

Helicopter flies on Mars in a first for space exploration



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A small helicopter flew on Mars on April 19. It was the first time humans flew an aircraft on another planet. The helicopter flew for about 30 seconds. It hovered about 3 meters (10 feet) above the ground.

The helicopter is named Ingenuity. It went to Mars in February 2021. It was on the bottom of NASA's Perseverance rover. The rover is a moving robot. It will gather information about Mars. Scientists will use this information to learn more about Mars.

Studying Mars

Mars is called the red planet. That's because its soil is red. Humans have been sending robots to Mars for more than 40 years. The Viking 1 and Viking 2 landers arrived in 1976. But they couldn't move around on the planet.

Later, people sent rovers. They could move around. Some rovers are Spirit, Curiosity, and Perseverance.

Perseverance landed in February. You can watch a video of the landing [here](#). After landing, the rover took pictures. It also recorded sound of the Mars environment. Then, it looked for a good spot for the helicopter to land.

Getting Off The Ground

The helicopter had some work to do before it could fly. It had to recharge its solar batteries. These are batteries that get energy from the sun. Next, the helicopter had to separate from Perseverance. Then it did some tests. This was to make sure everything worked.

This process was scheduled to happen over six solar days. A solar day is also called a sol. It is how long a day lasts on Mars. Sols are about 24 hours and 40 minutes. Earth days are 24 hours long. The original flight date was delayed. This was due to a software glitch. It caused problems for the helicopter's flight control system.

People at NASA worked on the helicopter for years. "We wanted to see if we could fly on Mars," says MiMi Aung. She is a project manager for the helicopter. She works at NASA's Jet Propulsion Laboratory. It is in California.

Flying On Another Planet

Flying on Mars is very different than flying on Earth. The red planet has strong dust storms. It gets less sunlight. And at night, it gets very cold.

Then there is the question of flight. To fly, an aircraft has to balance four forces. A force is a push or pull in a specific direction. The four forces are lift, thrust, drag, and weight. Lift holds an aircraft in the air. It happens when the blades of a helicopter move through the air. It is an upward force. It must be larger than the weight of the helicopter.

We have these forces on Earth, too. But they are different on Mars. There is less gravity than on Earth. Gravity is the force that pulls things toward each other. Plus, the atmosphere on Mars is much less dense. An atmosphere is a layer of gases around a planet. Dense means how tightly packed particles are. The air on Mars is "thin." It is hard to get enough lift.

To help it fly, scientists made the helicopter small. They also made it light. Ingenuity weighs 1.8 kilograms. That is 4 pounds. Its two helicopter blades spin 2,500 times a minute. That helps make lift.

This was Ingenuity's first flight. But it might not be the last. Ingenuity has five flights planned in total.