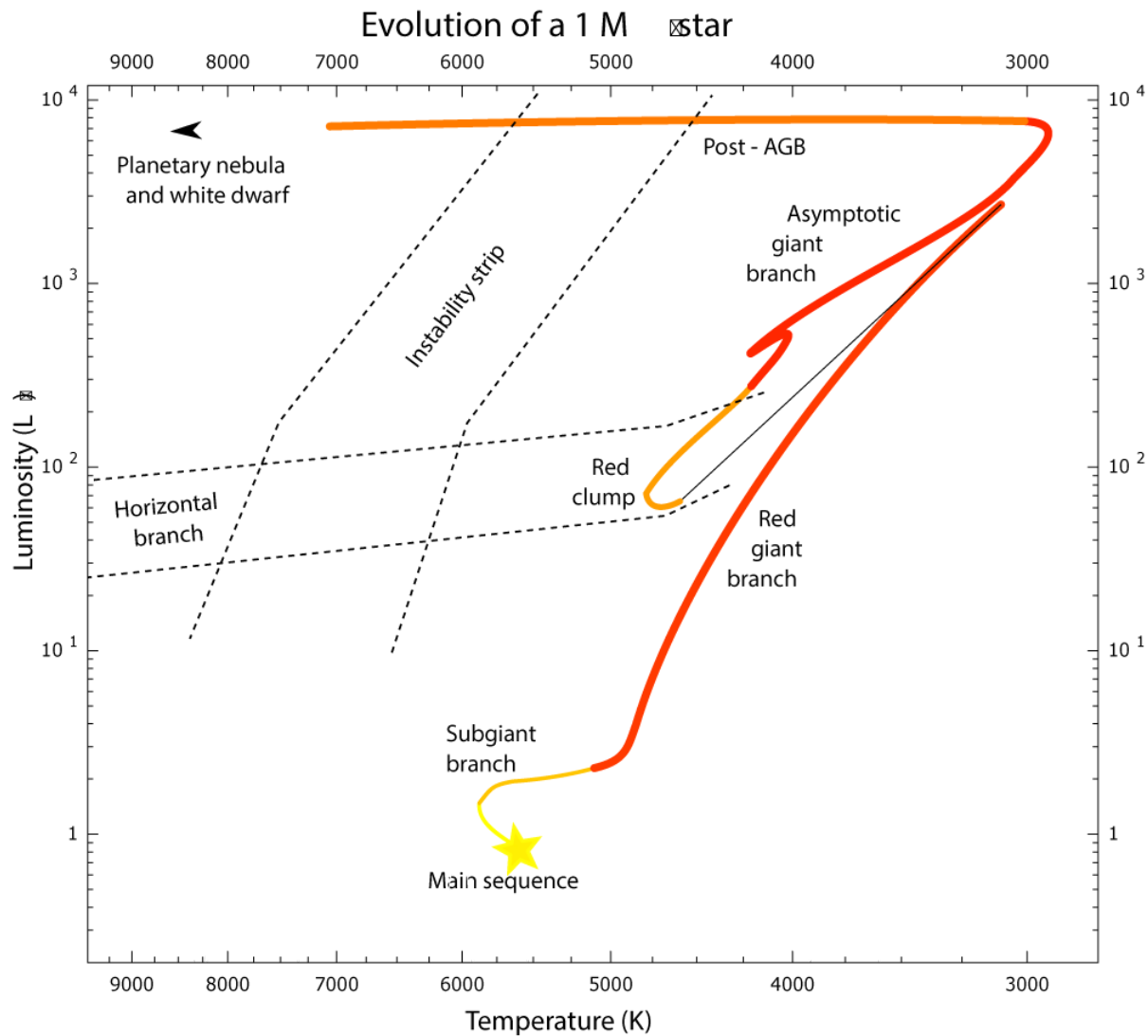


11.4: H-R Diagram and Star Life Cycles

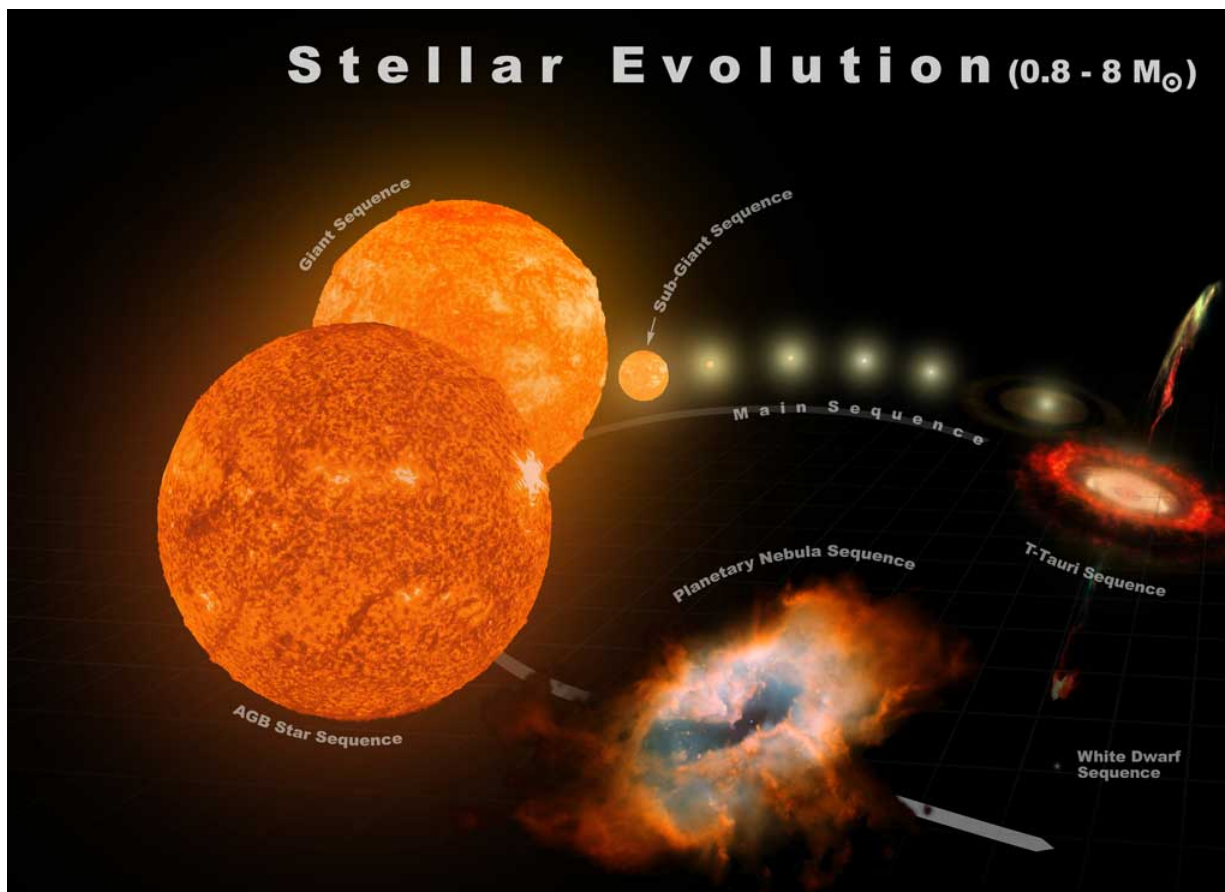
H-R Diagram and Star Life Cycles

H-R diagrams which show how a star changes or evolves during its stellar life.

The H-R diagram can be used to study and understand how a star will evolve during its life cycle. Stellar evolution is the processes and changes a star undergoes over time.



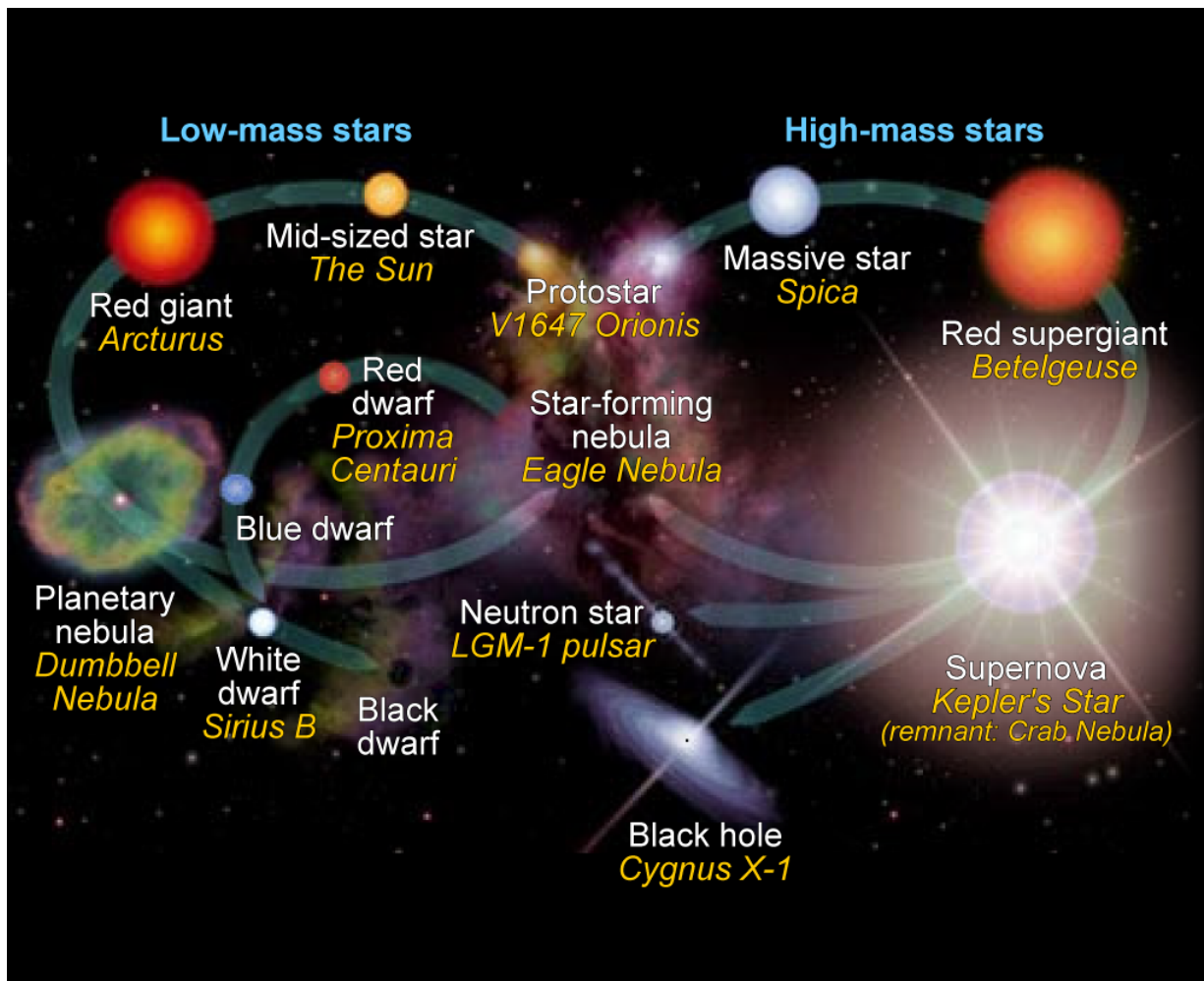
An H-R Diagram showing stellar evolution of a 1 solar mass star; that is, our Sun and stars like our Sun. Evolutionary track 1m by Lithopsian is licensed under [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)



The typical stellar evolution sequence and relative sizes for stars from 0.8 to 8 solar masses. Stellar Evolution by Antonio Ciccolella is licensed under [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)

Stars are not all the same mass when their fusion processes begin. So, a star's stellar evolution will vary, depending on the star's stellar mass. High-mass stars fuse their fuel quickly, as fast as a few million years. Low-mass stars like the Sun, are much slower and so evolve much slower, periods of billions to even trillions of years.

Since astronomers cannot track the stellar evolution of one single star, even with a high mass short lived star. So many stars are studied, providing astronomers a good look at the various changes stars go through over time.



Stellar evolution comparison of low mass (left) and high mass stars. Examples of each stage are shown in italics. Star life cycles red dwarf en by NASA Goddard Space Flight Center is in the [Public Domain](#)

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