Lab of Horrors Station Cards

Nine project options Choose one station and use its matching Science Reference Card

Station 1 The Organelle Asylum

Your biology question

How does an organelle help a cell function?

Build an exhibit

Make a paper mitochondrion on cardboard. Use a folded paper strip for the inner membrane. Add a fictional face separately from the biological labels.

Four biological features to explain

- Outer mitochondrial membrane
- Inner membrane and cristae
- Matrix
- ATP production annotation

Every exhibit needs

- Four accurate facts in your own words, linked to two traceable sources. The reference card may count as one source.
- A handmade model with four labels that explain functions or meanings. Use arrows when showing movement or change.
- A readable museum card with a creative title, four facts, a 3–5 sentence scientific explanation, and a clearly marked 1–2 sentence fictional backstory or warning.
- A completed research sheet or assigned paper. Both partners can explain the science.

Check your science

ATP is an energy-transfer molecule. Mitochondria transform energy rather than creating it.

Discuss or write: Why do folds matter in a mitochondrion?

Materials and scoring

Use paper, cardboard, clay, yarn, markers, tape, or clean recycled containers. Use craft models only. Project grade: 50 points. Individual work evaluation: 10 separate points. Artistic skill and purchased supplies do not determine your grade.

Station 2 The Microbial Graveyard

Your biology question

What can colony appearance tell us about bacteria?

Build an exhibit

Place paper or clay colonies in a clean plastic container. Include a side-view drawing for elevation and a small binary-fission sequence beside the container.

Four biological features to explain

- Form such as circular
- Margin such as smooth
- Elevation such as raised
- Pigmentation such as yellow

Every exhibit needs

- Four accurate facts in your own words, linked to two traceable sources. The reference card may count as one source.
- A handmade model with four labels that explain functions or meanings. Use arrows when showing movement or change.
- A readable museum card with a creative title, four facts, a 3–5 sentence scientific explanation, and a clearly marked 1–2 sentence fictional backstory or warning.
- A completed research sheet or assigned paper. Both partners can explain the science.

Check your science

This is a craft simulation. Do not collect, grow, or open real environmental cultures.

Discuss or write: Can a scary-looking colony prove that a bacterium causes disease?

Materials and scoring

Use paper, cardboard, clay, yarn, markers, tape, or clean recycled containers. Use craft models only. Project grade: 50 points. Individual work evaluation: 10 separate points. Artistic skill and purchased supplies do not determine your grade.

Station 3 The Anatomy Crypt

Your biology question

How do heart structures work together to move blood?

Build an exhibit

Make a four-chamber paper heart. Add flow arrows, simple valve flaps, and a septum. Label the four chambers and explain the extra features in your card.

Four biological features to explain

- Right atrium
- Right ventricle
- Left atrium
- Left ventricle

Every exhibit needs

- Four accurate facts in your own words, linked to two traceable sources. The reference card may count as one source.
- A handmade model with four labels that explain functions or meanings. Use arrows when showing movement or change.
- A readable museum card with a creative title, four facts, a 3–5 sentence scientific explanation, and a clearly marked 1–2 sentence fictional backstory or warning.
- A completed research sheet or assigned paper. Both partners can explain the science.

Check your science

Right and left refer to the person's body. In a front view, anatomical right appears on the viewer's left. Red and blue are diagram conventions, not actual blood colors.

Discuss or write: Why does a heart model need arrows as well as chamber names?

Materials and scoring

Use paper, cardboard, clay, yarn, markers, tape, or clean recycled containers. Use craft models only. Project grade: 50 points. Individual work evaluation: 10 separate points. Artistic skill and purchased supplies do not determine your grade.

Station 4 The Mutation Station

Your biology question

How can a DNA change affect a protein or trait?

Build an exhibit

Make a before-and-after sequence strip and a chain model. Connect the DNA change to the protein and cell effect. You may use the documented HBB example or a clearly marked hypothetical example.

Four biological features to explain

- Original DNA sequence
- Changed DNA sequence
- Protein consequence
- Cell or trait consequence

Every exhibit needs

- Four accurate facts in your own words, linked to two traceable sources. The reference card may count as one source.
- A handmade model with four labels that explain functions or meanings. Use arrows when showing movement or change.
- A readable museum card with a creative title, four facts, a 3–5 sentence scientific explanation, and a clearly marked 1–2 sentence fictional backstory or warning.
- A completed research sheet or assigned paper. Both partners can explain the science.

Check your science

Do not imply that one variant always causes the same disease severity or that mutations are always harmful.

Discuss or write: Does every mutation change an amino acid?

Materials and scoring

Use paper, cardboard, clay, yarn, markers, tape, or clean recycled containers. Use craft models only. Project grade: 50 points. Individual work evaluation: 10 separate points. Artistic skill and purchased supplies do not determine your grade.

Station 5 The Diseased Tissue Gallery

Your biology question

How can changes in cells disrupt a tissue?

Build an exhibit

Use paper circles or clay to make side-by-side tissue models. Keep scale and viewpoint similar. Show a boundary and label where the cancer model crosses it.

Four biological features to explain

- Normal organized cell layer
- Controlled division annotation
- Abnormal crowded growth
- Invasion into adjacent tissue

Every exhibit needs

- Four accurate facts in your own words, linked to two traceable sources. The reference card may count as one source.
- A handmade model with four labels that explain functions or meanings. Use arrows when showing movement or change.
- A readable museum card with a creative title, four facts, a 3–5 sentence scientific explanation, and a clearly marked 1–2 sentence fictional backstory or warning.
- A completed research sheet or assigned paper. Both partners can explain the science.

Check your science

This model simplifies one solid-tumor example. Not all cancers form solid tumors, and a craft model cannot diagnose disease.

Discuss or write: Does every tumor invade nearby tissue?

Materials and scoring

Use paper, cardboard, clay, yarn, markers, tape, or clean recycled containers. Use craft models only. Project grade: 50 points. Individual work evaluation: 10 separate points. Artistic skill and purchased supplies do not determine your grade.

Station 6 The Cell Death Cemetery

Your biology question

How do apoptosis and necrosis differ?

Build an exhibit

Make two short sequences of paper cells on a cemetery base. Use arrows to show the changes. Keep ghost decorations separate from cell labels.

Four biological features to explain

- Apoptotic cell shrinkage
- Membrane-enclosed fragments
- Necrotic cell swelling
- Rupture and leaking contents

Every exhibit needs

- Four accurate facts in your own words, linked to two traceable sources. The reference card may count as one source.
- A handmade model with four labels that explain functions or meanings. Use arrows when showing movement or change.
- A readable museum card with a creative title, four facts, a 3–5 sentence scientific explanation, and a clearly marked 1–2 sentence fictional backstory or warning.
- A completed research sheet or assigned paper. Both partners can explain the science.

Check your science

This is a basic contrast. Some necrotic cell-death pathways are regulated, so avoid claiming all necrosis is unregulated.

Discuss or write: Why can membrane rupture affect neighboring tissue?

Materials and scoring

Use paper, cardboard, clay, yarn, markers, tape, or clean recycled containers. Use craft models only. Project grade: 50 points. Individual work evaluation: 10 separate points. Artistic skill and purchased supplies do not determine your grade.

Station 7 The Carnivorous Greenhouse

Your biology question

Why do some photosynthetic plants capture prey?

Build an exhibit

Build a paper pitcher plant with a smooth inner surface and a digestive region near the bottom. Add a photosynthesis annotation and explain two trap-related adaptations.

Four biological features to explain

- Photosynthetic leaf surface
- Prey trap
- Digestive region
- Nutrient uptake annotation

Every exhibit needs

- Four accurate facts in your own words, linked to two traceable sources. The reference card may count as one source.
- A handmade model with four labels that explain functions or meanings. Use arrows when showing movement or change.
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Check your science

A plant does not develop a new trap because it decides it needs one. Label imaginary teeth or movement as fictional.

Discuss or write: Why does capturing insects not replace photosynthesis?

Materials and scoring

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Station 8 The Biological Ooze Collection

Your biology question

How do materials outside cells support living systems?

Build an exhibit

Choose ONE material. Use yarn for matrix fibers, paper cells, and a clear sealed plastic container. Colorless tissue paper can represent water without making real slime.

Four biological features to explain

- Cells that produce or occupy the material
- Structural molecules
- Water or hydrated space
- Function such as support or attachment

Every exhibit needs

- Four accurate facts in your own words, linked to two traceable sources. The reference card may count as one source.
- A handmade model with four labels that explain functions or meanings. Use arrows when showing movement or change.
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- A completed research sheet or assigned paper. Both partners can explain the science.

Check your science

A container of decorative slime alone does not demonstrate biology. Explain what each material represents. No bodily fluids or live cultures.

Discuss or write: Are mucus, biofilm, and animal extracellular matrix the same thing?

Materials and scoring

Use paper, cardboard, clay, yarn, markers, tape, or clean recycled containers. Use craft models only. Project grade: 50 points. Individual work evaluation: 10 separate points. Artistic skill and purchased supplies do not determine your grade.

Station 9 Nature's Monsters

Your biology question

How does an unusual adaptation help a real organism survive or reproduce?

Build an exhibit

Make a paper fish with a hinged mouth and a clay or paper isopod inside. Use arrows to connect attachment and feeding to the effect on the fish. Add four explained labels.

Four biological features to explain

- Fish host and mouth
- Attached isopod
- Attachment legs
- Feeding site and effect on host

Every exhibit needs

- Four accurate facts in your own words, linked to two traceable sources. The reference card may count as one source.
- A handmade model with four labels that explain functions or meanings. Use arrows when showing movement or change.
- A readable museum card with a creative title, four facts, a 3–5 sentence scientific explanation, and a clearly marked 1–2 sentence fictional backstory or warning.
- A completed research sheet or assigned paper. Both partners can explain the science.

Check your science

"Monster" is a theme, not a scientific group. These organisms are not evil. Do not imply that all parasites replace tongues or that organisms choose to evolve traits. Mark invented behavior as fiction.

Discuss or write: Why is this relationship parasitism rather than mutualism?

Other organism choices

Investigate a deep-sea anglerfish or parasitoid wasp, or propose another real organism for teacher approval. Choose one organism and adapt all four labels to it. Use the reference card's linked readings to begin.

Materials and scoring

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