

RED DWARF

An artist's depiction of Gliese 581 and some of its planets.

Do You Know?

Scientists find distant planets by looking for wobbly stars. Stars wobble when they are tugged by the gravity of a nearby planet.

SMALL AND DIM

Kara steered the *Stella* where Captain Gamma pointed, but she didn't see anything. "Is *that* it?" she asked, finally spotting a faint red disk. Her Star Reader told her that this star was only about one-third the mass and one-third the diameter of the Sun.

"Its surface temperature is about 3,200 degrees Celsius," Manolo noted. "But the Sun is 2,000 degrees hotter than that! These little red dwarfs aren't very impressive."

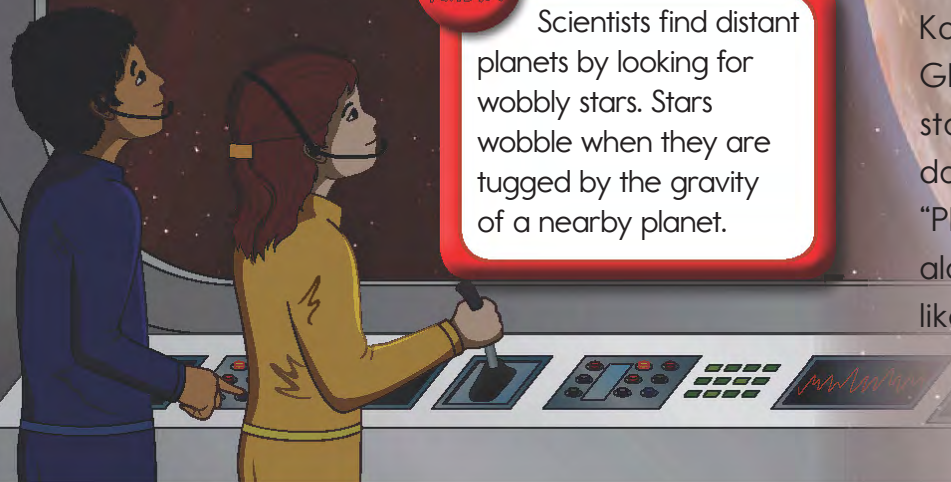
"Welcome to Gliese 581," Captain Gamma announced as they drew closer to the star. "Look closely," he said. "Even a red dwarf like Gliese can surprise you."

Manolo squinted as he looked out the window. Gliese 581 was not very bright, so at first he saw just the star. Then he noticed a few lumps floating in the blackness. "It has planets!" Manolo shouted. "I count four, and there might be more, but Gliese is too dim to light them up."

Kara kept the *Stella* near Gliese for a long time, staring in wonder at the dark disks orbiting the star. "Planets..." she wondered aloud. "Maybe there's one like Earth!"



Gliese 581 isn't very bright, so you'll need a telescope to see it. Look for it near the constellation Libra.



Live Long and Stay Cool

A star's life span depends on its mass; small stars live longer than large stars do. Red dwarfs have the longest life span of any star type. They can burn for *trillions* of years! That's because red dwarfs don't have much mass.

Red dwarf stars release energy through nuclear fusion. Their gravity crushes hydrogen until it turns into helium. But red dwarfs have weak gravity because of their small mass. As a result, they can only crush a little bit of hydrogen at a time.

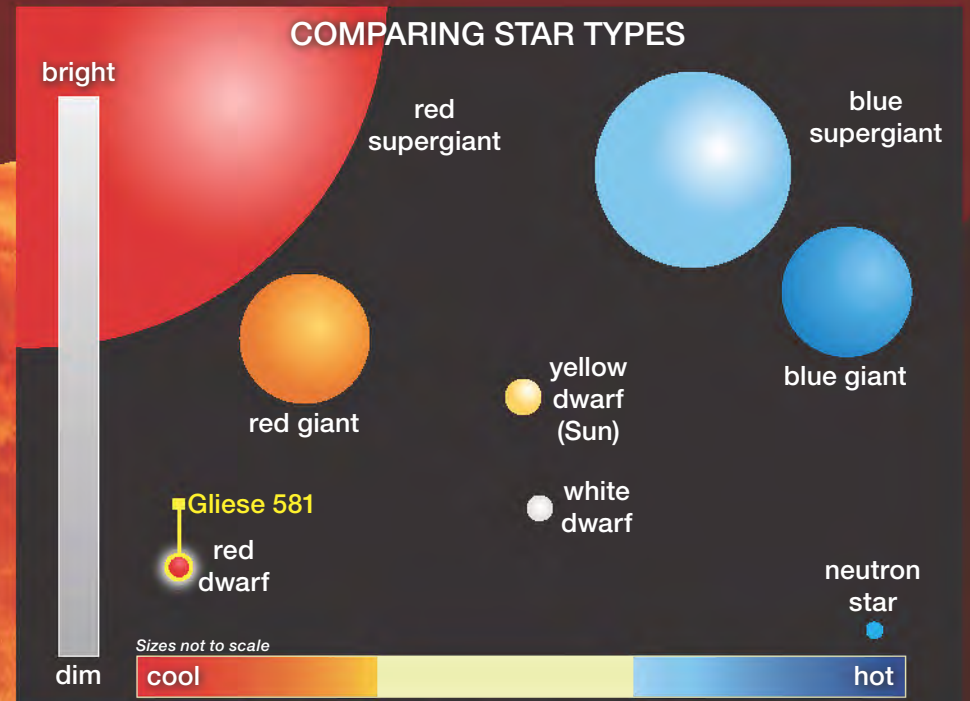
These stars don't have a lot of nuclear fusion going on at once, so they never get as hot or bright as other stars. Even though red dwarf stars don't have much hydrogen, they can keep burning it for a long time without running out.

Wowser!

Scientists estimate that 80% of all stars in the Milky Way galaxy are red dwarfs. There may be 60 million red dwarfs in our galaxy alone!

Other star types 20%

Red dwarfs
80%



Gliese 581 is a red dwarf star. It looks red because of its low temperature. Red dwarfs are not very hot or bright compared to other star types.

Do You Know?

Stars often form near each other at about the same time, creating a *cluster*. If all the large stars in a cluster have burned out, leaving only red dwarfs, the cluster is probably old.

