

Intro to Cells, Cell Theory

- The 3 big principles of the cell theory.
 - All living organisms are composed of one or more cells.
 - The cell is the most basic unit of life.
 - All cells arise from pre-existing, living cells.

- Cells are the structural and functional units of all living organisms.
 - Humans have some 37.2 Trillion
 - Multi-cellular (More than one cell)
 - Protists, Archaea, and Bacteria have 1 - Unicellular

- Pasteur's experiments (1860's) showed that micro-organisms are even carried in the air.

- Both flasks boiled to sterilize
- Micro-organisms trapped in swan neck flask and broth does not spoil



- Spontaneous Origin: The belief that living organisms are produced / generated from non-living sources.

Do turtles come from the sand?



Do flies emerge from meat?

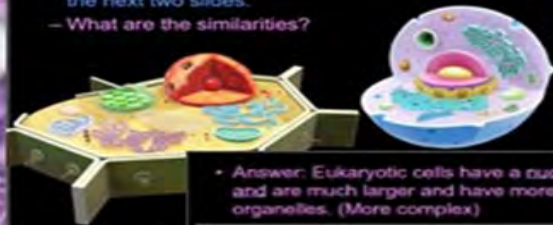


Do fish emerge from the mud in a pond?



- Questions? Plant Cell and Animal Cell

- What are differences you noticed between a plant cell and an animal cell - Study these pictures and the next two slides.
- What are the similarities?



- Answer: Eukaryotic cells have a nucleus, and are much larger and have more organelles. (More complex)

Form Follows Function

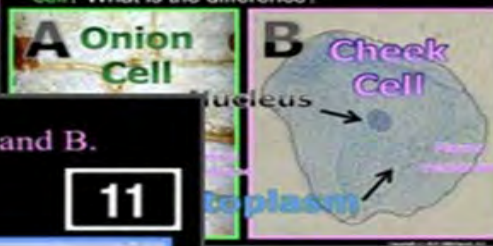
- Use the
- It has to do with the way they look and feel.

- Form Follows Function: Means that the form of a body part or structure is related to its function.

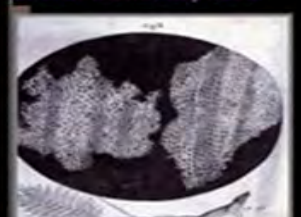
- The form or shape of a structure within an organism is correlated to the purpose or function of that structure.



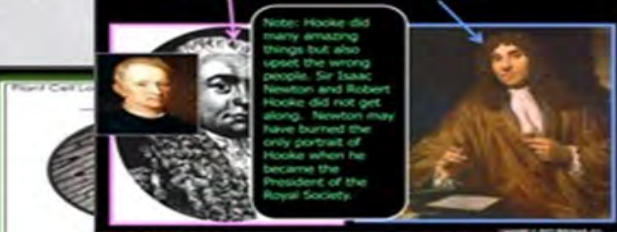
- Which is a cheek cell, and which is an onion cell? What is the difference?



Robert Hooke called them after monastery cells.



- Robert Hooke - First Cells
- Anton van Leeuwenhoek - First living cells



8 Lessons

Interactive Slideshows

• **Prokaryote**

No nucleus and no membrane bound organelles. Smaller, less complex, evolved first, always unicellular. DNA is circular. Single haploid chromosome. divide by binary fission (split).

• **Eukaryopolis. Optional Video (11 min)**
 – <https://www.youtube.com/watch?v=cj8dDTHGJB>
 Y&ab_channel=CrashCourse

Review and Full of Info

Robert Hooke

Robert Hooke is best known today for his contribution to the cellular structure of plants in Cork Cells. He coined the term "cells" as they looked like the rooms in a monastery. He was the first to use the word "cell" to describe the structure of plants in Cork Cells. He coined the term "cells" as they looked like the rooms in a monastery. He was the first to use the word "cell" to describe the structure of plants in Cork Cells.

Antonie van Leeuwenhoek

Antonie van Leeuwenhoek was a Dutch scientist who was the first to observe and describe microorganisms. He was the first to observe and describe microorganisms. He was the first to observe and describe microorganisms. He was the first to observe and describe microorganisms.

Matthias Schleiden

Matthias Schleiden was a German biologist who was the first to propose that all living things are made of cells. He was the first to propose that all living things are made of cells. He was the first to propose that all living things are made of cells. He was the first to propose that all living things are made of cells.

Rudolf Virchow

Rudolf Virchow was a German physician and pathologist who was the first to propose that all living things are made of cells. He was the first to propose that all living things are made of cells. He was the first to propose that all living things are made of cells. He was the first to propose that all living things are made of cells.

• Different cells include...

– Absorbing Cells such as those in your intestines aid in digestion.

• **Part 1 Review Game**

• Humans have some...

1. 100 Trillion cells

2. 100 Million vital cells

3. 100 Trillion cells

4. 100 Trillion cells

5. 100 Trillion cells

STUDY!

few important things before we begin.

The body is made of 37.2 trillion cells all working together.

Fungi Absorb

Animals Consume (eat)

eat or

Which organism below is multi-cellular, and which is unicellular?

Answers: **Unicellular**

Answers: **Multicellular**

Has a nucleus and many membrane bound organelles. This is a member of the Kingdom Protista

Tardigrades, known as water bears, are a multicellular phylum of eight-legged segmented micro-animals.

• **Schleiden and Schwann** improved the cell theory.

They observed both plants and animals are made of cells.

	Bacteria	Archaea	Eukarya			
Domain	Bacteria	Archaea	Protista	Plantae	Fungi	Animalia
Type	Prokaryotic (No nucleus)	Prokaryotic (No nucleus)	Eukaryotic (Nucleus)	Eukaryotic (Nucleus)	Eukaryotic (Nucleus)	Eukaryotic (Nucleus)

Prokaryotic

Eukaryotic

Nucleus

Follow Along Bundle

Part 1 Intro to Cell Biology



Questions for questions 1 and 2: What is the function of the nucleus? What is the function of the cytoplasm?

Write on all of the following lines for the...

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

Answer 1: Mitochondrion



Write on all of the following lines for the...



Characteristics of life

- 1. Movement
- 2. Growth
- 3. Reproduction
- 4. Response to the environment
- 5. Metabolism
- 6. Homeostasis
- 7. Adaptation
- 8. Evolution



Questions for questions 1 and 2: What is the function of the nucleus? What is the function of the cytoplasm?



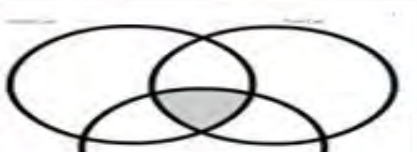
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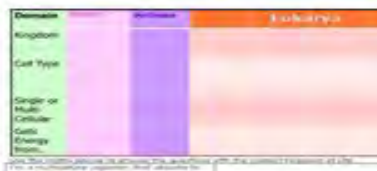
Form Follows Function



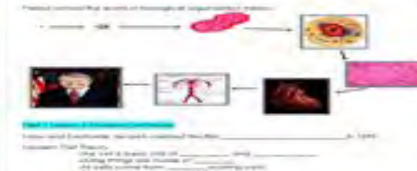
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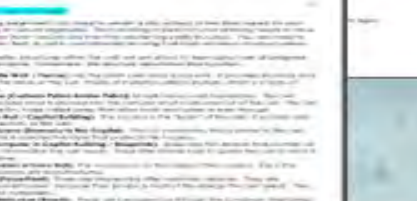
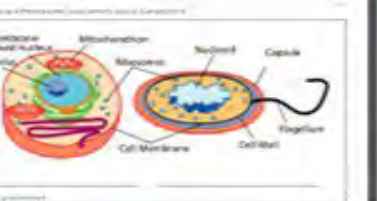
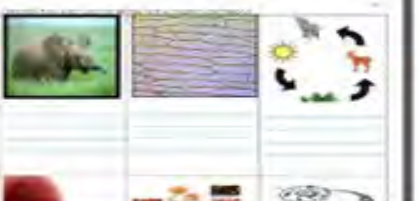
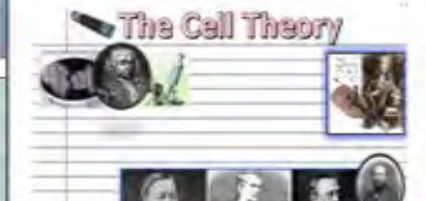
Questions for questions 1 and 2: What is the function of the nucleus? What is the function of the cytoplasm?



Questions for questions 1 and 2: What is the function of the nucleus? What is the function of the cytoplasm?



Questions for questions 1 and 2: What is the function of the nucleus? What is the function of the cytoplasm?



20 Pages

Activities, Assessments, Keys, and more all built in

- Until recently (1984), scientists believed all life got its energy from the sun. A whole new system existed on the ocean floor.

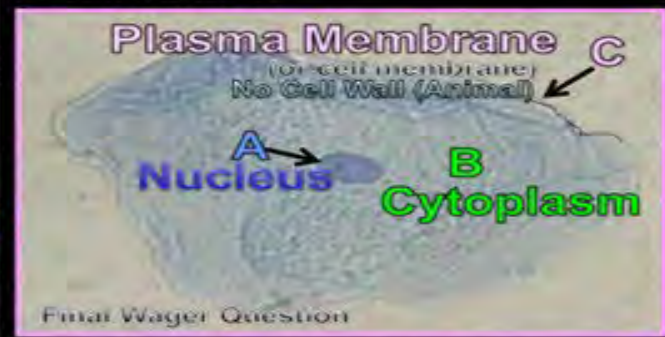


- Plant and animal cells both have all of the following except...

- A.) Nucleus to hold DNA
- B.) Cytoplasm as fluid.
- C.) Cell Membrane to keep materials in.
- D.) Chloroplast to make sugar from light.



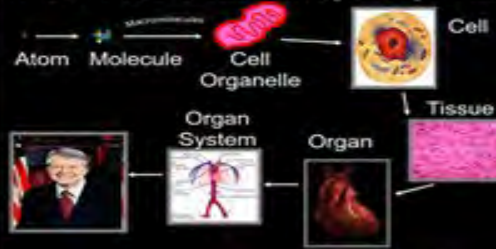
- Name A, B, and C?



- Organism: An organism that embodies the properties of life.
- Organisms are classified such as multicellular and unicellular microorganisms, bacteria, and archaea.



- Area of Focus: Levels of Biological Organization



asts
lls
ape
cu

- Is this a plant cell or animal cell?



Kingdoms of Life



- Francesco Redi – (1668)

- Life comes from pre existing life. Except...
- Abiogenesis: The first life came from non-living materials.

Abiogenesis



He believed flies spontaneously came from meat.
He covered one flask, left one open to air.
He observed flies laying eggs on meat.
He concluded that flies come from flies. Life comes from life.

Experimental Group

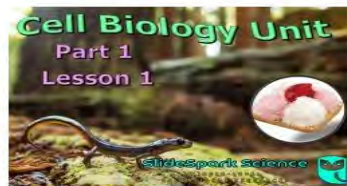
- Made of cells.



Part 1: Cell Biology Unit: 8 Lessons of 50 minutes and 20 Page Follow Along Work Bundle, What is Life, Sewer Lice / Raisins in Ginger Ale Activity, What is an Organism, Introduction to CHNOPS/SPONCH biologically Important Atoms/Molecules, % of CHNOPS graph in Animals, Characteristics of Living Things, Spontaneous Origin, Case Study of Francesco Redi Experiment, Case Study of Pasteur's Swan Necked Flask Experiment, Needs of Living Things, Cheek and Onion Cells Under the Microscope Activity, Differences between Plants and Animal Cells, Plant and Animal Cell Venn Diagram, Visual Tour of Types of Cells, Introduction to Forms Follows Function Concept, Forms Follows Function Object Activity, Multicellular vs. Unicellular, Kingdoms of Life Step by Step Diagram, Adding of Bacteria to Venn Diagram, Eukaryotic Cells vs. Prokaryotic Cells, Energy Flow of Life through Cells, Chemosynthesis, Deep Ocean Life at Hydrothermal Vents, Archaea, Domains and Kingdoms Diagram, Autotrophic vs. Heterotrophic, Levels of Biological Organization, Introduction to the Cell Theory, Microscope Creation by Hans and Zacharias Janssen, Robert Hooke, Anton van Leeuwenhoek, Schleiden and Schwann, Rudolf Virchow, Robert Remak, The Modern Cell Theory, Three Big Principles of the Cell Theory, Introduction to the Cellular Organelle Poster Project, Cell City Project, Students design a cell modeled after the Jobs and Functions of a City, Box Games, Crossword Puzzle, End Unit Assessment



Additional and Printables



Part 1 Lesson 1 Sewer Lice SPONCH



Part 1 Lesson 2 Characteristics of Life



Part 1 Lesson 3 Cheek and Onion



Part 1 Lesson 4 Form Function Archaea



Part 1 Lesson 5 Domains and Kingdoms



Part 1 Lesson 6 Cell Theory



Part 1 Lesson 7 Cell City Project



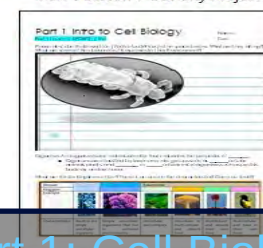
Part 1 Lesson 8 Review Game



Part 1 Lesson 9 Review Game Answers



Part 1 Work Bundle Answers



Part 1: Cell Biology Unit

SlideSpark Science



MIDDLE-LEVEL EDUCATIONAL RESOURCES

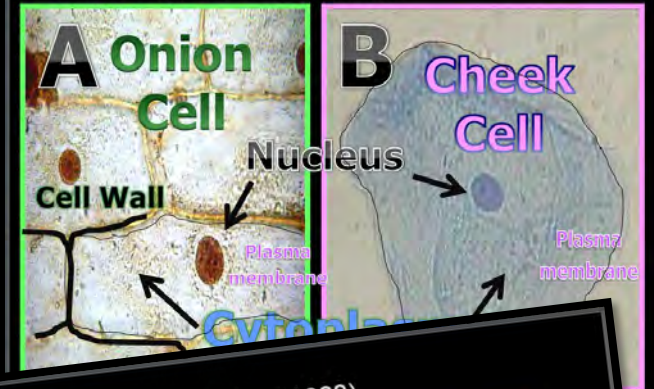
Interactive slideshows provide the roadmap for an amazing learning experience for students in grades 5-9. A Detailed set of work bundles chronologically follow the digital learning, providing a clear and intuitive roadmap to understanding. As the teacher or student advances through a slideshow, exciting hands-on activities, fantastic visuals, fill-in notes, review opportunities, video links, assessments, and much more are strategically placed throughout. Interactive learning unfolds step by step and supported by the work bundle to reach all types of learners. Everything you need to run to an amazing learning experience is provided in this one-of-a-kind science curriculum.

Each unit in the curriculum is designed to help teachers deliver the best possible learning experience for their students. Our interactive science slideshows are filled with questions and answers, important fill-in notes, hands-on activities, projects, games, built-in quizzes, and end of the unit assessment pieces. Students follow along with a work bundle that documents the entire learning experience for a fantastic review and assessment piece.

- **Organism:** An organism is any individual entity that embodies the properties of life.
- Organisms are classified by taxonomy into groups such as multicellular animals, plants, and fungi; or **unicellular microorganisms** such as **protists**, **bacteria**, and **archaea**.



- Which is a **cheek cell**, and which is an **onion cell**? What is the difference?



- **Francesco Redi – (1668)**
 - People believed **flies spontaneously came from meat**.
 - Redi covered one flask, left one open to air.
 - Observed flies laying eggs on meat.
 - Flies come from flies. **Life comes from life.**

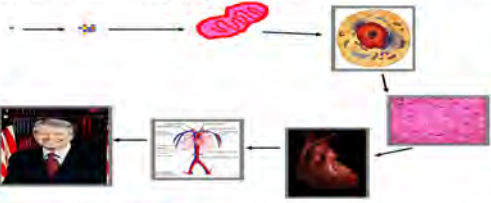


- The cell is the basic unit of structure and function.

**Form
Follows
Function**

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Please record the levels of biological organization below.



Part 1: Cell and Modern Cell Theory

Hans and Zacharias Jansen created the first _____ in 1595.

Modern Cell Theory

- The cell is basic unit of _____ and _____.
- Living things are made of _____.
- All cells come from _____ existing cells.
- Cells contain _____ information.
- All cells are similar in _____.
- Energy flow of _____ occurs in cells.

The 3 big principles of the cell theory.

- All living organisms are composed of one or more cells.
- The cell is the most basic unit of life.
- All cells arise from pre-existing, living cells.

There are two main groups of cells.

- Prokaryotic
- Eukaryotic

Prokaryotic cells

- No nuclear
- Genetic materials is _____ in cytoplasm
- No membrane-bound
- Most primitive type of cell (appeared about _____ billion years ago)

Eukaryotic Cells

- Nuclear membrane surrounding _____ material
- Numerous _____-bound organelles
- Appeared approximately _____ billion years ago
- C _____ internal structure

Red Slide Notes: Help students record important information in a fun and easy-to-understand way. Designed red-colored slides contain a few pieces of crucial information that students must record into their work bundle to complete the notes. Students will use these important notes throughout the work bundle.

Transport through the plasma membrane

Can be...

Can be...

Active

Passive

Which requires

Which requires

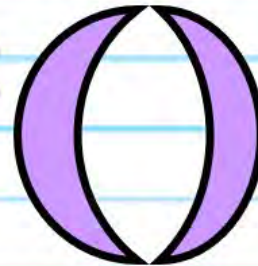
Energy

No Energy

and

and

**Transport
Proteins**



osmosis

Diffusion

To move materials from...

Regions of High concentrations to
regions of Low concentrations

To move materials from...

Regions of **Low** concentrations to
regions of **High** concentrations

(against gradient)

(with gradient)

The set-up of the slideshows are designed to make learning fun and interactive for students. With a mix of questions and answers, teachers can use these slides to get their students thinking and actively participating in their education. Plus, the answers are always revealed on the next slide, providing students with immediate feedback and helping teachers assess their understanding.

• Domains and Kingdoms

Domain	Bacteria	Archaea	Eukarya			
Kingdom	Bacteria	Archaea	Protista	Plantae	Fungi	Animalia
Cell Type	Prokaryotic (No nucleus)	Prokaryotic (No nucleus)	Eukaryotic (Nucleus)	Eukaryotic (Nucleus)	Eukaryotic (Nucleus)	Eukaryotic (Nucleus)
Single or Multi-Cellular	Single (Unicellular)	Single (Unicellular)	Single (Unicellular)	Multicellular	Multicellular	Multicellular
Gets Energy from..	Varies	Varies	Varies	Sunlight	Absorbs	Consumes Food

I'm a multicellular organism that can make its own food?

• Domains and Kingdoms

Domain	Bacteria	Archaea	Eukarya			
Kingdom	Bacteria	Archaea	Protista	Plantae	Fungi	Animalia
Cell Type				Eukaryotic (Nucleus)	Eukaryotic (Nucleus)	Eukaryotic (Nucleus)
Single or Multi-Cellular				Multicellular	Multicellular	Multicellular
Gets Energy from..				Sunlight Auto-trophic	Absorbs	Consumes Food

I'm a multicellular organism that can make its own food? **Plantae (Autotroph)**

Domain	Bacteria	Archaea	Eukarya
Kingdom			
Cell Type			
Single or Multi-Cellular			
Gets Energy from..			

Use the matrix above to answer the questions with the correct Kingdom of life

I'm a multicellular organism that absorbs its food?

I'm a single celled organism that has a nucleus?

I'm a multicellular organism that can make its own food?

I'm a unicellular organism without a nucleus?

I'm a multicellular organism that eats other organisms?

I'm a multicellular organism?

I'm an autotroph?

I'm only a heterotroph?

I don't have a cell wall?

I have a cell wall, but it's made of cellulose?

I have a cell wall made of peptidoglycan?

Next Slide

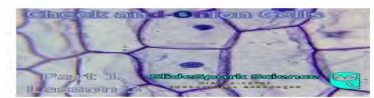
slideshow supports
Work Bundle

Lesson Planning

Daily lessons space exciting hands-on activities, red slide notes, video and academic links, projects, simulations, readings, built-in quizzes, and review opportunities throughout the slideshows. A typical day may have many different learning styles being targeted. Daily lesson planning becomes advancing through the slideshow roadmap the night before. Each lesson is roughly 50 minutes, but sometimes things can speed up or slow down. The best strategy is just to go at your classes own pace. The work bundle chronologically follows the interactive slideshow and you can always spend extra time assessing the quality of the writing within. If you don't quite finish a lesson, you can always pick it up the next day where you left off. The only real trick in timing is not starting a larger activity if you don't have the available time to complete. The slideshows have been designed to be a low stress, go at your classes own pace experience. Most activities are designed to be cost effective, using general materials that can be gathered from your local stores.



Additional and Printables



Follow Along Work Bundle

Each science unit comes with several work bundles. The bundles should be printed before the unit begins and distributed to the students on the first day of the unit. The work bundles will be due shortly after the completion of the unit. The work bundle will become a resource for the review games, crossword puzzles, and will be collected for assessment. The work bundle follows the entire learning experience and will be used every day. They are chronological to the lessons and provide places to record fill-in notes, answer questions, collect data, graph and much more. An answer version is provided that can be distributed to your support professionals. A digital version of the work bundle and some writable .pdf versions are provided if you want to go paperless. These work bundles are perfect for students looking for an easy and organized way to track their progress and stay on top of their studies.

Review Game / Assessments

This unit concludes with a review quiz. Answers are provided in slideshow form so students can self assess. A blank template sheet is provided in the work bundle. Students can benefit from working together in small table groups with quiet communication. You can decide if you want to allow the use of work bundles or not. These are a nice review opportunity and get the students looking through their work bundles for the answers.

A microscopic image of muscle tissue, showing large, pink, striated muscle fibers separated by lighter, connective tissue. A white grid is overlaid on the image. The text 'Review Game' is at the top, 'Part 1 Lesson 8' is on the left, and 'slidespark science' is on the right. At the bottom, it says 'MIDDLE-LEVEL EDUCATIONAL RESOURCES' and there is a logo on the right.

Review Game

Part 1
Lesson 8

slidespark science

MIDDLE-LEVEL
EDUCATIONAL RESOURCES

The logo for slidespark science, featuring a stylized blue and green shape that resembles a lowercase 'e' or a speech bubble.

20

Part 1 Review Game

Lesson 6

Name: _____

Due today _____

Score ____ / 100

1-10 = 5 pts * = bonus = 1 pt.
 (Secretly write row in correct space *1 pt)
 First Question = 5 pt wager

IT CAME FROM THE SEWER	[1] ADVE	LEVEL UP	SCHEDULE ON TIME	CELL BLOCK (Sewer) (Library)
1)	6)	11)	16)	*21)
2)	7)	12)	17)	*22)
3)	8)	13)	18)	*23)
4)	9)	14)	19)	*24)
5)	10)	15)	20)	*25)

First Question Wager: ____ / Answer: _____

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Part 1 Review Game

1 = 10 = 10 pts.
 (secretly write owl in correct space + 1 pt)
 Final Question = 5 pt wager

Name: _____
 Date Today _____
 Score ____ / 100

IT CAME FROM THE SEWER	[IS ALIVE]	LEVEL-UP	SCHED ON TIME	CELL BLOCK Some words 1st mon.
1) LETTER E	6) ENERGY, OXYGEN, WATER, MINERALS	11) A=MULTI CELLULAR B=UNICELLULAR	16) Rudolf Wirtchow	*21) WOLVERINE
2) CARBON	7) A=PLANT B=ANIMAL	12) STRUCTURAL FUNCTIONAL	17) SCHWANN SKELETON	*22) SHAWSHANK REDEMPTION
3) LIFE ARIOSGENESIS	8) LETTER D	13) CELL ORGANELLE CELL TISSUE ORGAN	18) LETTER O	*23) DEATH STAIN
4) FRANCISCO RED 1.668	9) SPERM and EGG	14) Anton van Leeuwenhoek	19) PROKARYOTIC EUKARYOTIC	*24) ALADDIN
5) LOUIS PASTEUR	10) LETTER C	15) ROBERT HOOKE	20) All Prokaryotic (prokaryotes) about 3.8 billion years ago. All Eukaryotic (eukaryotes) appear 2.2 billion years ago!	*25) THE COUNT OF MONTE CRISTO

Final Question Wager ____ / 5. Answer: A=NUCLEUS, B=CYTOPLASM, C=CELL PLASMA

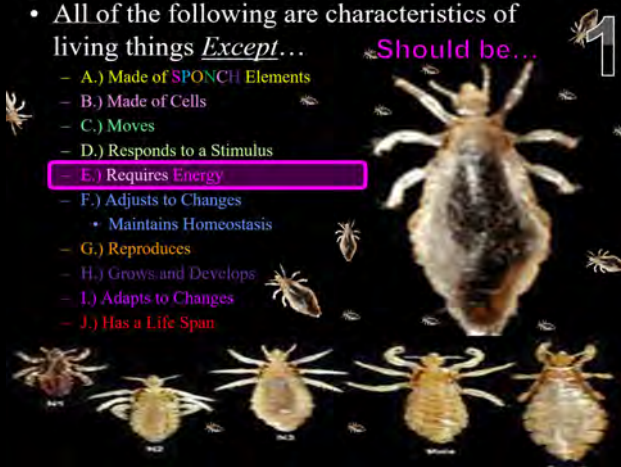
MEMBRANE

Cellular Biology Review Game Answer Version

Part 1
Lesson 9

Slidespark Science
HIGHER LEVEL
EDUCATIONAL RESOURCES

- All of the following are characteristics of living things Except... **Should be...**
- A.) Made of SPONCH Elements
- B.) Made of Cells
- C.) Moves
- D.) Responds to a Stimulus
- **E.) Requires Energy**
- F.) Adjusts to Changes
 - Maintains Homeostasis
- G.) Reproduces
- H.) Grows and Develops
- I.) Adapts to Changes
- J.) Has a Life Span

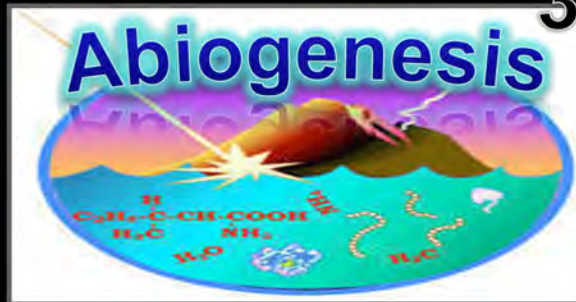


- This SPONCH element is considered by many to be the duct tape of life
- It holds everything together and makes up about 18.5% of animals.

CARBON C

- Life comes from pre existing life. **Except...**
- **Abiogenesis:** The first life came from non-living materials.

3

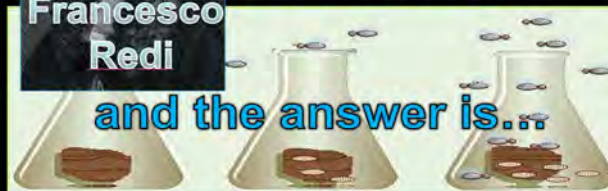


- This experiment was created in 1668 by **Francesco Redi** that helped disprove spontaneous origin.



flies spontaneously came from meat.
flask, left one open to air.
laying eggs on meat.
flies. Life comes from life.

4



- **Louis Pasteur's** experiments (1860' s) showed that micro-organisms are even carried in the air.

- Both flasks boiled to sterilize
- Open to air (swan neck)

Micro-organisms trapped in swan
and broth does not spoil.

5



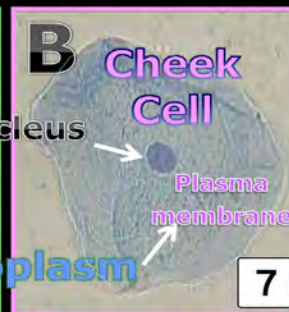
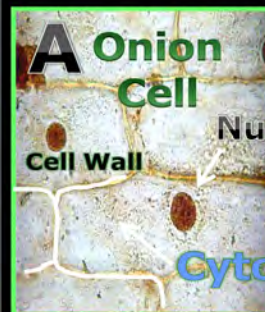
and the answer is...

- Living things need...
- **Energy** Supplied by the sun (most of the time) and stored in food.
- **Oxygen** To burn the food in cells. (Respiration)
- **Water** To keep things moving in and out of cells. (Universal Solvent)
- **Minerals** For proper chemical balance.

6



- Which is a cheek cell, and which is an onion cell?



7

- Plant and animal cells both have all of the following except...

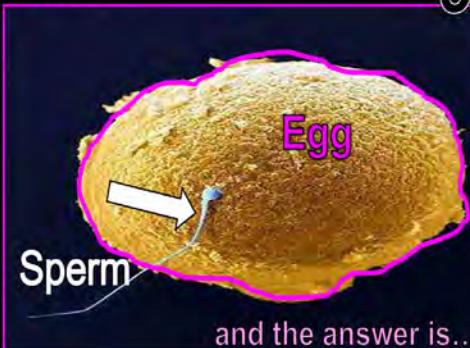
- A.) Nucleus to hold DNA
- B.) Cytoplasm as fluid.
- C.) Cell Membrane to keep materials in.
- D.) Chloroplast to make sugar from light.**

8



- Life comes from life. Name these two sex cells?

9



- Humans have some...
 - A.) 7,000 Cells
 - B.) 1 Million total cells
 - C.) 30-37 Trillion cells.
 - D.) 876 Quintillion cells
 - E.) We are not made of tr

10



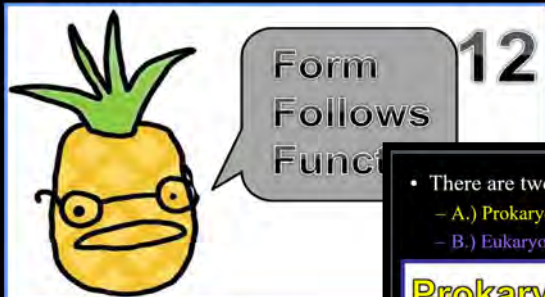
and the answer is...

- Use the terms from class to describe A and B.
 - It has to do with how many cells it has.

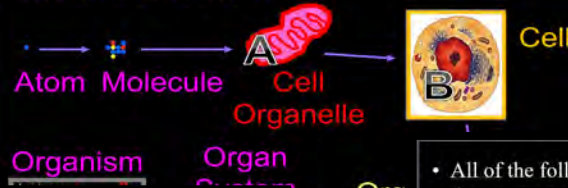
11



- Cells are the structural and functional units of all living organisms.



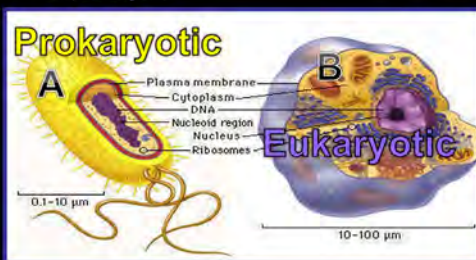
- Name, A, B, C, and D?



Org
D

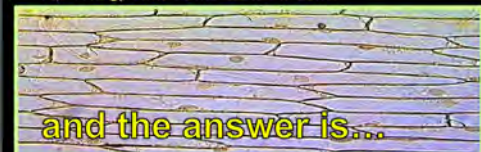
- There are two main groups of cells.
 - A.) Prokaryotic
 - B.) Eukaryotic

19



- All of the following are part of the modern cell theory except?
 - A.) -Living things are made of cells.
 - B.) -All cells come from pre-existing cells.
 - C.) -Cells contain genetic information.
 - D.) -All cells are different in composition.
 - E.) -Energy flow of life occurs in cells.

18



and the answer is...

- Robert Hooke
 - Named first cells.
 - Advanced early microscopes

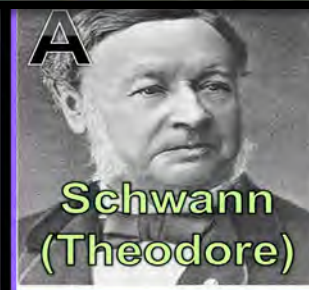


Robert Remak
Virchow may have taken from...



16

Bonus 1pt



17

- Anton van Leeuwenhoek
 - Looked at the first living cells.
 - Advanced early microscopes and



14

I create the modern

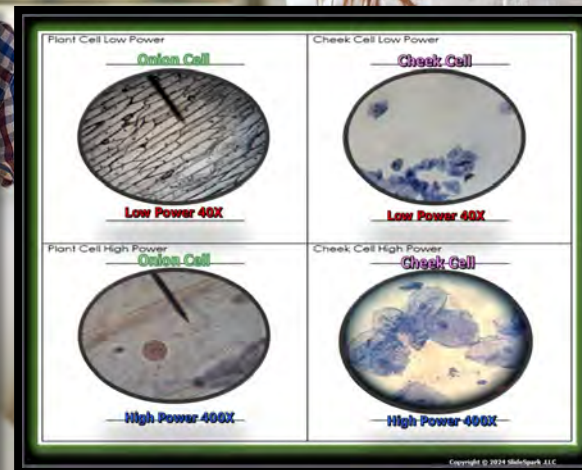
Activities / Labs

Our science activities are designed to help students explore and understand complex scientific concepts in an engaging and interactive way. Each science unit includes several hands-on activities that encourage students to collect data and think critically about the world around them. Our easy-to-follow slideshow provides detailed visuals, simple materials, and clear directions, making it easy for both students and teachers to navigate the activities.

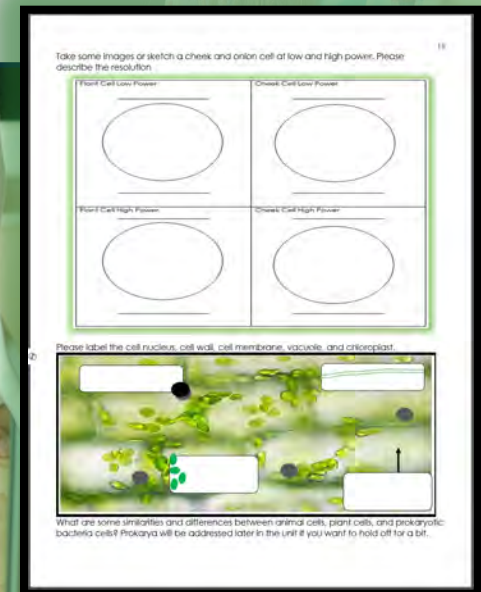
- Activity! Looking at plant cells.
- Procedure
 - Use **you** fingernails to separate one layer of onion from the bulb.
 - Place thin layer on glass slide.
 - Add one drop of water to onion layer.
 - Gently place cover slip on top of drop.
 - Observe and make a sketch of what you see using a Petri dish to make a circle.



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Built-in Assessment

Each unit contains several built-in assessment questions that students answer in their work bundle. With the question revealed before the answer, the teacher can easily call on individual students or table groups to respond. These provide an effective and efficient way for teachers to assess student learning.

- The 3 big principles of the cell theory.
 - All living organisms are composed of one or more
 - The cell is the most basic unit of
 - All cells arise from , living cells.



- The 3 big principles of the cell theory.
 - All living organisms are composed of one or more cells.
 - The cell is the most basic unit of
 - All cells arise from , living cells.



Unit 1 Lesson 6 Modern Cell Theory

Hans and Zacharias Janewen created the first _____ in 1595.

Modern Cell Theory

- The cell is basic unit of _____ and _____
- Living things are made of _____
- All cells come from _____ existing cells.
- Cells contain _____ information
- All cells are similar in _____
- Energy flow of _____ occurs in cells

The 3 big principles of cell theory.

- All living organisms are composed of one or more _____
- The cell is the most basic unit of _____
- All cells arise from _____ living cells.

There are two main groups of cells.

- ☐ Pro _____
- ☐ Eukaryotic.

Prokaryotic cells:

- No nuclear _____
- Genetic materials are _____ in cytoplasm
- No membrane-bound _____
- Most primitive type of cell (appeared about _____ billion years ago)

Eukaryotic Cells:

- Nuclear membrane surrounding _____ material
- Numerous _____-bound organelles
- Appeared approximately _____ billion years ago
- _____ internal structure



Questions in Work Bundle

Built-in Video Links

Our science education program is designed with the modern, multimedia learner in mind, and our video links are a perfect complement to our educational materials. These short clips are embedded into the slideshow at just the right places for a fantastic review. Whether you're studying biology, chemistry or physics, our video links are an excellent way to reinforce your learning.

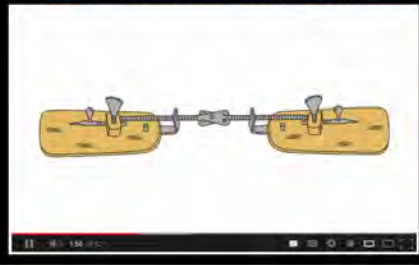
- Video! Introduction to the Characteristics of Life... Maybe.

– <http://www.youtube.com/watch?v=juxLuo-sH6M>



- The Wacky History of the Cell Theory

– <http://www.youtube.com/watch?v=4OpByIwH9DU>



- Redi Experiment Time Lapse.

– https://www.youtube.com/watch?v=zxTt_Rk0AuU



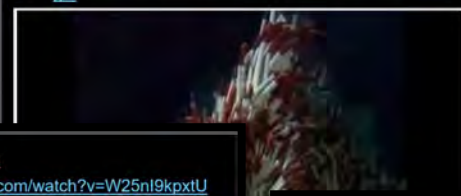
- Video Link! Archaea

– <http://www.youtube.com/watch?v=W25nI9kpxtU>



- Video Link! Hydrothermal Vents.

– <https://www.youtube.com/watch?v=D69hGvCsWqA>



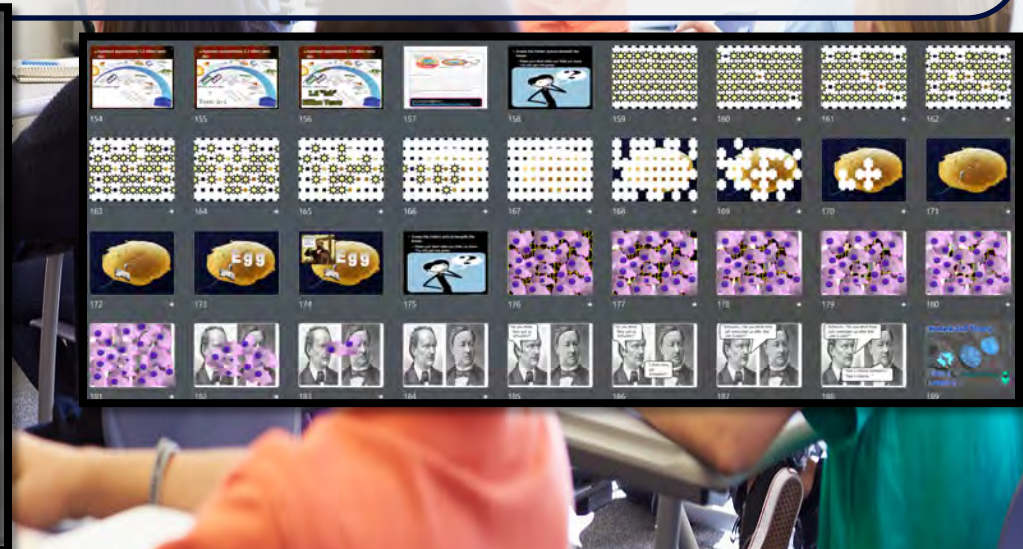
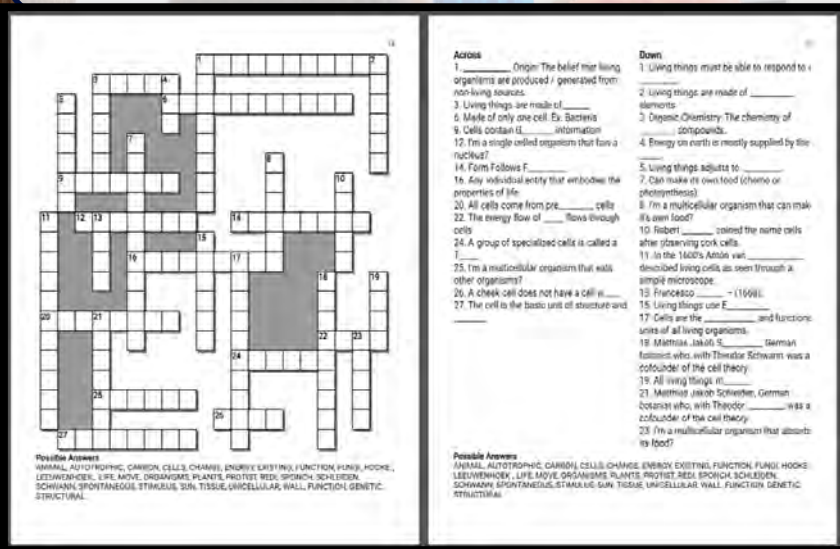
- 3D Tour of a Eukaryotic Cell (Shorter)

– https://www.youtube.com/watch?v=rKS-vvhMV8E&ab_channel=NucleusMedicalMedia



Games and Review

Games are a fantastic way for students to learn scientific concepts while having fun. We incorporate a variety of games into our curriculum, including interactive quizzes and puzzles that challenge students to think critically about the material. Our Hidden Box Games are a particularly popular feature, which conclude each unit by revealing a picture related to the topic. Students try to guess what the picture might be, making learning an engaging experience.



- 25 of the 92 naturally occurring elements are essential for life.

- SPONCH elements are the most biologically important.



- 25 of the 92 naturally occurring elements are essential for life.

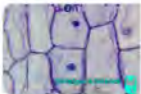
- SPONCH elements are the most biologically important.

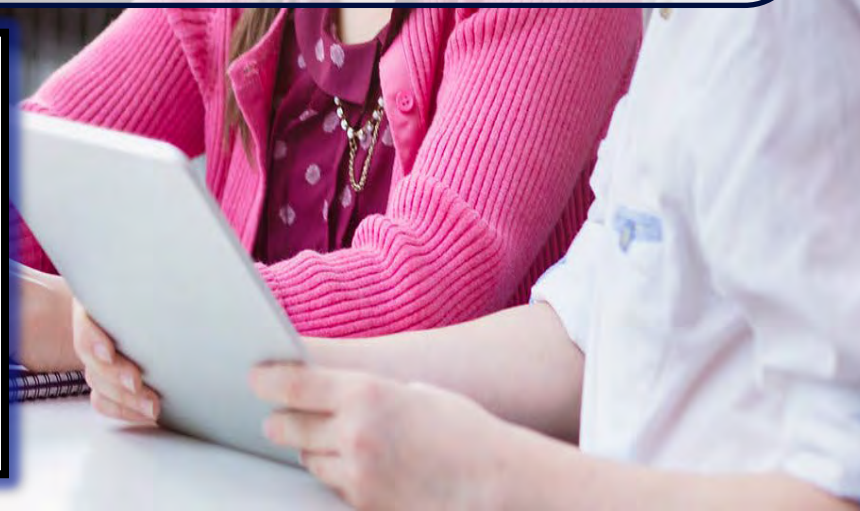


The Owl - Each Part of the slideshow has a small clipart Owl hiding somewhere in a slide. The owl is incredibly small and blended into just the right slide. If a student spots the “Owl” they can raise their hand high into the air. When you call upon the student they can say “Owl” and be the student who spotted the Owl. Each PowerPoint Review game also has an owl hiding in it worth one point. Remind the students that they secretly write the word “owl” rather than yell it out during the review games. The Owl search is not included in every lesson. A slide at the beginning of the lesson will alert the students that today is an “Owl” day. Everything arrives editable so delete if you wish. You will find that some students will become the expert owl hunters in the group.

Google Classroom Compatible

Our digital learning programs are designed for students to learn science in a flexible and engaging environment. Our Google Classroom-compatible units provide a seamless learning experience whether your students are in the classroom or learning from home. Our step-by-step slideshows and student work bundles ensure that students can complete their work independently. The PowerPoint Slideshows and step-by-step work bundles can easily be loaded to your Google Drive and posted in your Google Classroom. These are great for daily lessons, students who need additional time, and for a student who was absent and looking to catch up in their work bundle.

	<u>Part 1 Lesson 3 Cheek and ...</u> Google Slides		<u>Part 1 Lesson 2 Characterist...</u> Google Slides
	<u>Part 1 Lesson 6 Cell Theory</u> Google Slides		<u>Part 1 Lesson 5 Domains an...</u> Google Slides
	<u>Part 1 Lesson 4 Form Functi...</u> Google Slides		<u>Part 1 Lesson 1 Sewer Lice S...</u> Google Slides
	<u>Part 1 Lesson 7 Cell City Pro...</u> Google Slides		<u>Part 1 Lesson 8 Review Game</u> Google Slides



Built-in Questions and Assessments

Many slides will have relevant terms covered with a box. When advancing through the slideshow an outline around the box will glow with a bright color. The next slide will make the box disappear. These slides allow the teacher to call upon students or table groups / check for understanding before advancing. The team at SlideSpark has found that using this technique helps to keep the students focused. Constantly recalling and reviewing information learned is necessary when moving through a large unit. The slideshows don't just give everything away for free. Students should be able to demonstrate knowledge before moving on. Some slides have full questions instead of just covered terms. In these slides, the teacher should encourage small group work. The teacher can then call upon one or two groups to share before advancing the slide. The next slide will always reveal the correct answer.

Please label the cell **nucleus**, **cell wall**, **cell membrane**, **vacuole**, and **chloroplast**.



Please label the cell **nucleus**, **cell wall**, **cell membrane**, **vacuole**, and **chloroplast**.



Please label the cell **nucleus**, **cell wall**, **cell membrane**, **vacuole**, and **chloroplast**.



What are some similarities and differences between animal cells, plant cells, and prokaryotic bacteria cells? Prokaryota will be addressed later in the unit if you want to hold off for a bit.

Cellular Biology Unit

Cell Biology Unit



30 Lessons 3 Parts. (8th-10th Most Difficult) Part 1 is an Introduction to Cells and contains 8 Lessons and 20 Page Work Bundle. Part 2 about Cell Transport and contains 7 Lessons and 17 Page Work Bundle. Part 3 explores Cellular Organelles and has 5 Lessons and 13 Page Work Bundle. Part 4 Finishes exploring Cell Organelles and wrap up. It contains 11 Lessons and 18 Page Work Bundle.

Part 1: Cell Biology Unit: 8 Lessons of 50 minutes and 20 Page Follow Along Work Bundle, What is Life, Sewer Lice / Raisins in Ginger Ale Activity, What is an Organism, Introduction to CHNOPS/SPONCH biologically Important Atoms/Molecules, % of CHNOPS graph in Animals, Characteristics of Living Things, Spontaneous Origin, Case Study of Francesco Redi Experiment, Case Study of Pasteur's Swan Necked Flask Experiment, Needs of Living Things, Cheek and Onion Cells Under the Microscope Activity, Differences between Plants and Animal Cells, Plant and Animal Cell Venn Diagram, Visual Tour of Types of Cells, Introduction to Forms Follows Function Concept, Forms Follows Function Object Activity, Multicellular vs. Unicellular, Kingdoms of Life Step by Step Diagram, Adding of Bacteria to Venn Diagram, Eukaryotic Cells vs. Prokaryotic Cells, Energy Flow of Life through Cells, Chemosynthesis, Deep Ocean Life at Hydrothermal Vents, Archaea, Domains and Kingdoms Diagram, Autotrophic vs. Heterotrophic, Levels of Biological Organization, Introduction to the Cell Theory, Microscope Creation by Hans and Zacharias Janssen, Robert Hooke, Anton van Leeuwenhoek, Schleiden and Schwann, Rudolf Virchow, Robert Remak, The Modern Cell Theory, Three Big Principles of the Cell Theory, Introduction to the Cellular Organelle Poster Project, Cell City Project, Students design a cell modeled after the Jobs and Functions of a City, Box Games, Crossword Puzzle, End Unit Assessment

Part 2: Cell Biology Unit: 7 Lessons of 50 minutes and 17 Page Follow Along Work Bundle Placing Eggs into Vinegar for Later in Unit, Surface Area to Volume Ratio, Why Surface Area Matters, Reasons for being multicellular, Explanation of Surface Area and Volume, Introduction to Diffusion, Beets in Bleach Lab Activity / Demonstration, Calculating Surface Area to Volume Ratio, Finding the % Bleach penetration into the Beets, How various cells increase their surface area to volume ratio, Set-Up for Gummy Bears in water, saltwater, vinegar, soda Lab in two Days, Potato Slices in Water vs. Salt Water Lab, Cytoplasm, Capsule Slime Layer in Bacteria and Need for good oral hygiene, Cell Wall, Functions of the Cell Wall, Set-up of Osmosis and Diffusion lab with Iodine Solution and Starch / Dialysis Tubing, Cell Membrane, Aquaporins, Phospholipid Bilayer, Hydrophilic vs. Hydrophobic, Transport Proteins, Polarity of the Phospholipid, Oil vs Water demo, Selectively Permeable, What might go in and out of a cell, Diffusion, Diffusion Demo, Bumper Boats Diffusion Activity, Visiting the Iodine and Starch Lab, Sketching Out the Dialysis Tubing, Osmosis, Calculating the % Change in Mass, Passive Transport, Permeable vs. Impermeable, Facilitated Diffusion, Active vs. Passive Transport with Visuals, Finding % Change of Gummy Bears placed in various Solutions, Hypertonic Solutions, Hypotonic Solutions, Isotonic Solutions, Built-In Visual Quiz, Cells Walls preventions in Lysis, Prefixes Visual Quiz, Why we can't drink Saltwater, Set-up Syrup in Dialysis Tubing Demo, Revisiting Potato Slice in Water and Salt Water and calculating % change in Mass, Visiting Eggs in Vinegar and explanation of what occurred, Find % change, Active Transport, Sodium Potassium Pump, Class Simulation of Active Transport, Cell Communication, Endocytosis, Phagocytosis, Class Engulfs a Particle Activity, Pinocytosis, Transmembrane Proteins Receptor Mediated Endocytosis, Exocytosis, Movement through a cell Flow Chart, Box Game Review, Crossword Puzzle, End Unit Assessment

[Parts 3 and 4: Cellular Organelles](#) Part 3: 8 Lessons of 50 minutes and 20 Page Follow Along Work Bundle, Special Functions of Cellular Organelles in a Cell, Nucleus, Functions of the Nucleus, Information Flow of Life, DNA-RNA-Proteins, Transcription, Translation, Important Role of Proteins, Chromosomes, Chromatin, Unwinding 6 feet of string Chromosome activity, Nuclear Membrane, Nucleolus, Ribosome Creation, Visuals Matching Activity, Nuclear Pores/Openings, Phospholipid bilayer, Nucleoplasm, Rough Endoplasmic Reticulum, The Lost Art of Maze Making Activity, Smooth Endoplasmic Reticulum, Ribosomes, Flow of Information Class Simulation to Music, Gene Expression, Review of Transcription and Translation, Protein Synthesis, Initiation, Step by Step Drawing Protein Synthesis, Elongation, Termination, Review of the Steps with Visuals, Importance of Protein in our Diet, Hormones, Golgi Apparatus, Cis Face, Trans Face, Build Golgi Body Fanny Packs Activity, Visual Review of the flow of molecules, Box Game Review, Crossword Puzzle, End Unit Assessment

[Parts 3 and 4: Cellular Organelles](#) Part 4: 11 Lessons of 50 minutes and 18 Page Follow Along Work Bundle Special Functions of Cellular Organelles in a Cell, Lysosomes, Function of Lysosomes and the Breakdown of Materials, Cytoskeleton, Microfilaments, Intermediate Filaments, Microtubules, Flagellum, Cilium, Centrioles, Role in Mitosis, Endosymbiotic Theory, Step by Step Visual, Mitochondria, Chloroplast, Optional Chromatography Activity to see Plastids in Leaves, Plastids, Thylakoids, Granum, Photosynthesis Equation, Learning the Equation with M&M's Activity, Description of Photosynthesis Main Parts, Video Options for Photosynthesis in more detail, Four Main Steps of Photosynthetic Process, Cellular Respiration, Foods Macronutrients, Mitochondria, Function of Mitochondria, Cristae, Learning the Respiration Equation, M&M's again as a manipulative, Blowing a balloon with Yeast Demo, Step by Step of Calvin Cycle, Review of Cellular Respiration, The Carbon Dioxide and Oxygen Balance of Life, Aerobic vs. Anaerobic Respiration, Fermentation, Fermentation Equation, Activity with Cabbage Indicator and Yeast, Venn Diagram of Anaerobic and Aerobic Respiration, Dangers of Botulism, Vacuoles, The Many Functions of Vacuoles, Turgid Pressure in Plants, Contractile Vacuoles, Name that Organelle Visual Quiz, Box Game Review, Crossword Puzzle, Unit Assessment

Cellular Biology Unit

- **Organism:** An organism is any individual entity that embodies the properties of life.
 - Organisms are classified by taxonomy into groups such as multicellular animals, plants, and fungi, or unicellular microorganisms such as prokaryotes, bacteria, and archaea.
- **Form Follows Function:** Means that the form of a body part or structure is related to its function.
 - The form or shape of a structure within an organism is correlated to the purpose or function of that structure.
- **Cellular Organelles:** A membrane-bound compartment or structure in a cell that performs a special function.
 - They **Support** **Manufacture** **Make** **Breakdown** **and Transport** **Materials** **Communicate** **within the cell.**
- **Answer:** Because lipids are nonpolar. They don't mix with water.
 - The membrane becomes a water proof barrier between two liquid areas.
- **Spontaneous** organisms are produced / generated from non-living sources.
 - Do flies emerge from meat?
 - Do turtles come from the sand?
 - Life comes from life.
- **DNA makes RNA, RNA has information to make proteins.**
- **Form Follows Function**
 - Answer: Eukaryotic cells have a nucleus, and are much larger and have more organelles. (More complex)
- **DNA (Double Strand)**
 - The RNA molecule (Single Strand)

30 Lessons of 50 minutes

With Follow Along Work Bundles

Part 1 Intro to Cell Biology

The Cell Theory

Form Follows Function

68 Pages

With Follow Along Work Bundles

68 Pages

Truly Interactive Slides

Schleiden and Schwann improved the cell theory.

They observed both plants and animals are made of cells.

The 3 big principles of the cell theory.

Surface Area to Volume Ratio with Beets

Golgi Apparatus

Venn Diagram

Diffusion

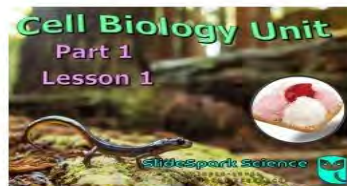
Facilitated Diffusion

Endoplasmic Reticulum

Part 1: Cell Biology Unit: 8 Lessons of 50 minutes and 20 Page Follow Along Work Bundle, What is Life, Sewer Lice / Raisins in Ginger Ale Activity, What is an Organism, Introduction to CHNOPS/SPONCH biologically Important Atoms/Molecules, % of CHNOPS graph in Animals, Characteristics of Living Things, Spontaneous Origin, Case Study of Francesco Redi Experiment, Case Study of Pasteur's Swan Necked Flask Experiment, Needs of Living Things, Cheek and Onion Cells Under the Microscope Activity, Differences between Plants and Animal Cells, Plant and Animal Cell Venn Diagram, Visual Tour of Types of Cells, Introduction to Forms Follows Function Concept, Forms Follows Function Object Activity, Multicellular vs. Unicellular, Kingdoms of Life Step by Step Diagram, Adding of Bacteria to Venn Diagram, Eukaryotic Cells vs. Prokaryotic Cells, Energy Flow of Life through Cells, Chemosynthesis, Deep Ocean Life at Hydrothermal Vents, Archaea, Domains and Kingdoms Diagram, Autotrophic vs. Heterotrophic, Levels of Biological Organization, Introduction to the Cell Theory, Microscope Creation by Hans and Zacharias Janssen, Robert Hooke, Anton van Leeuwenhoek, Schleiden and Schwann, Rudolf Virchow, Robert Remak, The Modern Cell Theory, Three Big Principles of the Cell Theory, Introduction to the Cellular Organelle Poster Project, Cell City Project, Students design a cell modeled after the Jobs and Functions of a City, Box Games, Crossword Puzzle, End Unit Assessment



Additional and Printables



Part 1 Lesson 1 Sewer Lice SPONCH



Part 1 Lesson 2 Characteristics of Life



Part 1 Lesson 3 Cheek and Onion



Part 1 Lesson 4 Form Function Archaea



Part 1 Lesson 5 Domains and Kingdoms



Part 1 Lesson 6 Cell Theory



Part 1 Lesson 7 Cell City Project



Part 1 Lesson 8 Review Game



Part 1 Lesson 9 Review Game Answers



Part 1 Work Bundle Answers



Part 1: Cell Biology Unit

Part 2: Cell Biology Unit: 7 Lessons of 50 minutes and 17 Page Follow Along Work Bundle Placing Eggs into Vinegar for Later in Unit, Surface Area to Volume Ratio, Why Surface Area Matters, Reasons for being multi-cellular, Explanation of Surface Area and Volume, Introduction to Diffusion, Beets in Bleach Lab Activity / Demonstration, Calculating Surface Area to Volume Ratio, Finding the % Bleach penetration into the Beets, How various cells increase their surface area to volume ratio, Set-Up for Gummy Bears in water, saltwater, vinegar, soda Lab in two Days, Potato Slices in Water vs. Salt Water Lab, Cytoplasm, Capsule Slime Layer in Bacteria and Need for good oral hygiene, Cell Wall, Functions of the Cell Wall, Set-up of Osmosis and Diffusion lab with Iodine Solution and Starch / Dialysis Tubing, Cell Membrane, Aquaporins, Phospholipid Bilayer, Hydrophilic vs. Hydrophobic, Transport Proteins, Polarity of the Phospholipid, Oil vs Water demo, Selectively Permeable, What might go in and out of a cell, Diffusion, Diffusion Demo, Bumper Boats Diffusion Activity, Visiting the Iodine and Starch Lab, Sketching Out the Dialysis Tubing, Osmosis, Calculating the % Change in Mass, Passive Transport, Permeable vs. Impermeable, Facilitated Diffusion, Active vs. Passive Transport with Visuals, Finding % Change of Gummy Bears placed in various Solutions, Hypertonic Solutions, Hypotonic Solutions, Isotonic Solutions, Built-In Visual Quiz, Cells Walls preventions in Lysis, Prefixes Visual Quiz, Why we can't drink Saltwater, Set-up Syrup in Dialysis Tubing Demo, Revisiting Potato Slice in Water and Salt Water and calculating % change in Mass, Visiting Eggs in Vinegar and explanation of what occurred, Find % change, Active Transport, Sodium Potassium Pump, Class Simulation of Active Transport, Cell Communication, Endocytosis, Phagocytosis, Class Engulfs a Particle Activity, Pinocytosis, Transmembrane Proteins Receptor Mediated Endocytosis, Exocytosis, Movement through a cell Flow Chart, Box Game Review, Crossword Puzzle, End Unit Assessment



Additional and Printables



Part 2 Lesson 1 Cell Membrane



Part 2 Lesson 2 Osmosis



Part 2 Lesson 3 Gummy Bear Lab



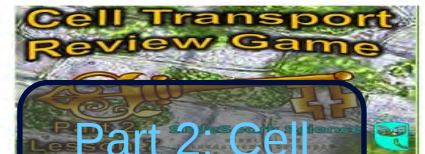
Part 2 Lesson 4 Extensions



Part 2 Lesson 5 Active Transport



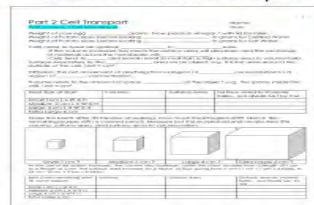
Part 2 Lesson 6 Review Game



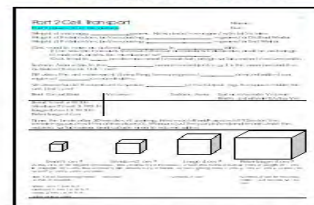
Part 2: Cell
Biology Unit



Part 2 Work Bundle Answers



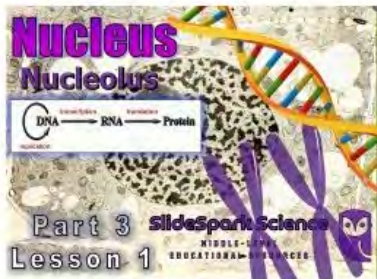
Part 2 Work Bundle Digital



Part 2 Work Bundle Print

Parts 3 and 4: Cellular Organelles Part 3: 8 Lessons of 50 minutes and 20 Page Follow Along Work Bundle, Special Functions of Cellular Organelles in a Cell, Nucleus, Functions of the Nucleus, Information Flow of Life, DNA-RNA-Proteins, Transcription, Translation, Important Role of Proteins, Chromosomes, Chromatin, Unwinding 6 feet of string Chromosome activity, Nuclear Membrane, Nucleolus, Ribosome Creation, Visuals Matching Activity, Nuclear Pores/Openings, Phospholipid bilayer, Nucleoplasm, Rough Endoplasmic Reticulum, The Lost Art of Maze Making Activity, Smooth Endoplasmic Reticulum, Ribosomes, Flow of Information Class Simulation to Music, Gene Expression, Review of Transcription and Translation, Protein Synthesis, Initiation, Step by Step Drawing Protein Synthesis, Elongation, Termination, Review of the Steps with Visuals, Importance of Protein in our Diet, Hormones, Golgi Apparatus, Cis Face, Trans Face, Build Golgi Body Fanny Packs Activity, Visual Review of the flow of molecules, Box Game Review, Crossword Puzzle, End Unit Assessment

Parts 3 and 4: Cellular Organelles



Part 3 Lesson 1 The Nucleus



Part 3 Lesson 2 Nuclear Membrane ER



Part 3 Lesson 3 Protein Synthesis



Part 3 Lesson 4 Golgi Apparatus



Part 3 Lesson 5 Review Game



Part 3 Lesson 6 Review Game Answers



Part 3 Work Bundle Answers



Part 3 Work Bundle Print

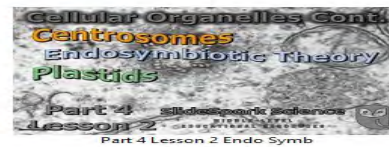
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Additional and Printables



Part 4 Lesson 1 Lysosomes



Part 4 Lesson 2 Endo Symb



Part 4 Lesson 3 Chloroplast



Part 4 Lesson 4 Photosynthesis Cont



Part 4 Lesson 5 Mitochondria



Part 4 Lesson 6 Respiration Cont



Part 4 Lesson 7 Anerobic



Part 4 Lesson 8 Vacuoles



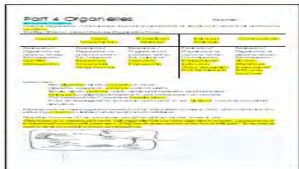
Part 4 Lesson 9 Wrap Up and Visual Quiz



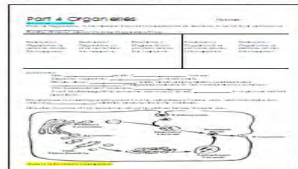
Part 4 Lesson 10 Review Game



Part 4 Lesson 11 Review Game Answers



Part 4 Work Bundle Answers



Part 4 Work Bundle Digital



Part 4 Work Bundle Print

Parts 3 and 4:
Cellular
Organelles

Curriculum Guide

Number of Lessons in each unit (50 min, daily lessons) and difficult rating scale / intended grade level.

 =Easier,

 = More difficult,

 =Most difficult

Earth Science Units	Daily Lessons	Intended Grade	
Geology Topics Unit	60 Lessons	6-8 medium difficulty	
Weather and Climate Unit	40 Lessons	6-8 medium difficulty	
Astronomy Unit	60 Lessons	6-8 medium difficulty	
Weathering, Soil Sciences	28 Lessons	5-7 easier	
Rivers and Water Quality	25 Lessons	5-7 easier	
Water Molecule Unit	20 Lessons	5-7 easier	

Life Science Units

Life Science Units	Daily Lessons	Intended Grade	
Ecology Feeding Levels Unit	13 Lessons	5-6 easier	
Ecology Interactions Unit	30 Lessons	5-6 easier	
Ecology Abiotic Factors Unit	24 Lessons	5-6 easier	
Botany Unit	50 Lessons	5-7 easier	
Evolution and Natural Selection	40 Lessons	5-7 easier	
Taxonomy and Classification	50 Lessons	6-8 medium difficulty	
Infectious Diseases Unit	30 Lessons	7-9 more difficult	
DNA and Genetics Unit	42 Lessons	8-10 most difficult	
Human Body Systems Unit	85 Lessons	6-8 medium difficulty	
Cell Biology Unit	30 Lessons	8-10 most difficult	

Physical Science

	Daily Lessons	Intended Grade	
Laws of Motion and Machines Unit	33 Lessons	8-10 most difficult	
Matter Energy and the Environment	58 Lessons	7-10 medium difficulty	
Atoms and Periodic Table Unit	44 Lessons	8-10 most difficult	
Science Skills Unit	30 Lessons	5-7 medium difficulty	

[Physical Science Curriculum](#)

[Entire SlideSpark Science Curriculum](#)



Dear Valued Educator,

Our fully editable .pptx and .doc resources are perfect for educators looking to bring enthusiasm and creativity to their lessons. We encourage you to make changes to fit your needs and style. As science educators, we're committed to providing students with the tools they need to succeed in the classroom and beyond. Each unit in the curriculum includes a range of resources that have been developed through extensive research and use in a busy classroom. Our teaching approach is designed to make science education engaging and exciting for learners of all ages. We offer a one-of-a-kind science curriculum that will challenge, inspire, and educate students to become tomorrow's scientists and leaders. Join us today and learn more about how our program can help you achieve your classroom goals.

With appreciation,

Support@SlideSpark.net



Thank you for your time and interest in our Science curriculum. We strive to provide students with engaging and informative lessons that will spark their curiosity and encourage scientific exploration. Should you have any questions or concerns, please do not hesitate to contact us. Thank you again for considering our curriculum, and we wish you all the best in your educational journey.

Sincerely,

Support@slidespark.net



SlideSpark Science

MIDDLE-LEVEL
EDUCATIONAL RESOURCES



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