

Galactic Archaeology and the Formation of the Elements

The cosmos is within us. We are made of
star-stuff. We are a way for the Universe to
know itself.

-Carl Sagan

Madeline van Staveren

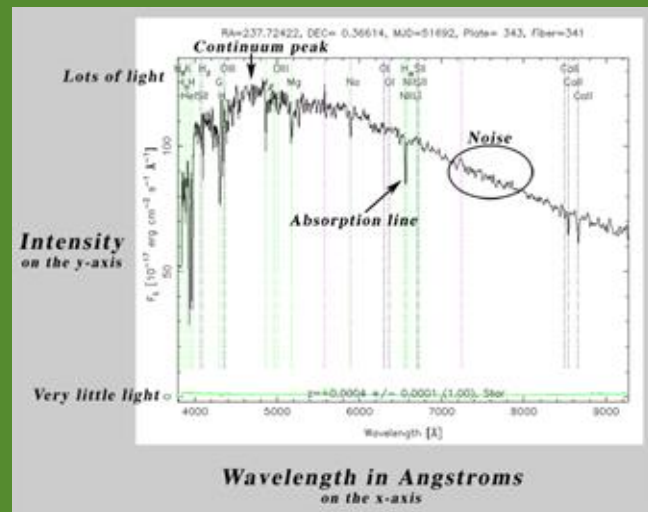
Michael Hayden

- Galactic Archaeology is the study of the history and formation of galaxies using data collected from their stars.
- Stars function as a “time machine”

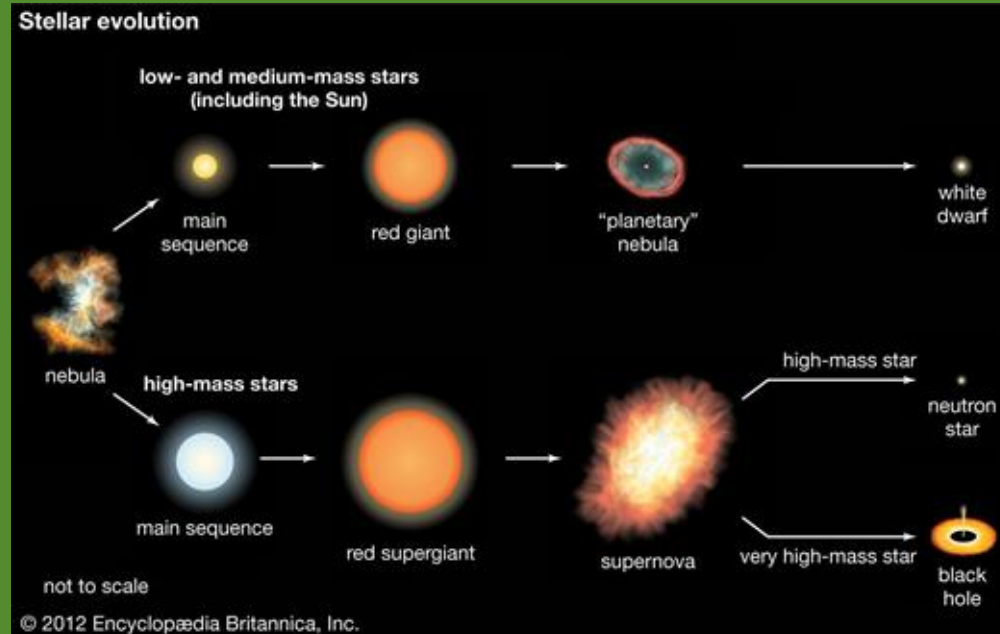


Where do we get the data?

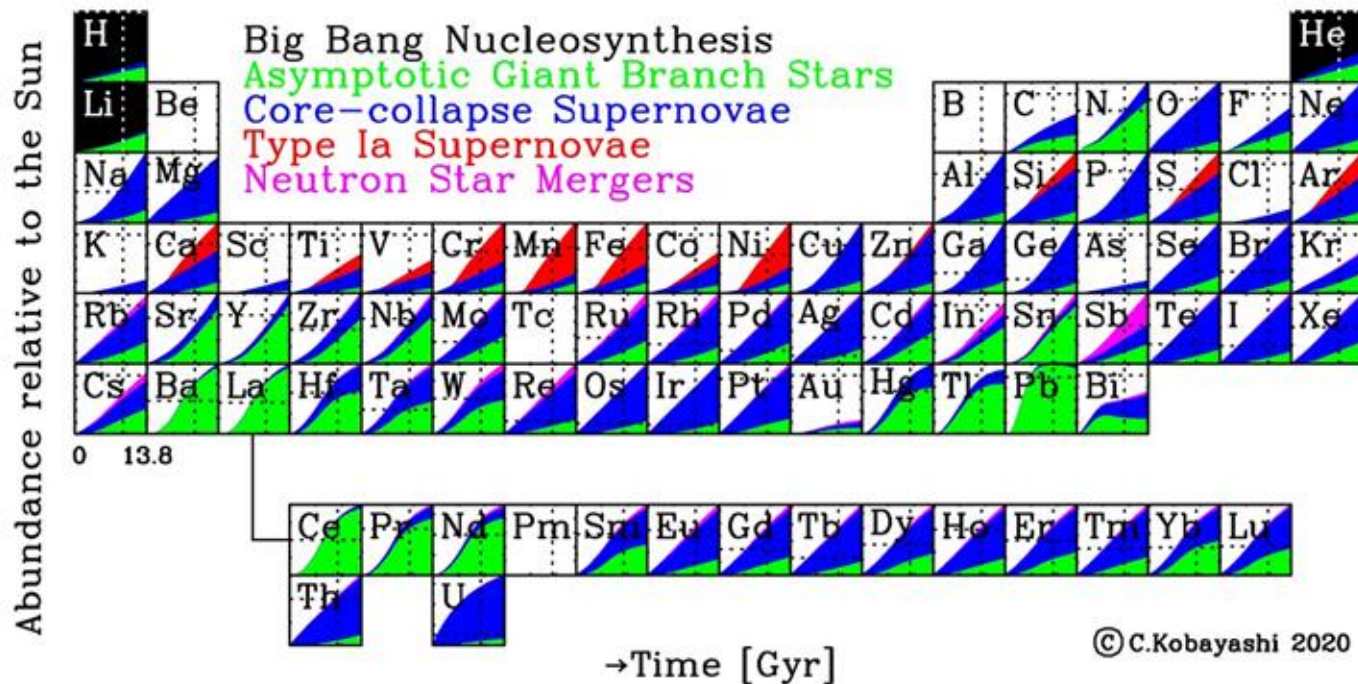
- Medium-resolution Multi-object Spectroscopy
 - APOGEE (the Apache Point Observatory Galactic Evolution Experiment)
 - HERMES (the High Efficiency and Resolution Multi-Element Spectrograph)
 - 4MOST (4-metre Multi-Object Spectroscopic Telescope)
 - MSE (Maunakea Spectroscopic Explorer)



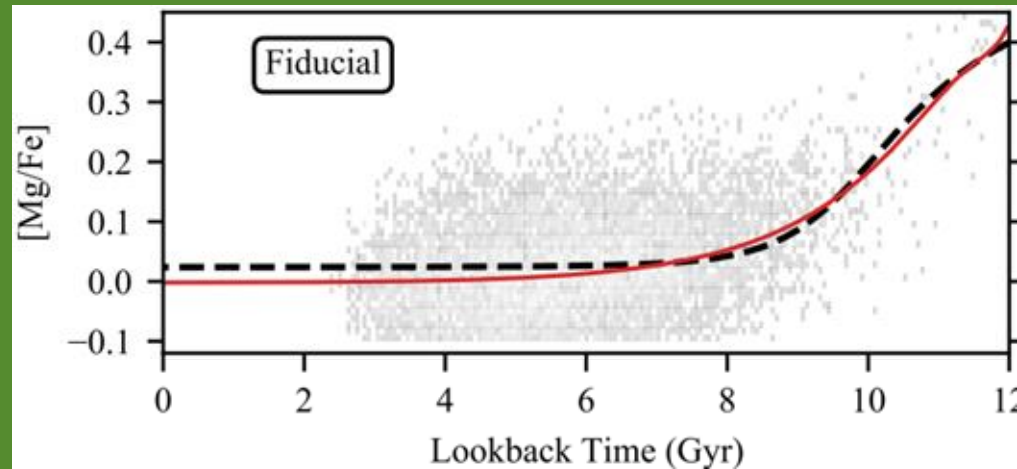
Galactic Archaeology surveys data revealing the chemo dynamical structure (the galaxy's "fossil record") of the Milky Way and the Local Group.



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Galactic Chemical Evolution models simulated changes in the chemical composition of galaxies over time.



Chen, Hayden+2022

Understanding Barium



- Analyzing different yield sites for Barium
 - Primarily AGB stars
- Fit new yields to the measured data
- Goal is to help fix our current galactic evolution model

