Newest Mars probe, MAVEN, will investigate Red Planet's history

←This artist's concept of a future Mars mission shows astronauts near a lander on the Red Planet.

1)NASA's newest robotic explorer, Maven, rocketed toward Mars on Monday on a **quest** to **unravel** the ancient mystery of the **red planet**'s radical climate change. The Maven spacecraft is due at Mars next fall following a journey of more than 440 million miles.

2) "Hey, guys, we're going to Mars!" Maven's principal scientist, Bruce Jakosky of the University of Colorado at Boulder, told reporters after liftoff. Jakosky and others want to know why Mars went from being warm and wet during its first billion years to cold and dry today. The early **Martian** atmosphere was thick enough to hold water and possibly support **microbial** life. But much of that atmosphere may have been lost to space, **eroded** by the sun. Maven set off through a cloudy afternoon sky in its bid to provide answers. An unmanned Atlas V rocket put the spacecraft on the proper course for Mars, and launch controllers **applauded** and shook hands over the success.

3) "What a Monday at the office," NASA project manager David Mitchell said. "Maybe I'm not showing it, but I'm **euphoric**."

4) Ten years **in the making**, Maven had Nov. 18, 2013, as its original launch date, "and we hit it," Mitchell said. "I just want to say, 'Safe travels, Maven. We're with you all the way.'" Jakosky, Maven's **mastermind**, said he was anxious and even shaking as the final seconds of the countdown **ticked away**. An estimated 10,000 NASA guests gathered for the liftoff — the most exciting one of the year from Cape Canaveral — including **a couple thousand** representing the University of Colorado. Surviving liftoff was the first big hurdle, Jakosky said. The next huge **milestone** will be Maven's **insertion** into orbit around Mars on Sept. 22, 2014. To help solve Mars' environmental puzzle, Maven will spend an entire Earth year measuring atmospheric gases.

5) This is NASA's 21st mission to Mars since the 1960s. But it's the first one devoted to studying the Martian upper atmosphere. The mission costs $671 million.

6) Maven — short for Mars Atmosphere and **Volatile** Evolution, with a capital "N" in EvolutioN — bears eight science instruments. The spacecraft, at 5,410 pounds, weighs as much as an SUV. From solar wingtip to wingtip, it stretches 37.5 feet, about the length of a school bus. A question **underlying** all of NASA's Mars missions to date is whether life could have started on what now seems to be a **barren** world. "We don't have that answer yet, and that's all part of our quest for trying to answer, 'Are we alone in the universe?' in a much broader sense," said John Grunsfeld, NASA's science mission director.

7) Unlike the 2011-launched Curiosity **rover**, Maven will conduct its experiments from orbit around Mars.

8) Maven will **dip** as low as 78 miles above the Martian surface, sampling the atmosphere. The **lopsided** orbit will stretch as high as 3,864 miles. Curiosity's **odometer** reads 2.6 miles after more than a year of roving the red planet. An astronaut could accomplish that distance in about a day on the Martian surface, Grunsfeld noted. Grunsfeld, a former astronaut, said considerable technology is needed, however, before humans can fly to Mars in the 2030s, NASA's ultimate objective.

9) Mars remains an **intimidating** target even for robotic craft, more than 50 years after the world's first shot at the red planet. Fourteen of NASA's previous 20 missions to Mars have succeeded, beginning with the 1964-launched Mariner 4, a Martian **flyby.** The U.S. hasn't **logged** a Mars failure, in fact, since the late 1990s. That's a U.S. success rate of 70 percent. No other country comes close. Russia has a poor track record involving Mars, despite repeated attempts dating to 1960. India became the newest entry to the Martian market two weeks ago with its first launch to Mars.

10)If all goes well, Maven will cruise past India's Mars **voyager**, called Mangalyaan, or "Mars craft" in Hindi. Maven should beat Mangalyaan to Mars by two days next September, Mitchell said. "It's kind of a **neat race**, and we wish them all the best," Mitchell said. Earth and Mars line up properly for a Mars flight every two years, occasionally resulting in just this sort of traffic jam. The two planets are constantly on the move, thus the 440 million-mile-plus chase by Maven to Mars over the next 10 months.

11)Maven's science instruments will be turned on in the next few weeks. During the second week of December, the University of Colorado's **ultraviolet spectrograph** will try to observe Comet ISON, now visible and brightening in the night sky as it speeds toward the sun. ISON will **zip** within 730,000 miles of the sun on Thanksgiving Day. **Astronomers** are uncertain whether the comet will survive that **blisteringly** close encounter. Comets have many of the same gases as the Martian atmosphere, observed the chief scientist for Maven's ultraviolet instrument, Nick Schneider. "What an ideal opportunity for us to try out our instrument and do some good science along the way," Schneider said.【11/19/2013/AP】

quest:探究 unravel:解明する Martian:火星の microbial:微生物の erode:腐食する applaud:拍手する euphoric:幸福感にあふれた mastermind:立案者 tick:チクタクなる milestone:画期的事件 insertion:挿入 underlie:横たわる barren:不毛の rover:惑星探査機 dip:一時的にちょっと下げる lopsided:不均衡な odometer:走行距離車 intimidate:おびえさせる flyby:接近通過をする宇宙船 log:記録する ultraviolet spectrograph: 紫外分光器 zip:ぴゅーっと音を立てて進む astronomer:天文学者 blisteringly:痛烈に

☆Ice breaker for active discussion☆

1. Do you believe that we are alone in the universe or that Earth is unique in the universe?
2. Why do you think the NASA is particularly interested in investigating Mars?
3. The NASA's ultimate goal is to send humans by 2030s. Do you think it's possible? How can you say so?
4. Why do you think NASA is so aggressive towards these kinds of projects or space explorations?
5. Other countries like Russia, India and China are also interested in space exploration. Do you think Japan should be more proactive too?
6. If the Earth were to be destroyed in several years and supposed transferring to Mars is possible, would you go there to live? Why or why not?
7. Make sentences using the following words : quest, unravel, liftoff, microbial, euphoric, mastermind, barren, lopsided, flyby and zip.

かつては厚い大気に覆われ温暖で水が存在したとされる火星。寒冷で乾燥した今の火星に変化をした謎を解く手がかりを MAVEN はもたらしてくれるのでしょうか。