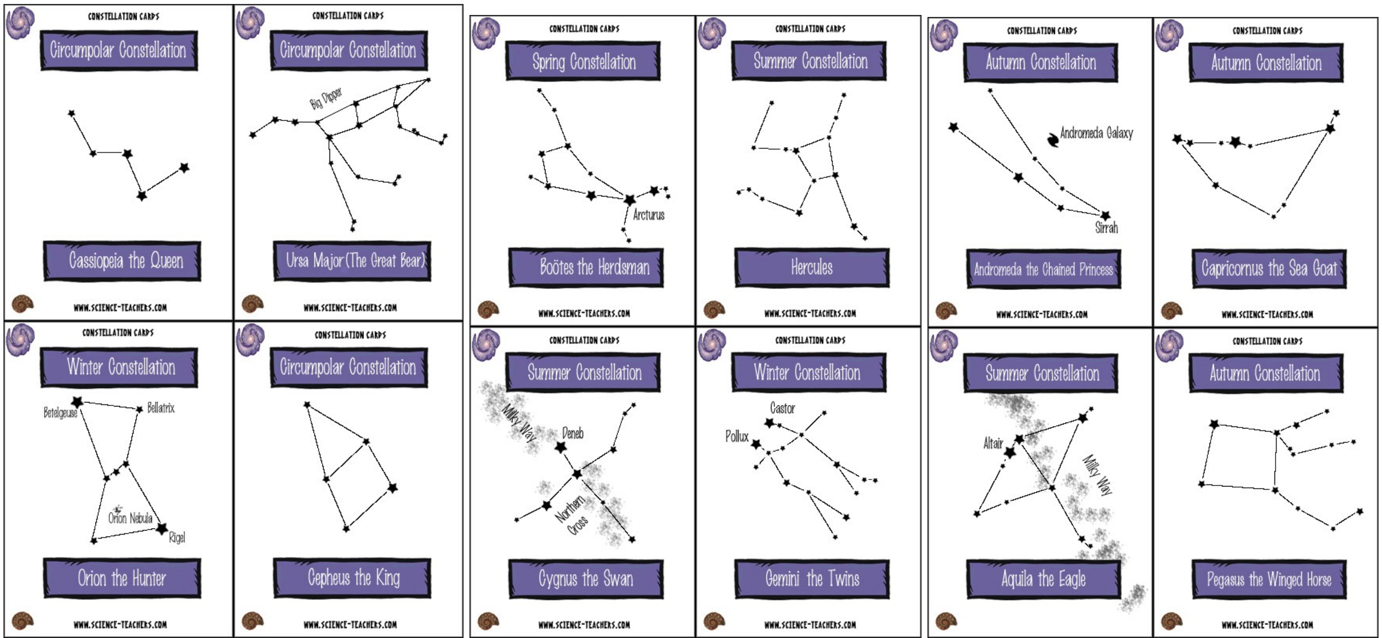
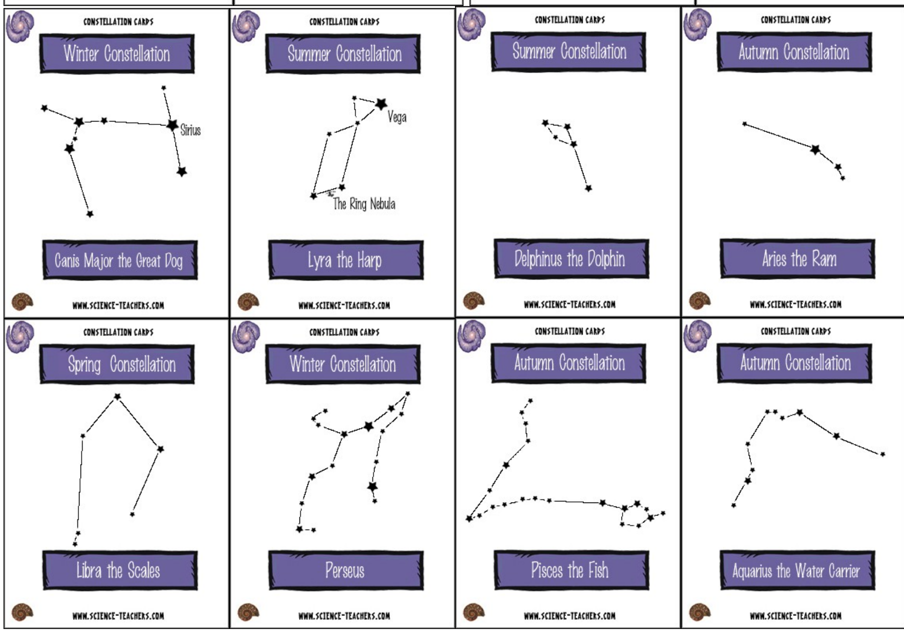
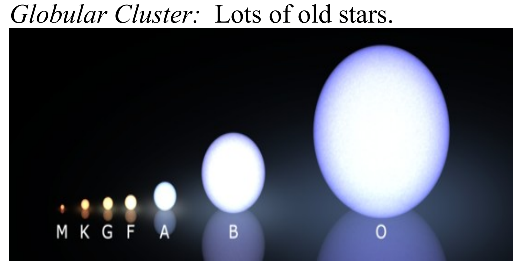


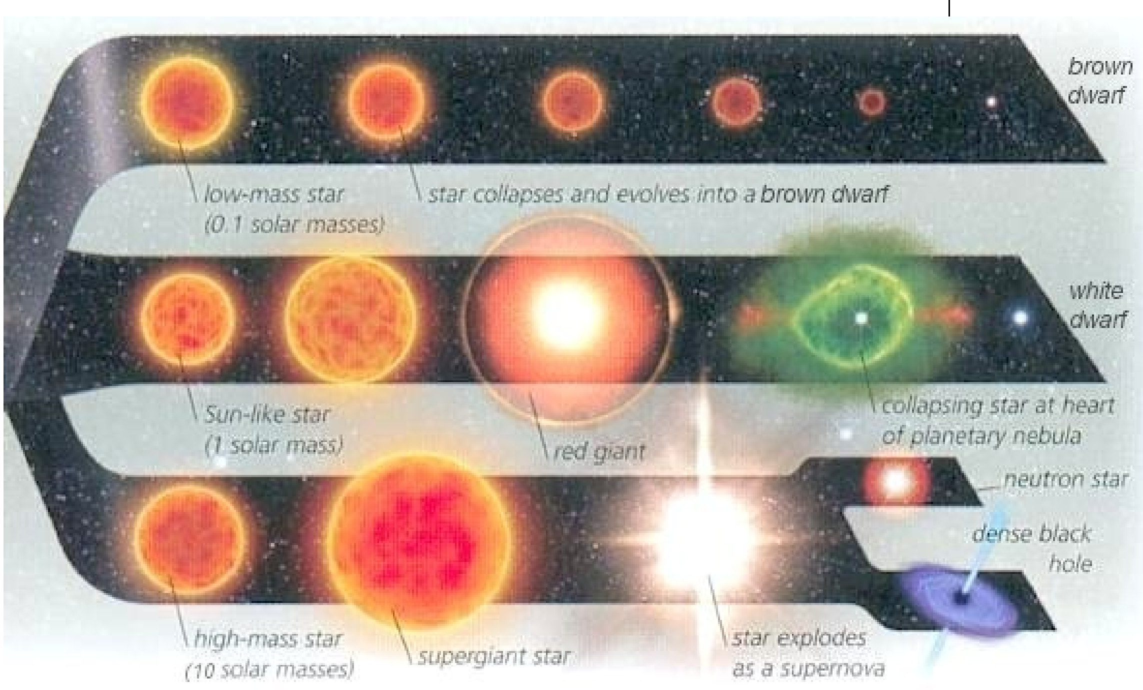


Open Star Cluster: Young stars, but a few.
Globular Cluster: Lots of old stars.

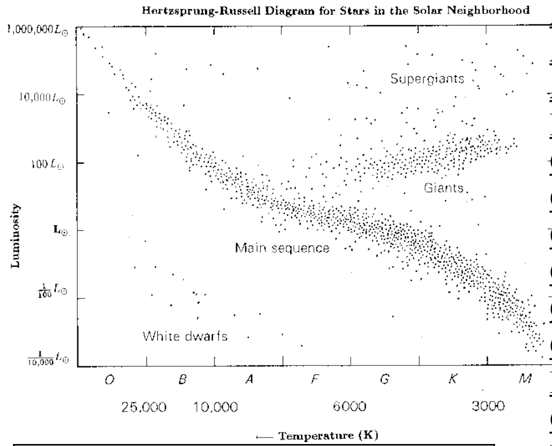


Morgan-Keenan Structure^

1) A **Type Ia supernova** is a sub-category of cataclysmic variable stars that results from the violent explosion of a white dwarf star. A white dwarf is the remnant of a star that has completed its normal life cycle and has ceased nuclear fusion



2) **Types Ib and Ic supernovae** are categories of stellar explosions. They are caused by the core collapse of a massive star that has shed (or been stripped of) its outer envelope of hydrogen.



Galactic Types: Spiral, Barred Spiral, Elliptical,

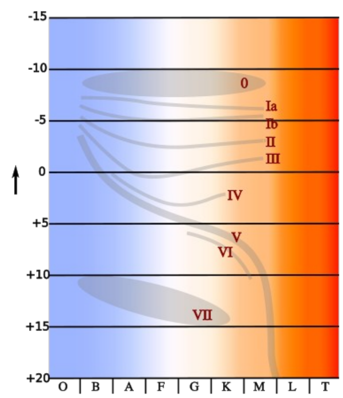
Figure 2 Spiral

Andromeda: *M31 Andromeda Galaxy*
Aquila: **Altair**
Auriga: **Capella**
Bootes: **Arcturus**
Cancer: *M44 Beehive Cluster*
Canes Venatica: *M51 Whirlpool Galaxy*
Canis Major: **Sirius**
Canis Minor: **Procyon**
Centaurus: **Proxima Centauri**
Cassiopia: *Cas A & Tycho's Star*
Dorado: *LMC*
Gemini: **Castor** & **Pollux**
Hercules: *M13 Globular Cluster*
Lyra: **Vega** & *M57 Ring Nebula*
Mensa: *LMC*
Ophiuchus: *Bernard's Star*
Orion: **Betelgeuse**, **Rigel** & *M42 Orion Nebula*
Perseus: **Algol**;
Sagittaris: *Sgr A*
Taurus: **Aldebaran**, *Hyades Star Cluster*, *M1 Crab Nebula* & *M45 Pleiades*
Tucana: *SMC*
Ursa Minor: **Polaris**
Virgo: **Spica**

3) Type II supernova, or **core-collapse supernova**, is a sub-category of cataclysmic variable stars that results from the internal collapse and violent explosion of a massive star. Stars must have at least 9 times the mass of the Sun in order to undergo a core-collapse.[1]

Parsec is 3.2616 light-years
Light-year $9.46x10^{12}$ Kilometers
Luminosity=the Rate of Radiation electromagnetic energy into space by a star or other object
Red Shift=The displacement of spectral lines to longer wave lengths that are observed when a light source is receding from an observer.
Parallax=Shift in positions of an object when viewed from diff. locations.

Figure 4 Elliptical



1Yerkes Scale

Figure 3 Barred Spiral

Sun=G2 Spectral class, O= Blue, G= Yellow, M= Red
Mid-sized star 19,10,1,21,24,2 Massive Star 19, 10,7,5,23,16,3 or 17
1)Right ascension and declination are what astronomers use to precisely locate objects on a celestial map, and are equivalent to the imaginary lines of longitude and latitiude used in maps of the earth. Although it is obvious that all of the stars lie at different distances from the earth, it is also convenient to think of the sky as a fixed sphere with the earth at the center. Just as the earth has a north pole, south pole, and equator, so does the sky.

The nearest star-formation regions in our galaxy lie at a distance of 150 pc (e.g., Taurus-Auriga), and the nearest rich star-formation region lies at 450 pc (Orion). The stars in these regions were mostly too faint to be observed by Hipparcos. The improved sensitivity of FAME will allow large numbers of pre-mainsequence stars in these regions to be surveyed. Perhaps the most important result will be to provide distances to individual stars, thus allowing them to be placed accurately on an HR diagram. This is critical for the determination of better ages of individual pre-main-sequence stars, which are presently uncertain by about a factor of 2 or more.

Furthermore, accurate proper motions provided by FAME, together with ground-based radial velocities, will allow studies of the kinematics of star-formation regions, which will clarify the processes by which newly-formed stars are distributed into the disk of the galaxy.

In particular, FAME will investigate the membership of many young (~10^6 year old) galactic clusters. ROSAT observations have shown that many of these clusters are surrounded by large populations of X-ray sources in extended halos up to several degrees in size. These extended X-ray populations can outnumber cluster X-ray T Tauri stars by a factor of 10, so it is very important to determine whether they are also young stars that formed at the same time as the compact clusters. Knowing whether or not these stars are members of the clusters will fundamentally impact our knowledge of the mass function in galactic clusters, the lifetime for accretion disks and planet formation, and dynamical evolution of young clusters. FAME observations of these bright stars (mV ~11 mag for M ~1 solar mass at the distance and age of the Chameleon cluster) will determine whether the compact clusters are at the same distances as their extended X-ray populations, and FAME tangential velocities will reveal whether the extended populations could have traveled from the cluster cores over the cluster lifetime (as deduced from its stellar evolutionary ages).

Finally, FAME will be able to determine the orbital inclinations of selected pre-main-sequence binaries with spectroscopic orbits, thus contributing to our knowledge of the masses for pre-mainsequence stars. There are at present no direct mass determinations for pre-main-sequence stars less massive than the Sun.