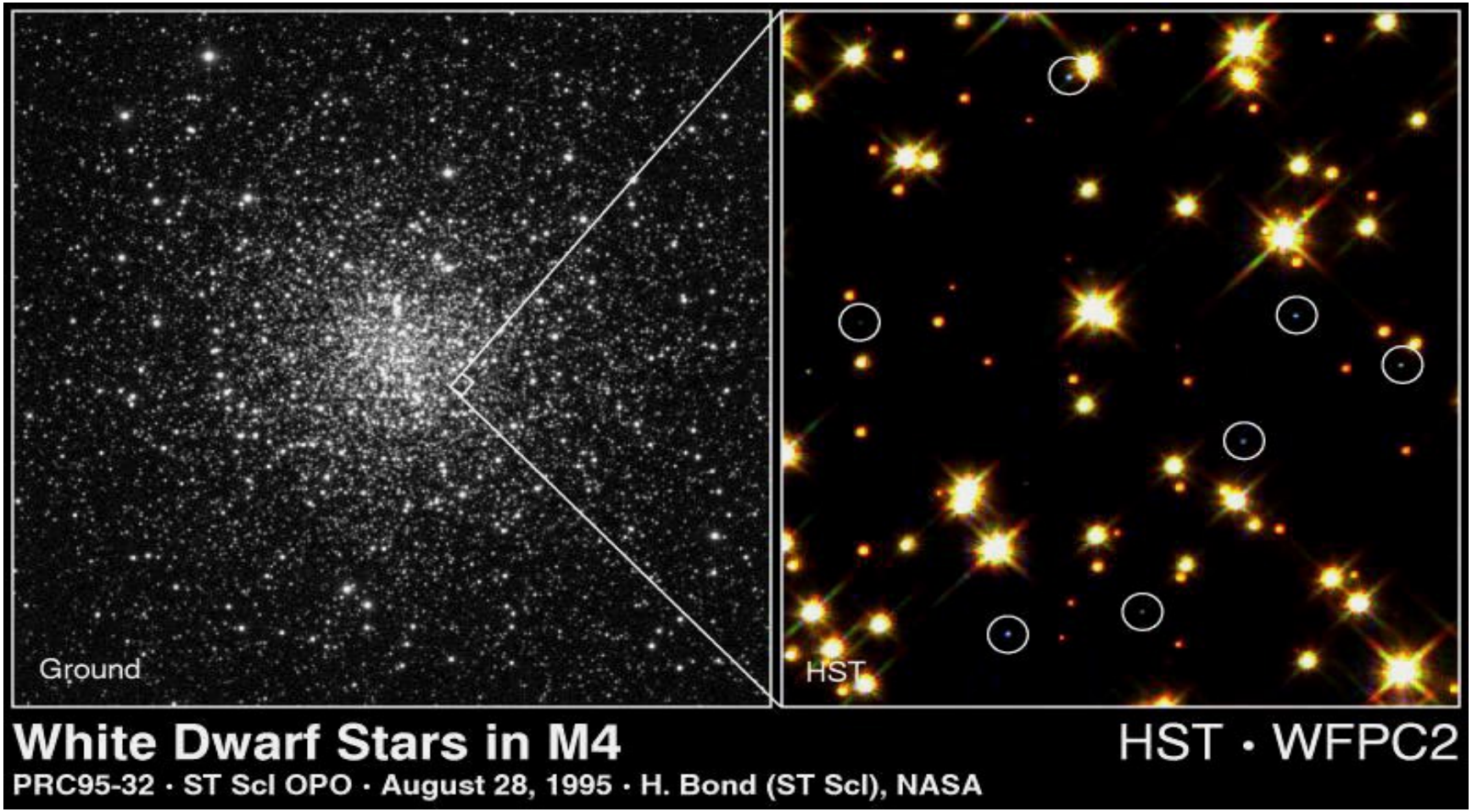
AGA0100

8.2 Estrelas: da adolescência à velhice

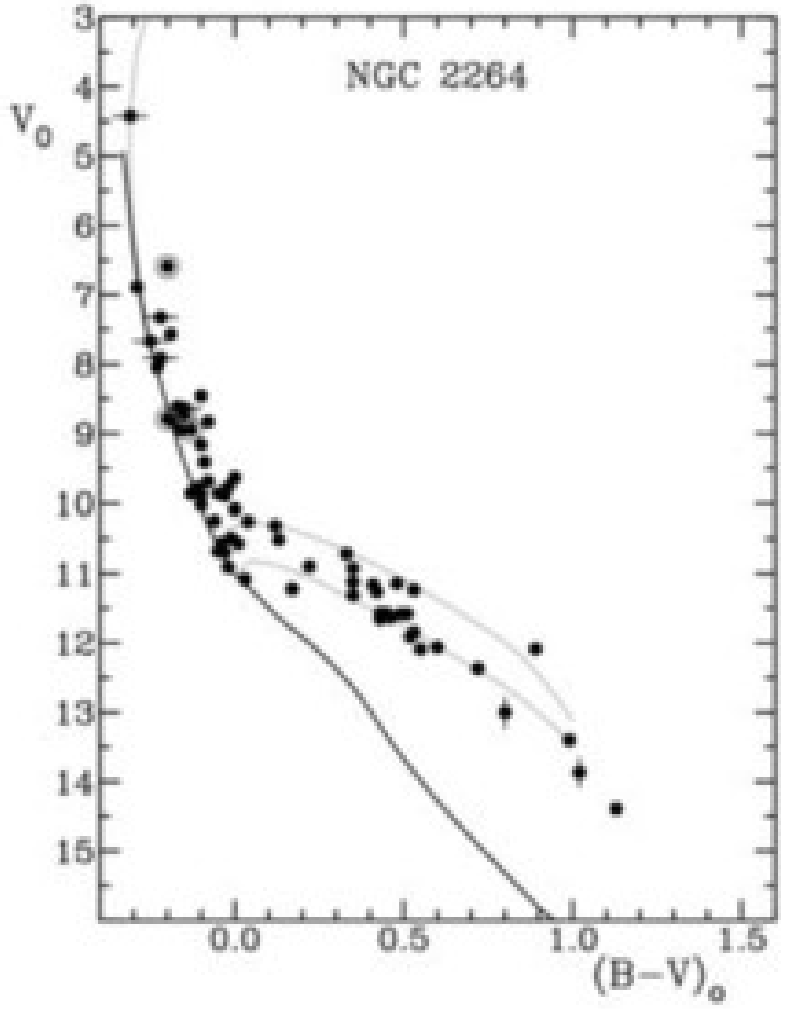
Tempo de vida na Sequencia principal

Tipo Espectral	**Massa/M_{Sol}**	**Tempo na Sequencia Principal**
O5	40	1 milhão
B0	16	10 milhões
A0	3,3	500 milhões
F0	1,7	2,7 bilhões
G0	1,1	9 bilhões
K0	0,8	14 bilhões
M0	0,4	200 bilhões

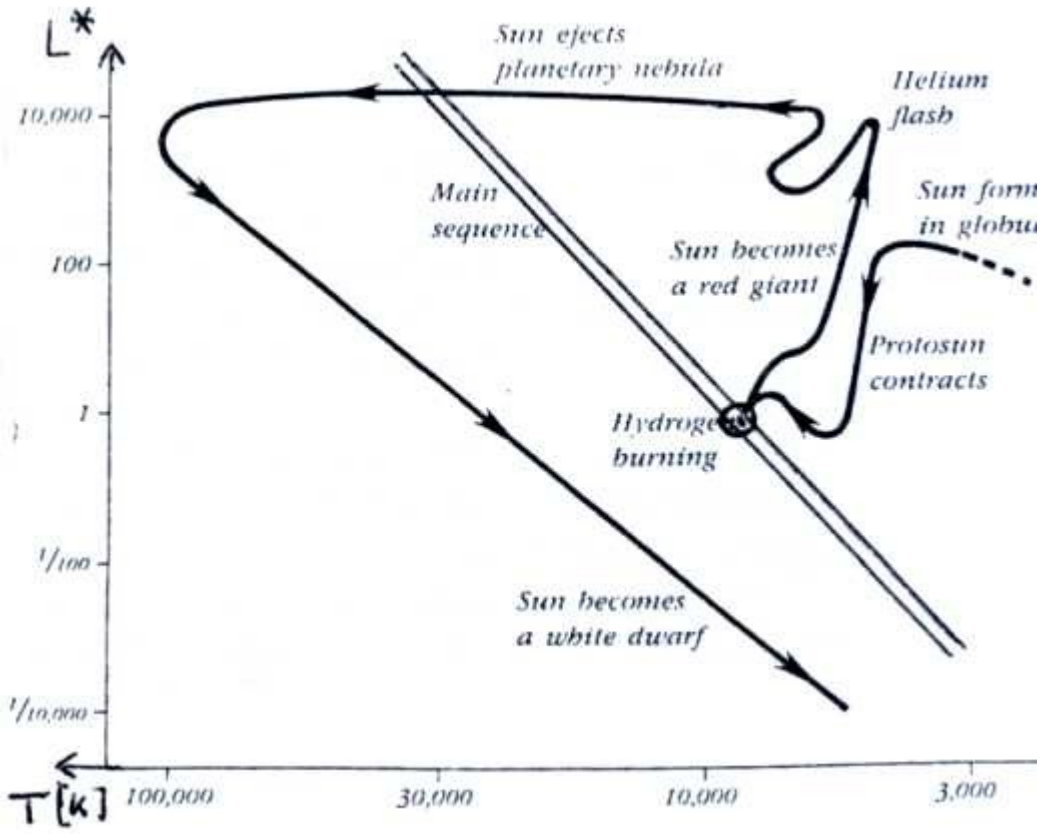
Aglomerados: uma família, uma origem.



Aglomerado NGC 2264:
Sequencia Principal e estrelas T Tauri



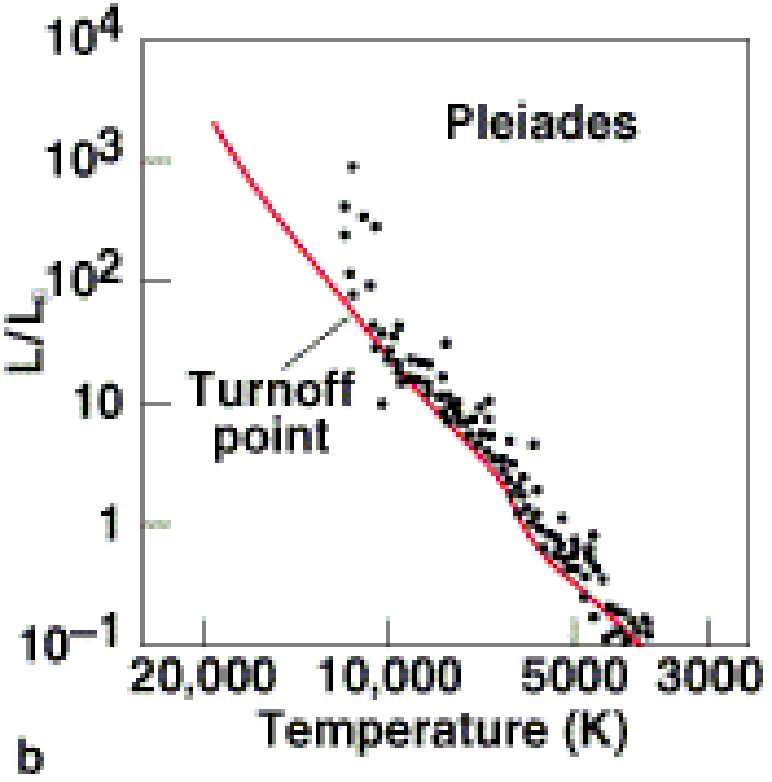
Trajetória evolutiva de uma estrela de 1 M_{sol}



O limite de Schönberg-Schandrasekhar (1942)

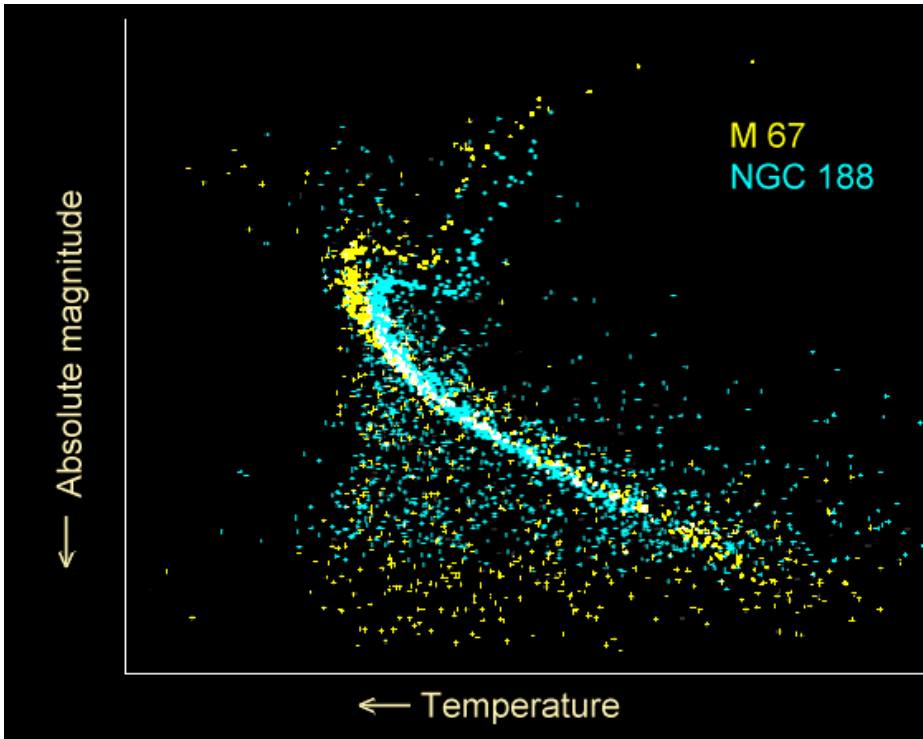
As estrelas deixam a Sequencia Principal quando 9% da sua massa for transformada em Hélio, no núcleo

- Pleiades
- T ~100 Milhões de anos

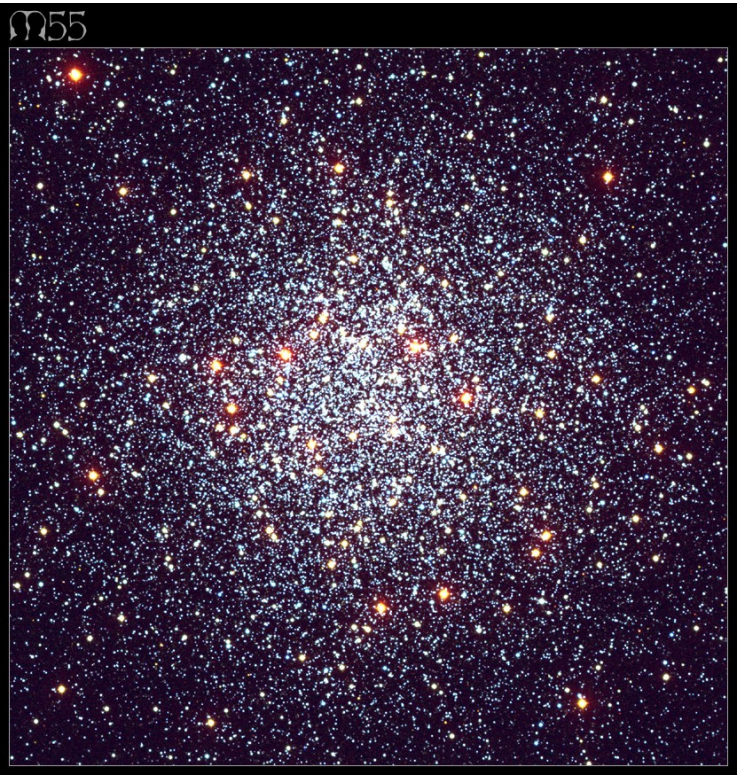


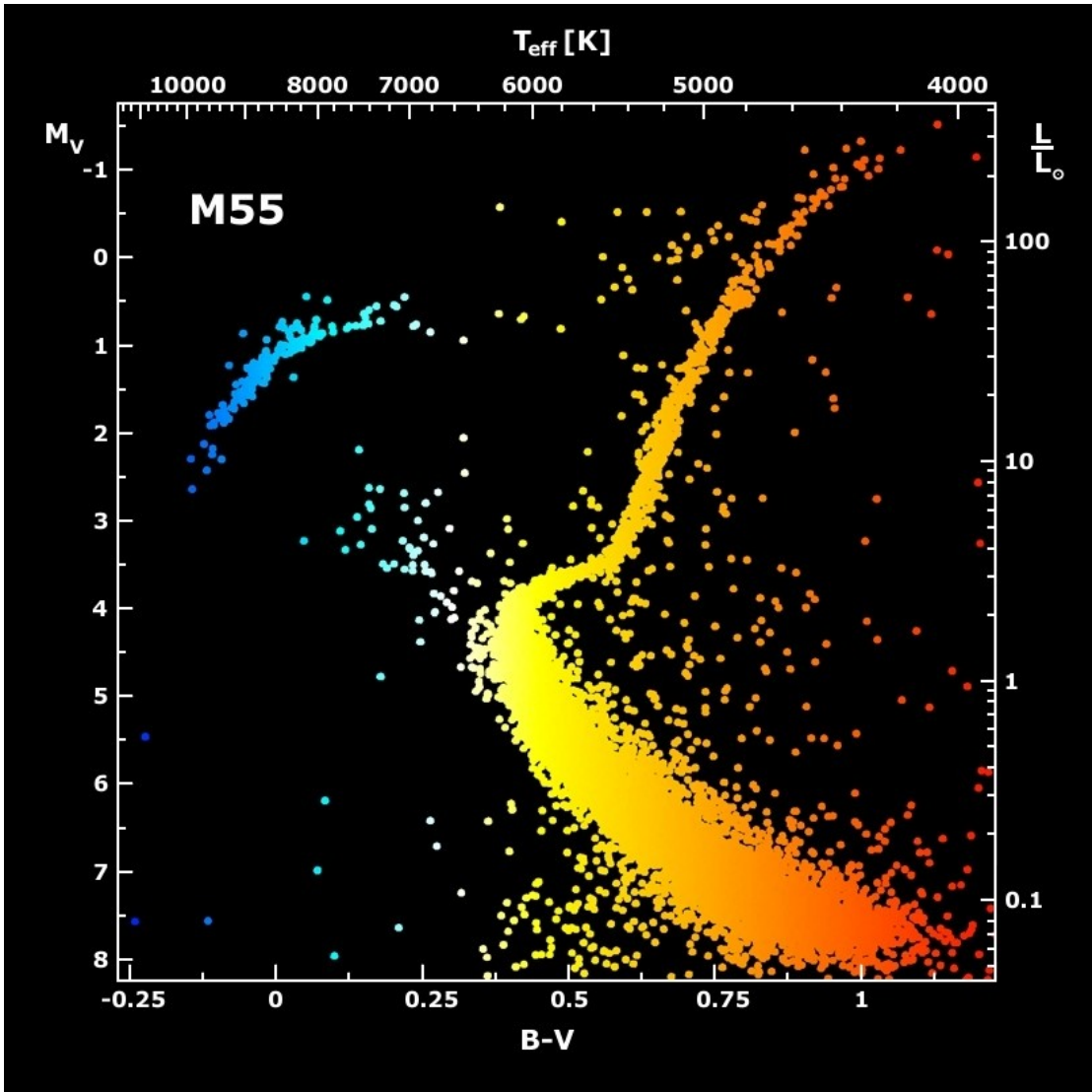
M67 NGC 188

- T~ 3.2 a 5 Gano

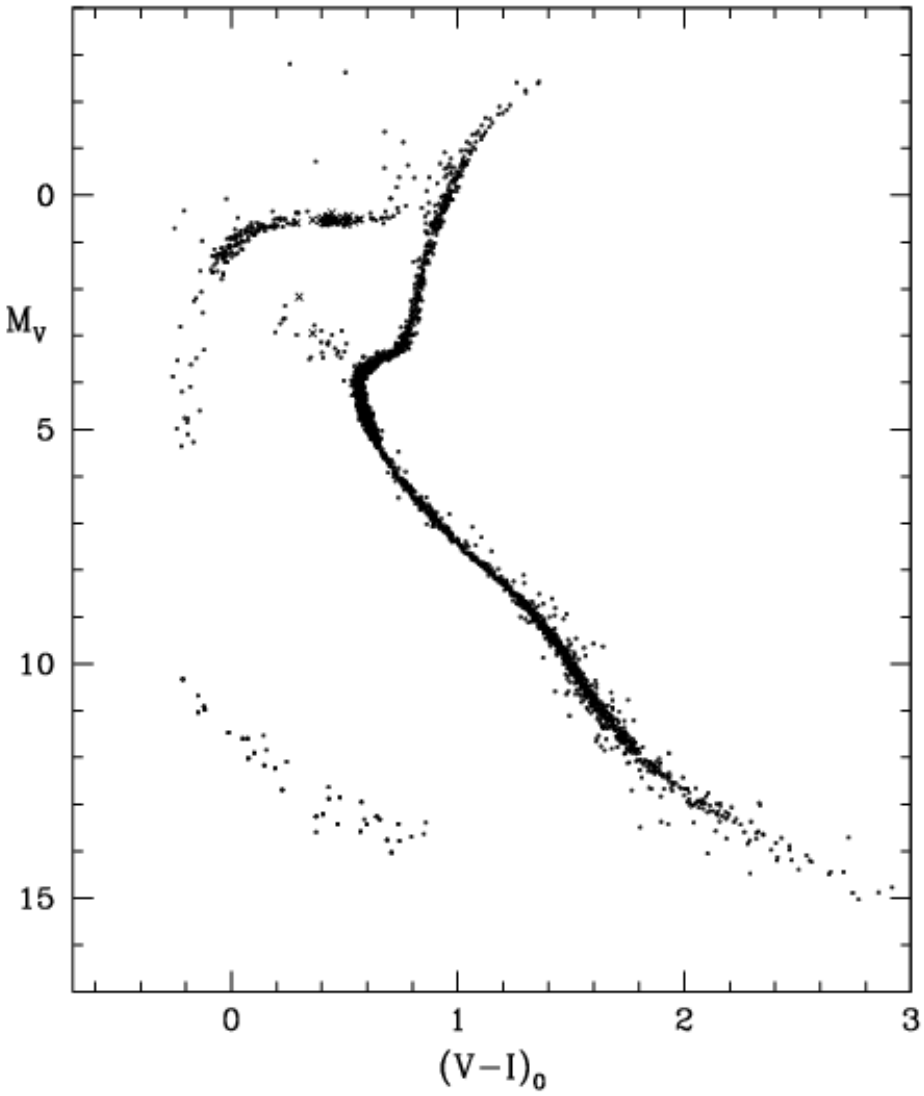


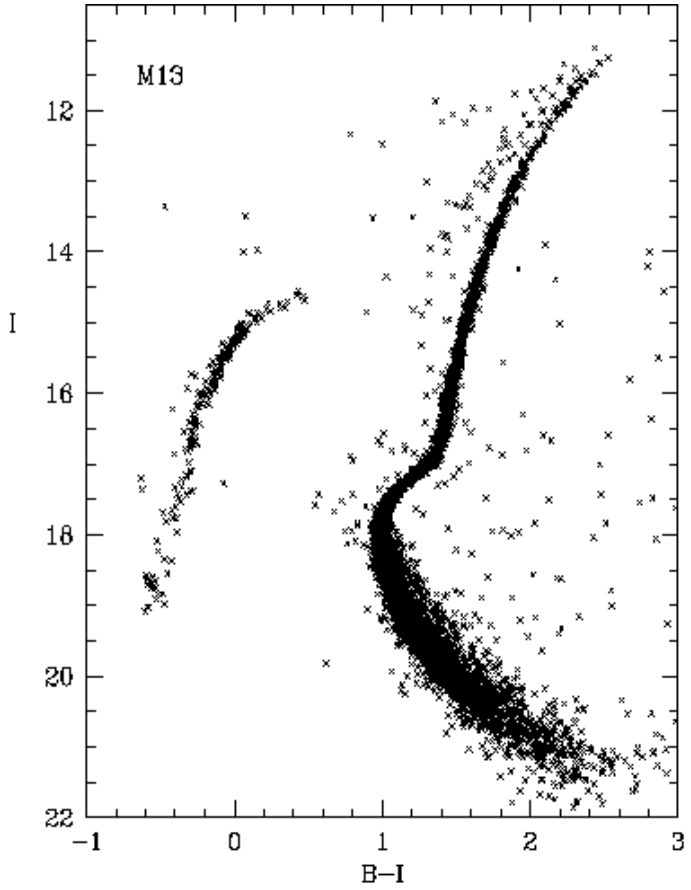
- M 55
- T ~12.3 Gano



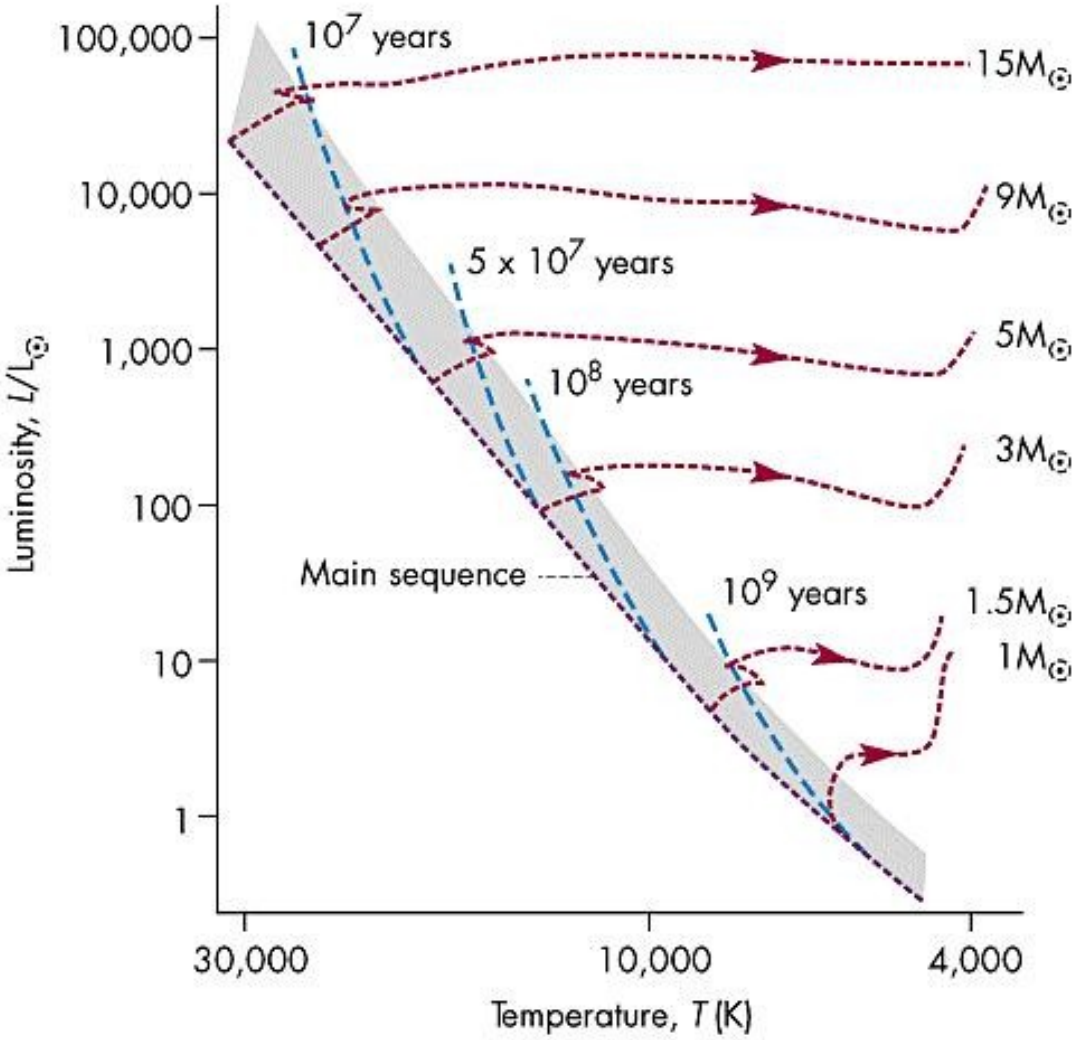


- Composição de aglomerados globulares pobres em metais

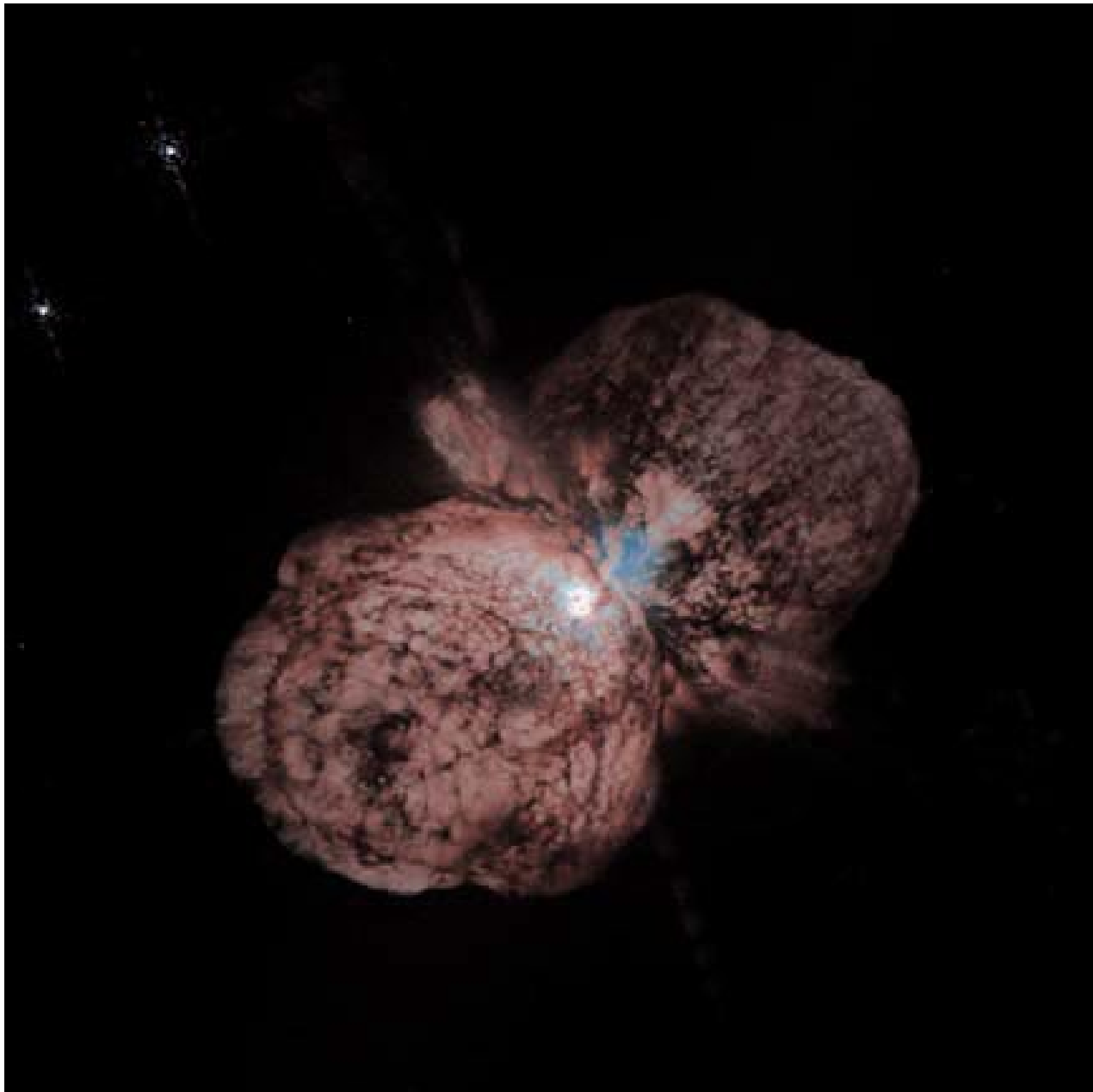


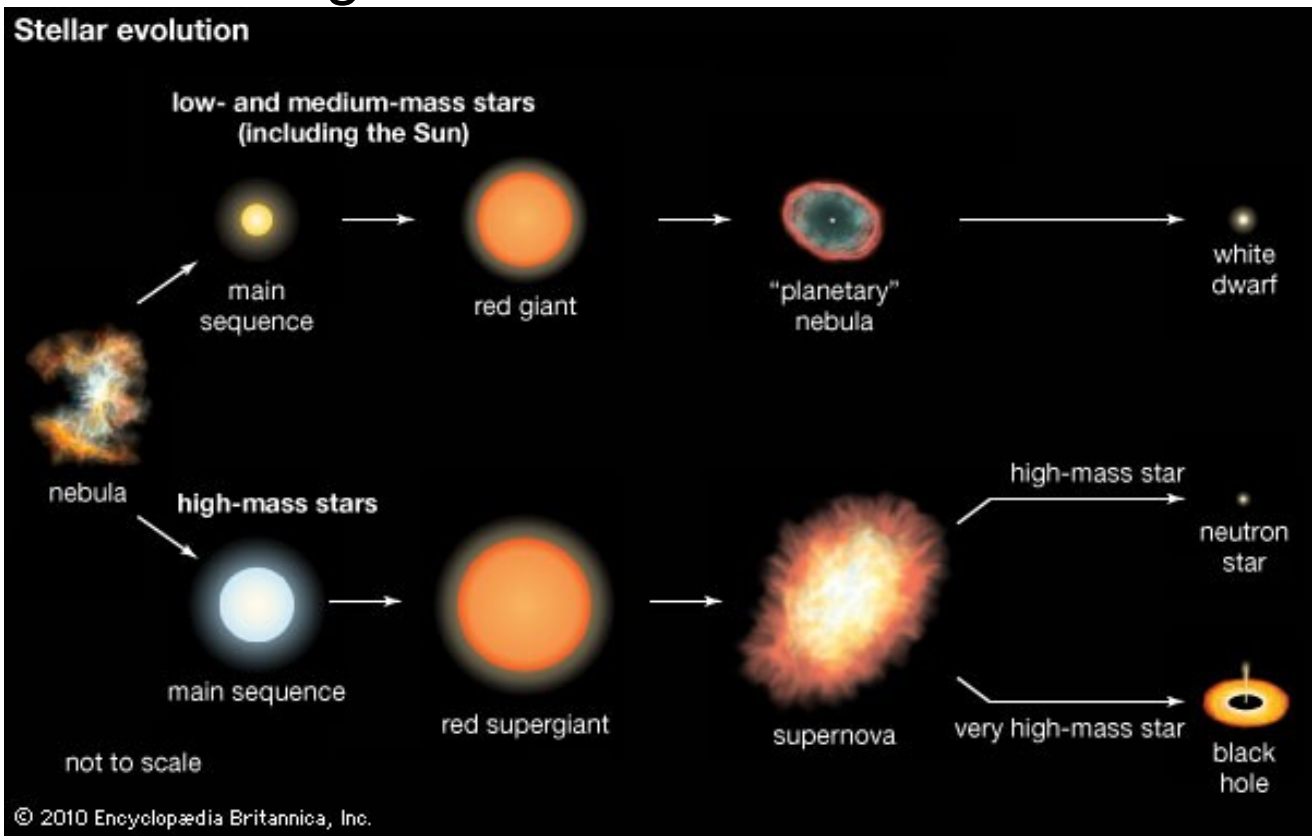


Color-magnitude diagram for 6,624 minimally crowded stars in the field of M13.


100,000
10,000
1,000
100
10
1
Luminosity, $L/L_\odot$
10^7 years
5×10^7 years
10^8 years
10^9 years
Main sequence
$15M_\odot$
$9M_\odot$
$5M_\odot$
$3M_\odot$
$1.5M_\odot$
$1M_\odot$
30,000
10,000
4,000
Temperature, T (K)

Eta Carinae



O produto final de uma estrela depende de sua massa inicial (M_{in})

- $M_{in} < 8\ M_{sol} \rightarrow$ anã branca
- $8\ M_{sol} < M_{in} < 20\ M_{sol} \rightarrow$ estrela de nêutrons
- $M_{in} > 20\ M_{sol} \rightarrow$ buraco negro