

c3.1 explain how different atomic models evolved as a result of experimental evidence (e.g., how the Thomson model of the atom changed as a result of the Rutherford gold-foil experiment)

A **scientific theory** is not a guess, it is an explanation of our best understandings of a phenomenon, based on scientific evidence or reasoning.

Scientific theories are always evolving as more information is gathered. As technology improves, new information is gained. Sometimes theories need to be modified or even discarded and new theories need to be created. This is true with the model of the structure of the atom.

In your assigned group, read your section from the text to gather the necessary information you will be presenting to your classmates. You will be given a sheet of chart paper and markers to write the main points of your lesson that should include:

- The important people and when they made their discovery/model.
- A labelled diagram of your model of the atom.
- What your scientist learned about the atom, or what they theorized about it.
- An explanation of your scientist's atomic theory.

Democritus' Model - The Indivisible Particle

Proposed that atoms are:

- of different sizes
- in constant motion
- separated by empty spaces
- He also proposed that all matter can be divided into a single, individual atom.

Dalton - The Billiard Ball Model-

- All matter is made up of tiny, invisible particles
- All atoms of an element are identical
- atoms of different elements are different
- atoms are rearranged to form new substances

Thomson - The Electron

- J. J Thomson discovered that small negatively charged particles could be emitted with heat in 1897.

- He learned that ...

- ↳ atoms contain negatively charged electrons
- ↳ since atoms are neutral, the rest of the atom is a positively charged sphere.
- ↳ Negatively charged electrons are evenly distributed throughout the atom.
- ↳ negatives and positives attract.

Rutherford - The Nucleus & Proton (The Gold Foil Experiment)

- He discovered the proton in 1920
- He predicted that if positive and negative charges shot at a thin piece of gold foil they would pass through,
- The end result was most of the atoms passed through but some were deflected.

Chadwick - The Neutron

- In 1932 he found a particle that could penetrate and disintegrate atoms
- These particles have zero charge
- He thought there must be undetect

Bohr Model

- created in 1913.
- completely explains the observations of the light emitted by a hydrogen atom
- Electrons orbit the nucleus.