken the first step for man on the moon. However, it was John Glenn who took the first slurp of applesauce for humankind.

At one time, NASA scientists weren't sure humans could swallow and digest food in space. They thought people needed gravity to eat, but there is none in space. In 1962, Glenn proved them wrong. While orbiting the Earth, Glenn ate his snack with no trouble. Today's astronauts sometimes spend months living in the International Space Station (ISS). The Space Station orbits about 200 miles above Earth. Astronauts live on it. They run experiments there to learn more about outer space.

They'd get pretty hungry without a few snacks!

Of course, the human body still needs food in space. However, cooking and eating food there is different from back home. That's why NASA scientists work hard on astronaut menus. A healthy diet is even more crucial for astronauts. Spending time in space makes your body start to lose bone

and muscle. NASA has to figure out how to send food up in a rocket, store it for as long as possible and make sure it's healthy. NASA has to keep astronauts from getting bored, too!

"Imagine trying to eat the same food for every meal for six months. You may get tired of the food," said F. Ryan Dowdy. He is in charge of food for the International Space Station. He works at NASA's Johnson Space Center in Houston, Texas.

### **Astronauts Have 200 Different Food Choices**

If you're bored, you may eat less than you need to be healthy and active. That's why NASA makes sure the astronauts have many choices of healthy food.

Astronauts have about 200 food items to pick from. A lot of them are surprisingly similar to meals we eat on Earth, Dowdy said.

"It's important for the astronauts when eating to be reminded of home," he said. Space can be stressful, and food can be comforting.



On Earth, food often has to sit in storage for six months before it even goes into space. Then it has to last for weeks or months. NASA designs everything to last at least two years. Macaroni and cheese is freeze-dried. That means most of the moisture is removed, which makes it safe to store at room temperature. Astronauts add hot water to it on the space station. Chocolate pudding cake comes in a pouch, so it takes up less space.

### **No Crumbs Allowed!**

Some Earth foods already work well. Tortillas, for example, are a great alternative to bread. They last a long time, and they don't form crumbs that can float around and get caught in important parts of the ship. Astronauts can also ask for some fresh fruits and vegetables whenever NASA sends supplies up. For the most part though, they're eating various combinations of stored foods.

NASA is getting ready to send missions to Mars, and perhaps even farther. It has to design even more durable food. It takes about eight months to get to Mars. Astronauts will have to bring food for the journey home, too. Dowdy says NASA is working to make foods last around five years, but space farming is also part of the plan.

Astronauts on the ISS are able to grow plants such as lettuce. Still, it will be a while before astronauts can live on what they grow. Dowdy thinks 3-D printed treats may be on the menu someday soon. A 3-D printer reads a design from a computer program. It makes an object from the bottom up, one layer at a time.

One thing is for sure. It's going to take a lot of scientific know-how to feed the space explorers of the future.

## Quiz

1 Which two statements are MAIN ideas of the article?

1. *Neil Armstrong took the first step for man on the moon.*
2. *NASA tries to give astronauts many choices of healthy foods.*
3. *Food that is sent to space has to last a long time.*
4. *3-D printed treats might be on the menu for astronauts someday soon.*

- (A) 1 and 2  
(B) 2 and 3  
(C) 3 and 4  
(D) 1 and 4

2 Read the following paragraph from the section "No Crumbs Allowed!"

*NASA is getting ready to send missions to Mars, and perhaps even farther. It has to design even more durable food. It takes about eight months to get to Mars. Astronauts will have to bring food for the journey home, too. Dowdy says NASA is working to make foods last around five years, but space farming is also part of the plan.*

Which statement summarizes the paragraph?

- (A) to get astronauts to Mars, NASA scientists must design space food that can last even longer.  
(B) NASA is getting ready to send missions to Mars, where they will set up places to farm their own food.  
(C) It takes about eight months to get to Mars, and astronauts might not have enough food for the journey home.  
(D) If astronauts have to eat foods that will last around five years, they probably will not taste very good.

3 What effect does being in space have on astronauts' need to eat?

- (A) It causes them to need more food than they would normally eat on Earth because there is no moisture left inside it.  
(B) It causes them to need fresher food than they would eat on Earth so that crumbs do not get caught in the ship.  
(C) It causes them to need soft foods they can swallow without gravity, as well as healthy foods to keep their minds working quickly.  
(D) It causes them to need healthy foods so they do not lose bone and muscle, as well as comforting foods for when they are stressed.

4 What is the relationship between freeze-drying and 3-D printing?

- (A) Freeze-drying is the way fruits and vegetables are made into space food, but 3-D printing is the way cake is saved.  
(B) Freeze-drying is the way a lot of food for astronauts is made now, but 3-D printing might be how it is made in the future.  
(C) Freeze-drying and 3-D printing are both the ways that astronauts save foods like lettuce that they grow in space.  
(D) Freeze-drying and 3-D printing are both things that NASA is working on to be able to give astronauts fresh fruit in the future.