



## Plant Cells

### **What I Will Be Learning In This Mastery Badge:**

In this master badge we will extend our understanding of cells by looking at plant cells. We will also learn new organelles and how to distinguish between plant and animal cells.

### **What This Packet Includes:**

It is important that you complete all aspects of this packet so that you gain the knowledge and skills that we are working on.

#### **I. Discovering Lab**

A discovering lab is a fun, introductory lab, where we discover the knowledge on our own.

#### **II. Video Instruction**

You will watch a video presented by Mr. Bertoch, and answer questions about it.

#### **III. Literacy Practice**

Reading and writing are critical life skills, and also very important to science. You will read the assigned article and complete a writing prompt.

#### **IV. Applying Lab**

An applying lab is how you pass off the Mastery Badge. It serves as the quiz. It is a hands on demonstration that you have mastered the skills and content of this badge.

### **Key Things We Will Learn In This Mastery Badge**

Some of the most important things we will learn in this mastery badge:

- Cell Review
- How are plants and animals different?
- How these differences extend down to the cellular level.
- More Parts of Cells
  - Cell Wall
  - Chloroplasts - Why plants are green
- How plant vacuoles are different from animal vacuoles.

Name: \_\_\_\_\_

Date: \_\_\_\_\_



# Discovering Lab

## Learning Through Hands On Activities



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### Activity: Discovering How Plants Are Different From Animals

**Directions:** You will be studying living things to learn how they are alike, and how they are different.



Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment

**Goal:** To learn as much as you can about how plant and animal cells are different.

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### All Living Things Are Made of Cells But Not All Cells Are Alike

Last week we learned that all living things are made up of cells. However, not all cells are alike. In this lab you will examine the differences between plants and animals.

### Part I: Discovering Plants And Animals

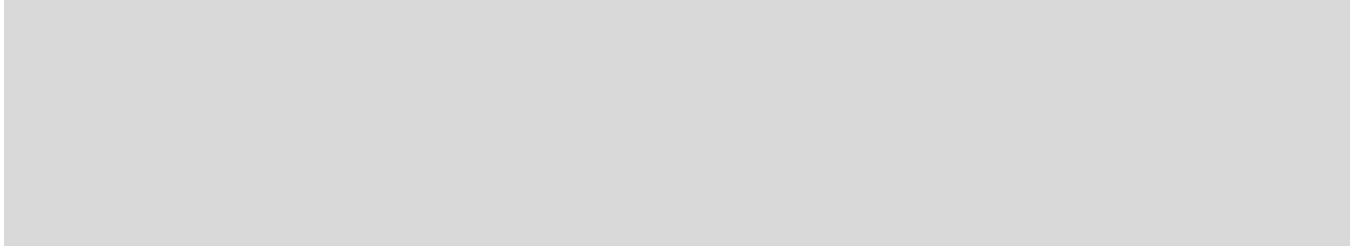
Go outside (with adult permission) and observe four animals and four plant samples. Your animal samples can include family members (humans are a type of animal), pets, worms, birds, and insects.

<b>Specimen 1:</b> What type of animal or plant did you observe?	Describe what you observed. Include details about how it moves, how it feels, and so forth.
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<b>Specimen 2:</b> What type of animal or plant did you observe?	Describe what you observed. Include details about how it moves, how it feels, and so forth.
<b>Specimen 3:</b> What type of animal or plant did you observe?	Describe what you observed. Include details about how it moves, how it feels, and so forth.
<b>Specimen 4:</b> What type of animal or plant did you observe?	Describe what you observed. Include details about how it moves, how it feels, and so forth.
<b>Specimen 5:</b> What type of animal or plant did you observe?	Describe what you observed. Include details about how it moves, how it feels, and so forth.
<b>Specimen 6:</b> What type of animal or plant did you observe?	Describe what you observed. Include details about how it moves, how it feels, and so forth.
<b>Specimen 7:</b> What type of animal or plant did you observe?	Describe what you observed. Include details about how it moves, how it feels, and so forth.
<b>Specimen 8:</b> What type of animal or plant did you observe?	Describe what you observed. Include details about how it moves, how it feels, and so forth.

## Part II: How Are Plants And Animals Alike? How Are They Different?

Look over your observations. Share some of your discoveries about how all plants and animals are alike.



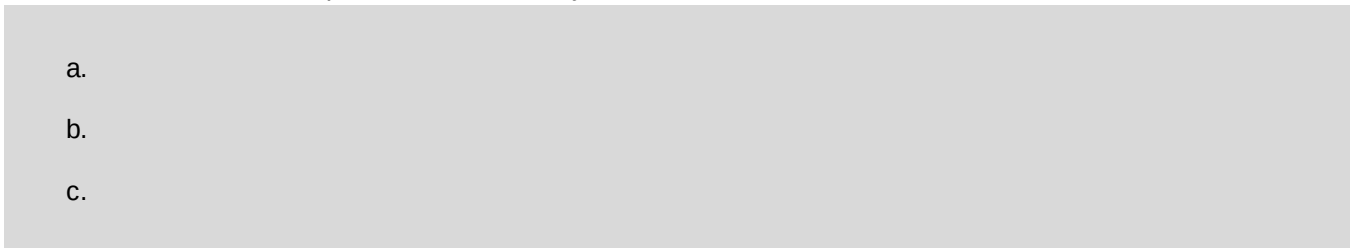
Now look for things that make a plant different from an animal. You know right away when you see a plant or an animal what it is. How do you tell the difference? How is a plant different than an animal?



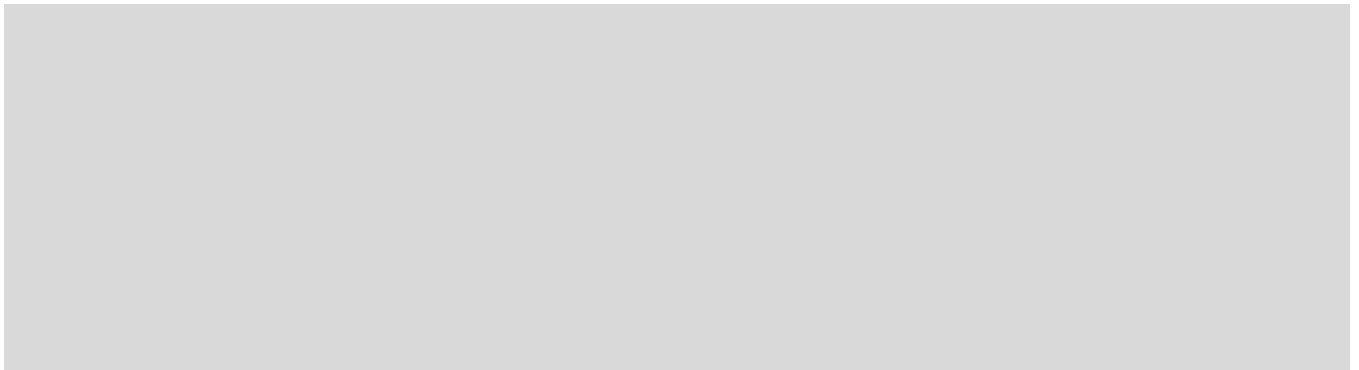
### Final Questions:

1. Review: What are the three parts of the cell theory?

- a.
- b.
- c.

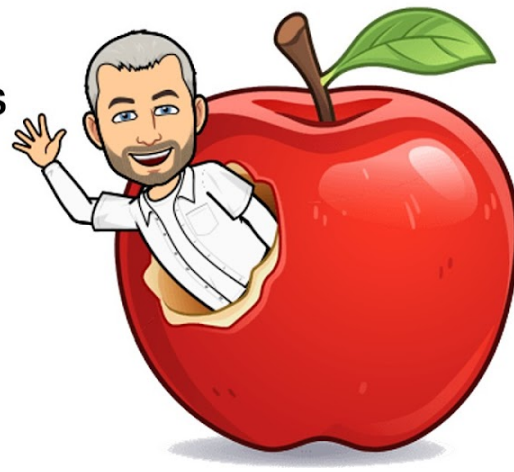


2. Why do you think plants are green? Later we will learn the actual reason. But based on what you already know, what is your best guess?



# Video Instruction

## Reviewing The Teacher's Instruction At My Own Pace



### Handsome Science Teacher One Take Videos

Now that you have completed the Discovering Lab let's watch the video that goes with it. In this video Mr. Bertoch will help connect the discoveries that you made during the lab to the broader concepts covered under this badge, and will also introduce the vocabulary that goes with these concept.

### Take Your Time, Pause And Rewind As needed

You are not in a hurry! It is more important that you understand the concepts in this video than that you finish it quickly. Take your time. If you don't understand something, pause the video and use the Internet or other resources to look up the concept that has you confused.

When you finish this video, you should have a good understanding of the concepts that have been taught. If you find yourself confused, rewind, and rewatch.

### The Video For This Mastery Badge Can Be Opened Using This QR Code

This Mastery Badge includes one video:



Watch The Assigned Science Video

Scan This QR Code To Open And Watch The Assigned Video For This Mastery Badge

### Check Point

Let's make sure that you really did take your time and watch the video carefully! Remember that it is important to hold yourself accountable to a high standard and to take pride in your own success as a learner.

**I watched the video carefully, and paused to look up anything I didn't understand.**

### Recording Your Learning

On the next page, you will record your learning and connect it to things you already know.

### Ten Things I Learned From This Video

A powerful tool to help you retain what you learn is to take notes. Notes give you something that you can look back at later, to quickly remind your brain reinforcing the memories for the concepts you have learned. Record ten things that you learned or that you perhaps already knew that were discussed in this video.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

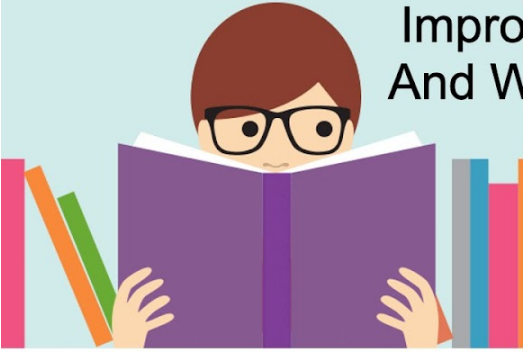
### Now, Let's Connect These New Concepts To Things You Already Knew

Another great way to help your brain retain new things is to connect these new concepts to other things that you already know. This gives your mind a place to store the new knowledge. Imagine that you are placing the new knowledge on a shelf in your brain next to facts that are already in there.

Write a paragraph explaining how the concepts taught in this video relate to things you already knew. There are no wrong answers. What are some things that you already knew that this video reminded you of?

# Literacy Practice

Improving Our Reading  
And Writing In Search of  
Knowledge



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## Activity: Reading And Writing About This Topic

**Directions:** Reading and writing are very important life skills. Good scientists must be able to learn through reading and communicate their own discoveries through writing.



Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

**Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment**

### 1. Practice Reading For Understanding

Read the article below **for understanding**. Reading for understanding means that you take your time and monitor your own learning. If you get to the end of a sentence and you do not remember or understand what you read, **re-read it**.

### 2. Practice Writing To Communicate

Complete the writing prompt below. Do your very best to write clearly so that others will understand what you are saying. This means using correct spelling, grammar, and writing, taking your time to think about the best ways to clearly communicate to others the main ideas that you are trying to get across to them.

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## Article:



Read The Assigned Article Carefully For Understanding.

<https://handsomescienceteacher.com/Online-science-classes-kids/the-discovery-of-cells-2/>

**Scan This QR Code To Open And Read The Article That Goes With This Mastery Badge**

### Check Point

Let's make sure that you really did read for understanding! Remember that it is important to hold yourself accountable to a high standard and to take pride in your own success as a learner.

**I Read For Understanding. I did not skim the article. I understood the material that the article discussed.**

### Quiz Time

Complete the quiz at the end of the article and post your score in the box below. Your goal is to get at least 75% on the quiz. Did you accomplish this goal?

%

### Now Let's Write To Communicate

Remember that when you write to communicate you are taking your time, and explaining the topic in a detailed and concise way. Don't rush! You are not in a hurry. Think about what you are going to say, and plan how you will say it. So that someone else who reads your paragraphs will understand them easily.

**Writing Prompt:** Write two paragraphs in your own words explaining how cells were first discovered.





Name: \_\_\_\_\_

Date: \_\_\_\_\_



# Applying Lab

## Proving That We Can Do It Ourselves



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### Activity: Drawing Plant & Animal Cells

**Directions:** Scientists make models of things to help them better understand them. In this lab, you are going to demonstrate your understanding of plant and animal cells by creating a diagram illustrating the differences.



Video Instructions Available For This Assignment. Watch this video to learn how to do this assignment, and why it is important.

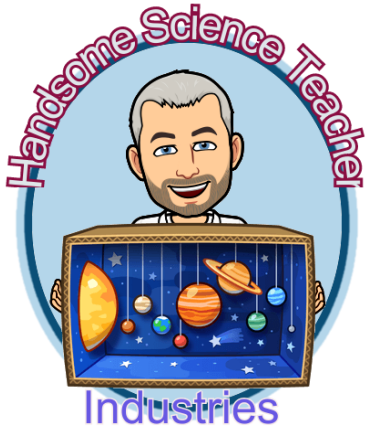
**Scan This QR Code To Watch Mr. Bertoch Give You Directions For This Assignment**

**Goal:** To demonstrate your understanding of how plant cells are different than animal cells by creating a model.

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Your model must include the following:

- One animal cell
  - Cell Membrane
  - Nucleus
  - Cytoplasm
  - Ribosomes
  - Endoplasmic Reticulum
  - Mighty Mitochondria
  - Vacuoles
  - Golgi Apparatus
- One plant cell
  - Cell Wall
  - Cell Membrane
  - Nucleus
  - Cytoplasm
  - Ribosomes
  - Endoplasmic Reticulum
  - Mighty Mitochondria
  - Chloroplast
  - Large Central Vacuole
  - Golgi Apparatus
- Must be labeled
- Must be in color
- Must include a description explaining how plant cells are different than animal cells.



**Congratulations! You Have Completed The Entire Mastery Badge**

You have worked really hard to earn this mastery badge. More importantly, you have worked hard to earn your knowledge!

**Time To Evaluate Your Work**

Check each of the following to evaluate your work:

1. Did you do every assignment?
2. Did you read the assigned article?
3. Did you watch the assigned video?
4. Did you answer all the questions using complete sentences?
5. Are your answers accurate?

**My Self-Evaluation:**

Based on the criteria listed above, I believe I have passed off this Mastery Badge because...  
(Be detailed and specific)

**Mastery Badge Counselor Evaluation:**

I have reviewed this student's work. Based on the criteria listed above I hereby certify that they have passed off the Mastery Badge because... (Be detailed and specific) Note: Any adult may serve as a Mastery Badge Counselor, so long as they are committed to ensuring the highest standards of excellence.

\_\_\_\_\_  
Student's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Mastery  
Badge Counselor

\_\_\_\_\_  
Date

## Certificate For Your Homeschool Records

The following certificate which has been awarded through self-evaluation by the student, and also certified by a mastery badge counselor proves that the student listed thereon has completed all the work and has mastered all the concepts for the specified topic.

**Keep this on file as evidence of your successful completion of this topic.**

If audited by the State, these certificates stand as evidence that you have worked on and successfully completed a rigorous science curriculum.



The certificate features a decorative border with a repeating floral pattern. On the left side, there is a circular logo with a cartoon man's face and the text "Handsome Science Teacher Industries". The main title "Mastery Badge Certificate" is centered in a large, bold, black font. Below the title, the topic "Topic: Plant Cells" is written in a purple font. A line for the student's name is provided. The central text states: "This certificate certifies that the person named above has completed all of the requirements to earn this Mastery Badge." At the bottom, there are two lines for signatures and dates, labeled "MASTERY BADGE COUNSELOR SIGNATURE" and "DATE AWARDED". A small version of the logo is in the bottom right corner.

**Mastery Badge Certificate**

Topic: Plant Cells

Student Name: \_\_\_\_\_

This certificate certifies that the person named above has completed all of the requirements to earn this Mastery Badge.

\_\_\_\_\_  
MASTERY BADGE COUNSELOR SIGNATURE

\_\_\_\_\_  
DATE AWARDED