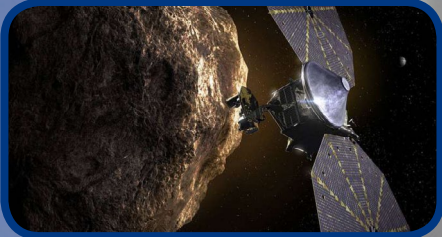




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### NASA Lucy Mission’s Message to the Future

As the first-ever mission to the Trojan asteroids, Lucy will survey this enigmatic population of small bodies that orbit the Sun beyond the main asteroid belt—trapped by Jupiter and the Sun so that they have led and followed Jupiter in its orbit. As these never before explored asteroids are in many ways “fossils” from the formation and evolution of the planets, the Lucy spacecraft is named in honor of the fossilized human ancestor discovered the year after Pioneer 11 began its journey out of the Solar System. Lucy’s name was inspired by the Beatles’ song “Lucy in the Sky with Diamonds.” Lucy’s expected launch date is October 16, 2021.

Phys.org



## With Virgin Galactic’s Launch, All Eyes Are on Blue Origin and Jeff Bezos

Richard Branson completed his much-anticipated mission on Sunday (July 11), riding to suborbital space and back on the first fully crewed flight of Virgin Galactic’s VSS Unity space plane. But that was just the first of two planned billionaire space jaunts this month. Blue Origin boss Jeff Bezos is scheduled to fly to the suborbital frontier on his company’s New Shepard craft on July 20, the 52<sup>nd</sup> anniversary of the Apollo 11 moon landing.

Space.com

## Mars Helicopter Begins to Scout for Perseverance Rover with Longest Flight



NASA's Mars helicopter Ingenuity has begun to scout missions for the Perseverance rover, completing its ninth and most challenging flight yet. Flight nine included a speed record for the aircraft at roughly 11 mph, which NASA called "a high-speed flight across unfriendly terrain, which will take us far away from the rover."

Ingenuity scanned an area of the Martian Jezero Crater, named the Séítah, where the rover could get bogged down in sand dunes, NASA said in a description of the flight plan.

*MarsDaily.com*

## Surface of Jupiter's Moon Europa Churned by Small Impacts

Jupiter's moon Europa and its global ocean may currently have conditions suitable for life. Scientists are studying processes on the icy surface as they prepare to explore. It's easy to see the impact of space debris on our Moon, where the ancient, battered surface is covered with craters and scars. Jupiter's icy moon Europa withstands a similar trouncing – along with a punch of super-intense radiation. As the uppermost surface of the icy moon churns, material brought to the surface is zapped by high-energy electron radiation accelerated by Jupiter.



*Technology.org*

## Astronomers Find 100 Black Holes In Palomar 5



The globular star cluster Palomar 5 has always been strange. The cluster is one of the “fluffiest” known, it’s less massive than other globulars and has a greater distance between its stars. It also has two long streamers of stars flowing away from the cluster. And now astronomers have found a new quirk of Palomar 5: it’s hiding more than 100 black holes at its center. A team of astronomers announced July 1, 2021, that this unusual globular cluster has about three times as many black holes as expected.

*EarthSky.org*

## Solar-Powered Moon Rovers will Help Scientists Seek Lunar Ice

Scientists have long tested solar energy in space, but it may soon arrive on the Moon — in the form of rovers equipped with solar panels. On unmanned moon missions, these petite robotic vehicles will test the limits of how humans power their explorations, navigate the moon’s surface, and create potential human habitats far from home. Under a NASA contract, the robotics company has scheduled unmanned missions to the Moon with the rover in tow for the next year. The first mission, Peregrine 1, is slated for late 2021.



*Astronomy.com*

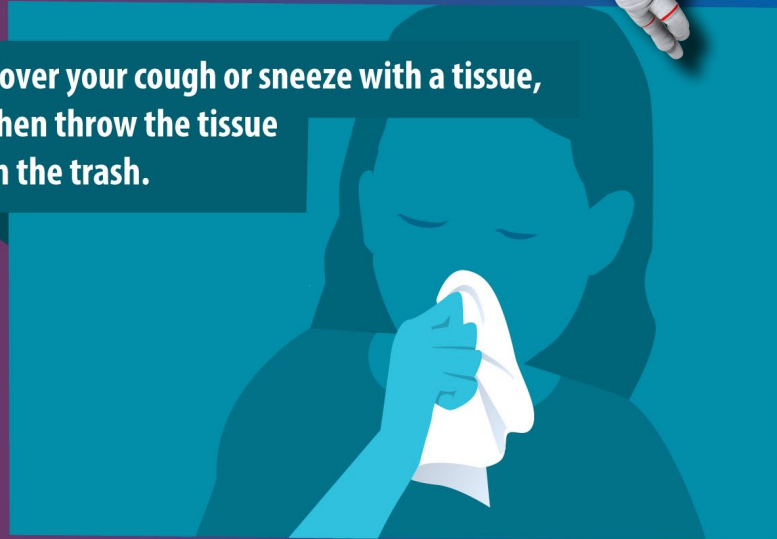
## How to Protect Ourselves?



Avoid close contact with people who are sick.



Cover your cough or sneeze with a tissue, then throw the tissue in the trash.



Avoid touching your eyes, nose, and mouth.



Clean and disinfect frequently touched objects and surfaces.



Stay home when you are sick, except to get medical care.



Wash your hands often with soap and water for at least 20 seconds.





## Astronomy Picture of the Day

**M27: The Dumbbell Nebula**

**Image Credit & Copyright:** *Bray Falls & Keith Quattrocchi*

What will become of our Sun? The first hint of our Sun's future was discovered inadvertently in 1764. At that time, Charles Messier was compiling a list of diffuse objects not to be confused with comets. The 27th object on Messier's list, now known as M27 or the Dumbbell Nebula, is a planetary nebula, one of the brightest planetary nebulae on the sky -- and visible toward the constellation of the Fox (Vulpecula) with binoculars. It takes light about 1000 years to reach us from M27, featured here in colors emitted by hydrogen and oxygen. We now know that in about 6 billion years, our Sun will shed its outer gases into a planetary nebula like M27, while its remaining center will become an X-ray hot white dwarf star. Understanding the physics and significance of M27 was well beyond 18th century science, though. Even today, many things remain mysterious about planetary nebulas, including how their intricate shapes are created.

[apod.nasa.gov](http://apod.nasa.gov)



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