

CELL STRUCTURE TEACHER GUIDE

Use this Classroom Pack for individual students or groups of students. See the complete line of Classroom Packs at your local educational supply store, hobby shop or online at www.scenearama.com.

Before starting, here are some considerations for your classroom project:

- To better understand this project and the time it takes to complete each session, try building your own Cell Structure first.
- The project is divided into five sessions, but modify it for your convenience. Sessions can be combined.
- This kit contains materials that may stain or dry on clothing. Have students bring old clothes or an apron to wear while completing the project.
- Students can extend the paint by dipping their **Paintbrush** in water frequently.
- Students should have flat surfaces to work on. A workspace of approximately 2'x2' should be allotted for each cell.
- Begin collecting newspapers the week before starting the project.
- The project area should be covered ahead of time with newspapers or table covers (for easy cleanup).

Here are some good ideas:

- Watch the how-to video for this project at www.scenearama.com.
- This kit can be easily adapted for sharing supplies in larger groups working around one table.
- Use masking tape to identify each **Project Base** and to hold parts while building project.
- Ask some of your students' parents to volunteer to help during the project.
- Have the students read their guides first before doing their project, so they can see how the project will go together (each step of the **Teacher Guide** corresponds with the **Student Guide**).

After the project has ended, make copies of the Cell Structure Certificate (inside back cover) and fill in students' name. It gives them a reminder of the work they have accomplished and the lessons they have learned.

CELL STRUCTURE KIT CONTENTS

Teacher and Student Guide with Easel Template

12 Project Bases* with Labels

12 Project Paints† (6 colors)

Project Glue†

3 Plaster Cloth Rolls†

12 Easel Boards (4 1/4" x 11")

12 Label Boards (2" x 8")

12 Sculpting Clay Packets

12 Plastic Cups

12 Paintbrushes (large)

12 Paintbrushes (small)

12 Project Wires (36")

† Non-Toxic. We recommend you do not apply Plaster Cloth directly to skin as it may cause irritation.
*Patent Pending (Base)

Conforms to Health Requirements of ASTM D4236
Made in USA of US and Imported Parts

Kit contents are highlighted in text for easy identification.

ADDITIONAL SUPPLIES

- Water (approx. 5 cups per cell)
- Newspapers (two full-sized sheets per cell)
- Masking Tape (approx. 9' per cell)
- Scissors (one per cell)
- Markers (for labeling)
- Paper Towel Rolls for cleanup (2)
- Table Covering (can be newspapers)
- Measuring Spoon (1 tablespoon and 1 teaspoon)
- Ruler (one per cell)
- Full-sized white paper towel (one per cell)
- Scrap paper (for glue)
- Disposable Cup with water (for rinsing **Paintbrushes**)



CREATE CELL MEMBRANE

Allow approximately 60 minutes.

CONTENTS



• 1 Project Base

QUANTITIES PER CELL



• Plaster Cloth (15 - 3" x 8" strips)

ADDITIONAL SUPPLIES

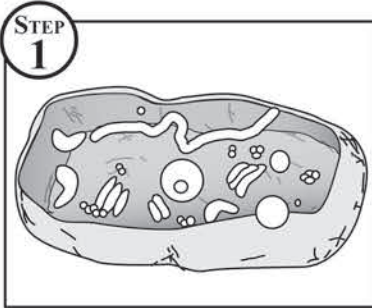
- Newspapers (two full-sized sheets per cell)
- Scissors (one per cell)
- Ruler (one per cell)
- Masking Tape (approx. 9' per cell)
- Water (5 cups per cell)
- Full-sized white paper towel (one per cell)

PREP WORK

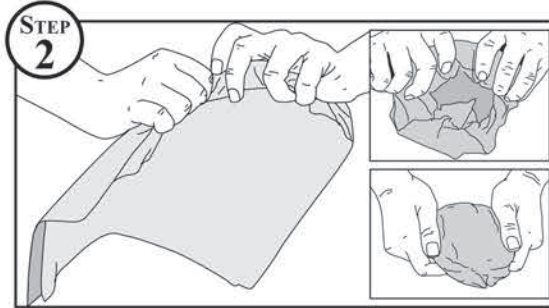
- Cut **Plaster Cloth** into approximately 3" x 8" strips (15 strips per cell). Be sure to keep the Plaster Cloth dry until use.
- Put 1" of water (approximately 5 cups) in **Project Bases**.

- Distribute two full-sized sheets of newspaper per cell.
- NOTE:** When finished with water in Session 1, let sediment from **Plaster Cloth** settle. Pour water off and throw sediment in a trash can.

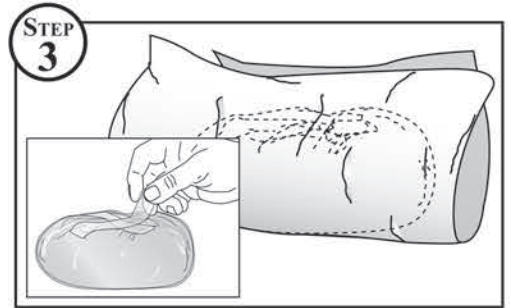
INSTRUCTIONS



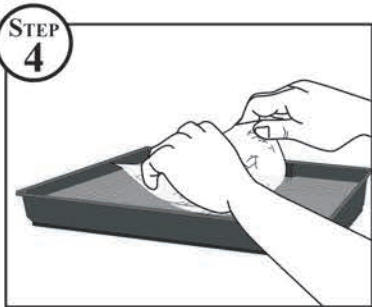
Determine size of cell. Enough material is provided to cover approximately 4" height x 6" length x 2 1/2" depth.



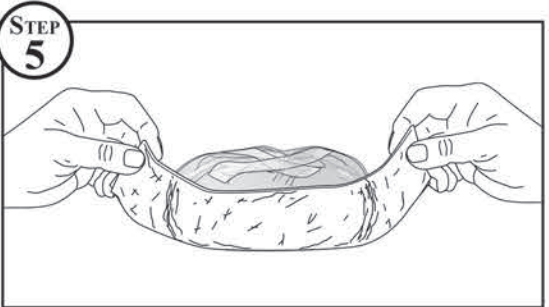
Unfold two full-sized sheets of newspaper and layer them together. Wad by rolling edges of the newspaper sheets toward the center until you have your desired cell shape. Tape to hold.



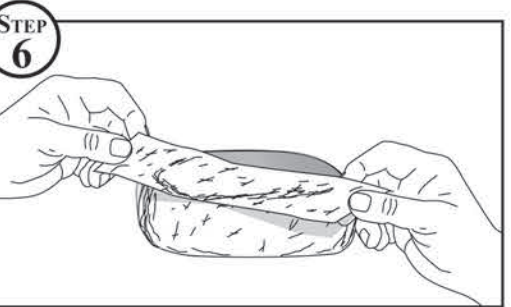
Cover the entire cell with a white paper towel. Tape to hold.



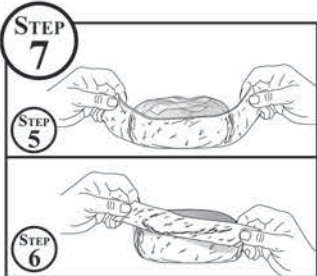
Fold strips of **Plaster Cloth** in half lengthwise, bumpy-side-out. Hold strips tightly by corners and drag through water.



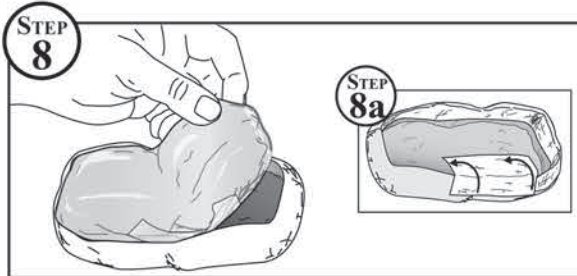
With the taped side of the cell up, wrap the wet **Plaster Cloth** around the side of the cell form and smooth with fingers. Continue until you have **Plaster Cloth** all the way around the side of the cell. Leave opening large enough for organelles.



Turn cell over (tape down) and apply wet **Plaster Cloth** over the cell. Overlap each strip by 50% until cell is covered, two layers in all.



Turn cell back over and repeat Steps 5 and 6 once more. Allow to dry until set.



Carefully remove the newspaper. Reinforce edges by wrapping with **Plaster Cloth** (Step 8a) Dry overnight.



MAKE ORGANELLES

Allow approximately 60 minutes.

CONTENTS



• 1 Project Base

QUANTITIES PER CELL

• 1/2 tsp Project Glue



• 1 Sculpting Clay Packet

ADDITIONAL SUPPLIES



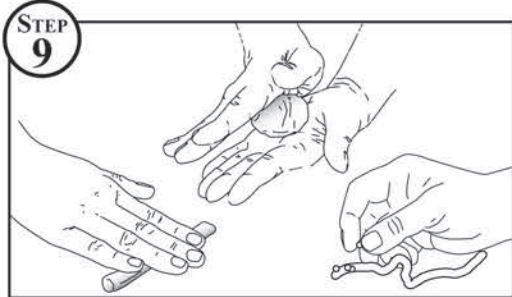
- Measuring Spoon (1/2 tsp)
- Scrap paper
- Scissors (one per cell)

PREP WORK

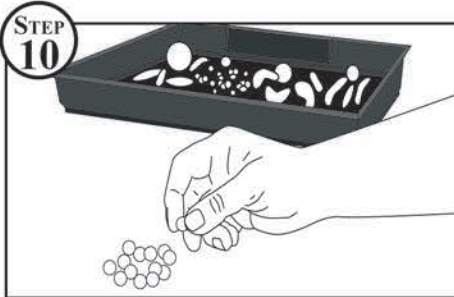
- Put 1/2 tsp of **Project Glue** on scrap paper (one per cell).

NOTE: Determine size and shape of organelles to be made. Making sure that organelles will fit within the cell membrane. Remove only the amount of clay to make each organelle one at a time. Keep remaining clay in closed package when not being used, as **Sculpting Clay** will dry out in 10-15 minutes.

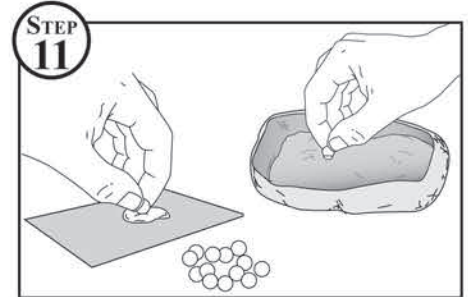
INSTRUCTIONS



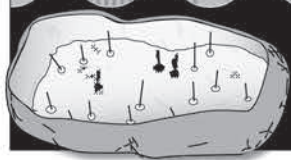
Using the **Sculpting Clay**, create organelles. Stick parts together while **Sculpting Clay** is still wet, or glue them together after drying. Put all organelles into the **Project Base** and allow to dry overnight.



Roll clay into large pea-sized balls, enough for each organelle. These “anchoring dots” will be placed inside the cell to hold mounting wires and organelles in place. Larger organelles may require two anchoring dots.



Lightly dip anchoring dots in glue and place them inside the cell where organelles will be placed. Allow to dry overnight.



PAINT AND PREPARE CELL

Allow approximately 60 minutes.

CONTENTS



• 1 Project Paint

• Paintbrushes (1 large, 1 small)

QUANTITIES PER CELL

• 1 roll Project Wire

• 1 Plastic Cup



• 1/2 tsp Project Glue

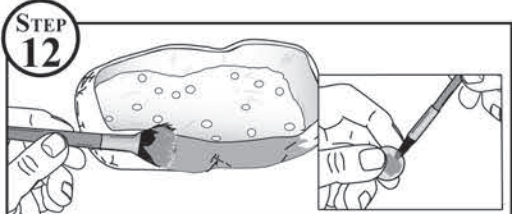


ADDITIONAL SUPPLIES

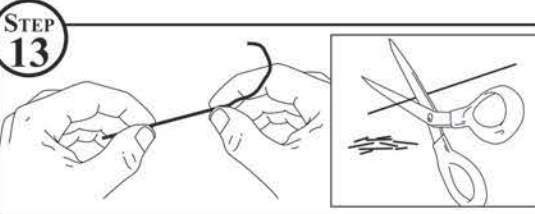
- Measuring Spoon (1 tsp)
- Scissors (one per cell)
- Disposable Cup with water (for rinsing paintbrushes)
- Scrap paper
- Ruler

PREP WORK • Put 1/2 tsp of **Project Glue** on scrap paper (one per cell).

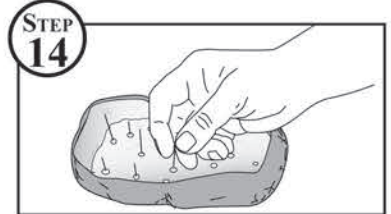
INSTRUCTIONS



Paint organelles and the cell as desired. Remember, you can use the **Plastic Cup** to blend paints for unique colors. Rinse **Paintbrushes** when finished.

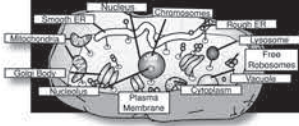


Project Wire will be used to suspend organelles. Straighten the wire by pulling one end between fingers. Cut wire to desired length (approx. 1 1/4" long) for the amount of organelles you have made.



Dip wire end into the glue, then push it gently into the anchoring dots that are mounted inside the cell. Allow to dry overnight.

ASSEMBLE AND LABEL CELL



Allow approximately 60 minutes.

CONTENTS

- 1 Label Board (2" x 8")



QUANTITIES PER CELL

- Paintbrushes (1 large, 1 small)



- 1 tbsp Project Glue
- 1 roll Project Wire

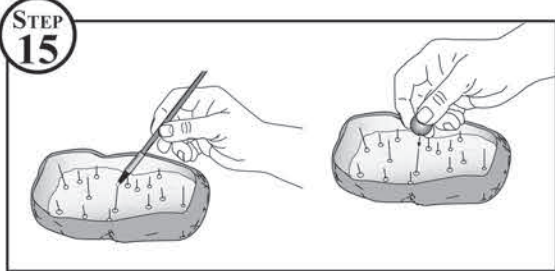
ADDITIONAL SUPPLIES

- Measuring Spoon (1 tbsp)
- Scissors (one per cell)
- Disposable Cup with water (for rinsing paintbrushes)
- Scrap paper
- Ruler

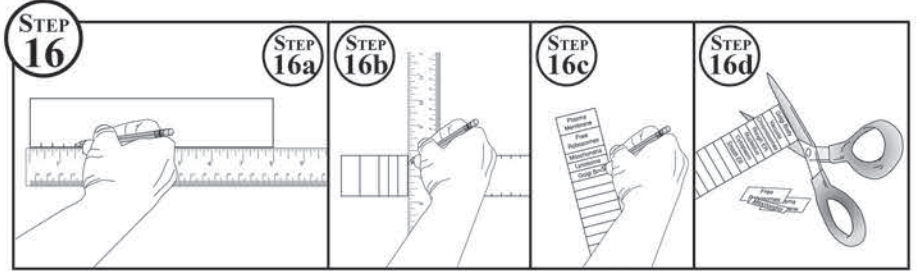
PREP WORK

- Put 1 tbsp of **Project Glue** on scrap paper (one per cell).

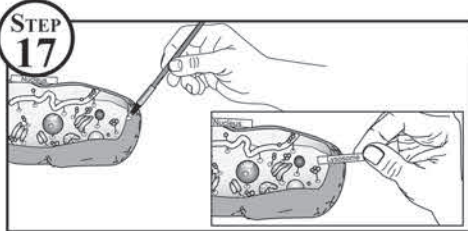
INSTRUCTIONS



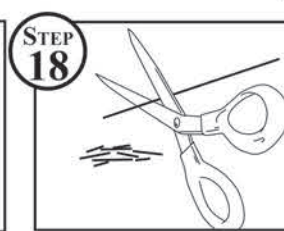
Apply glue to the wire end, then push the organelle onto the wire for mounting. Allow to dry.



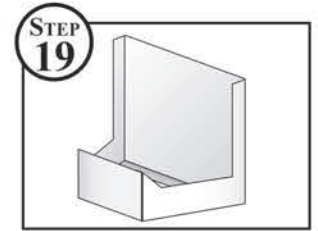
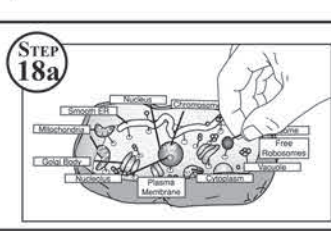
On the **Label Board** measure and draw a line every 3/8" or up to 3/4" depending on length of organelle name (Step 16a and 16b). Do not exceed 3/4" in height (so glue will hold). Write names of organelles to make labels (Step 16c). Cut labels along marked lines (Step 16d).



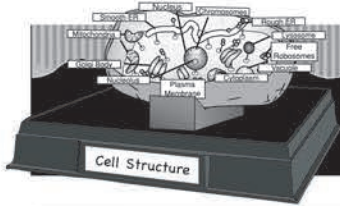
Using **Project Glue** and small **Paintbrush**, glue label to edge of cell membrane adjacent to its respective organelle. Allow to dry.



Cut remaining **Project Wire** to desired length (approx. 1 1/4" long) for the amount of labels made. Dip end of wire in glue and push into organelles. Bend wire so wire will point to its respective label (Step 18a). Allow to dry overnight.



The **Easel** can be made now (see **Easel Assembly** on the following page for instructions).



DISPLAY CELL

Allow approximately 60 minutes.

CONTENTS



- 1 Project Base and Label

QUANTITIES PER CELL

- Paintbrush (1 small)

- 1 tbsp Project Glue

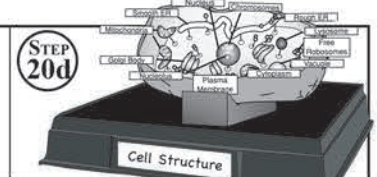
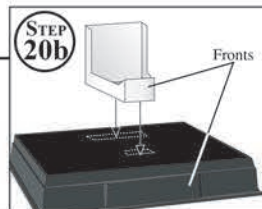
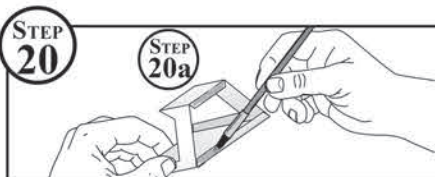


ADDITIONAL SUPPLIES

- Measuring Spoon (1 tbsp)
- Scissors (one per cell)
- Disposable Cup with water (for rinsing paintbrushes)
- Scrap paper
- Markers

PREP WORK Put 1 tbsp of **Project Glue** on scrap paper (one per cell).

INSTRUCTIONS



Brush glue on **Easel** tabs (Step 20a). Place **Easel** onto **Project Base** in center, facing forward (Step 20b). Remove and lay **Easel** on side (Step 20c). Wait until glue is tacky (10 minutes). While glue is drying, decorate **Project Label**, on shiny side, with markers and attach to the front of the **Project Base**. Then place **Easel** back onto **Project Base** in same position and press together. Glue cell to **Easel** (Step 20d).

EASEL ASSEMBLY

CONTENTS

QUANTITIES PER EASEL

- 1 Easel Board (4 1/4" x 11")
- 1 Paintbrush (large)
- 1 tsp Project Glue
- 1 Easel Template

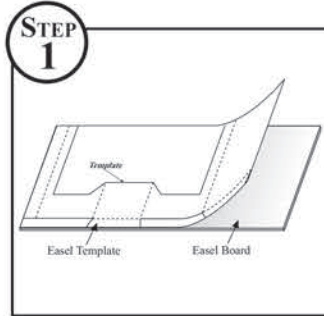
ADDITIONAL SUPPLIES

- Measuring Spoon (1 tsp)
- Scissors (one per Easel)
- Ruler (one per Easel)

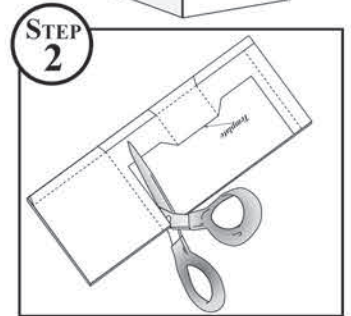
PREP WORK

- Make a copy of this page, one for each cell.
- Put 1 tsp **Project Glue** on scrap paper.

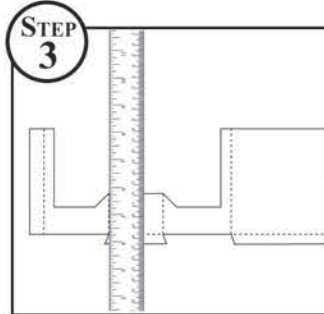
INSTRUCTIONS



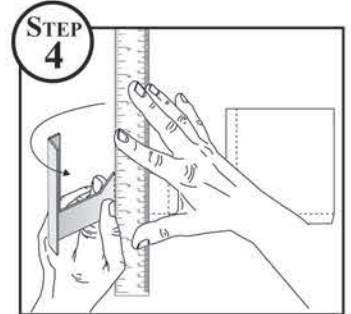
Lay **Easel Board** flat on workspace, brush on glue, and lay template on top. Allow to dry.



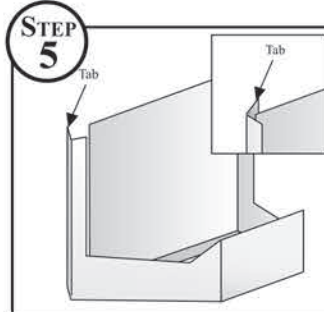
Cut **Easel Template** on solid lines.



Place a ruler along the dotted lines.



Fold sides and tabs of Easel inward on dotted lines to create the corners.



Brush glue on the inside of tab to join edges of Easel.



OPTIONAL: Paint Easel any color, inside and out.

NOTE: Trim Easel if necessary to accommodate your project.

Cut

Cut

Easel Template

Template

Scene-A-Rama Class Project

CERTIFICATE OF COMPLETION

This is to certify that

_____ *Name of student*

completed the Scene-A-Rama classroom project

CELL STRUCTURE

on _____

Date

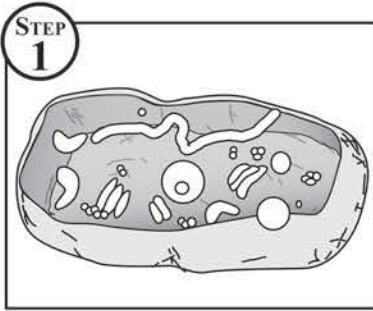
_____ *Teacher*

A division of Woodland Scenics®

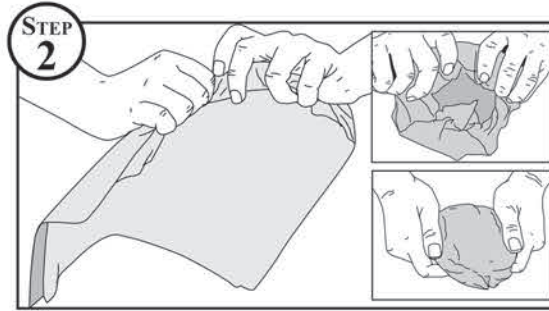
SCENE+ARAMA

DIORAMAS • SCHOOL PROJECTS • DISPLAYS

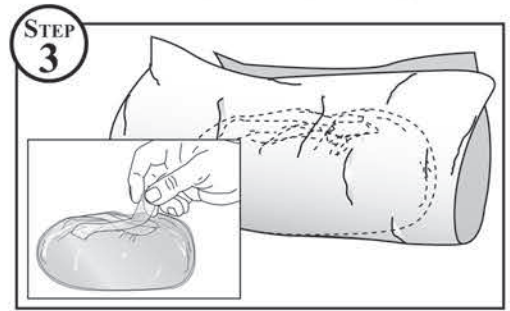
See the complete line of products and exciting how-to videos at www.scenearama.com.



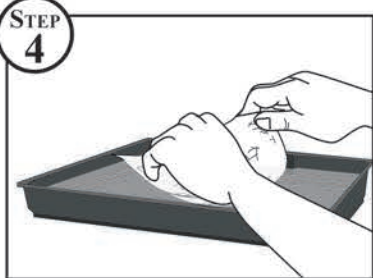
STEP 1
Determine size of cell. Enough material is provided to cover approximately 4" height x 6" length x 2 1/2" depth.



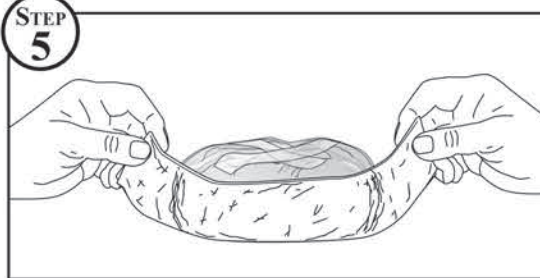
STEP 2
Unfold two full-sized sheets of newspaper and layer them together. Wad by rolling edges of the newspaper sheets toward the center until you have your desired cell shape. Tape to hold.



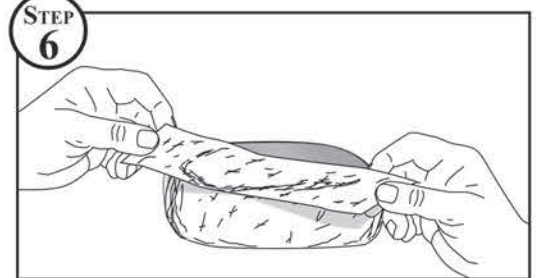
STEP 3
Cover the entire cell with a white paper towel. Tape to hold.



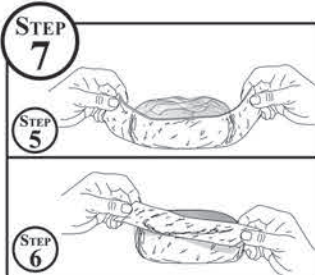
STEP 4
Fold strips of **Plaster Cloth** in half lengthwise, bumpy-side-out. Hold strips tightly by corners and drag through water.



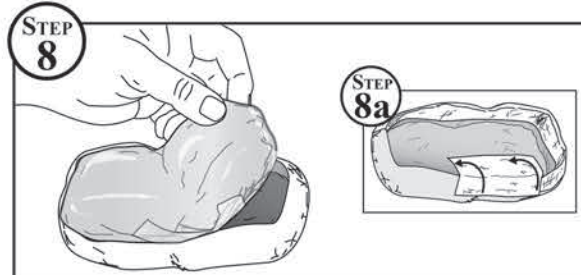
STEP 5
With the taped side of the cell up, wrap the wet **Plaster Cloth** around the side of the cell form and smooth with fingers. Continue until you have **Plaster Cloth** all the way around the side of the cell. Leave opening large enough for organelles.



STEP 6
Turn cell over (tape down) and apply wet **Plaster Cloth** over the cell. Overlap each strip by 50% until cell is covered, two layers in all.



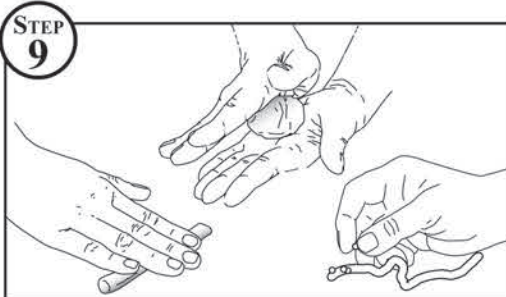
STEP 7
STEP 5
STEP 6
Turn cell back over and repeat Steps 5 and 6 once more. Allow to dry until set.



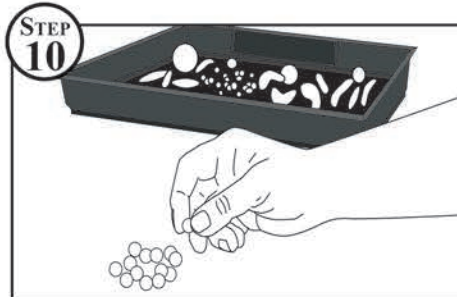
STEP 8
STEP 8a
Carefully remove the newspaper. Reinforce edges by wrapping with **Plaster Cloth** (Step 8a) Dry overnight.

MAKE ORGANELLES

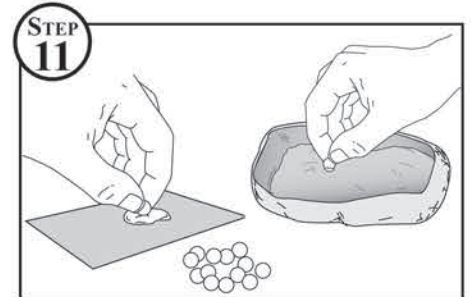
SESSION 2



STEP 9
Using the **Sculpting Clay**, create organelles. Stick parts together while **Sculpting Clay** is still wet, or glue them together after drying. Put all organelles into the **Project Base** and allow to dry overnight.



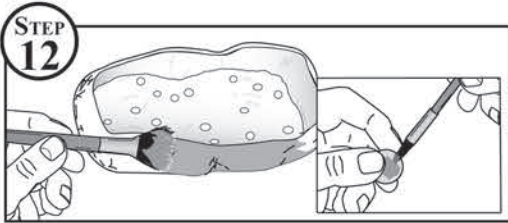
STEP 10
Roll clay into large pea-sized balls, enough for each organelle. These "anchoring dots" will be placed inside the cell to hold mounting wires and organelles in place. Larger organelles may require two anchoring dots.



STEP 11
Lightly dip anchoring dots in glue and place them inside the cell where organelles will be placed. Allow to dry overnight.

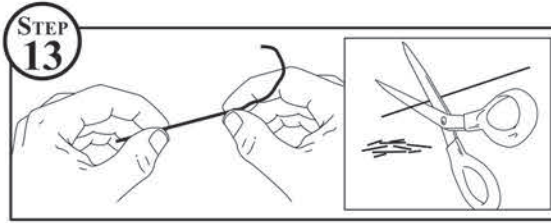
PAINT AND PREPARE CELL

SESSION **3**



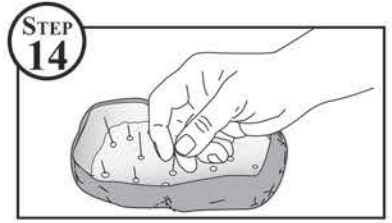
STEP 12

Paint organelles and the cell as desired. Remember, you can use the **Plastic Cup** to blend paints for unique colors. Rinse **Paintbrushes** when finished.



STEP 13

Project Wire will be used to suspend organelles. Straighten the wire by pulling one end between fingers. Cut wire to desired length (approx. 1 1/4" long) for the amount of organelles you have made.

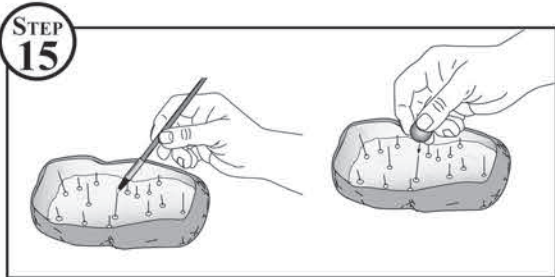


STEP 14

Dip wire end into the glue, then push it gently into the anchoring dots that are mounted inside the cell. Allow to dry overnight.

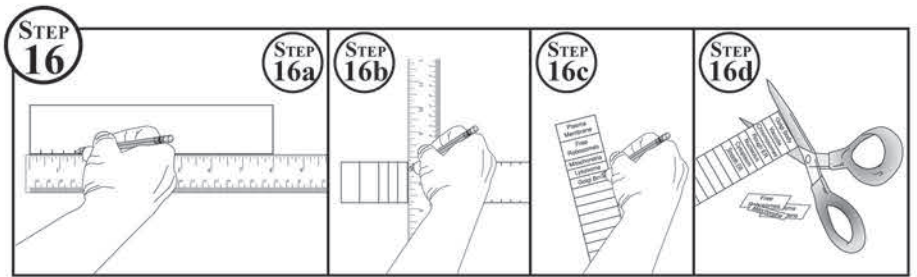
ASSEMBLE AND LABEL CELL

SESSION **4**



STEP 15

Apply glue to the wire end, then push the organelle onto the wire for mounting. Allow to dry.



STEP 16

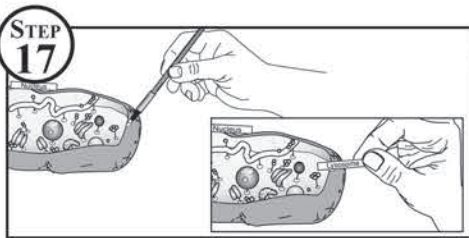
STEP 16a

STEP 16b

STEP 16c

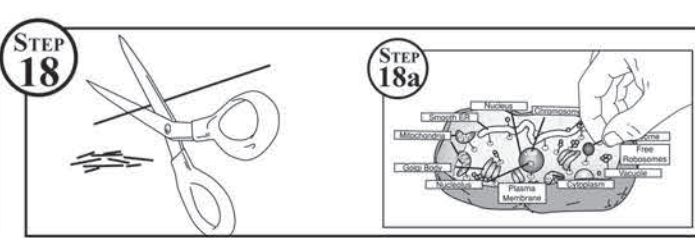
STEP 16d

On the **Label Board** measure and draw a line every 3/8" or up to 3/4" depending on length of organelle name (Step 16a and 16b). Do not exceed 3/4" in height (so glue will hold). Write names of organelles to make labels (Step 16c). Cut labels along marked lines (Step 16d).



STEP 17

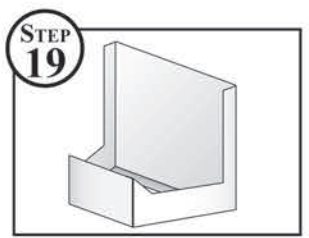
Using **Project Glue** and small **Paintbrush**, glue label to edge of cell membrane adjacent to its respective organelle. Allow to dry.



STEP 18

STEP 18a

Cut remaining **Project Wire** to desired length (approx. 1 1/4" long) for the amount of labels made. Dip end of wire in glue and push into organelles. Bend so wire will point to its respective label (Step 18a). Allow to dry overnight.

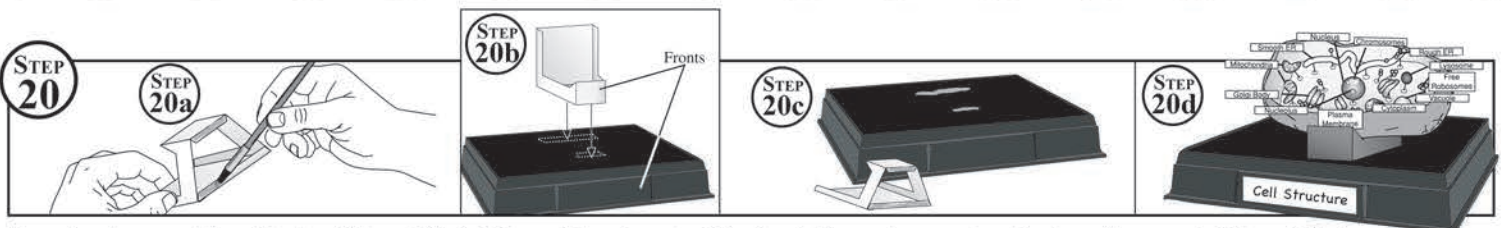


STEP 19

The Easel can be made now.

DISPLAY CELL

SESSION **5**



STEP 20

STEP 20a

STEP 20b

STEP 20c

STEP 20d

Brush glue on Easel tabs (Step 20a). Place Easel onto **Project Base** in center, facing forward (Step 20b). Remove and lay Easel on side (Step 20c). Wait until glue is tacky (10 minutes). While glue is drying, decorate **Project Label**, on shiny side, with markers and attach it to the front of the **Project Base**. Then place Easel back onto **Project Base** in same position and press together. Glue cell to Easel (Step 20d).