

# Shrinky Dinks® Plant & Animal Cells Activity Kit Instructions

## Materials

Scissors

Colored pencils (Do not use wax crayons or oil-based pencils) or Permanent markers (non-water-based)

Tape (optional)

Hole punch

Aluminum foil

Cookie sheet or toaster oven tray

Oven or toaster oven

## Instructions

### 1. Photocopy

- Photocopy a cell template, cell diagram and definition sheet for each student.
- Cut cell diagrams and plastic sheets in half or trace both together.

### 2. Trace

- Position a blank Shrinky Dinks® sheet **rough-side up** over the top of the cell diagram you wish to replicate. Once the sheet is in position, you may tape down the corners to prevent the sheets from sliding.
- Using a black colored pencil or permanent marker (for more crisp lines), trace the outlines of the cell diagram and its organelles.

### 3. Color

- Use colored pencils or permanent markers to color the outlined cell and organelles (Note: Colors will get brighter and intensify after baking).
- You may also wish to color code the organelle definition sheet to help identify the cell structures.
- Initial your work for identification.

### 4. Cut

- Use scissors to carefully cut around the outside black border of the cell wall being sure to round-out any sharp edges.
- Punch a hole in the finished piece if you wish to attach a fastener after baking.

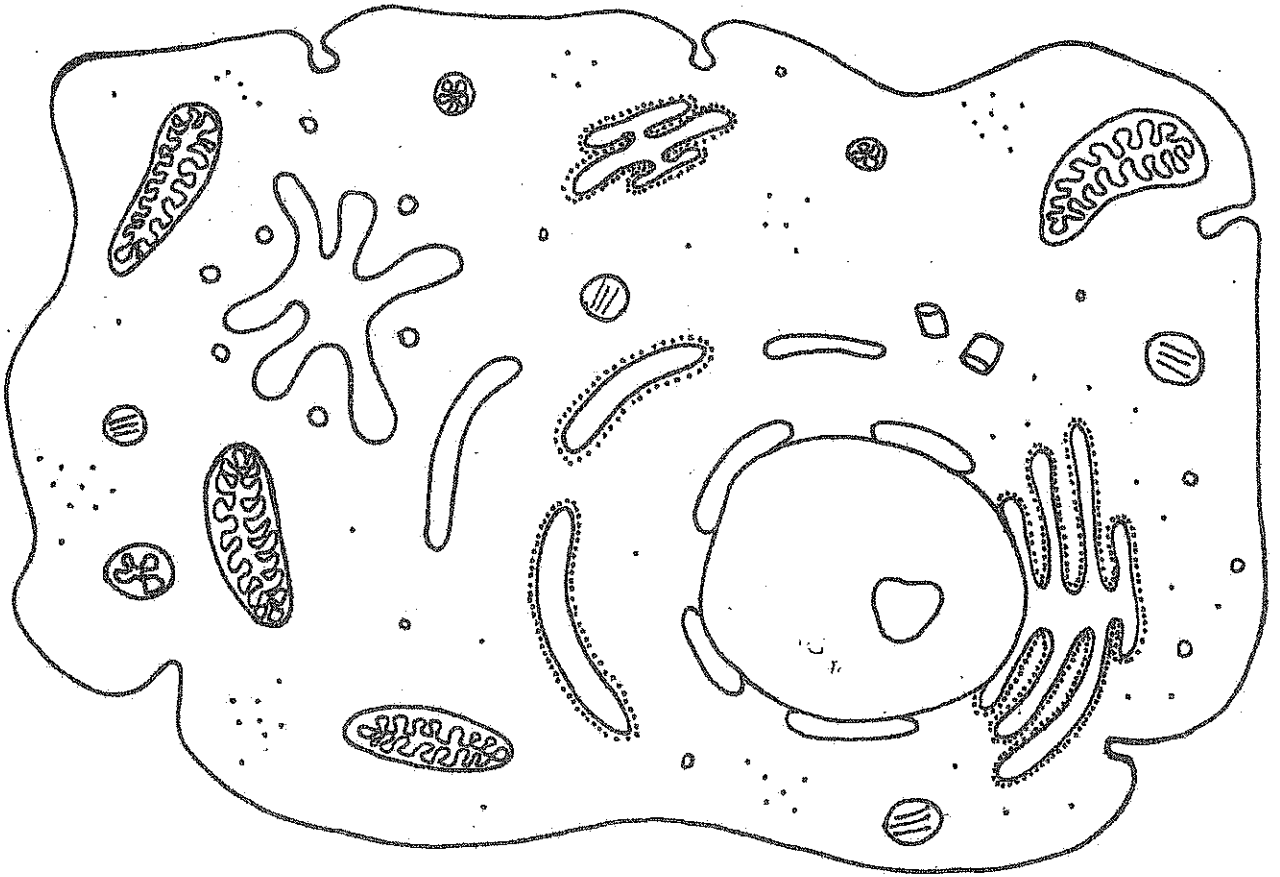
## 5. Bake - ADULT SUPERVISION REQUIRED!

- Pre-heat oven or toaster oven to 325°F.
- Tear off a sheet of aluminum foil and place your finished cell on the foil with the **colored-side up**.
- Turn up one corner of the foil sheet to make it easier to remove it from the oven.
- Carefully place the foil sheet and colored "cell" onto the pre-heated cookie sheet or tray and close the oven door.
- Watch closely as your colored creation quickly begins to twist, curl, and shrink down to approximately 1/3 its original size!  
⇒ **Note:** *If the cell model gets stuck to itself while shrinking, have an adult remove the "cell" from the oven, uncurl it using a non-metal utensil before placing it back in the oven.*
- Once the shrunken cell has reached the point where it lies flat, leave it in the oven for an additional 15 seconds.
- Carefully remove the foil sheet and Shrinky Dinks® cell from the oven and immediately press down on it with an oven mitt or book to flatten the piece.
- Allow another 30 seconds for your Shrinky Dinks® cell to completely cool before handling.

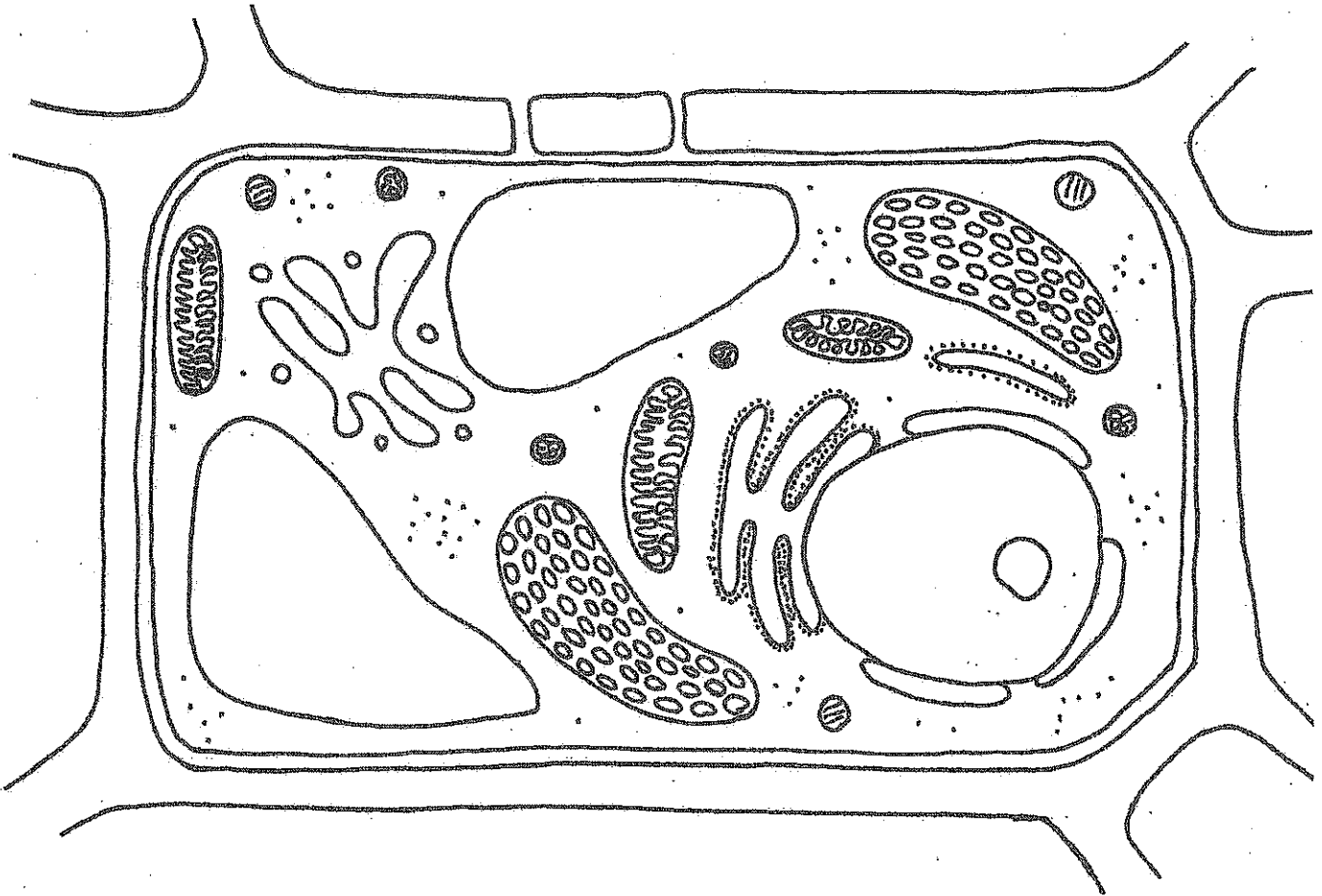
## 6. Enjoy!

- Find a place where you would like to hang your new Shrinky Dinks® cell model (e.g. zipper pull, backpack, etc.) and secure it there by using a plastic loop lock (supplied) or similar.
- Enjoy your newest creation!

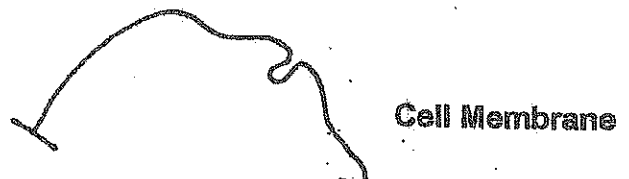
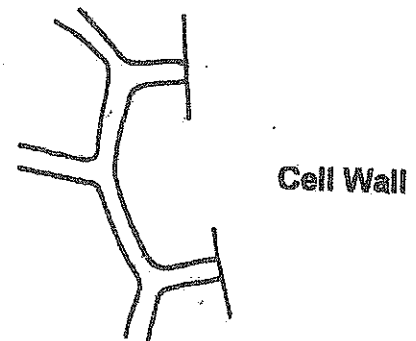
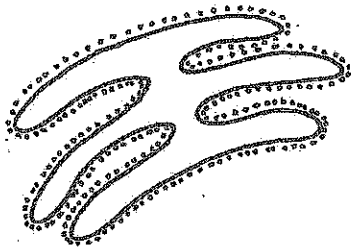
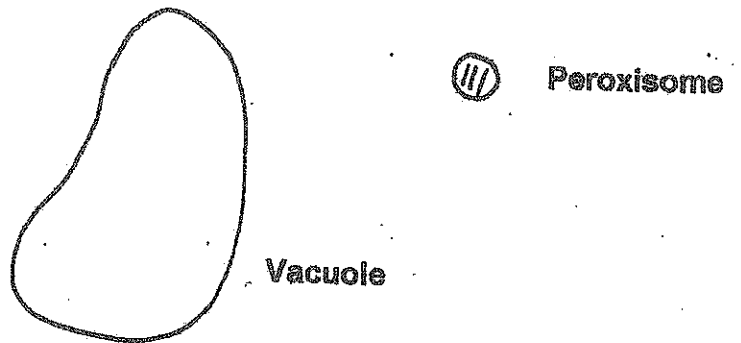
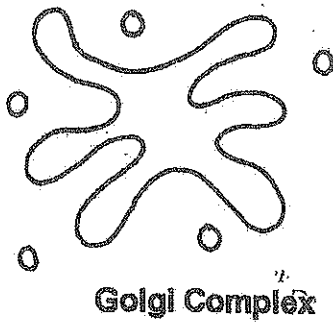
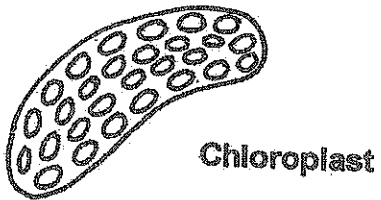
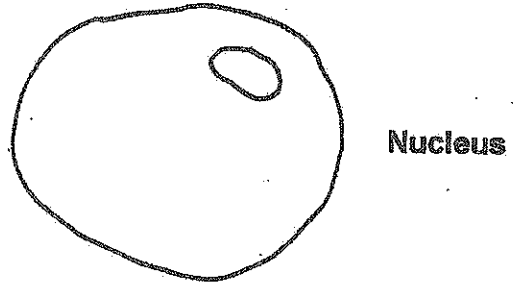
Animal Cell



Plant Cell



# Cell Diagram



## Definitions

1. **Cell membrane:** A thin membrane that forms the outer surface of a cell.
2. **Cell wall:** A rigid, transparent outer covering of a plant cell, made up of cellulose and other materials, and surround the cell membrane.
3. **Centriole:** Hollow, cylindrical organelle which forms spindle fibers to separate chromosomes during cell division.
4. **Chloroplast:** An organelle that contains a green chemical called chlorophyll, and is the site of photosynthesis
5. **Cytoplasm:** A semi-fluid medium between the nucleus and the cell membrane.
6. **DNA (deoxyribonucleic acid):** A double stranded molecule that is in all living cells, and is the genetic material organisms inherit from their parents.
7. **Endoplasmic reticulum:** The endoplasmic reticulum is a transport system. The ER modifies proteins, makes macromolecules, and transfers substances throughout the cell. It is also the site for membrane manufacturing.
8. **Golgi complex:** An organelle that stacks, ships, and packages products which come from the endoplasmic reticulum (i.e. proteins).
9. **Lysosome:** An organelle that contains digestive enzymes which break down macromolecules. They are built in the golgi complex.
10. **Mitochondria:** An organelle where most of the cell's energy is made.
11. **Nucleus:** The control center of a cell that contains DNA inside a delicate membrane.
12. **Peroxisome:** An organelle that contains enzymes that function to rid the body of toxic substances, such as hydrogen peroxide. Unlike lysosomes, peroxisomes self-replicate by dividing. High numbers of peroxisomes can be found in the liver.
13. **Ribosome:** Main site for protein synthesis
14. **RNA (ribonucleic acid):** Similar to DNA, RNA is single stranded and found outside the nucleus. It delivers the message for protein synthesis.
15. **Rough endoplasmic reticulum:** The endoplasmic reticulum to which ribosomes are attached. The attached ribosomes make it appear bumpy. The rough endoplasmic reticulum specializes in protein synthesis
16. **Vacuole:** A membrane enclosed sac involved in diverse storage functions.