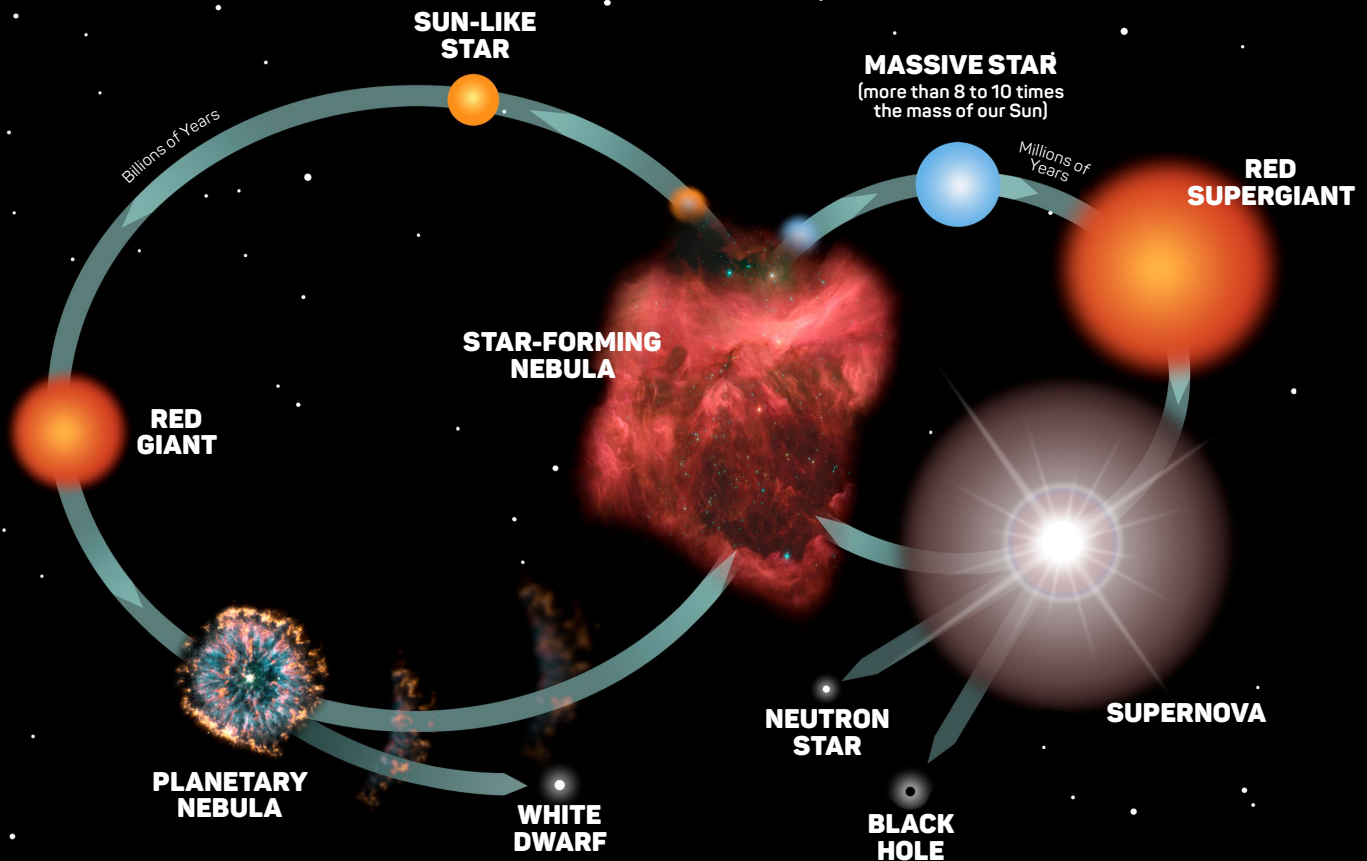


# The Life Cycles of Stars

All stars, even our Sun, change over time.



After shining for millions or billions of years, stars go through different life cycles depending on their mass.

#### LEARN MORE:

[imagine.gsfc.nasa.gov/educators/lessons/xray\\_spectra/background-lifecycles.html](https://imagine.gsfc.nasa.gov/educators/lessons/xray_spectra/background-lifecycles.html)

**All stars are born from clouds of gas and dust, but they then evolve differently depending on how massive they are.** Stars about as massive as the Sun shine for billions of years before expanding, cooling, and becoming a type of star known as a *red giant*. They shed their outer layers of gas as colorful planetary nebulas and eventually turn into tiny, hot objects known as *white dwarfs*. More massive stars, on the other hand, only shine for millions of years before expanding and becoming *red supergiants*. These enormous stars explode as supernovas and can then become either small, dense *neutron stars* or black holes. Like taking a single photo at a large family reunion to observe how humans change over time, astronomers can learn more about stellar life cycles by capturing images and studying differences across the many billions of stars in our Milky Way galaxy and nearby galaxies.