

# NASA's Mars 2020 mission

The largest and most capable rover ever sent to Mars is to embark on a journey to search for evidence of past life on the Red Planet – and to lay the groundwork for a mission to send humans into deep space

**LANDING:** *Perseverance* will use descent sequence used by *Curiosity* probe in 2012, plus new *Terrain-Relative Navigation* system

**Feb 18, 2021:** Rover dropped to *Jezero Crater*, which is believed to have held deep lake and is home to best-preserved Martian delta

## TERRAIN-RELATIVE NAVIGATION

1

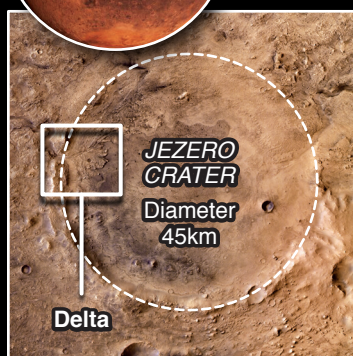
Camera takes pictures as rover descends

2

Computer compares these to maps of area and adjusts flightpath to avoid hazards

3

Lander lowers rover as close as possible to target site



➤ Rover path  
● Search Spots

## PERSEVERANCE

**SUPERCAM:** Laser blaster can identify chemical compositions on rocks from long distance

Plutonium power source supplies electricity to rover

**MASTCAM-Z**  
Advanced camera

**MEDA**  
Weather station

**SHERLOC:** Ultraviolet spectrometer searches for organics and minerals

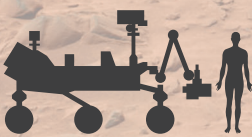
**INGENUITY**  
Drone-like helicopter carried on rover's belly will demonstrate first powered flight on another planet

**RIMFAX**  
Ground-penetrating radar to map geology beneath surface

**MOXIE**  
Experiment to demonstrate how astronauts might produce oxygen from Martian CO<sub>2</sub> for breathing and fuel

## PERSEVERANCE SPECIFICATIONS

Length 3m  
Height 2.2m  
Weight 1,025kg



## SAMPLE CACHING SYSTEM

**1 Drill:** Rotary percussive drill cuts out core of Martian rock, encased in sample tube

**2 Robot arm:** Swings back to rover's body to place tube in carousel

**3 Bit carousel:** Moves tube inside rover. Image taken and tube stored

*Sample tubes will be left on planet's surface for return to Earth by future mission, possibly by 2031*

**PIXL:** X-ray spectrometer to identify chemical elements

