The Space Twins
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COVER STORY

The Space Twins

Twins Scott and Mark Kelly are part of a new mission to help find out how living in space for a year affects people.

Mark and Scott Kelly are identical twins, but they have a lot more in common than how they look. For one thing, they're both astronauts. And starting later this month, they'll both be part of an **unprecedented** mission.

Scott will spend a full year aboard the International Space Station (ISS), the giant laboratory that orbits Earth. That's longer than any American has ever lived in space. Scientists at NASA, the U.S. space agency, will conduct tests on Scott to see how spending a prolonged period in space affects the human body.

While Scott is circling Earth on the ISS, Mark will be back home in Arizona, where researchers will perform the same tests on him.

Why were the twins picked for this mission? The answer has a lot to do with their genes. Genes are chemicals in our cells that help determine thousands of traits, such as our eye color and height, and how our bodies function. The Kelly twins have identical genes. That means any changes scientists see in Scott but not in Mark are likely caused by being in space.

Scientists at NASA hope this experiment will help them learn how to keep astronauts healthy during long space flights. Having that information will be crucial for NASA to someday achieve one of its biggest goals—a human mission to Mars. NASA hopes to send astronauts to Mars by the 2030s. A round-trip mission to the Red Planet would take about three years.

Twin Tests

The pull of gravity is much weaker in space, causing objects (and people!) to float. From past missions, NASA knows that strange things happen to people in the near-weightless environment. Among other things, astronauts' bones get brittle, and their vision becomes **impaired**. Their immune systems also weaken, making it harder to fight off diseases.

No one knows what other changes might happen during longer periods in space. To help

Scott Kelly (*far left*) is headed to space for a year, while his twin, Mark, is staying on Earth.

find out, the Kellys will undergo a series of tests during and after Scott's journey to space. Researchers will measure and compare the health of their hearts, muscles, and bones. They will also monitor Scott's moods and stress levels to see how he deals with being away from family and friends for so long.

A Year in Space

Scott Kelly won't be alone during his year away from Earth. On March 27, he'll travel to the ISS aboard a Russian spacecraft with two astronauts from Russia. Kelly and Mikhail Kornienko will stay there until March 2016. During that time, the third crew member will return home and be replaced by rotating teams of other astronauts.

Although Mark Kelly won't be going into space, he has a good idea of what life will be like for his brother. Mark visited space four times before retiring in 2011. Though he'll remain on Earth, Mark is proud to be part of such an important mission.

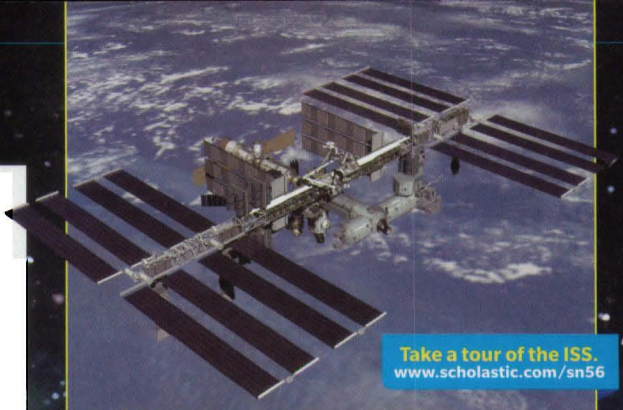
"This is the next step into expanding our knowledge of what it takes to keep people healthy in this kind of environment," says Mark. "In time, I think we could create a road map to get to Mars."

—by Lindsay Lowe

Words to Know

unprecedented (un-PRESS-ih-den-tihd) *adjective.* never done or known before

impaired (im-PAYRD) *adjective.* weakened or damaged



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Life on the ISS

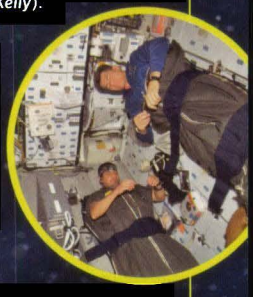
Astronauts often spend months living on the International Space Station (ISS). Their jobs include conducting experiments and making repairs to the station. Doing almost anything, even everyday tasks, is tricky when you're floating around in space.

Eating

Meals mostly come in cans or sealed pouches that can be heated in the station's ovens. The ISS has no refrigerators or freezers, so astronauts can't have ice cream. But they do get to enjoy other treats, like M&M's (*left, floating near Scott Kelly*).

Sleeping

At bedtime, astronauts climb into special sleeping bags that hook onto the wall. This stops them from floating around. "It's really weird," says Mark Kelly. "Because there's no up or down, there's no rolling over."



Washing

The ISS has no sinks, showers, or running water of any kind. To wash up, astronauts use prefilled packets of water. They wash their hair with a special dry shampoo that doesn't require rinsing (*left*).