

12.2: Star Life

There are specific terms in biology, which deal with life: birth, growing up, getting old, death, and even evolution. For the sake of convenience and familiarity, astronomers use similar terminology when dealing with stars. This module will focus on astronomical concepts, such as stars being born or stellar birth, stellar nurseries, stellar life, stars growing old, star death, and stellar evolution.

Note that stars are not alive! These are simply terms of familiarity. Stars are formed in **interstellar medium**, which is filled with hydrogen, helium, and dust. This interstellar medium is cold and dense. These areas in space are also called **Molecular Clouds, Interstellar Clouds, or Stellar Nurseries** (more than one star).

One debate that transpired in the 1800s into the early 1900s was the question of what composed the stars. A doctoral student at Harvard, **Cecelia Payne-Gaposhkin**, noted in her 1925 doctoral dissertation that stars were made of hydrogen. Not all agreed with Payne-Gaposhkin's findings, yet as more data was collected and researched, her theory was proven correct a few short years after she first proposed the theory.

So how are stars 'born'? That is, what are the steps to a stellar birth? First, hydrogen, helium, and dust – the interstellar medium – has to accumulate. The interstellar medium starts to collapse due to gravity; these various atoms and dust particles attract each other, forming larger and larger clumps, attracting more gas and dust. As the interstellar medium collapses, the density, pressure, and temperature within the interstellar medium increases. Think of it like this: as the density increases, more particles are striking each other, generating more energy and heat.

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