

Assignment for Monday, January 11, 2015

(Mr. Franklin may be away on assignment, recruiting our next group of Discovery scholars, and your future classmates! Get excited!)

Happy Monday, students! It's January 11th, and if all of Earth's history were squished down into only 1 calendar year, we'd be way back in the Hadean Eon! (In fact, we'd be stuck in that "Hell-on-Earth" until about Valentine's Day!) Want to see what it would be like? (Excuse the cheesy techno music...)

<https://www.youtube.com/watch?v=8ZqZ0UoHPjc>

This video is a representation of the early formation of Earth.

It begins with a spiraling **Protoplanetary Disk** at around 0:07 (remember that "proto" mean "first, earliest form of, prior to its current form")

At around 20 seconds, we see all those rocks coming together in what's known as **Planetary Accretion**. (Look up the definition of the word "**accretion**." What do you think is making all those rocks combine?)

At around 1:15, we see the now-formed Earth being bombarded with all sorts of asteroids, until 1:40 when we first catch a glimpse of The Big One...

After that Mars-sized body struck a glancing blow against the side of the Earth, all of the rocks and debris launched into orbit eventually reformed (we see it from about 2:05-2:10). What did they end up forming?

Eventually, by the end of the video, we see the surface of the Earth has cooled. Asteroids and comets have brought ice to Earth's surface that has melted into liquid water, and by the very end, we see the fossils of ancient **stromatolites**. What are stromatolites? Just some of the earliest life on Earth, still alive today! You can read about the [Stromatolites of Shark Bay here](#) , or take the "Virtual Field Trip" below:

(Take a "Virtual Field Trip" with some of the videos linked below – you choose your own adventure in Shark Bay, Australia! Just be able to tell me what these things are and why they're so important – how might they have changed the Earth??)

[What's a Stromatolite?](#) | [Why are they called Stromatolites?](#) | [How do Stromatolites form?](#)

[Using Modern Environments to Understand Ancient Earth](#) | [Were Stromatolites producing O₂ in the past?](#)

[Intro to Photosynthesis and Oxygen](#) | [Very Productive Photosynthesis](#) | [The Great Oxidation Event](#)

[Were Stromatolites producing O₂ in the past?](#) | [Thank You Stromatolites!](#)

So hey, back to that Hadean Eon video... Or at least I *thought* it was supposed to be about the Hadean! But the title says, “**Precambrian.**” What’s the deal?

Well, it’s both. Hadean is the Eon and the Precambrian is a “Supereon” that refers to all of the Eons prior to the **Cambrian Explosion**. Remember what happened in the Cambrian Explosion?

(If not, [here’s a brief summary. Please read.](#))

Here’s a video of a filmmaker describing her attempts to bring the past to life:

[Animating the Cambrian Explosion](#)

(Remember our recent discussion of S.T.E.A.M. – combining artistic creativity with Science and Technology?)

Now it’s your turn to investigate these crazy early lifeforms from the Cambrian Explosion.

[Explore Arthropods here.](#) Stop after you’ve identified all five creatures and constructed their evolutionary tree. (When you start reading about their exoskeletons in detail, you’ve gone too far... unless you *want* to continue exploring!)

Flip through [this artist’s representation of different Geologic Time Periods on Earth](#). Be sure to check out the Precambrian, as well as the geologic period where your “birthday” falls. Why do you think we’re so dependent on artists and filmmakers when studying this particular area of Science?

Ok, now it’s time to go back to where it all began.

[Click here to begin Exploring Geologic Time](#) and click on “Student Start” in the top corner.

[Make sure you Quiz yourself](#) with 5 Practice Questions at the end (because we will have a real quiz very soon!)

Next, check out [Stories from the Fossil Record](#) and click on “**Geologic Time.**” Make sure you are recording any important terms or concepts in your notebook. (In other words, take notes! We’ll see later this week who read carefully and who followed directions when I **check your notebooks for notes from these assignments!!!**)

Lastly, click on [Getting into the Fossil Record](#) and select **Student Level 1** (don’t select Level 2 unless you want a LOT more vocabulary words to take notes on!) As before, read carefully, record important terms and ideas, and be ready for a sizeable Quiz to be coming up real soon!