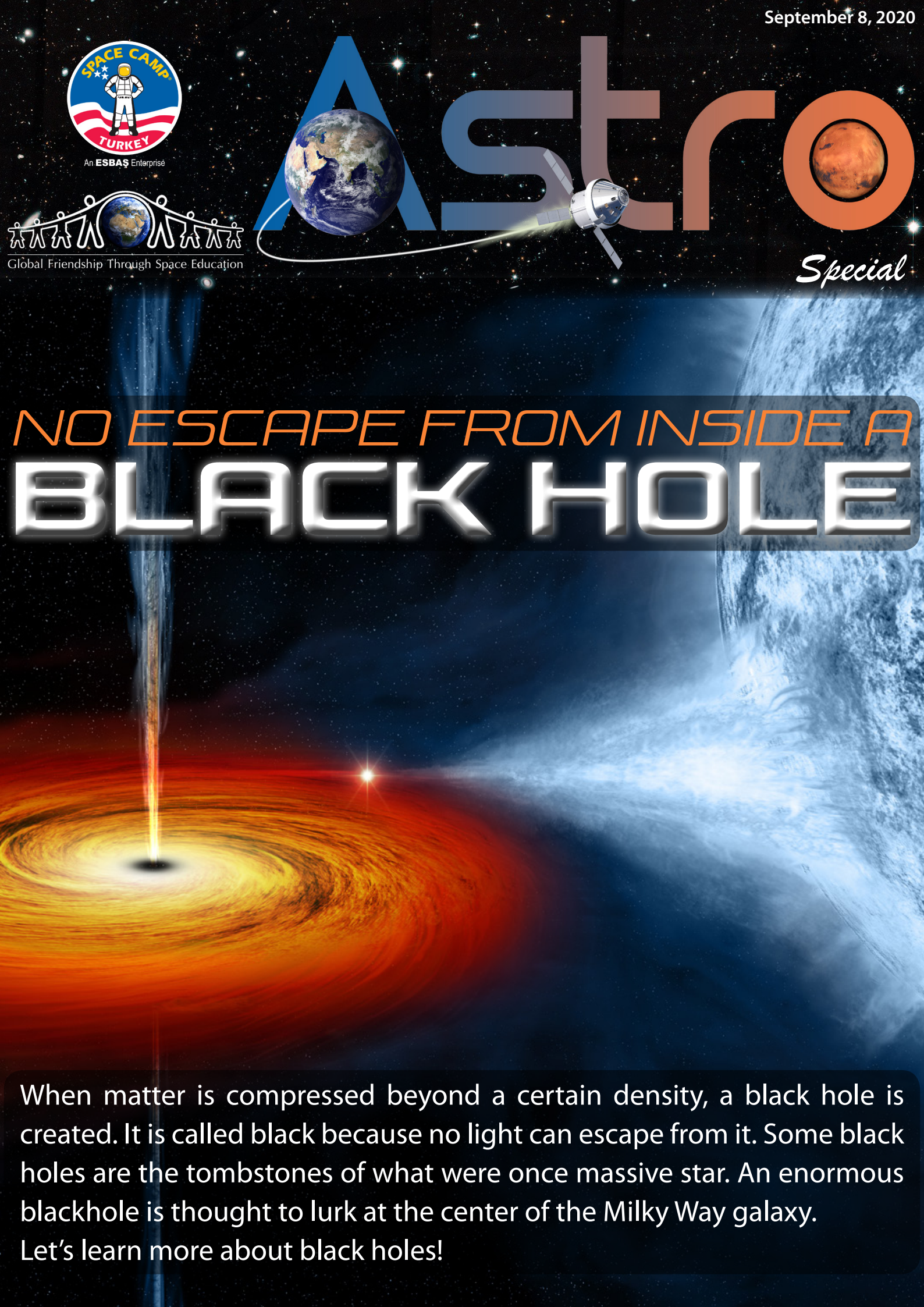
September 8, 2020

SPACE CAMP TURKEY
An ESBAŞ Enterprise

Global Friendship Through Space Education

Astro Special

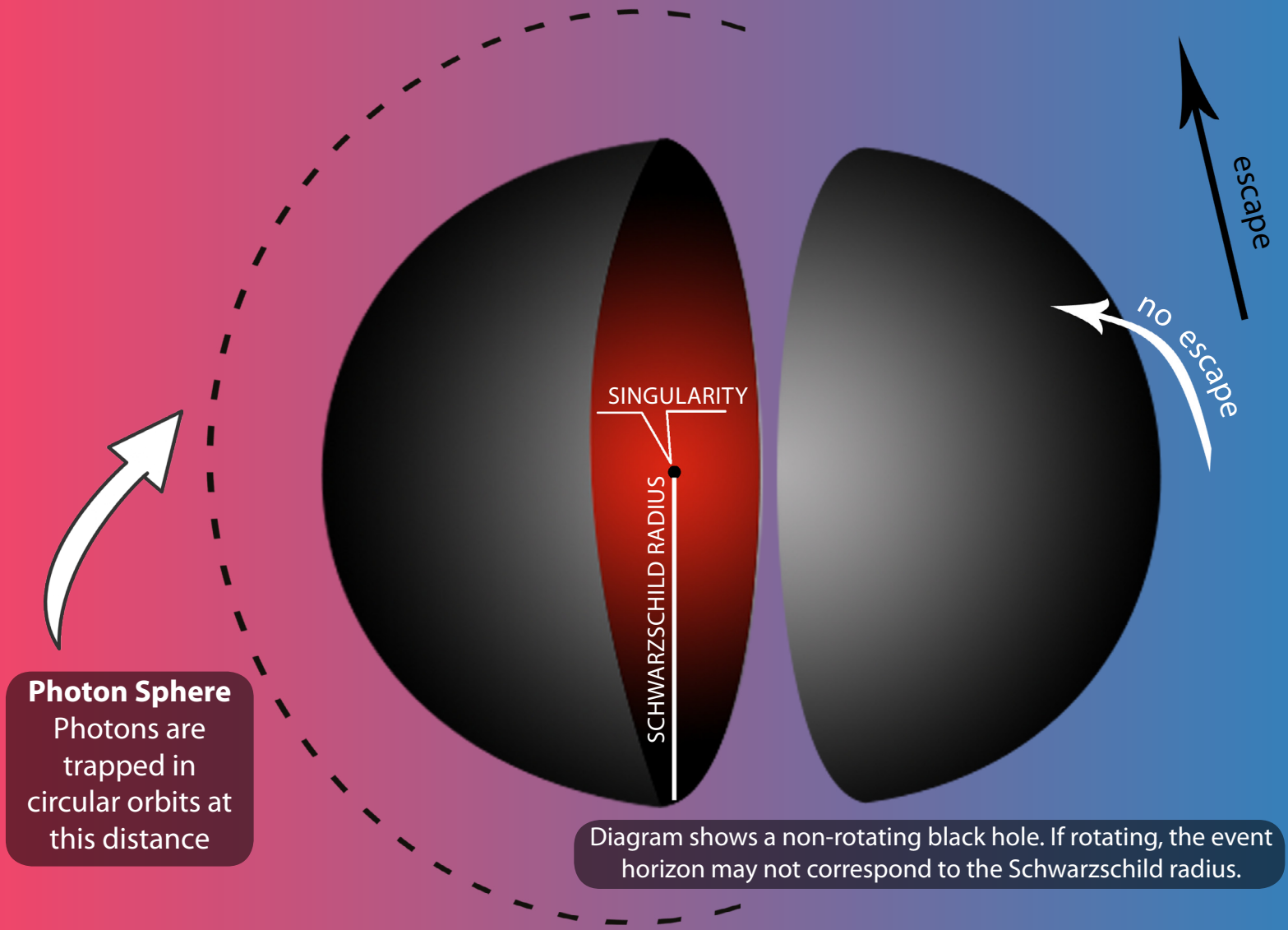
NO ESCAPE FROM INSIDE A BLACK HOLE



When matter is compressed beyond a certain density, a black hole is created. It is called black because no light can escape from it. Some black holes are the tombstones of what were once massive star. An enormous blackhole is thought to lurk at the center of the Milky Way galaxy.
Let's learn more about black holes!

Structure of a Black Hole

All the mass of a black hole is concentrated into a point at its center called the singularity. Gravity surrounding the singularity is so strong, you would have to travel faster than light to escape. This creates a spherical zone surrounding the singularity called the event horizon from which nothing can escape.



Photon Sphere
Photons are trapped in circular orbits at this distance

Diagram shows a non-rotating black hole. If rotating, the event horizon may not correspond to the Schwarzschild radius.

What Happens Inside?

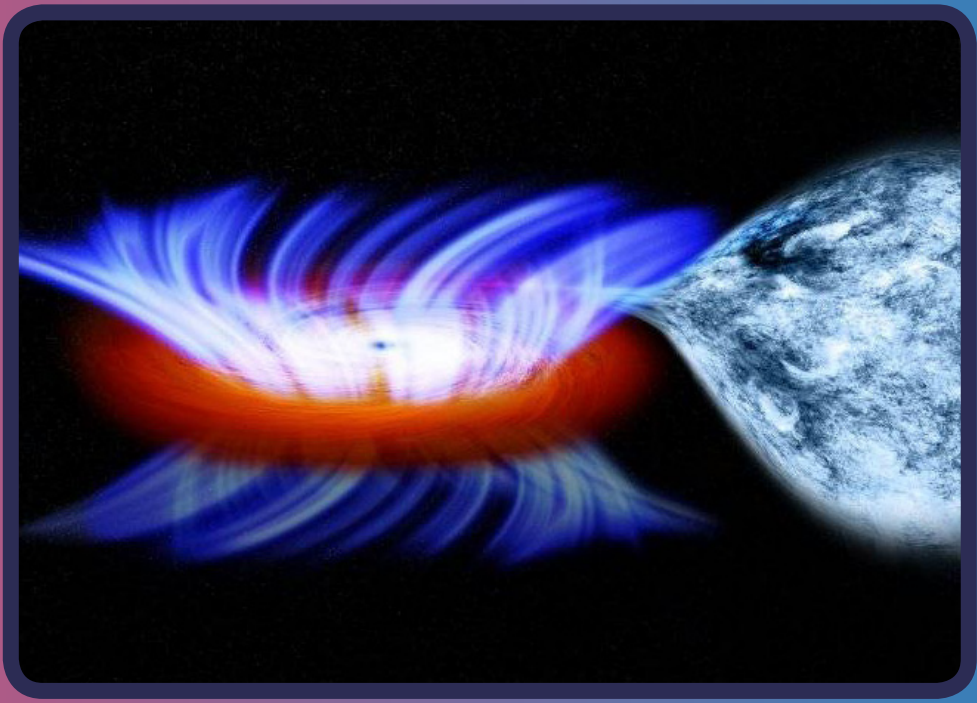
The gravity of a black hole creates enormous tidal forces. Any object approaching the singularity would be simultaneously stretched in one direction and compressed in the other, a process scientists call "**spaghettification.**"

For smaller holes the point of spaghettification may occur outside the event horizon. You would be dead before even falling in. However, in very large black holes you might cross the event horizon without noticing any tidal effects.

Black Hole Types

In theory, a black hole of any size could exist. A black hole with the mass of our sun would be 3.7 miles (6 km) in diameter. In practice, the death of a star like the sun does not compress the material enough to form a black hole. Stars with about two times the sun's mass or more form black holes. Astronomers recognize two major types:

STELLAR-MASS black holes have the mass of several sun-sized stars. They form when a dying star explodes into a supernova, then collapses under its own gravity. Matter drawn toward the black hole forms an accretion disc.



SUPERMASSIVE black holes can have billions of times our sun's mass. Matter drawn toward a super-massive black hole is compressed, heats up and may be blasted out intojets thousands of light-years long.

SPACE CAMP TURKEY
An ESBAŞ Enterprise

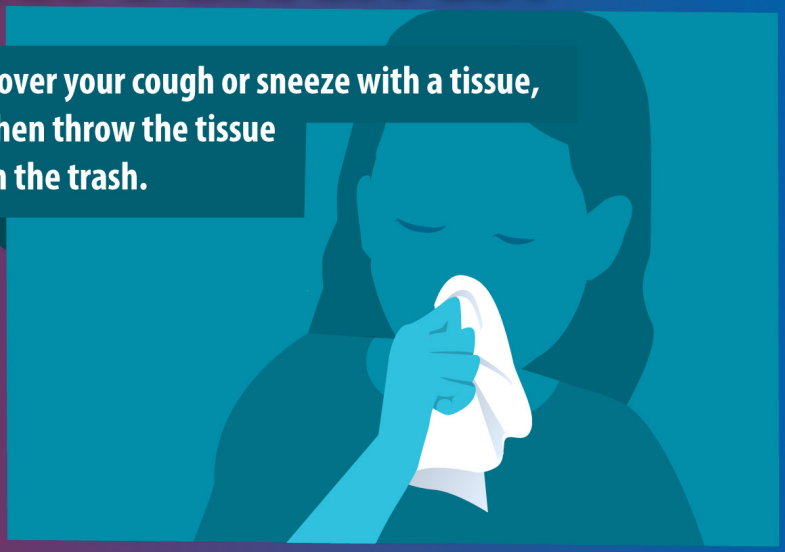
#Covid19

Global Friendship Through Space Education

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.

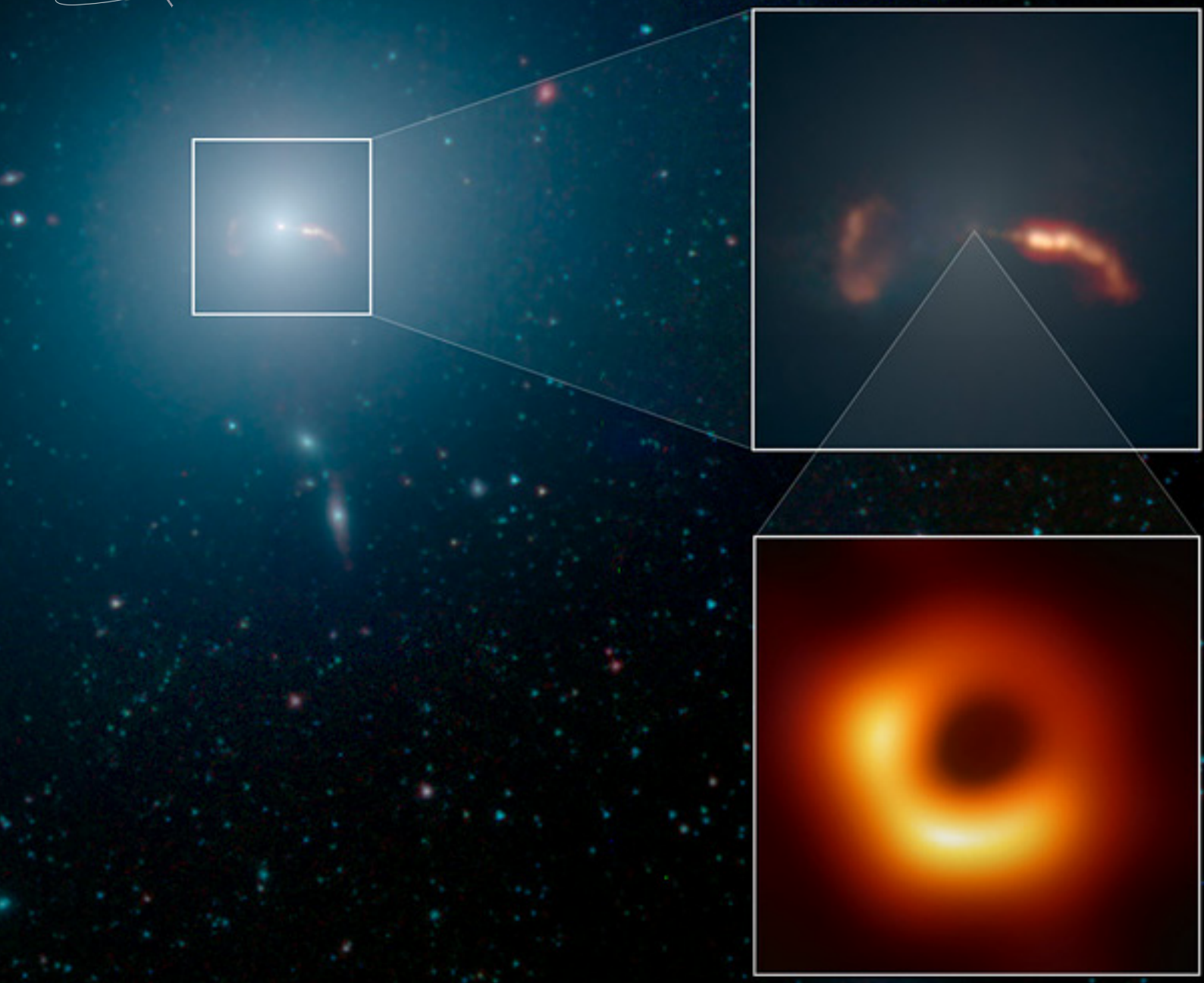
Clean and disinfect frequently touched objects and surfaces.

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

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

PSSP PARTNER SCHOOL SCIENCE PROGRAM

FUTURE EXPLORERS PROGRAM



Astronomy Picture of the Day

The Galaxy, the Jet, and the Black Hole

Image Credit & Copyright: NASA, JPL-Caltech, Event Horizon Telescope Collaboration

Messier 87 (M87) is home to the supermassive black hole captured by planet Earth's Event Horizon Telescope in the first ever image of a black hole. Giant of the Virgo galaxy cluster about 55 million light-years away, M87 is the large galaxy rendered in blue hues in this infrared image from the Spitzer Space telescope. Though M87 appears mostly featureless and cloud-like, the Spitzer image does record details of relativistic jets blasting from the galaxy's central region. Shown in the inset at top right, the jets themselves span thousands of light-years. The brighter jet seen on the right is approaching and close to our line of sight. Opposite, the shock created by the otherwise unseen receding jet lights up a fainter arc of material. Inset at bottom right, the historic black hole image is shown in context, at the center of giant galaxy and relativistic jets. Completely unresolved in the Spitzer image, the supermassive black hole surrounded by infalling material is the source of the enormous energy driving the relativistic jets from the center of active galaxy M87.

apod.nasa.gov

Space Camp Turkey, Aegean Free Zone 35410 Gaziemir, Izmir / Turkey
Phone : +90 232 252 35 00 Fax : +90 232 252 36 00
Email: info@spacecampturkey.com