**Atom Activity Guide: Prologue**

**This activity will begin to address the following Essential Question:**

*What makes some elements different from each other? How do we know?*

**Introduction**

1. Watch the following demo: “Lithium in Water”
2. Complete the following sentence starters in your notebook for Demo 1.

* I notice…
* It reminds me of…
* I wonder…
* Could it be…?

1. Watch Demo 2 “Aluminum in Water”. Compare & Contrast what you saw in Demo 1 with Demo 2.
2. Record in your notebook: Construct an explanation why lithium reacted in water but aluminum didn’t.
3. Share your answers with your tablemates. Revise your explanation.

**History of the Atom**

1. Sketch a model of what you think the atom looks like in your notebook. Please be prepared to share your idea with the class.
2. After reading the introduction below, pause for class discussion.

It is important to realize that a lot of what we know about the structure of atoms has been developed over a long period of time. This is often how scientific knowledge develops, with one person building on the ideas of someone else. We are going to look at how our modern understanding of the atom has evolved over time.

Definition: A model is a representation of a system in the real world. Models help us to understand systems and their properties.

For example, an atomic model represents what the structure of an atom could look like, based on what we know about how atoms behave. It is not necessarily a true picture of the exact structure of an atom.

Models are often simplified. The small toy cars that you may have played with as a child are models. They give you a good idea of what a real car looks like, but they are much smaller and much simpler. A model has a lot of merits because it can help demonstrate ideas and concepts we might not otherwise be able to see or visualize, but a model cannot always be absolutely accurate and it is important that we realize its limitations, so that we do not build up an incorrect idea about something.

1. Watch the history of the atom video as a class. (<https://www.youtube.com/watch?v=thnDxFdkzZs> *pause at 5:30min*)
2. As you’re watching, identify important scientists who contributed to our current model of the atom.

**Parts of the Atom – Atom Notes as a class**

It’s important to not only know how our current model of the atom was developed, but the significance of all the parts of the atom. JJ Thomson’s and Rutherford’s discoveries we’re grounding-breaking! Up until them, scientists believed that the atom was the smallest thing!

**Building our Understanding – Bohr Models**

Rutherford’s model was incomplete: How were electrons distributed? What prevents negative electrons from crashing into positive nucleus?

**Wrap-up:** What makes sodium different from aluminum?

*Up next… What makes some elements reactive while others are not?*