

# The Geological Time Scale

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

The purpose of this exercise is to construct a scale model of the Earth's timeline and place major events in Earth's history in their proper context.

Materials: group of 2-3 students

Meter stick/ruler

scissors & glue (tape)

pen

construction paper in the following colors-

**brown (for Precambrian)**

**green ( for Mesozoic)**

**blue ( for Paleozoic)**

**yellow ( for Cenozoic)**

Let's play:

- The timeline will be constricted at a sale of 1mm = 1 million years
- The timeline will have a width of 100mm. Be neat!
- Because we think of time moving forward and backwards, glue (or tape) the pieces of colored paper that represents each geologic era starting with the Precambrian on the left.
- Write the major events of Earth's history (given in your notes, or the next page) at the PROPER location on your timeline. ACCURACY IS VERY IMPORTANT HERE.
- You may add the periods of the geologic time scale for extra credit if you so desire. Use the internet for reference.

Let's think:

- Of the total length of your timeline, how much does the longest era take up? What percentage of the Earth's history is this?
- Which era is the shortest? What percentage of total Earth history is this?
- What was hard about marking events in the Cenozoic?
- The data seemed to indicate there has been more geology in the Cenozoic, and less in the Precambrian. Is this really true, or is something going on here? EXPLAIN
- Man is considered the most dominant form of life to ever inhabit this planet. How long has Man dominated compared to other life forms? Why is this statement often made?

### **Major events of Precambrian time**

- 4.6 billion years ago (bya): origin of Earth; crust cool and hardens
- 4.5 bya: oceans condense; primitive atmosphere forms
- 4.2 bya: oldest surviving rocks ( cratons in Canada and Australia)
- 3.5 bya: oldest known fossils ( algae)
- 3.4 bya: oldest rocks in the western US ( Wyoming craton)
- 2.7 bya: oldest rocks in Utah ( NE & NW Utah; Farmington Gneiss)
- 2.0 bya: modern atmosphere forms
- 1.0 bya: supercontinent of "Rodinia" forms
- 800 million years ago (mya): Rodinia splits apart; northern Utah is a large river valley that becomes origin of rocks in Uinta Mountains
- 550 mya: sudden outburst of complex, multi-celled life; end of Precambrian

### **Major events of the Paleozoic Era**

- 550 mya: Utah on edge of the continent ( and on equator!) under a warm, shallow, tropical ocean- origin of the limestones that make up today's Wasatch Mountains; corals, clams, trilobites, sponges, crinoids dominate life
- 450 mya: first land plants appear (ferns)
- 400 mya: first true fish; first insects
- 350 mya: first trees appear; period of intense global warming and coal formation
- 300 mya: first true reptiles
- 275 mya: super continent of "Pangaea" forms
- 250 mya: largest mass extinction ever kills off 95% of ocean life; end of Paleozoic

### **Major events of the Mesozoic Era**

- 250 mya: first true dinosaurs: Utah rises from ocean- warm grassland biome; desert sandstones found in southern Utah today begin to form
- 200 mya: Pangaea splits apart: modern Atlantic Ocean begins to form
- 190 mya: earliest ants and termites
- 150 mya: first true bird (Archaeopteryx)
- 140 mya: central US sinks and becomes shallow sea; eastern Utah grassland has many rivers, swamps, and dinosaurs; western Utah very mountainous
- 120 mya: first flowers
- 100 mya: eastern Utah very warm and swampy; the coal we mine here today forms
- 70 mya: Rocky Mountains begin to form from CO to MT (includes Uinta MTNS. In UT)
- 65 mya: dinosaurs go extinct; end of Mesozoic

**See next page for Cenozoic Era**

## Major events of the Cenozoic Era

65 mya: mammal species and populations greatly increase

40 mya: Himalaya Mountains begin to form

35 mya: massive burst of volcanic activity in western US (west TX to eastern CA); many large volcanoes and igneous intrusions in UT

20 mya: Wasatch Fault becomes active; Wasatch Mountains begin to form; rising of the Great Basin begins

4 mya: earliest evidence of primitive humans

2 mya: beginning of last major ice-age glaciers cover much of northern hemisphere, including the Rockies and many Utah mountain ranges

500,000 years ago (ya): earliest fossils of modern humans

30,000 ya: Lake Bonneville forms in western Utah

14,000 ya: great Bonneville flood

10,000 ya: end of last major ice age

6,000 ya: first evidence of major human communities

4,500 ya: Great pyramid built in Egypt

2,000 ya: beginning of the A.D. time

500 ya: Columbus sails the ocean blue- bumps into America

250 ya: industrial revolution

225 ya: Declaration of Independence

40 ya: man lands on moon (1969 A.D.)

15 ya : you are born!