

Edible Atoms

Estimated Time: 30 minutes

SUMMARY: Splitting the atom is easy when you create it from candy and toothpicks! For this activity students can create a model of an atom and then model a molecule like water or serotonin.

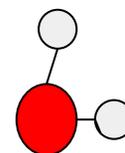
WHAT YOU'LL LEARN

- Atoms are the building blocks of everything.
- Atoms attach to each other to form molecules.
- Depending on the atoms, they may bind to another atom using one, two, or three bonds.

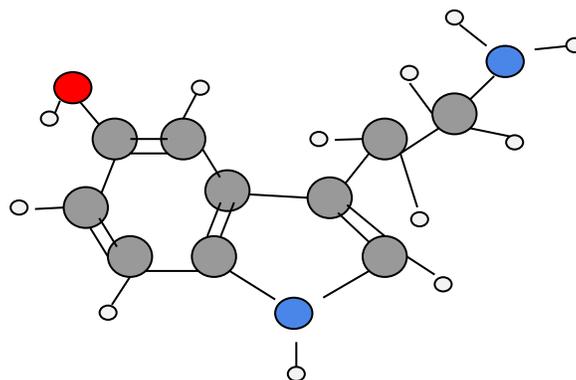
Materials Used	Resources Used
<ul style="list-style-type: none"> • A soft sticky candy that comes in at least four colors • Toothpicks • Paper (optional) • Pencil (optional) • Colored pencils (optional) • Ruler (optional) 	<ul style="list-style-type: none"> • https://phet.colorado.edu/sims/html/build-an-atom/latest/build-an-atom_en.html • https://fielddaylab.org/play/atom-touch/

WHAT TO DO

1. First, find and sort four colors of candy. These are going to represent atoms of nitrogen, hydrogen, carbon, and oxygen.
2. Next begin assembling a water molecule. It has one atom of oxygen and two atoms of hydrogen. Use toothpicks to connect the hydrogen atoms to the oxygen atoms.
3. Make 5 water molecules. What does water look like at freezing? What state is it in? (solid, liquid, or gas?) Move your molecules together in a tight pattern to simulate ice.
4. What does water look like when it is at boiling? What state is it in? Spread your molecules apart to simulate water vapor.
5. Now, start assembling a molecule of serotonin. This is a hormone and neurotransmitter that occurs naturally in the body. You will need ten carbon atoms, two nitrogen atoms, one oxygen atom and twelve hydrogen atoms. Note the placement of double bonds in this diagram.
6. Look at the online resources listed. Can you design a molecule online or on paper and then create a 3D model?
7. If you take apart the model of serotonin, can you form another molecule with the atoms?



Serotonin



TIPS

- We picked serotonin to challenge you with because of the myth behind turkey and tryptophan. For more information on why the science doesn't check out on this popular Thanksgiving idea, check out this link: <https://www.scientificamerican.com/article/fact-or-fiction-does-turkey-make-you-sleepy/>
- When building your molecules you are creating bonds. This absorbs or uses energy. When you break apart your molecules, you are breaking or destroying bonds. This releases energy. What form of energy do we use in the United States that uses this science?