

# The History of Atomic Theory

2500 years ago, Greek philosophers believed that all matter is made of...



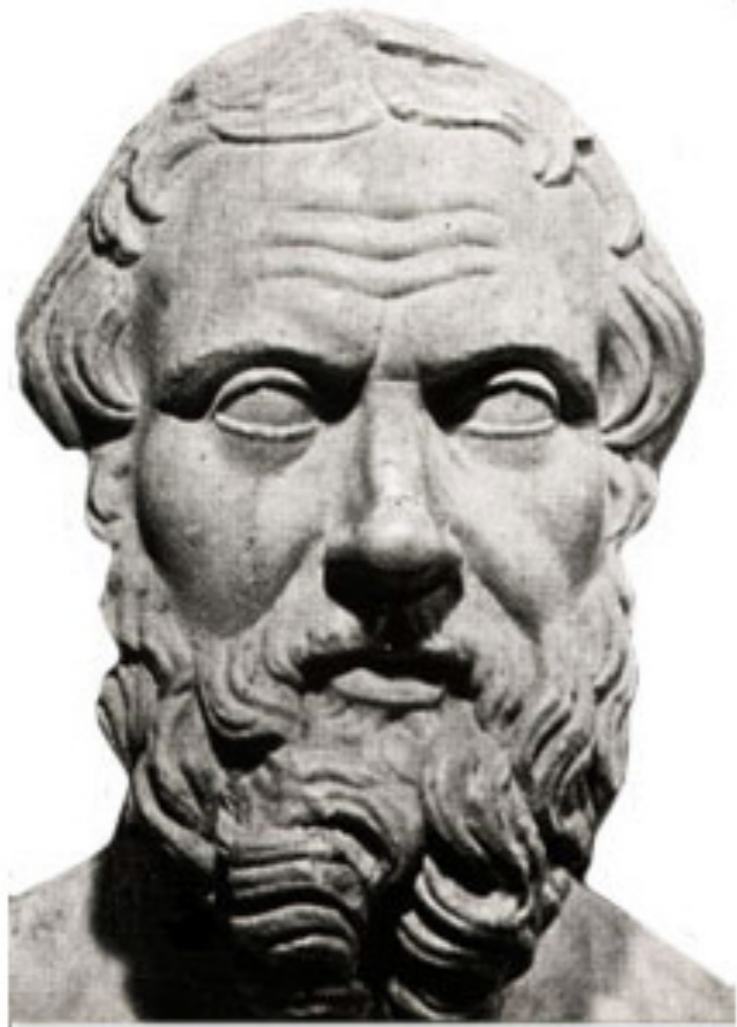
Earth

Fire

Water

Air

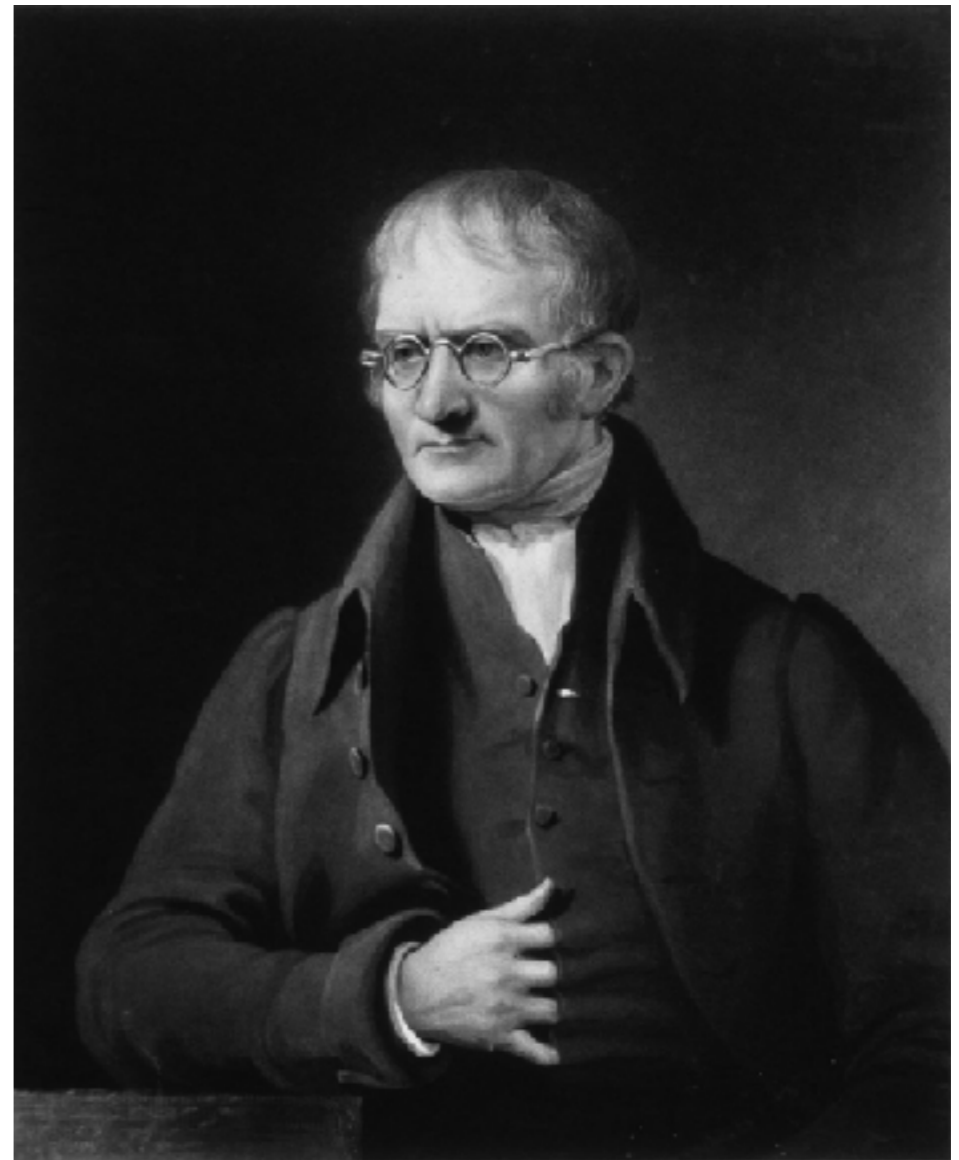
# Democritus



- Greek philosopher
- 460-370 B.C.
- First to propose that matter was not infinitely divisible

# John Dalton

- English chemist and physicist
- 1766-1844
- Considered to be the father of our modern atomic theory





# Dalton's Atomic Theory (1803)

1. Matter could be explained in terms of “atoms” (from the Greek word “atomos,” meaning indivisible).
2. Atoms of a given element are identical in size, mass, and other properties.
3. Atoms cannot be subdivided, created, or destroyed.
4. Atoms combine in simple whole-number ratios to form chemical compounds.
5. In chemical reactions, atoms recombine to form new substances.

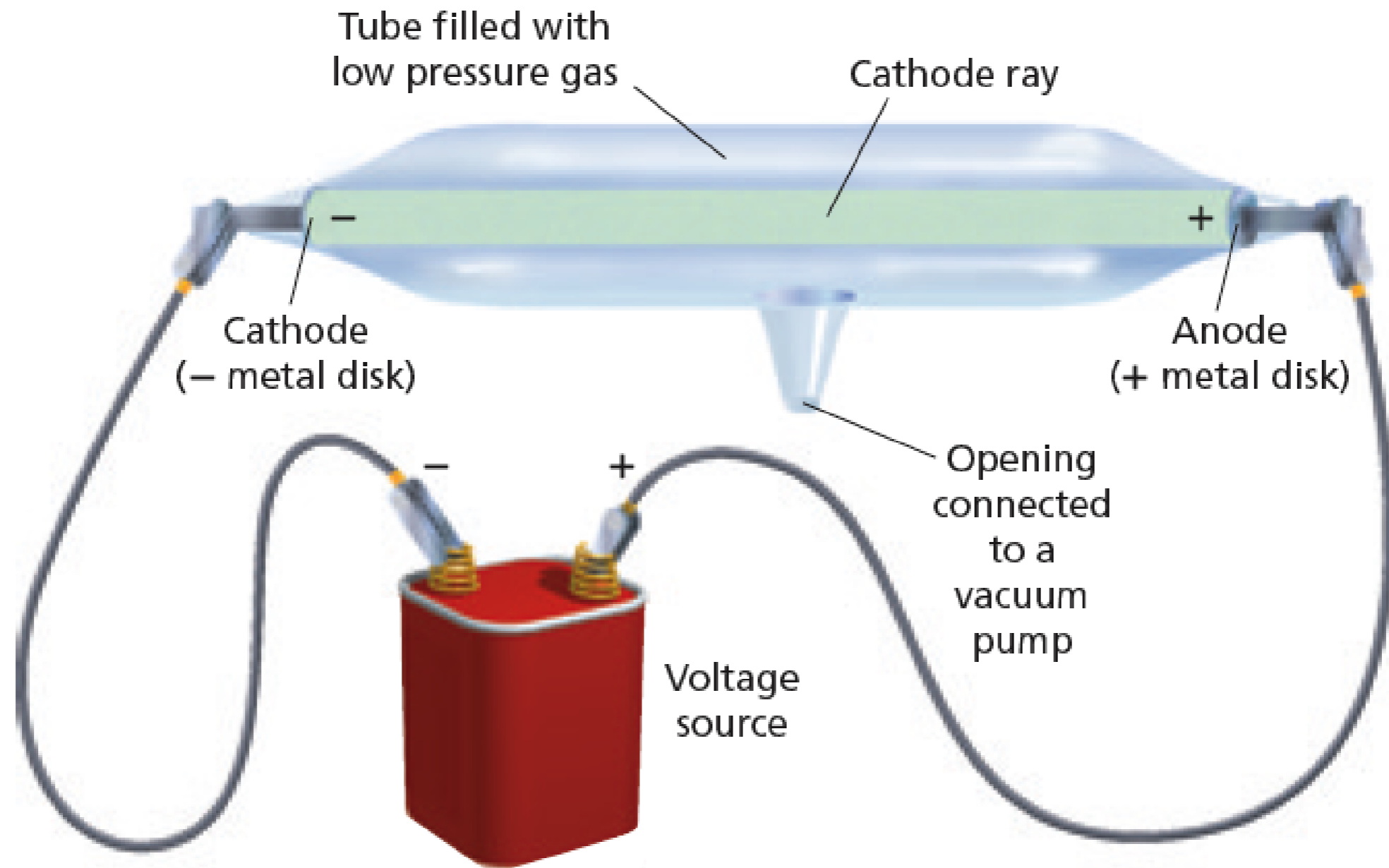
Which parts of Dalton's theory are  
“correct” today?

Which parts are “incorrect” today?

Although Dalton's theory was very successful, the question remained...

**Are atoms really indivisible?**

In 1898, J.J. Thomson conducted experiments using a Crooke's tube (cathode ray tube)





Thomson concluded that all elements give off the same negatively charged particles (“cathode ray particles”).

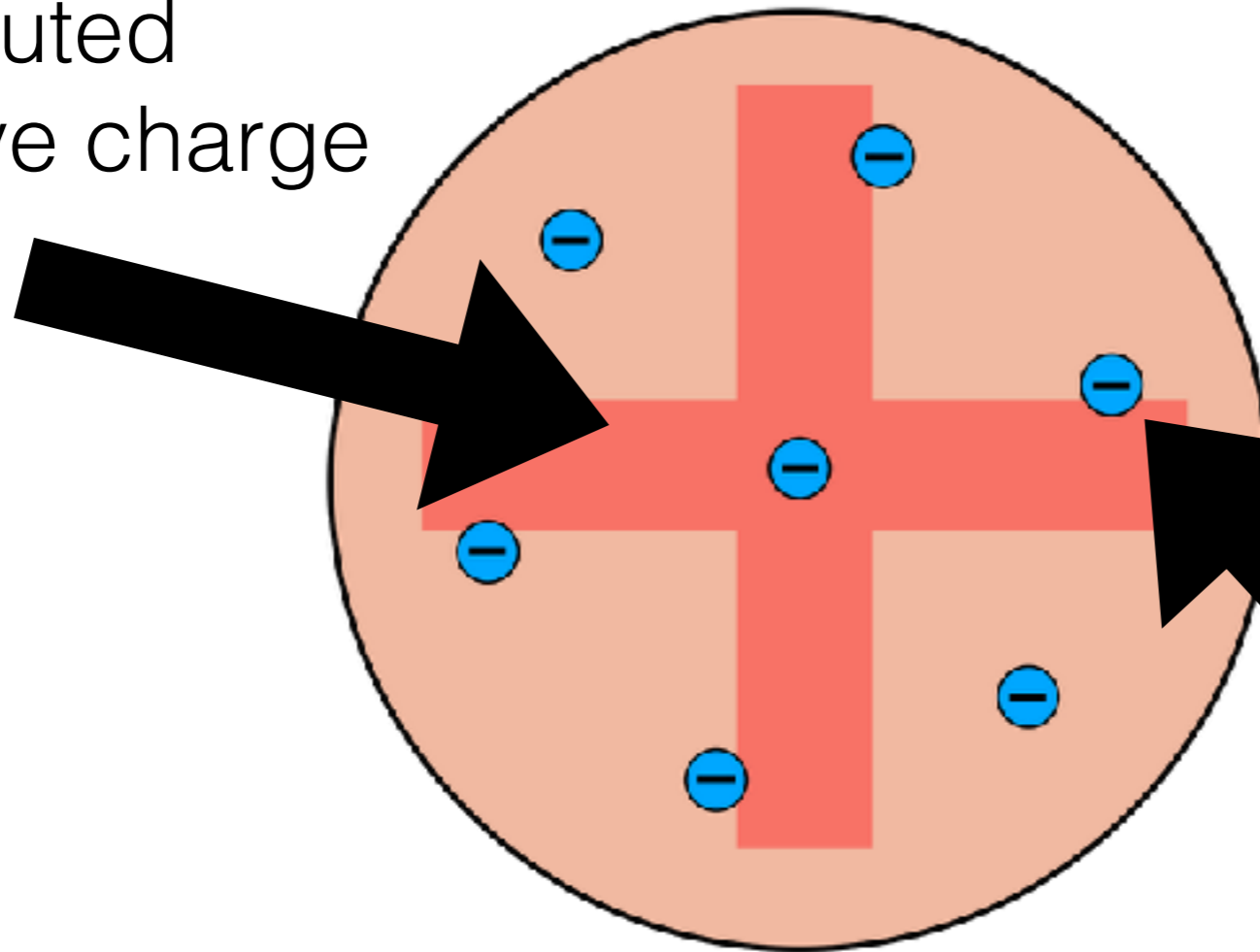
Today we call these particles...



**Electrons!!!**

# J.J. Thomson's Plum Pudding Model

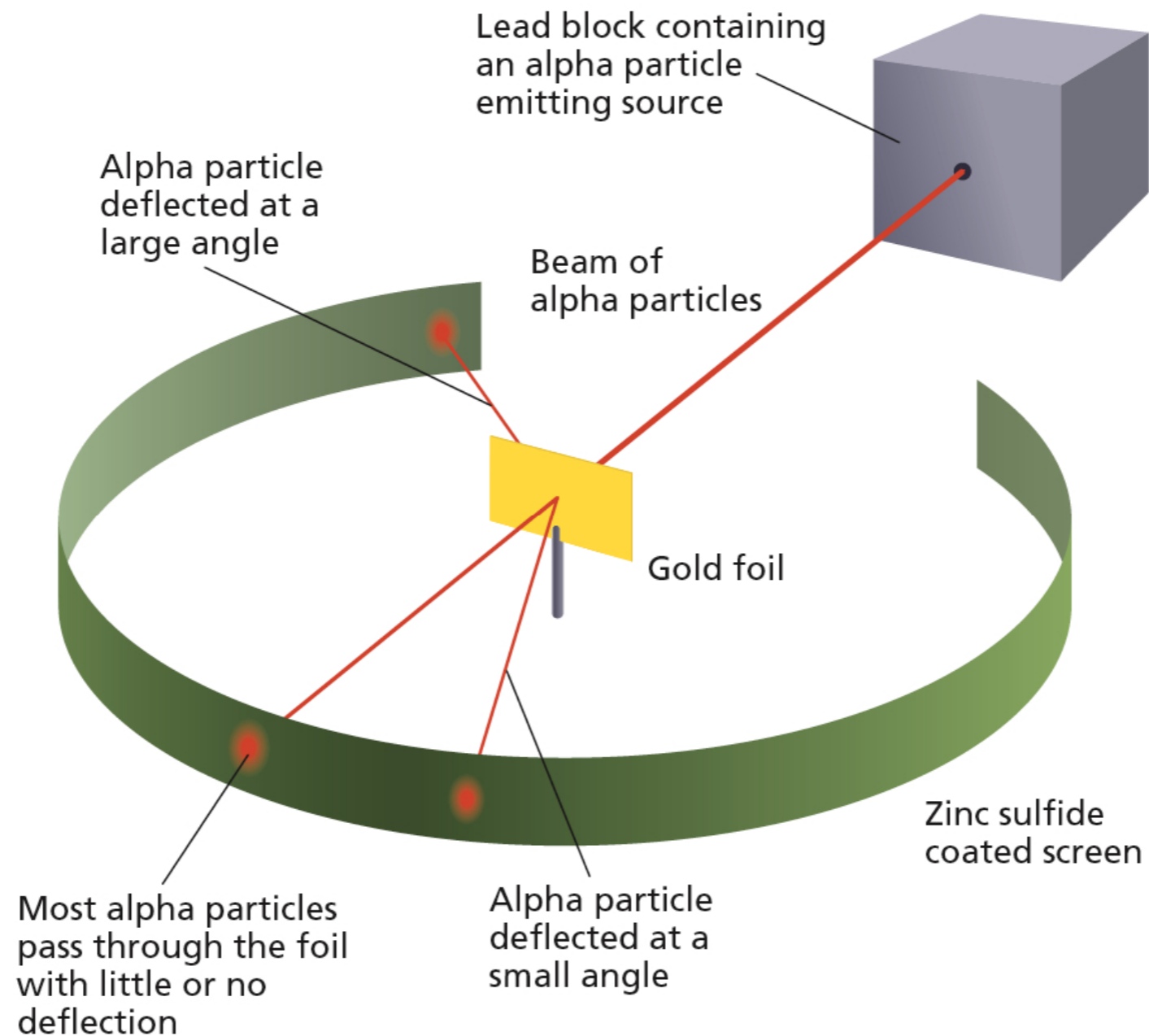
Evenly  
distributed  
positive charge



Electrons

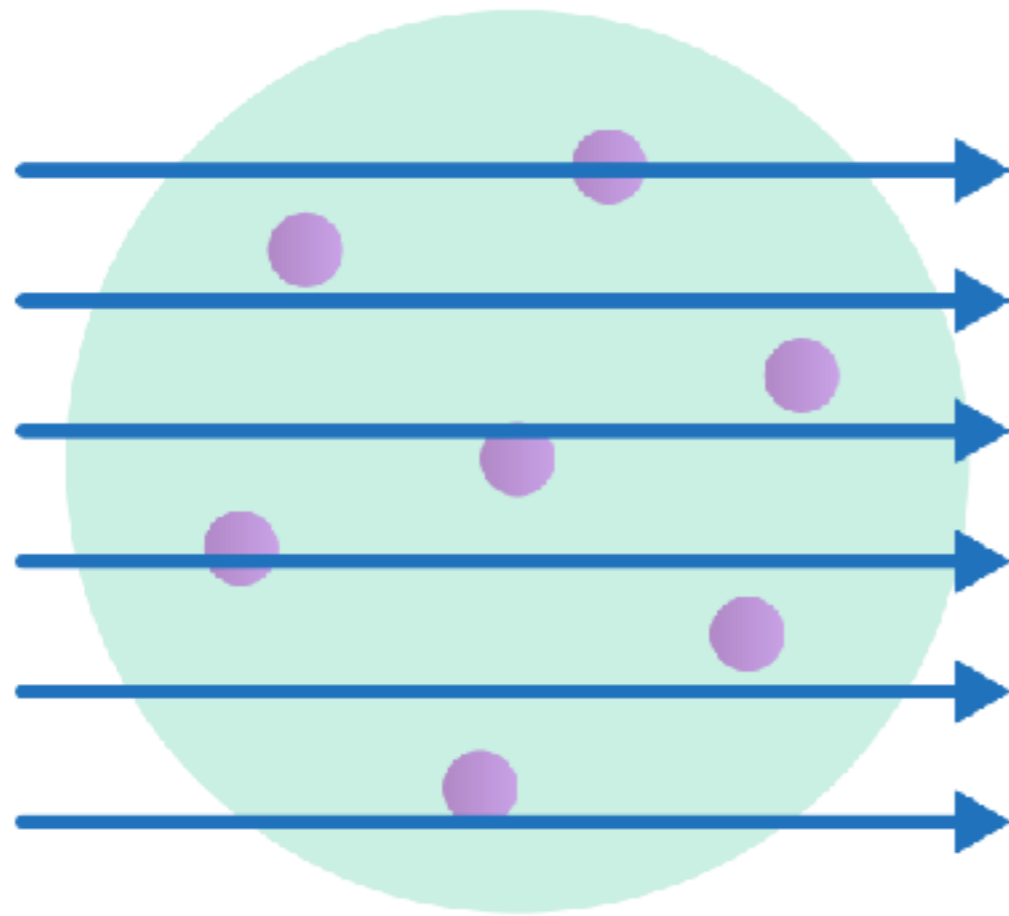
But this model was shown to be completely wrong by one of the most important experiments of all time...

# The Rutherford Experiment (1911)



# The Discovery of the Nucleus

THOMSON MODEL



RUTHERFORD MODEL

