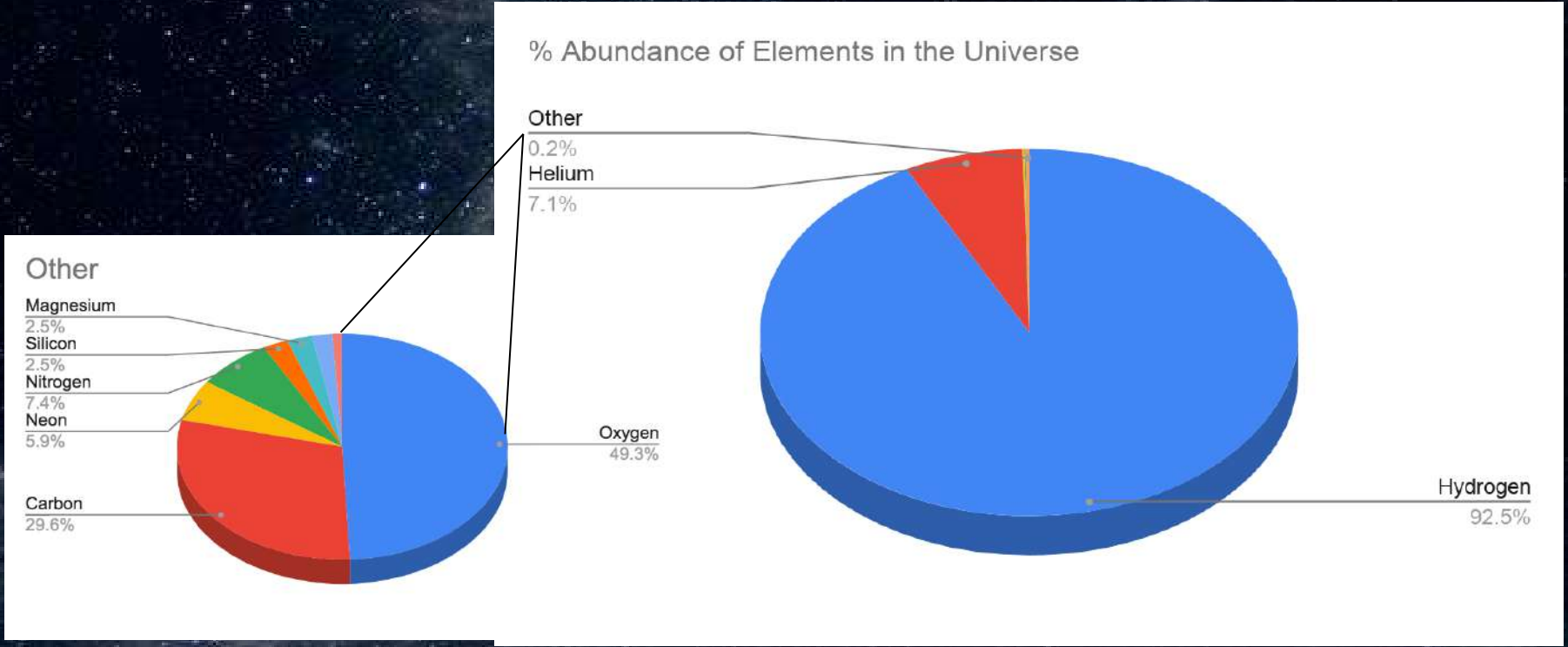
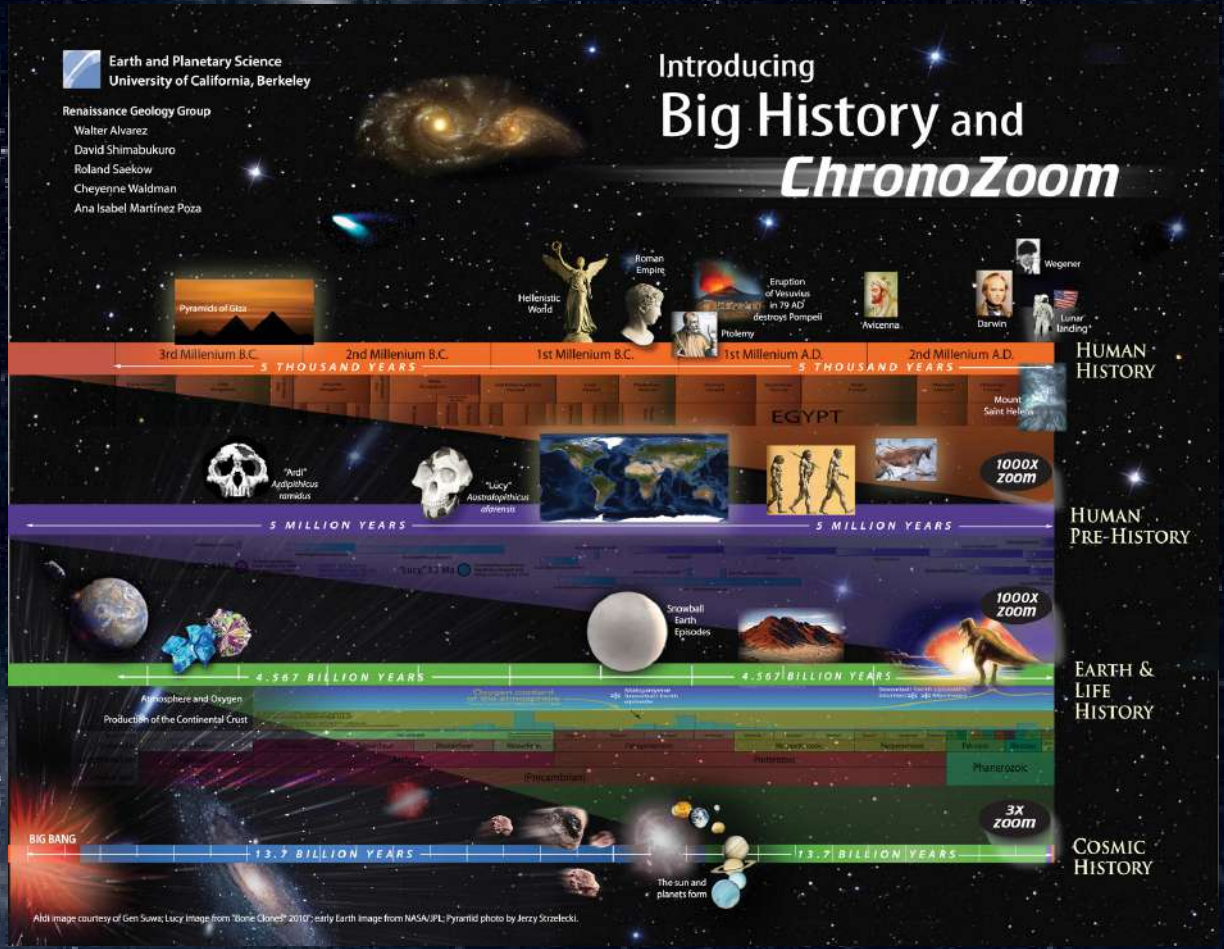
Where did matter that makes up the Universe Come from?

Matter in the Universe



All of History-One Timeline



Unit 1: The Universe and the Origin of Matter and Energy

Explore the Cosmos portion of the Chronozoom Website

What questions do you have about this portion of Earth's History?

About what portion of the timeline does this section cover?

Unit 1 Main Topics

- The evidence for the Big Bang Theory
- Modeling star formation and cycles
- Origin of elements that make up matter found on Earth.
- Formation of the Solar System.

Covers Nearly 9 BILLION YEARS OF HISTORY!

1.1

What information can light tell us about the universe?

Guiding Question

What are the different forms of “light” found in the universe?

Explore, forms of light

UV Light

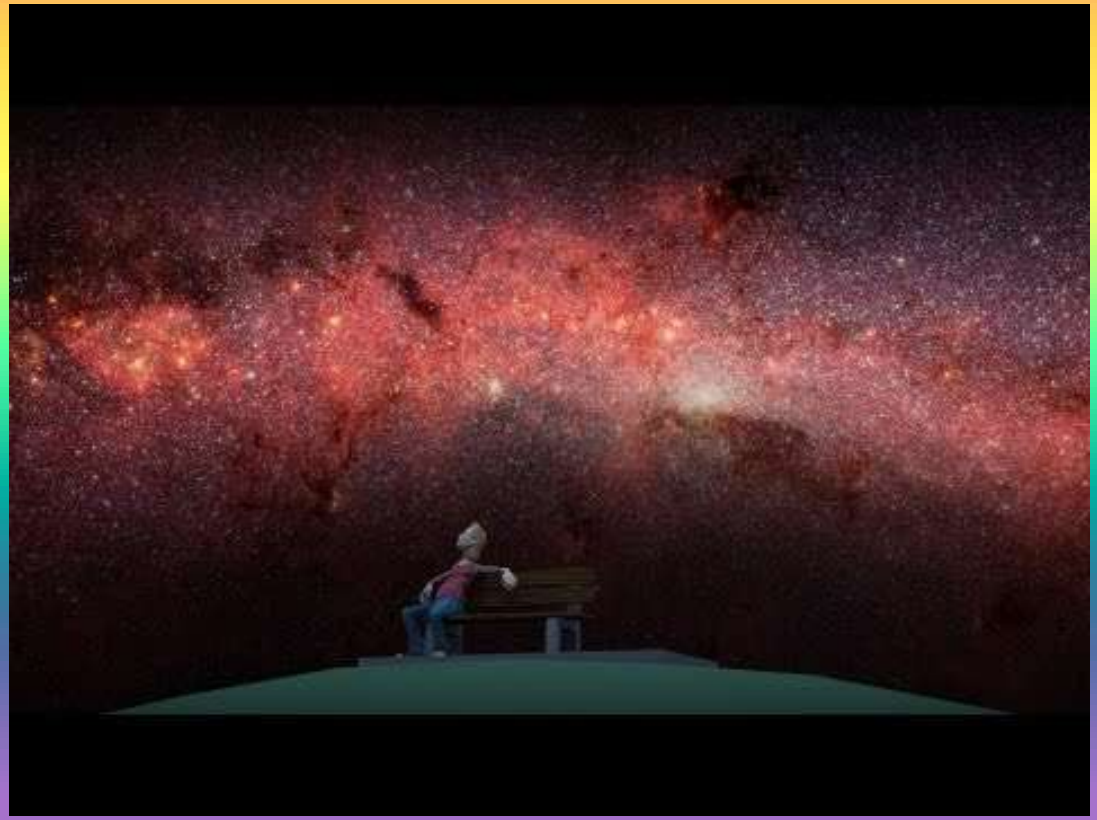
Geology.com

Stevespanglerscience.com

Infrared

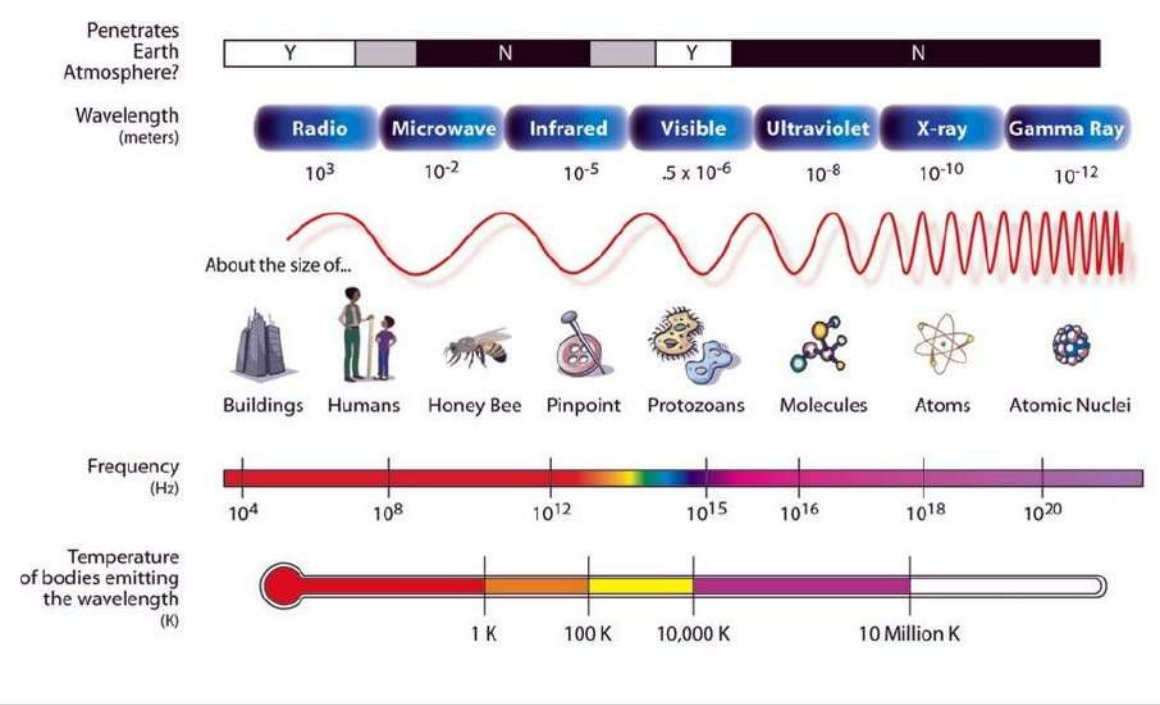
Flir.com

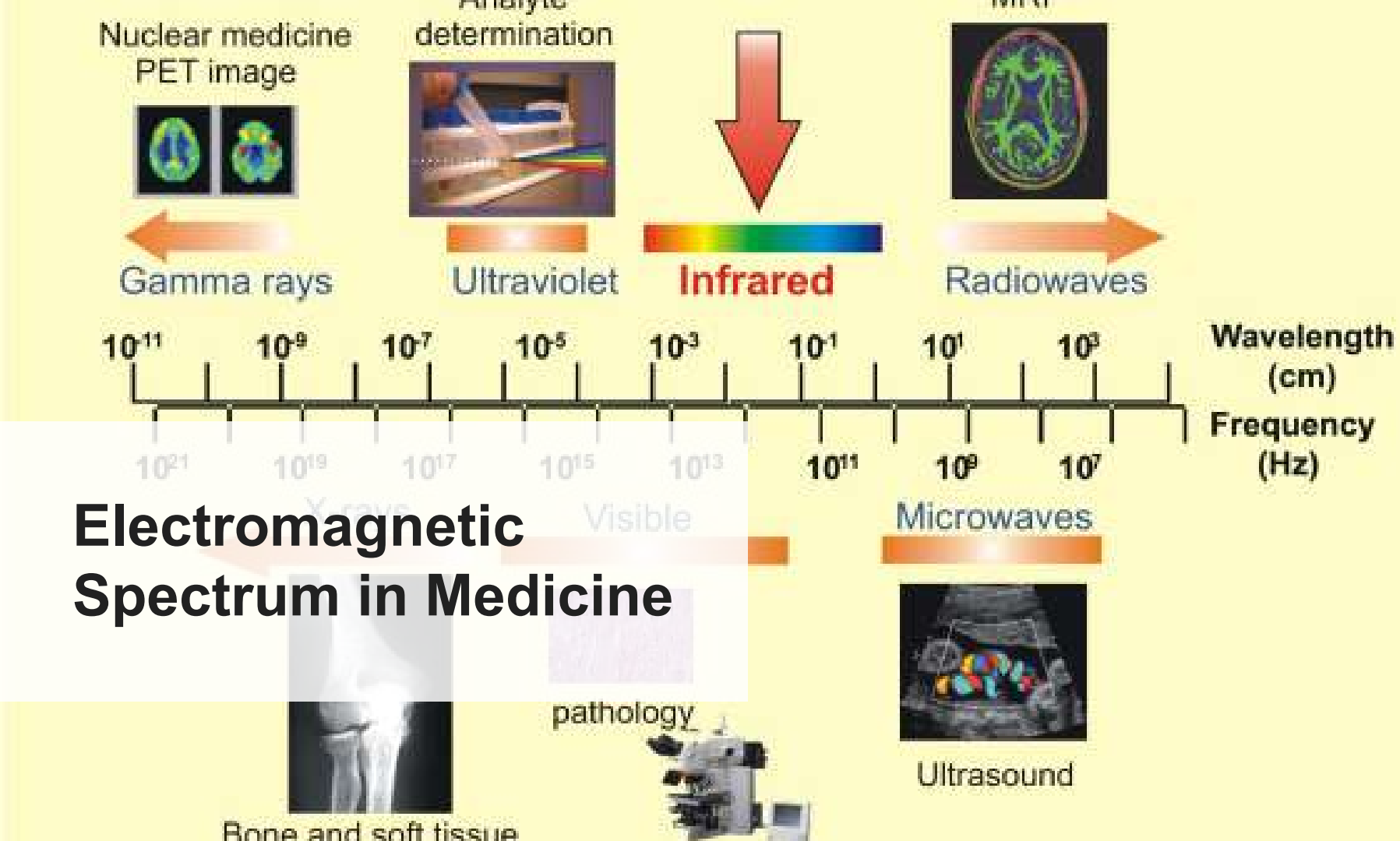
Light From Space and What We See.



Electromagnetic Spectrum

The range of wavelengths or frequencies over which electromagnetic radiation extends.




Nuclear medicine
PET image
Analyte determination
MRI
Gamma rays
Ultraviolet
Infrared
Radiowaves
10^{11} 10^{9} 10^{7} 10^{5} 10^{3} 10^{1} 10^{1} 10^{3}
Wavelength (cm)
10^{21} 10^{19} 10^{17} 10^{15} 10^{13} 10^{11} 10^{9} 10^{7}
Frequency (Hz)
X-rays
Visible
Microwaves
Electromagnetic Spectrum in Medicine
pathology
Ultrasound
Bone and soft tissue

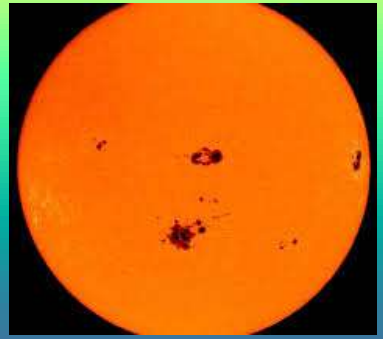
First Telescope

In 1609 Galileo used lenses from a Dutch eyeglass maker named Hans Lippershey to make the first telescope.

Observations and Discoveries

Moons of Jupiter

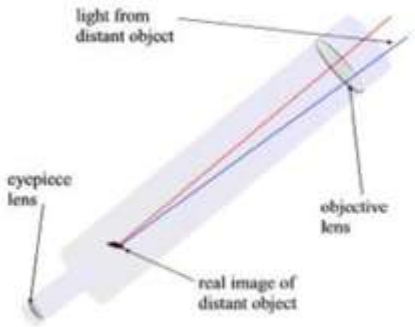
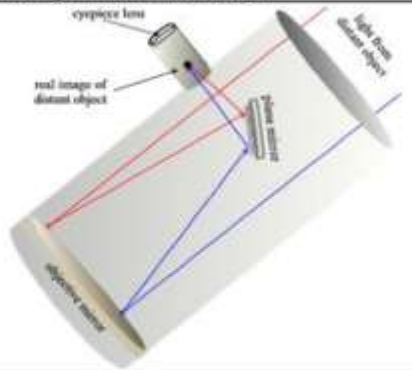
Supernova



Sunspots

Telescope Types

Light Telescopes

Refracting Telescope	Reflecting Telescope
It uses **two lenses** to gather and focus starlight.	It uses **mirrors** instead of lenses to gather and focus the light from the stars.
	
There is a limit to the size of lens that a refracting telescope can have. Diameters over 1 meter will cause the lens to warp.	An innovation for reflecting telescopes is the use of **segmented mirrors** (a segmented-mirror telescope uses several lightweight-segments to build one large mirror).

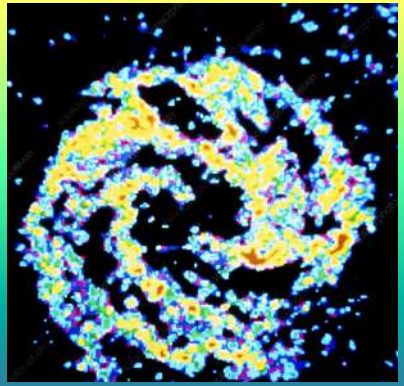
What the Electromagnetic Spectrum Shows Us

SPIRAL GALAXY M83

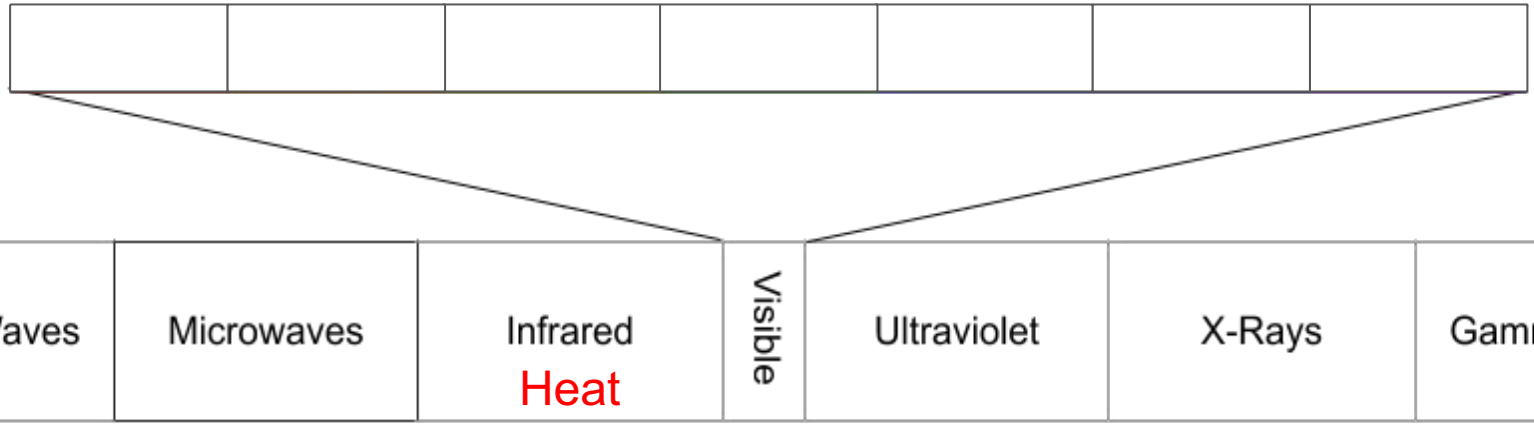
Hubble Space Telescope
Ultraviolet

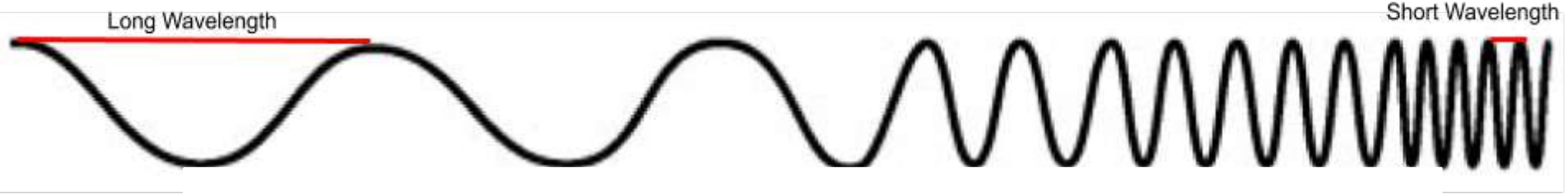
Spitzer Space Telescope
Infrared

Radio Telescope Array
Radio Waves



The Electromagnetic Spectrum Notes



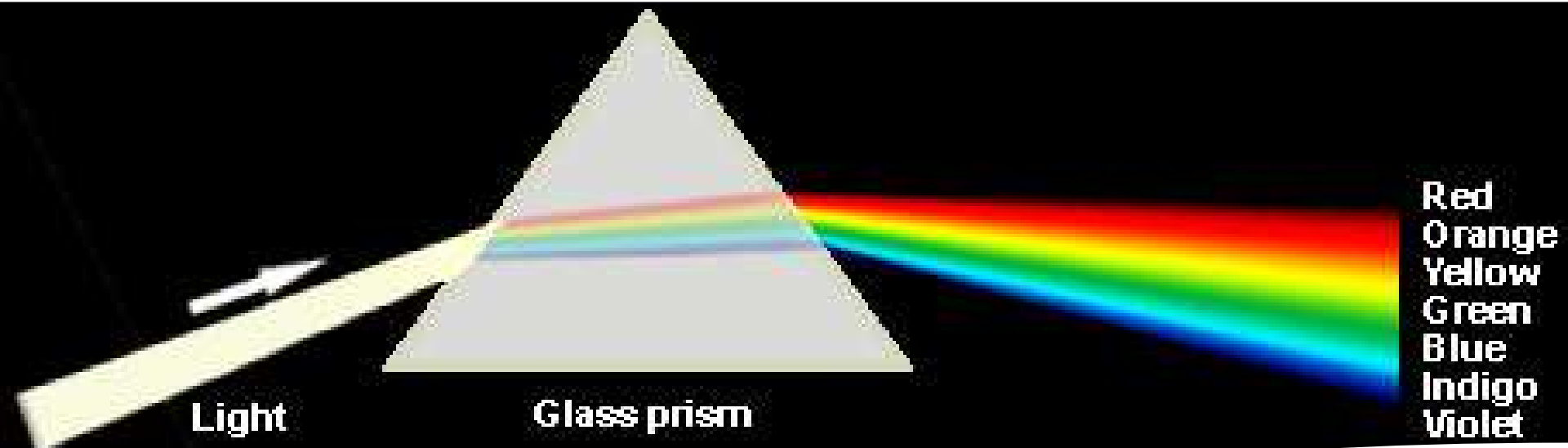


Long Wavelength

Low Energy

Short Wavelength

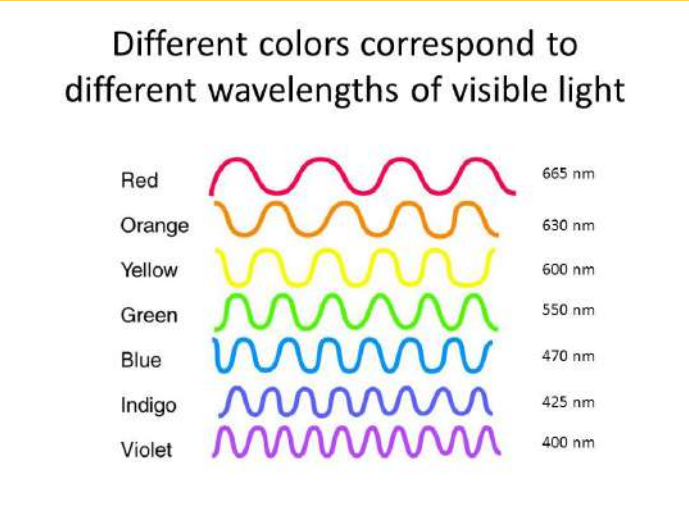
High Energy



White Light Through Prisms

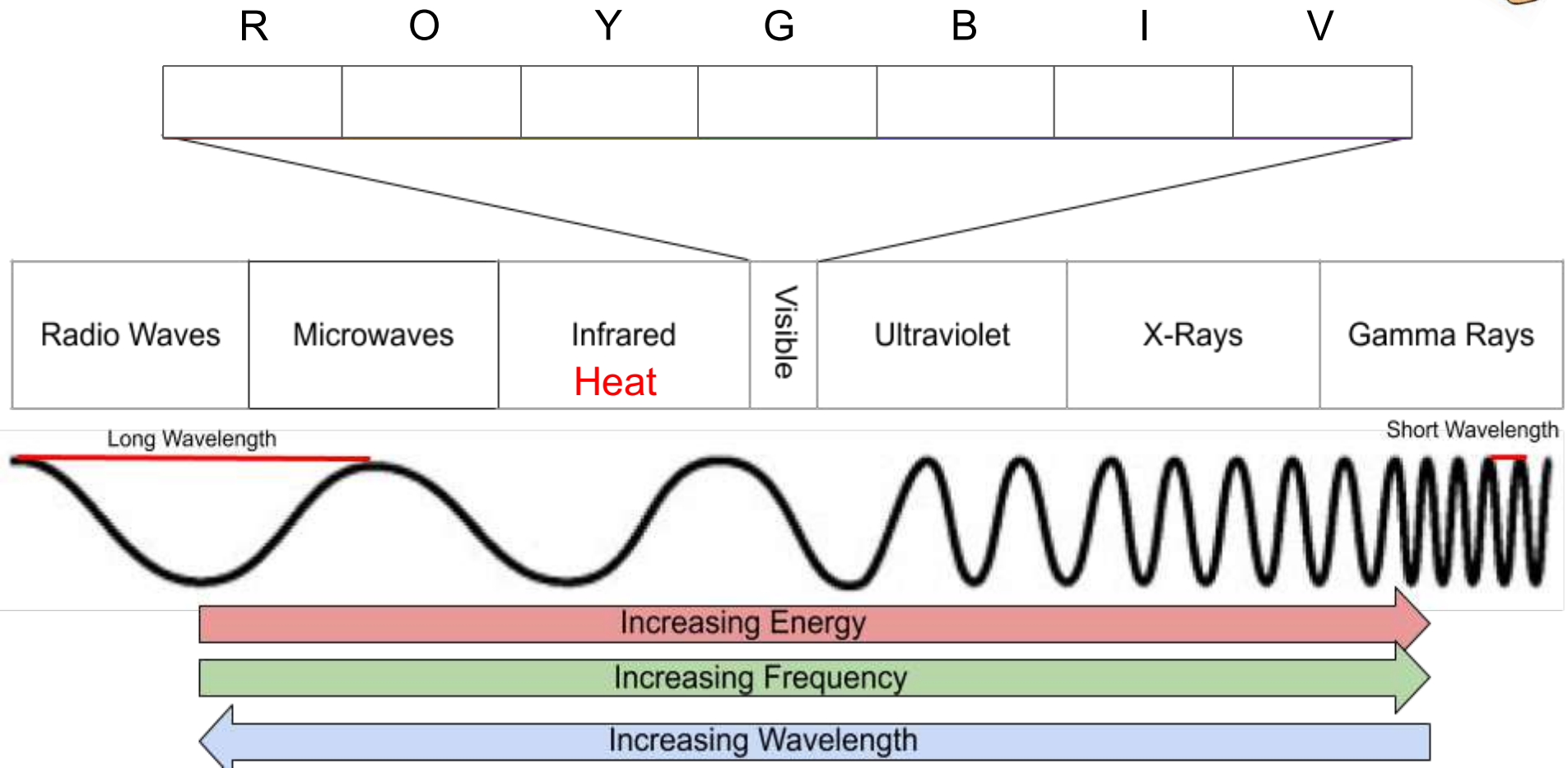
White Light Through Prisms

ROY G BIV and the Order of the rainbow colors



Roy G Biv Song

The Electromagnetic Spectrum Notes



Lesson Closure

Complete the Exit ticket

Next Lesson or Homework

Homework or Next Lesson: Reading Electromagnetic Spectrum

EL's, IEP, and other students who need extra support have them complete the EM spectrum Card Sort Activity