

# First flight on another planet



An illustration showing Ingenuity in flight, with Perseverance in the background.  
[Photo: NASA/JPL-Caltech.]

## *ZACHARY JOHN tells us about this historic event.*

Last month, the US space agency NASA scored a big first. It controlled the flight of a robotic helicopter, called Ingenuity, on another planet — Mars.

“117 years after the Wright brothers succeeded in making the first flight on our planet, NASA’s Ingenuity helicopter has succeeded in performing this feat on another world,” said NASA Associate Administrator for Science, Thomas Zurbuchen.

Standing at 49cm and weighing 1.8kg, the **pint-sized** rotorcraft’s sole purpose is to test flight in the thin air of Mars. The solar-powered helicopter climbed to three metres, hovered for 30 seconds, and descended. While this might not seem like much on Earth, it was a huge step for space technology.

### **Designing for Mars**

Gravity on Mars is only one third that of Earth’s, which should make flying three times easier. But, the atmosphere on Mars is very thin, with as little as 1% of the pressure experienced on Earth. This creates a major obstacle. Helicopters take flight using “lift” — they are carried by the air under their spinning blades. For a helicopter to take

off in Mars's thin atmosphere, it has to work very hard to generate enough lift.

To achieve this, Ingenuity had to be extra light. NASA engineers even used some handphone parts, which are also designed to be powerful but light. The helicopter also needed extra-large rotor blades that spin very fast.

Another challenge was the remote control. On Earth, it is easy to operate a remote control vehicle because you can watch where it is and react immediately. Ingenuity's engineers depend on videos that take some time to reach Earth. They cannot control the helicopter in real time. Instead, Ingenuity has to make its own decisions using its many sensors.

If Ingenuity's mission is a success, scientists will be able to design other **aerial** robots to go and study the Red Planet. Scientists and space enthusiasts around the world eagerly await more information from the Perseverance and Ingenuity missions, as humans continue exploring the new frontier.

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**VOCAB BUILDER**

**pint-sized** (say "pa-int saiz'd"; adjective) = very small.

**aerial** (say "ay-riel"; adjective) = operating in the air.