

DAY 3 EXPERIMENT

DNA Is Everywhere

See Onion DNA Using Kitchen Appliances

Materials

Prepare 1 per table or only 1 for an upfront demo. (This works well as an upfront demo.)

- ☐ Medium-sized onion
- ☐ 1 t. salt
- ☐ 1½ c. water
- ☐ 2 T. dishwashing liquid
- ☐ ½ t. meat tenderizer
- ☐ ¾ c. 91% rubbing alcohol (isopropyl)
- ☐ Cutting board and knife
- ☐ Blender
- ☐ Strainer
- ☐ Mixing bowl
- ☐ Spoon
- ☐ Clear glass (12 oz. or larger)
- ☐ Craft stick
- ☐ Babel Legend cards (11-7-070), 1 per child

Class Time Directions

Today, at *The Incredible Race*, we're exploring why we have beautifully different shades of skin and why we don't all look the same. We know from studying the Bible that all human beings are part of the same race—the human race! We all share a common ancestor in Adam and Eve. That means we're all related, no matter where we live or what we look like! All humans and all living things have something inside them that helps to make them who they are. It is called deoxyribonucleic acid or DNA for short. DNA is found in every living cell of every plant and animal (that we know of). It is like a recipe book providing information for building and running the plant or animal.

What are some things that our human DNA provides information for? Take answers: eye color, eye shape, skin shade, height, face shape, ear structure, finger length, etc.

Because all humans come from the same two humans, we all share very similar DNA. Only a very tiny percentage of our DNA is different among us.

God gave every kind of creature some unique DNA. Yet similar organisms often have similar DNA because they perform the same tasks. For example, both cats and dogs need DNA for making legs and tails, and vegetables and fruits need DNA for growing roots and stems.



Despite the differences, most living things perform some similar functions. For this reason, even human DNA has some similarity with an onion's DNA. And that's a good thing! Your body can easily break down the sugars and other molecules in the onion to build molecules for itself.

DNA is so very tiny that we can't see it just by looking at our bodies. But we are going to do an experiment today with an onion where we will extract its DNA and we will be able to see it!

After doing our experiment extracting DNA from an onion, it will look like a messy glob. But that's not how DNA appears in cells. DNA is neatly stored in a small compartment called the nucleus. The DNA is folded up many, many times so it can fit in the nucleus.

This folding is not random but carefully controlled and specific. To give you an idea about this marvel of packaging, imagine folding a long spaghetti noodle—stretched across the entire United States—and storing it in a small box so that any portion can be unfolded, copied, and used at any time. That's the wonder of DNA.

The DNA molecule is often compared to a book. The DNA bases (A, C, T, and G) form words called genes. The genes contain all sorts of information necessary for life. As we continue to learn more about this wonder, we can appreciate the wisdom and goodness of the author, God. He is the author of life, who created DNA to provide the information necessary for the development and growth of living organisms, including you and me.

Think about this the next time you eat an onion. Let's get started with our experiment to see some onion DNA!

Adults should supervise the experiment and perform all cutting, blending, and working with rubbing alcohol.

1. Adults chop the onion into chunks and place them in the blender.
2. Children can add 1 t. of salt and 1½ cups of water to the onion. Blend for 10 seconds. You should now have a mushy onion mixture.
3. Children can strain the onion mixture by pouring it through a strainer into a mixing bowl.
4. Children can fill the clear glass or jar with ¾ c. of the onion juice.
5. Children can add 2 T. of dishwashing liquid and ½ t. of meat tenderizer to the glass.
6. Children can stir gently with the spoon and wait 10 minutes. Don't stir too hard or the fragile DNA molecules will break.
7. Adults can very slowly pour ¾ c. alcohol into the glass. Don't stir.
8. Alcohol will float on top of your onion mixture. After a few minutes, white, stringy, small globs will appear in it. That's the DNA!
9. Children can slowly swirl the craft stick through the alcohol. DNA clumps should stick to it. You can then lift them out. You can touch the DNA, but wash your hands after you finish the experiment.

Pass out the Babel Legend cards, 1 per child.

Tip Corner

- This experiment works best with Juniors.