The Cosmic Perspective Timeline
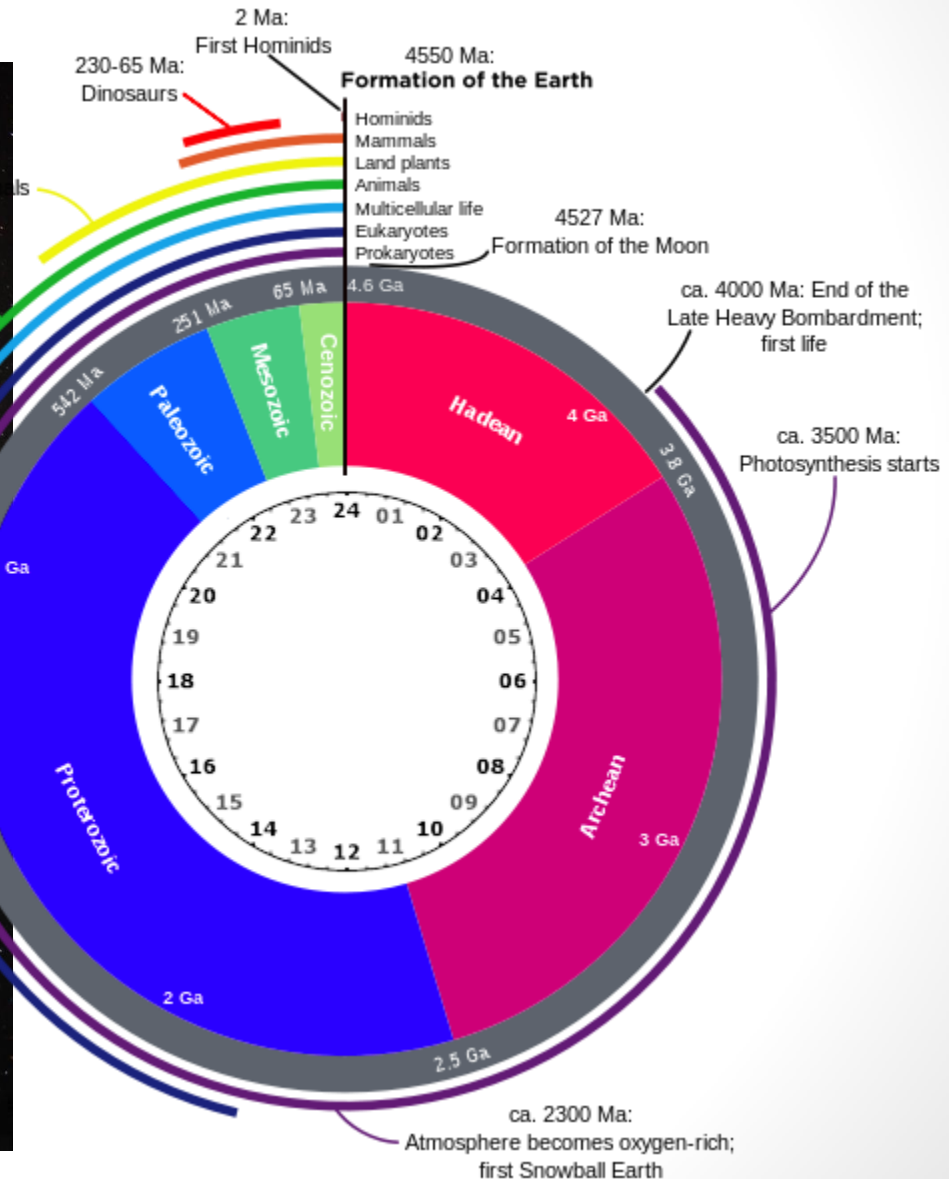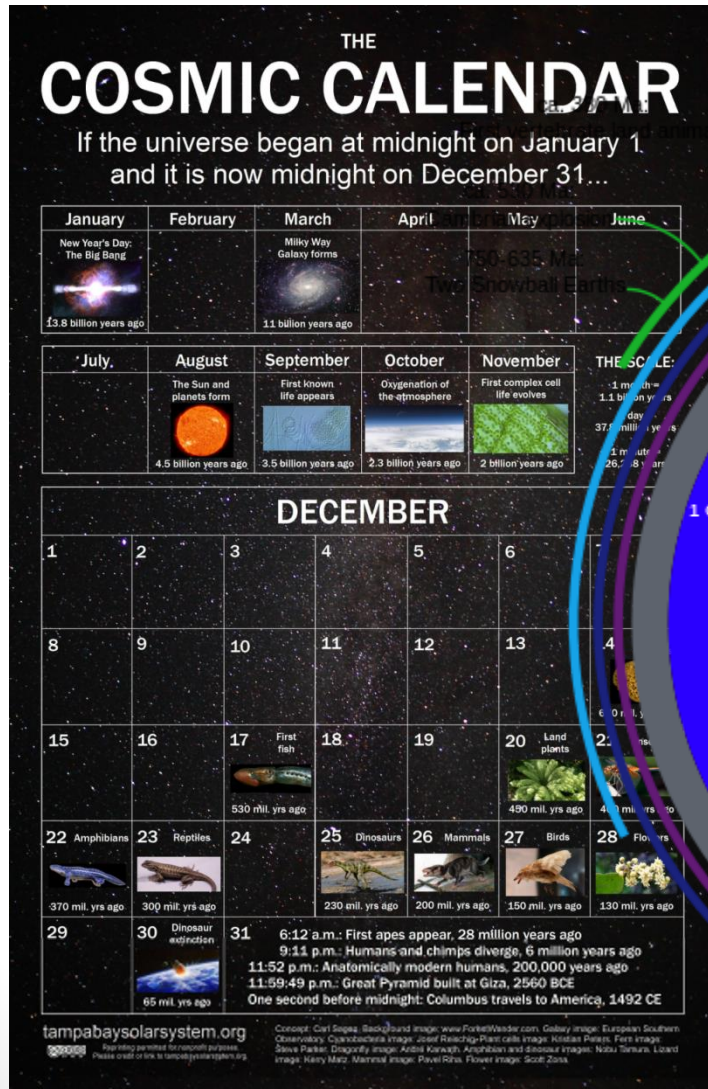
Kristi Concannon

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Scale Models of Space

Scale Models of Time

How has our understanding of our place in the Universe changed over time?

Key Moments in History

- 400 BC — Aristotle proposes an **Earth-centered universe**

- 200 AD — Ptolemy creates the **first mathematical model** of the universe using epicycles to describe the motion of the planets

- 1543 —Copernicus publishes his **heliocentric model of the universe**

- 1610 – Galileo publishes **observational evidence** for the heliocentric universe

- 1838 – Wilhelm Bessel observes the **first stellar parallax**, the first direct proof that Earth orbits the Sun

- 1929 —Hubble demonstrates the relationship between nebula velocity and distance leading to the **expansion of the Universe**

Key Moments in History

- 1965 —Penzias and Wilson discover the 2.7 K **microwave background** radiation

- 1990 —NASA's COBE satellite confirms the cosmic microwave background

- 1998 — Two groups of scientists show that the expansion of the **universe is accelerating**

- 2003 — NASA's WMAP indicates that the universe is 13.7 billion years old

- 2013 – First confirmed **Earth-like Exoplanet**

Cosmic Perspective Timeline

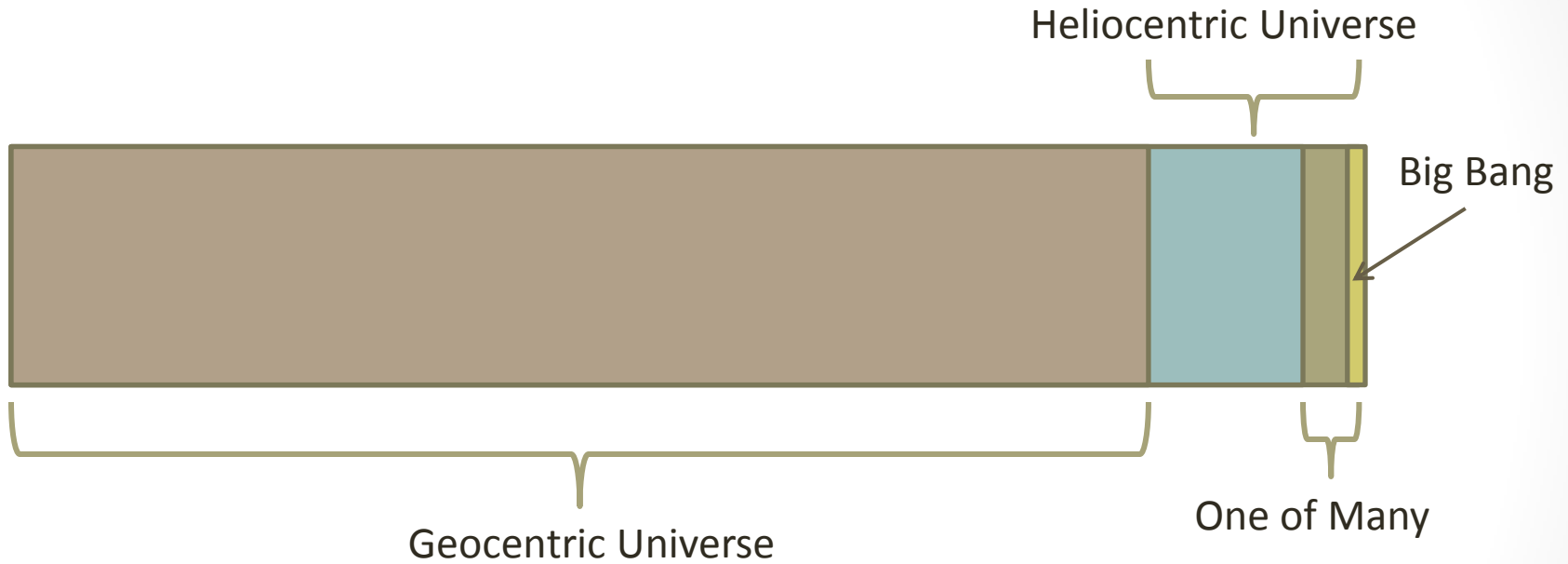| Historical Events	Timeline	Cosmic Perspective
400 BC	Aristotle's Universe	

- Engineering/Graph Paper
- Students mark key moments in history on timeline
- Note significant shifts in scientific understanding

Toilet Paper Cosmic Perspective

- 1 square of paper (4 in) = 50 years

Event	Time From Start (yrs)	Distance (squares)	Distance (feet)
Aristotle's Model	-----	-----	-----
Copernicus's Model	1943	38.9	12.96
Galileo's Observations	2010	40.2	13.4
Bessel's Parallax	2238	44.7	14.9
Hubble's Observations	2329	46.6	15.53
CMB Observation	2365	47.3	15.76
First Earth-like Planet	2413	48.2	16.06

Changes in Cosmic Perspective

Heliocentric Universe

Big Bang

Geocentric Universe

One of Many

Follow-up Questions

- What makes some beliefs more persistent than others?

- How do scientists know whether a new discovery is truly a paradigm shift?

- What change in perspective is next?