

Science Spin™

3-6 • November 2013

In This Issue
Learn About
Space Exploration

EARTH SCIENCE

The Right Stuff

What does it take to
become an astronaut?

For online resources, visit:
www.scholastic.com/sciencspin3-6



 **SCHOLASTIC**

BONUS
SKILLS
SHEETwww.scholastic.com
/sciencespin3-6WATCH
A VIDEO
ONLINEwww.scholastic.com
/sciencespin3-6Astronaut
Chris Cassidy
looks down at
Earth from the
International
Space Station.

Space Cadets

The next generation of astronauts gets ready for liftoff

When Jessica Meir was in first grade, her teacher asked her to draw what she wanted to be when she grew up. Meir drew an astronaut. Thirty years later, Meir got her wish. This past summer, NASA chose her to be part of its newest class of astronaut **trainees**.

"I was shocked," says Meir. "I couldn't believe this dream I've had for so long was actually coming true."

Only 530 people in history have ever gotten the chance to

blast off into space. You, like Meir, might dream of joining this group of space explorers. But becoming an astronaut isn't easy. It requires hard work, science smarts, and guts!

Astronauts Wanted

Two years ago, NASA announced that it was looking for astronauts. More than 6,100 people applied! Out of those, NASA chose only eight, including Meir, as trainees.

Traveling and working in space is hard on a person's body. To be selected, candidates had to be in good physical

condition. They also had to be the right height. That's so they'll fit aboard spacecraft and the International Space Station (ISS). Astronauts from all over the world live in this giant space laboratory, which **orbits**, or circles, Earth.

Astronauts fly spacecraft and explore space. But they also conduct scientific research. They perform **engineering** tasks too, like fixing things aboard the ISS. So trainees must have a college degree in science, engineering, or math.

The final requirement is experience as a pilot or other work related to space travel. For

example, Meir did experiments aboard a NASA plane nicknamed the "Vomit Comet" while she was studying biology in college. The plane flies up at an extreme angle. Then it nose-dives. That causes passengers to float for a few moments, just as they would in space. "Luckily, I don't get sick!" says Meir.

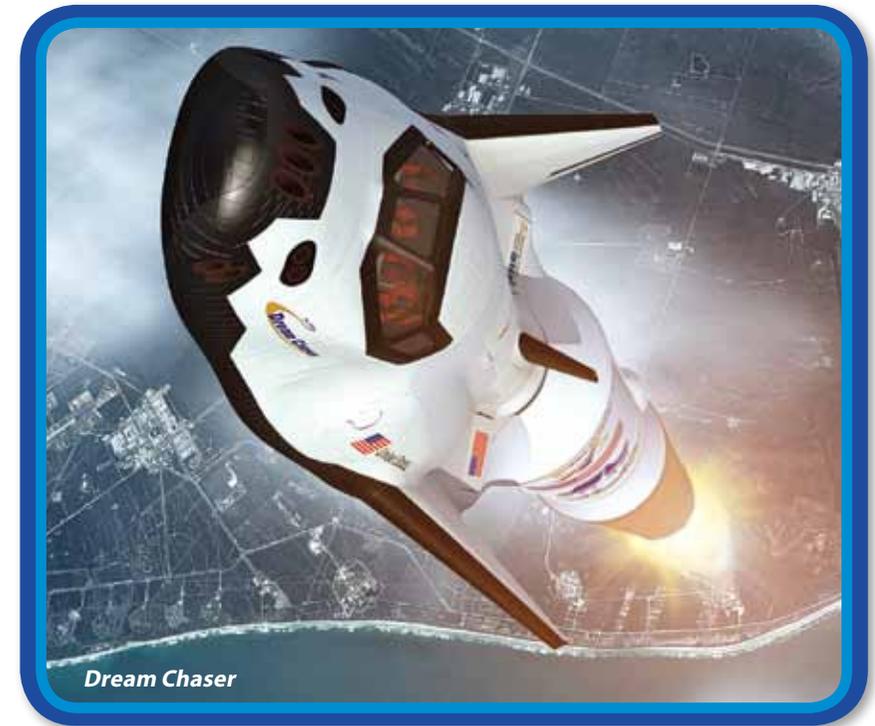
Training for Space

Meir and the other trainees will spend the next two years at NASA's Johnson Space Center in Houston, Texas. There they'll begin a tough training program.

The trainees will learn to fly jets. This will prepare them to pilot spacecraft. They'll take classes in survival training and practice for space walks. During a space walk, astronauts work in a spacesuit outside a spacecraft.

The trainees will also study different languages. That will allow them to talk with astronauts from other countries aboard the ISS.

Besides taking trips to the space station, the trainees could



Dream Chaser

become the first people to travel to new places in our solar system. "There are plans for people in my class to explore **asteroids**—and eventually Mars," says Meir.

Gearing Up

Once Meir and her fellow trainees graduate, they'll head for space on new space planes designed by private companies. One such plane is called the *Dream Chaser*. It will be able to carry a seven-person crew, fly with or without a pilot, and land on a regular runway.

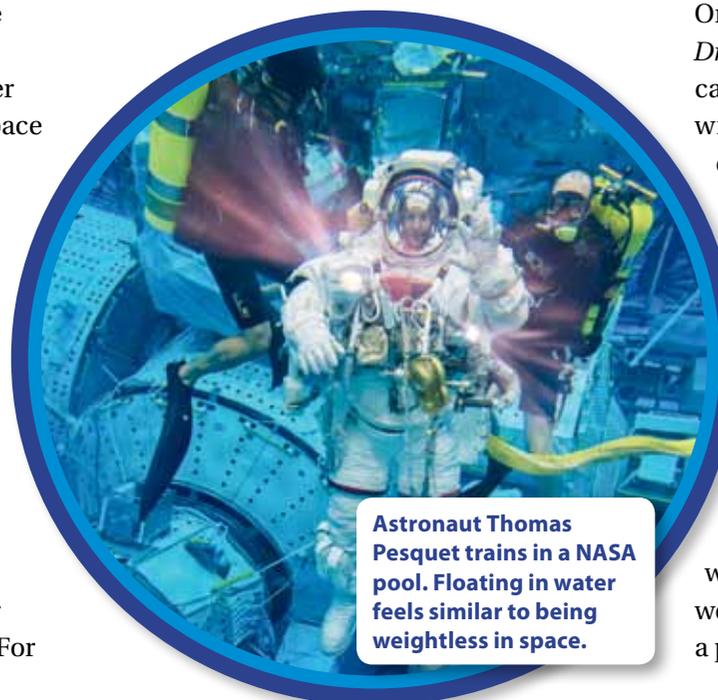
The astronauts will also get new outfits. NASA is now testing a spacesuit called the Z-1 (see diagram, p. 4). It has a hatch on the back that can connect to the outside of a space vehicle. Astronauts will climb out of the vehicle and right into the suit. Then they will detach for space walks. Astronauts will be able to wear the Z-1 both in space and on a planet's surface.

Future Missions

Today's astronaut trainees will pave the way for future missions. Their exploration of Mars could lead to a permanent base for people there. From Mars, future astronauts—perhaps you—could explore farther into the solar system than ever before.

If you want to be part of this out-of-this-world adventure, says Meir, study hard and don't get discouraged. She was rejected the first two times she applied to the astronaut program. "But I didn't give up," she says.

—Stephanie Warren



Astronaut Thomas Pesquet trains in a NASA pool. Floating in water feels similar to being weightless in space.

Words to Know

trainee: a person who is taught skills for a new job

orbit: to follow a curved path around a star, moon, or planet

engineering: using science and math to solve problems

asteroid: a rocky object that orbits the sun

Name: _____

NEXT-GENERATION SUIT

Astronauts put on spacesuits to fix things outside the International Space Station (ISS). The suit they wear today was designed in the 1980s. NASA decided it was time for an upgrade. So the space agency is developing a new suit, called the Z-1, with many new features. It will be used for space walks, as well as on the surface of planets like Mars.

BACK HATCH: A hatch on the back of the suit attaches to the outside of a space vehicle. Astronauts can climb from inside the vehicle right into the suits.

HELMET: Its bubble shape gives the wearer views in all directions.

LIFE SUPPORT: A pack that attaches to the back of the suit provides astronauts with oxygen to breathe. It also removes the carbon dioxide gas they breathe out.

FLEXIBLE JOINTS: They allow astronauts to move easily while floating in space or on planets, where they'll be weighed down by gravity.

SOFT SUIT: The suit is made mostly of moveable fabric. Still, it weighs a hefty 73 kilograms (161 pounds). That's less than NASA's current suit, which weighs 115 kg (254 lbs).



QUICK QUIZ: Use information from the article and the diagram above to answer the following questions.

- 1** Which of the following is true about NASA's Z-1 spacesuit?
Ⓐ It has a back hatch that can attach to a vehicle.
Ⓑ It can be used in space and on a planet's surface.
Ⓒ It weighs more than NASA's current suit.
Ⓓ both A and B
- 2** The Z-1 has a life-support pack that removes which type of gas?
Ⓐ oxygen
Ⓑ helium
Ⓒ carbon dioxide
Ⓓ nitrogen
- 3** Which is NOT one of the places the newest class of future astronauts is scheduled to visit?
Ⓐ an asteroid
Ⓑ the ISS
Ⓒ the moon
Ⓓ Mars
- 4** Which of the following would be another good title for this article?
Ⓐ Life Aboard the ISS
Ⓑ Space Planes Blast Off
Ⓒ A Dream Job in Space
Ⓓ First Mission to the Red Planet
- 5** Which of the following is NOT a requirement to be an astronaut?
Ⓐ 20/20 vision
Ⓑ a college degree in science, engineering, or math
Ⓒ work experience as a pilot or other work related to spaceflight
Ⓓ good physical condition