

**SAS Honors Seminar 259:
Extraterrestrial Life**

9/22/2008

Star formation in Eagle Nebula



Star-Birth Clouds · M16

HST · WFPC2

PRC95-44b · ST ScI OPO · November 2, 1995
J. Hester and P. Scowen (AZ State Univ.), NASA

Star formation in Orion

Visible • WFPC2



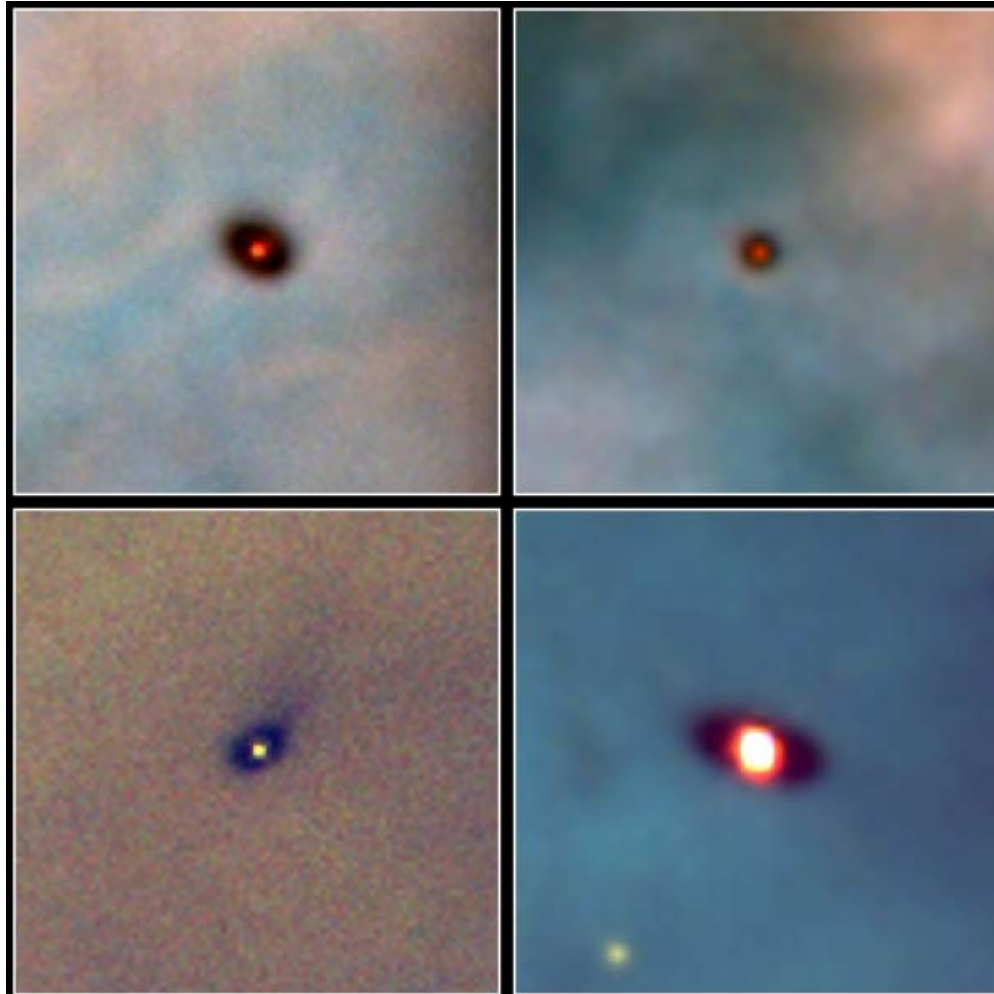
Infrared • NICMOS



Trapezium Cluster • Orion Nebula
WFPC2 • Hubble Space Telescope • NICMOS

NASA and K. Luhman (Harvard-Smithsonian Center for Astrophysics) • STScI-PRC00-19

“Proplyds” in Orion



**Protoplanetary Disks
Orion Nebula**

HST · WFPC2

PRC95-45b · ST ScI OPO · November 20, 1995
M. J. McCaughrean (MPIA), C. R. O'Dell (Rice University), NASA

Two kinds of supernovae

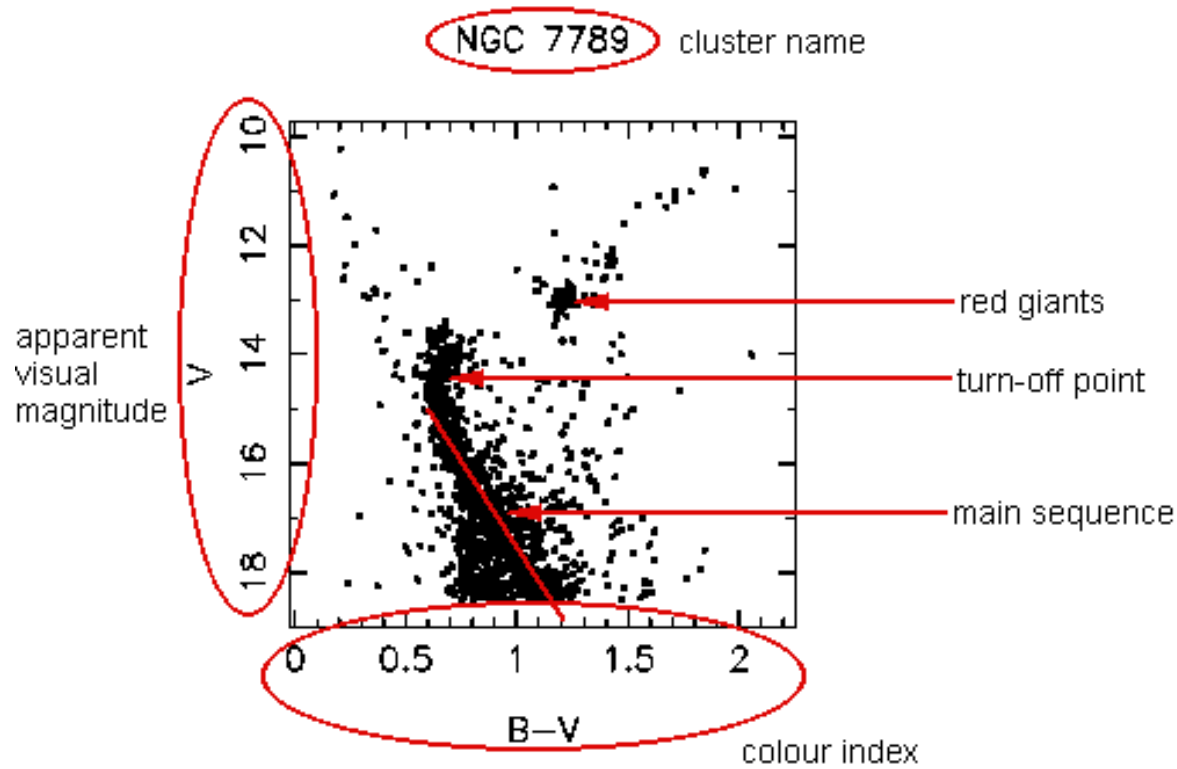
Type I: a white dwarf in a binary system is pushed “over the edge” (Chandrasekhar limit = 1.4 solar masses) by the addition of just a bit too much mass from a companion. These produce lots of Fe.

Type II: a very massive star undergoes core collapse when it is unable to derive any more energy from nuclear fusion. These produce lots of “alpha elements” (Ca, Mg, etc.).

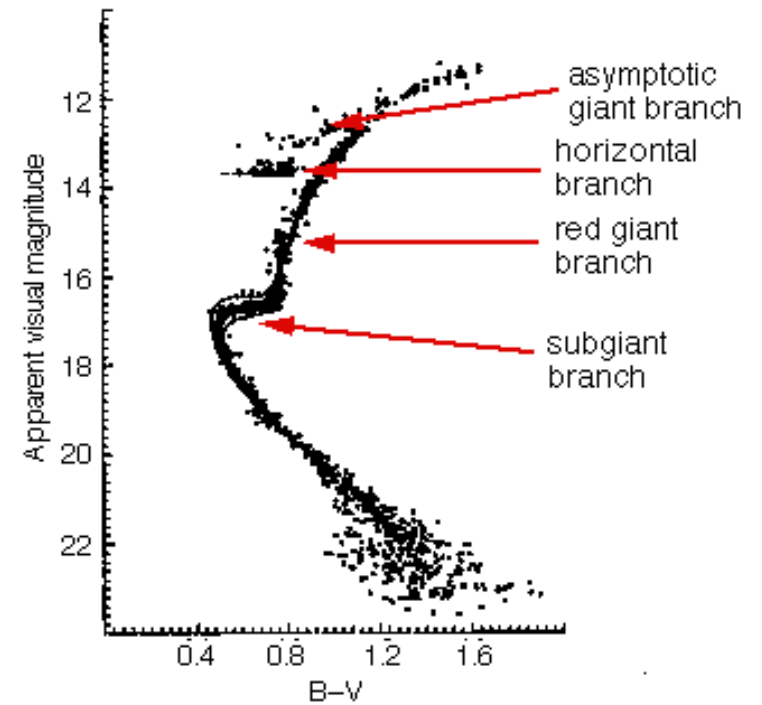
Components of a galaxy



HR diagrams



NGC 7789



47 Tuc

Wednesday's field trip (9/24)

Deep Sea Microbiology Lab (Prof. Costatino Vetriani)
Institute of Marine and Coastal Sciences (Cook Campus)

**Meet by 4:35pm in main
lobby, or (if late) look
upstairs near room 204G.**

Ask lots of questions!



Reading for Wednesday

Bennett & Shostak 5.5, 9.4 – background on extremophiles

Vetriani et al. (2005) – example of our host's work on

extremophile microbes – read all but “Materials and Methods” section

Web site will have a reading guide (later this evening).

No formal discussion, but use this reading as basis for questions during the field trip.

Reading for next Monday (9/29)

Bennett & Shostak 3.3, 3.5, 4.6 – background on solar system

Stevenson (2001) – background on Jupiter's moons

Canup & Ward (2002) – proposed model for formation of

Jupiter's moons – read only abstract, §1, and §4

Canup & Ward (2006) – generalization of 2002 paper –

read only first page, figure captions, and last paragraph

Web site will have a reading guide (forthcoming).

Response paper for Monday (9/29)

Describe one or more aspects of our visit to Professor Vetriani's deep sea microbiology lab that you found especially interesting or surprising.

