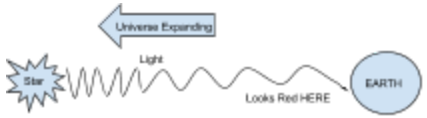
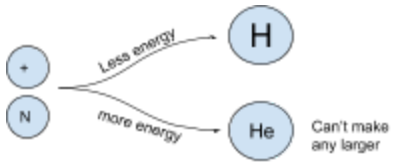
Phenomenon: Over 2 trillion galaxies in the Universe
Light from these galaxies take millions of years to reach us

Question: How did our universe form?

Activity/ Process	Observation/ Evidence/ Patterns	Why?	Connection
Big Bang Video Exploration ***(Big Bang)***	• Big Bang = start of universe • Start of universe = small hot dense dot • Everything in universe created during Big Bang	1) Start of the universe = HOT & DENSE a) 1 point with all energy & matter 2) Explosion of energy… CREATES EVERYTHING IN THE UNIVERSE	Universe started at one, tiny point of hot dense mass.
Big Bang Balloons ***(Universe = Expanding)***	• Universe is expanding • Galaxies farther away- expand faster than galaxies closer • Space increases in between galaxies	1) Universe is constantly expanding 2) Can measure the expansion of the universe B/C of this… we can trace back/ predict the beginning of the universe and the future	Since the "explosion" of the Big Bang, the universe is constantly expanding. Expansion is accelerating.
Redshift Activities ***(Redshift)***	• Wave moving away = longer wavelength • Wave moving closer = shorter wavelength • Longer wavelength = lower pitch, red color • Shorter wavelength = higher pitch, blue color	1) Redshift = change in wavelength  2) Longer Wavelengths look red 3) Shorter Wavelengths look blue 4) Example of Doppler Effect	We know expansion is happening because we can measure change in wavelengths.
Biozone: Evidence of Big Bang ***(Background Radiation)***	• View background radiation in different colors • Red = hot, blue = cold	1) START = Hot, white H plasma 2) H plasma cools into H atoms (universe = transparent) 3) Microwave radiation left over	There is leftover radiation from the Big bang and that radiation is still cooling down.
Biozone: Evidence of Big Bang ***(H: He Ratio)***	• More Hydrogen than Helium • Hydrogen requires less energy to be made than other elements.	Current Universe 74% H, 26% He 	Universe has mostly H but some He. Big Bang is the only theory that "creates" that much He.