

# Apologia “Exploring Creation With Biology” 2<sup>nd</sup> Edition Lapbook Journal



This Lapbook Journal has been specifically designed for use with the book, “Exploring Creation with Biology” 2<sup>nd</sup> Edition by Apologia Science.

Designed by  
Cyndi Kinney  
of Knowledge Box Central  
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Exploring Creation With Biology 2<sup>nd</sup> Edition Lapbook Journal  
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This book is dedicated to my amazing family. Thank you to my wonderful husband, Scott, who ate a lot of leftovers, listened to a lot of whining (from me!), and sent lots of positive energy my way. Thank you to my daughter, Shelby, who truly inspired me through her love for learning. Thank you to my parents, Judy and Billy Trout, who taught me to trust in my abilities and to never give up.

# PLEASE, PLEASE, PLEASE

## Read **THIS** First!!

I know it's tempting to go ahead and get to "the good stuff," but I promise that your use of this product will be greatly enhanced if you take a few minutes to read a little more about it. Within this document, you'll learn how to set up your binder, which files to print, what types of paper to use, where to view pictures of completed booklets, frequently asked questions, what can be easily omitted due to time constraints, and so much more. Also, if after reading this, you think of tips that would have helped you assemble and use your product, please feel free to let me know. I do want to make sure that we are providing the best product to supplement these awesome Apologia books.

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# Knowledge Box Central

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Welcome to our Lapbook Journal for Apologia's Exploring Creation  
With Biology 2<sup>nd</sup> Edition by Dr. Jay Wile.

We are very pleased to offer this product, as authorized by Dr. Wile.

## **So...now you bought it...what do you do with it?**

I'll try to answer your questions here. Please note that there are several ways to use our Lapbook Journal, and the BEST way is the way that works for your student.

**First**, purchase a 4 inch 3-ring binder, and divide it into 3 sections. Your dividers should be labeled as follows:

*On Your Own Journal (OYOJ)*

*Study Guide Pages (STP)*

*Lab Reports (LR)*

*Module Summaries (MS)*

You may use the acronyms if your label space is limited.

## **Now you have your binder ready....so what next?**

It's time to print! As for the order or printing...you may choose to print needed pages as you finish one module and begin the next....or you may choose to print everything up front. The choice is yours, but I would suggest marking off some time to print it all at once....that's just my opinion. Obviously, your time will dictate what you print when.

You will find 16 files within this product. These will consist of one file for each module of the book. Within each of these files (one per module), you will find the following:

1. On Your Own Journal Pages
2. Study Guide Lapbook Pages - Booklet Templates
3. Study Guide Lapbook Pages - Background Pages
4. Study Guide Journal Pages
5. Lab Reports (Supplies, Introduction, & Procedure filled out already)
6. Lab Reports (No information already filled in...only the report itself with the title of the experiment at the top)
7. Module Summary

**Now I will go into detail about how to print each of these files, what type of paper to print them on, and how to use them.**

As I said on the previous page, there are 16 files (one for each module of the book) included in this product, and within each of these files, you will find the following:

1. On Your Own Journal Pages
2. Study Guide Lapbook Pages - Booklet Templates
3. Study Guide Lapbook Pages - Background Pages
4. Study Guide Journal Pages
5. Lab Reports (Supplies, Introduction, & Procedure filled out already)
6. Lab Reports (No information already filled in...only the report itself with the title of the experiment at the top)
7. Module Summary

## **1. On Your Own Journal Pages**

*Supplies Needed:* Regular White Copy Paper (unless you desire differently)

These pages will be solely devoted to the “On Your Own” questions that appear throughout each of the modules. Instead of the student having to re-write the questions in a notebook, we have provided the questions in a “Notebooking” styled setting. There will be ample space for the students to answer the questions within these Journal Pages, and the borders and graphics provide a decorative page for documenting learning.

We recommend that these pages be printed on regular, white paper. There is no need to print these pages on any special type or color, unless that is your preference.

For each module, print these pages, and file them all together under your “On Your Own Journal Pages” divider tab. As your student comes to these questions, he will go to this section to document his answers.

### **IMPORTANT NOTE About Next Section:**

*NOTE: There are **TWO DIFFERENT OPTIONS** for the Study Guide questions – they are the Lapbook Pages **OR** the Journal Pages – depending on your student’s preference). **There is NO NEED TO PRINT BOTH!!!!***

## **IMPORTANT NOTE About THIS Section:**

*NOTE: There are **TWO DIFFERENT OPTIONS** for the Study Guide questions – they are the Lapbook Pages (#2 & 3) **OR** the Journal Pages (#4) – depending on your student's preference).  
**There is NO NEED TO PRINT BOTH!!!!***

### **HOW do I know which one of these options to use????**

\*\*\* If your child enjoys hands-on projects, scrapbooking, crafty projects, etc., then you will probably want to use the Study Guide Lapbook Pages and their Background Pages (#2 and #3).

\*\*\* If your child does NOT enjoy these types of hands-on projects and would rather have a journaling-style area for documenting the answers to the Study Guide questions, then you will probably want to use the Study Guide Journal Pages.

You may change after a few modules. You may even want to use both...but not at the same time....just every other module.

## **2. Study Guide Lapbook Pages Booklet Templates & Background Pages**

*Supplies Needed:* Regular White Copy Paper, Colored Paper, White Cardstock Paper (if desired), Glue, Scissors, Metal Brad Fasteners (if desired), Ribbon (if desired), Staples

This section is used with the Study Guide at the end of each module of the book. Instead of writing the questions and answers into a regular notebook, the student would complete these booklets to place into his binder.

This section provides more of a “hands-on” opportunity for your students. It is similar to the traditional lapbooks, but there are no folders in which to place the booklets.

**SPECIAL NOTE:** Remember, *IF your student DOES NOT want to create the lapbook booklets, we have added another option for the Study Guide Questions, and that is the Study Guide Journal in section 4.*

## **Study Guide Lapbook Pages Booklet Templates & Background Pages...cont.**

We recommend that you print these on the following types of paper:

- \* Study Guide Lapbook Pages Booklet Templates: colored paper, any weight (we use 24#, multi-colored paper)
- \* Study Guide Lapbook Pages Booklet Templates Instructions: white copy paper (these will ultimately be thrown away, so the weight of the paper isn't important)
- \* Study Guide Lapbook Pages Background Pages: white cardstock (These can be printed on white paper, if you prefer. We print on white cardstock because it is more durable, holds the weight of the booklets, and holds up to years of "thumbing through" the pages.)

These lapbook-style booklets will provide a 3-dimensional aspect to your student's learning experience. Science has proven that the more senses a student uses when learning and reviewing new material, the more he will retain. So, by adding this section, your student will be able to use his own hands to create these memories. Also, the colors and shapes of the booklets will stimulate memory as well.

At the end of each module, allow the student time to create these booklets, and place them randomly (be creative!) on the Study Guide Lapbook Journal Background Pages (print as many copies of these as you need).

This is the most time consuming portion of the Lapbook Journal, and I know that time is very precious. So, if you simply cannot make time for creating ALL of the booklets, or if your student is at first resistant to this hands-on method, you may choose to have your student only complete a few of the booklets...maybe the ones that cover areas in which he needs extra study.

Allow the student to have fun with this section. As he cuts, glues, and folds, he will be creating something to look back on for years to come. He will also be creating something that will be WONDERFUL when it comes time to review! There is NO better way to learn, in my opinion, than for the student to be intensely involved in the process by using his hands.

**3. The Study Guide Lapbook Background Pages – *SPECIAL NOTE:*** You will need to print as many of these as necessary. How many you need depends on how many booklets that your student made. Allow your student to arrange the completed booklets in any order they desire – be creative! You may need a bunch of these pages printed if he really gets the hang of this!

## 4. Study Guide Journal Pages

*Supplies Needed:* Regular White Copy Paper

This section is OPTIONAL and **could** replace the Study Guide Lapbook Pages. These pages will be solely devoted to the “Study Guide” questions that appear at the end of each of the modules. Instead of the student having to re-write the questions in a notebook, we have provided the questions in a “Notebooking/Journal” styled setting. There will be ample space for the students to answer the questions within these pages, and the borders provide a decorative page for documenting learning.

If you choose to use these pages, print them, and file them all together under your “Study Guide Questions” divider tab.

## 5 & 6. Lab Reports

*Supplies Needed:* Regular White Copy Paper

This section is where the student will document all of the work done on the lab experiments within each module.

I conducted a poll before finalizing this section. I wanted to know if parents would like the Lab Reports to be partially completed...or whether they would rather have the student write in all of the information themselves. The responses were split right down the middle. Then, a really smart mom emailed and said, “Why don’t you just put both formats in the Lapbook Journal?” So...that’s exactly what I did!

There are **2 different sections of each file** that are devoted to Lab Reports. There will be a section that gives you Lab Reports with the Experiment Title & Number, Supplies, Introduction, & Procedure already filled in. The back of these reports has no information filled in – this is where the student will document his observations, conclusions, etc. and draw any diagrams necessary. The other section gives you Lab Reports with ONLY the Experiment Title & Number filled in...the rest is blank. So, choose which works for you. You may even want to try both...or you may change midway through the year...or depending on your time that week. The choice is yours!

Print these on regular white paper, unless you WANT to print them on cardstock. They are meant to be printed double-sided, but feel free to print them as a 2-page report, if that works better for you (or for your printer!). PLEASE NOTE: Some Lab Reports are longer than others (3-4 pages max), so be aware when printing. File them in the “Lab Reports” section, and refer to them each time your student performs a lab experiment.



## 7. Module Summaries

Supplies Needed: Regular White Copy Paper

This section is OPTIONAL and **could** even be used as a “Pre-Test.” This is an exact copy of what is found at the back of the book, and it is exactly as it sounds...a summary of the entire module, with blanks to be filled in by the student.

If you choose to use these pages, print them, and file them all together under your “Module Summaries” divider tab.

### **BOTTOM LINE:**

Here is what your 3-ring binder will look like:

- \*\* Section 1: On Your Own
- \*\* Section 2: Study Guide (either the lapbook booklets OR the journal pages)
- \*\* Section 3: Lab Reports
- \*\* Section 4: Module Summaries

### **ONE OTHER OPTION:**

I have had a few moms tell me that they would RATHER divide their notebook into 16 sections – one for each module. These moms said that they put all of the above mentioned items in order in EACH section of the notebook.

The choice is yours.



## Frequently Asked Questions:

1. What if I don't have enough time to do all of this? What's ok to leave out?

If you are really pushed for time, please don't feel that you have to "do it all!" I am cursed with this syndrome, and it rears its head every time I get in a new piece of curriculum. YOU alone know what is best for your student, school, and family.

With that said, I'll say this. If I had to choose something to omit, I would probably first allow my student to use the Lab Reports that are partially filled in. This will save a lot of time...and frustration on the part of the student. If I still needed to omit something, then I would probably allow the student to answer some of the Study Guide questions either using the journal pages or verbally and only do some of the Lapbook Pages. However, I would be sure to NOT choose the lapbook booklets that deal with the easiest subject matter to leave out. I would allow the questions that deal with the easiest subject matter to be answered orally or via the journal pages, and require that the others be answered within the booklets.

2. What if I only have white paper, and I cannot afford to get (or don't have time to get) colored paper or cardstock?

We have made suggestions as to the colors and paper types that we would suggest, but they are ONLY suggestions. If your daughter is really into pink, and everything has to be pink...then print the whole thing on pink! If you are cramped for extra money, and you only have white paper, then print it all on white! I assure you that the color of the paper will not KEEP your child from learning. There is scientific research to support the improvement in memory when using colored paper, but who says the child can't color the paper themselves (the lapbook booklets)...draw pictures on them...make them his own. Or...just leave them white. The choice is ALWAYS yours.

## Frequently Asked Questions...continued...

3. My friend wants to use this Lapbook Journal too. Can I let her use my copy? Oh, and my Co-op might want to use it too.

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As for Co-Ops, we do have a Co-Op License available. All you have to do is purchase the Ebook or CD version of the product as well as the Co-Op License through our website. In the “comments” section of the purchase, state which product(s) will be used at the Co-Op. That’s it! It doesn’t matter how many children are represented in your Co-Op....print away!! I assure you that it’s WAY less expensive than for each family to purchase their own copy. You can all split the cost, and it comes out great for everyone.

4. Why are there very few color graphics in this product?

After much research, we believe that the children of this generation are visually over-stimulated. Between video games, internet, and television, there is very little left to the imagination. While colors play an important role in memory and retention of information, OVER-stimulation with colors has just the opposite effect.

Research ALSO shows that colored shapes have an effect on the memory that is amazing. Students will remember colored shapes much more than they will remember colored graphics on white paper.

Another reason.....colored ink costs homeschool moms TONS!

Without colored graphics, students will create their own! Allow them to draw pictures, color the borders, use their imaginations.

For these reasons, we have chosen to use few color graphics. We feel that this decision, although not the popular one, will benefit your students in the long run.

## **Frequently Asked Questions...continued some more...**

5. My child doesn't like lapbooks, so why use this product?

If your child has never used lapbooking, he may not know what he's missing. However, if he just doesn't want to do it – no how and no way – then we have included “Study Guide Journal Pages” to replace the lapbooking portion of the product. They are included within the product, right after the lapbooking section.

6. What if I don't have a printer, or my printer isn't working?

Most print shops will allow you to email your document to them for printing. Or, you may choose to burn the Ebook to a CD and take it to them for printing.

7. Is it OK to burn the Ebook to a CD?

Yes, absolutely! In fact, I would suggest it. My computer crashed last year, and I lost SO many wonderful homeschool products that were in Ebook format!! (still crying!)

8. What if I'm not creative, crafty...etc....and I don't really want to be?

That's ok. Not everyone enjoys working with “hands-on” products. That's why this product will work for you! All of the planning is done, and the instructions are written so that the student can read and follow them without assistance from an adult!



**Use the following  
pages at the  
beginning of each  
section of your  
notebook.**



**Lapbook Journal  
For  
Exploring Creation  
With Biology  
2<sup>nd</sup> Edition**

**By**

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**Exploring Creation  
With Biology**

**2<sup>nd</sup> Edition**

**On Your Own  
Journal**



**Exploring Creation  
With Biology**

**2<sup>nd</sup> Edition**

**Study Guide  
Lapbook  
Pages**





**Exploring Creation  
With Biology**

**2<sup>nd</sup> Edition**

**Study Guide  
Journal  
Pages**



**Exploring Creation  
With Biology**

**2<sup>nd</sup> Edition**

**Lab Reports**



**Exploring Creation  
With Biology**

**2<sup>nd</sup> Edition**

**Module  
Summaries**



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## **Biology 2<sup>nd</sup> Edition Module 1**

**The following pages are divided into 7 sections,  
with a page like this one between each section.**

**The sections are:**

### **ON YOUR OWN QUESTIONS:**

- (1) On Your Own Journal

### **STUDY GUIDE QUESTIONS:**

*(Choose either #2 & 3 OR #4 for these questions)*

- (2) Study Guide Lapbook Pages – Booklet  
Instructions & Templates
- (3) Study Guide Lapbook Pages – Background  
Pages
- (4) Study Guide Journal Pages

### **LAB REPORTS:**

*(Choose either #5 OR #6)*

- (5) Lab Reports (Partially Completed)
- (6) Lab Reports (Blank)

### **MODULE SUMMARIES:**

- (7) Module Summary



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**The following section is:**

**Biology 2<sup>nd</sup> Edition  
Module 1**

**On Your Own Journal Pages**





1.3 A biologist studies an organism and then two of its offspring. They are all identical in every possible way. Do these organisms reproduce sexually or asexually?

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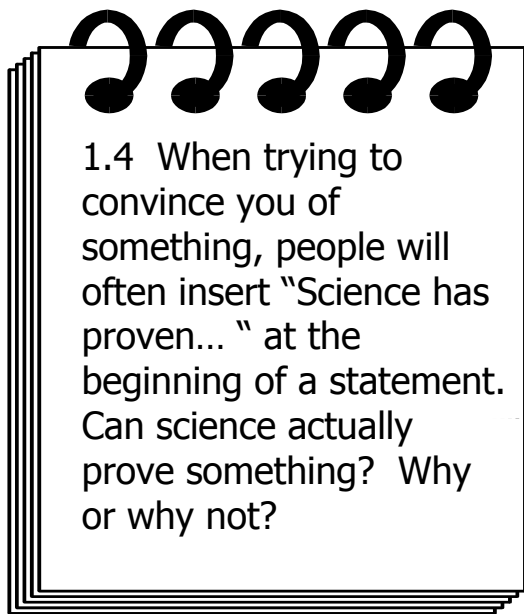
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1.4 When trying to convince you of something, people will often insert "Science has proven..." at the beginning of a statement. Can science actually prove something? Why or why not?

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1.5 A scientist makes a few observations and develops an explanation for the observations that she has made. At this point, is the explanation a hypothesis, theory, or scientific fact?

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1.6 Suppose you chose two organisms at random out of a list of the members of the kingdom Plantae, then you chose two organisms at random out of a list of the members of family Pinaceae. In which case would you expect the two organisms to be the most similar?

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1.7 You compare several organisms from different orders within a given class. You then compare organisms from different classes. In which case would you expect the differences to be greater?

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1.8 An organism is made up of one eukaryotic cell. To what kingdom does it belong?

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**The following section is:**

**Biology 2<sup>nd</sup> Edition  
Module 1**

**Study Guide Lapbook Pages –  
Booklet Instructions &  
Templates**

**(You MAY choose to use the  
“Study Guide Journal” in place  
of this section. )**



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## **Biology 2<sup>nd</sup> Edition - Module 1**

### **Study Guide Lapbook Pages - Booklet Templates**

### **Assembly Instructions**

#### Question 1. a-aa

Cut out along the outer black line edges of each page of the booklet. Then stack the pages in order, with the title page on top. Punch 2 or 3 holes along the left side of the stack, and secure with a ribbon or metal brad fasteners. You may choose to just staple the stack along the left side.

#### Question 2

Cut out along the outer black line edges of the one-page booklet. Glue to another piece of paper of a different color and a slight larger size. Cut around the edges, leaving a small border.

#### Question 3

Cut out along the outer black line edges of the booklet. Fold along the center line, making sure that the words are on the outside. Then cut along the 2 horizontal lines, creating "tabs."

#### Question 4

Cut out along the outer black line edges of the triangle-shaped booklet and the extra triangle. Fold the triangle booklet in the center, leaving the title on the outside. Glue the smaller triangle inside the booklet.

#### Question 5

Cut out along the outer black line edges of the booklet. Fold along both horizontal lines. Tri-fold so that the beginning of the question is on the outside, and the second part of the question is on the inside.

#### Question 6

Cut out along the outer black line edges of the booklet. Fold along the center line so that the question is on the outside.



# Knowledge Box Central

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## **Biology 2<sup>nd</sup> Edition - Module 1**

### **Study Guide Lapbook Pages - Booklet Templates**

### **Assembly Instructions**

#### Question 7

Cut out along the outer black line edges of the one-page booklet. Glue to another piece of paper of a different color and a slight larger size. Cut around the edges, leaving a small border.

#### Questions 8-10

Cut out each page of the booklet along the outer black line edges. Stack the pages so that the title is on the front and the questions are in order. Punch 2 holes along the top of the stack, and secure with metal brad fasteners or a ribbon. You may choose to only use a staple at the top of the booklet.

#### Questions 11-16

Cut out along the outer black line edges of the booklet. Fold along both vertical lines. Keeping the title "Classifications" on the outside, fold the section with the questions so that it is on the inside. Now cut along the small horizontal lines between the questions, creating "tabs" under which to write your answers.

# **Module #1: Biology: The Study of Life**

## **Study Guide Booklet Templates**

### **Question #1: a-aa**

# **Module # 1**

# **Definitions**

**a. Metabolism**

**b. Anabolism**

**c. Catabolism**

**d. Photosynthesis**

**e. Herbivores**

**f. Carnivores**

**g. Omnivores**

**h. Producers**

**i. Consumers**

**j. Decomposers**

**k. Autotrophs**

**l. Heterotrophs**

**m. Receptors**

**n. Asexual reproduction**

**o. Sexual reproduction**

**p. Inheritance**

**q. Mutation**

**r. Hypothesis**

**s. Theory**

**t. Scientific Law**



**u. Microorganisms**

**v. Abiogenesis**

**w. Prokaryotic cell**

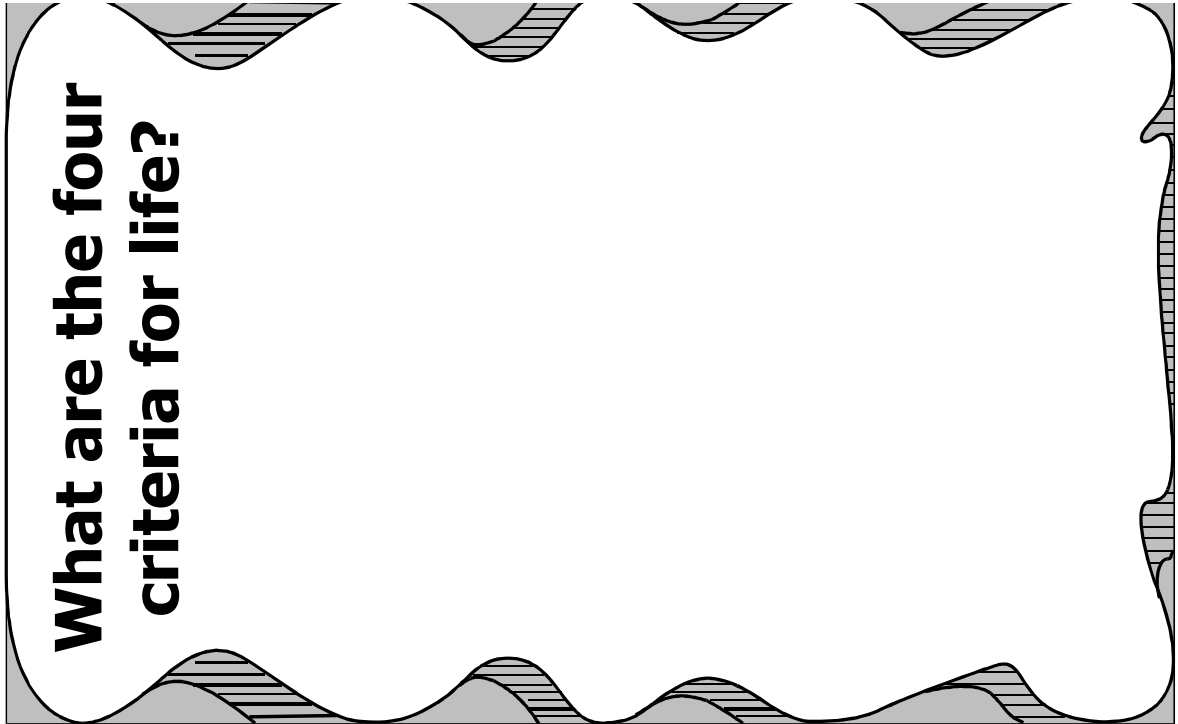
**x. Eukaryotic cell**

**y. Species**

**z. Taxonomy**

**aa. Binomial nomenclature**

**Question # 2**

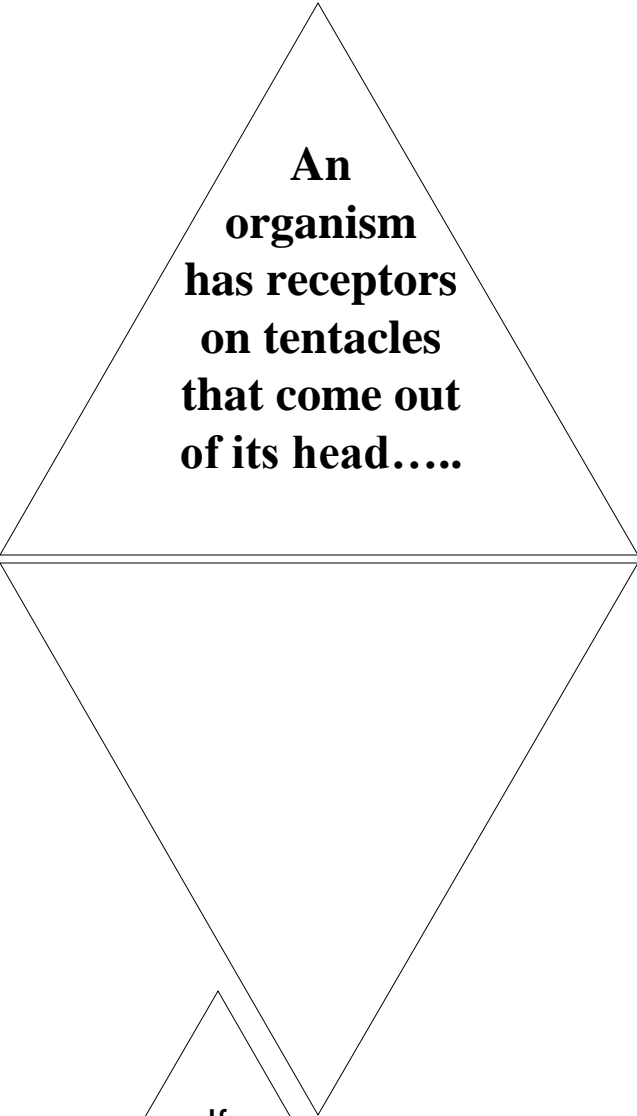


**Question # 3**

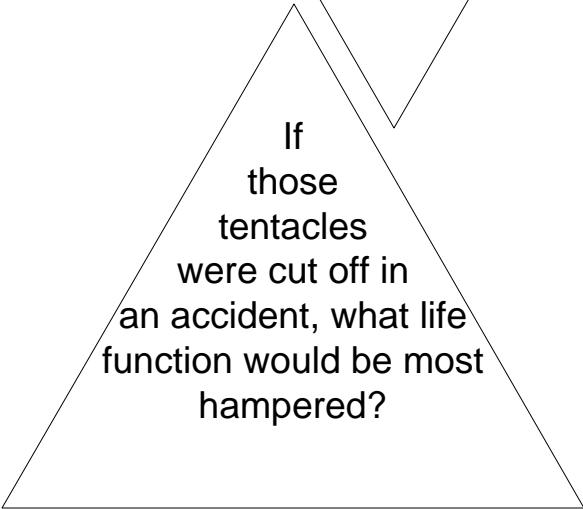
	<b>An organism is classified as a carnivore....</b>
	Is it a heterotroph or an autotroph?
	Is it a producer, consumer, or decomposer?

**Question #4**

**Question #5**



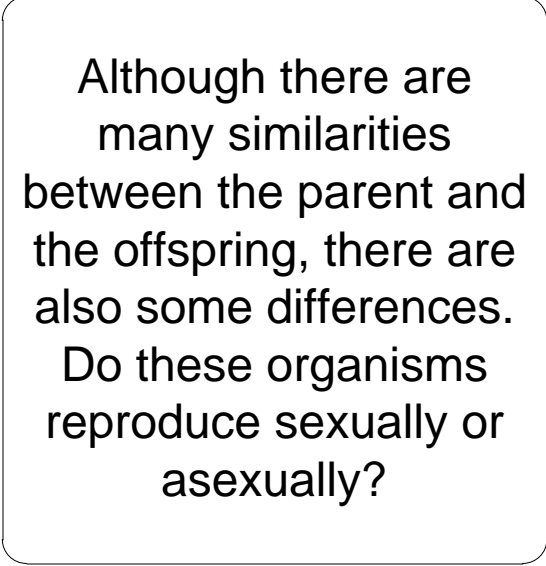
**An  
organism  
has receptors  
on tentacles  
that come out  
of its head.....**



If  
those  
tentacles  
were cut off in  
an accident, what life  
function would be most  
hampered?



**A parent and two  
offspring are  
studied...**



Although there are  
many similarities  
between the parent and  
the offspring, there are  
also some differences.  
Do these organisms  
reproduce sexually or  
asexually?

### Question #6

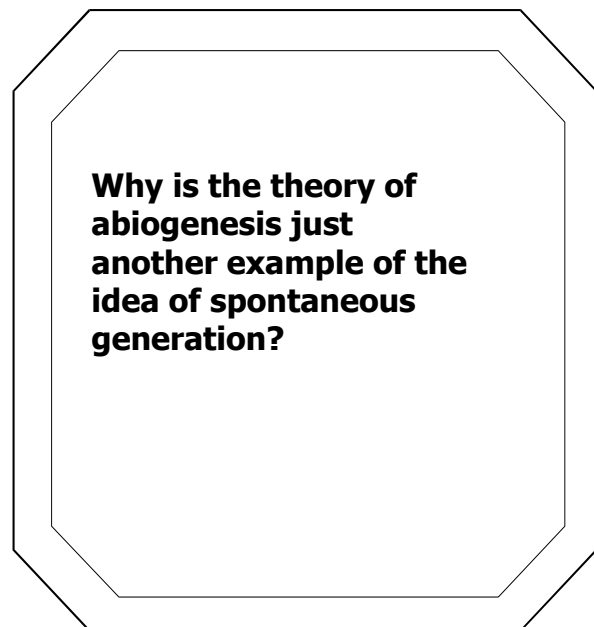
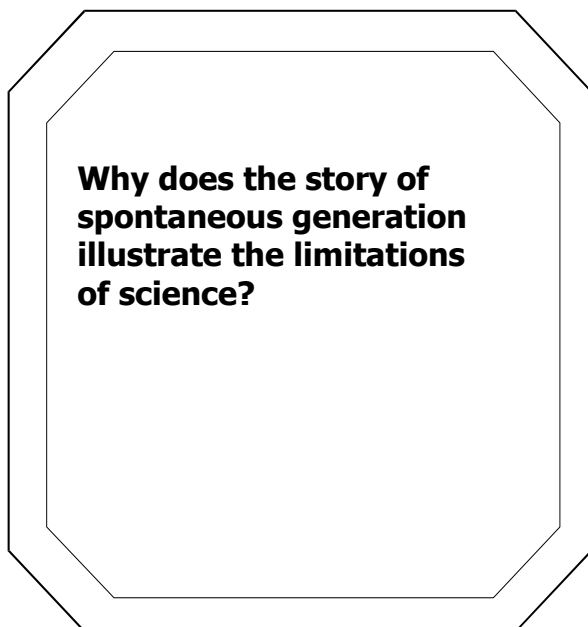
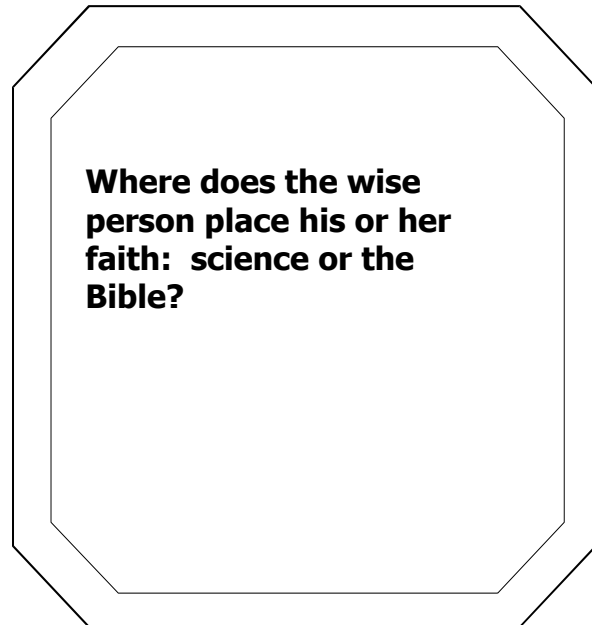
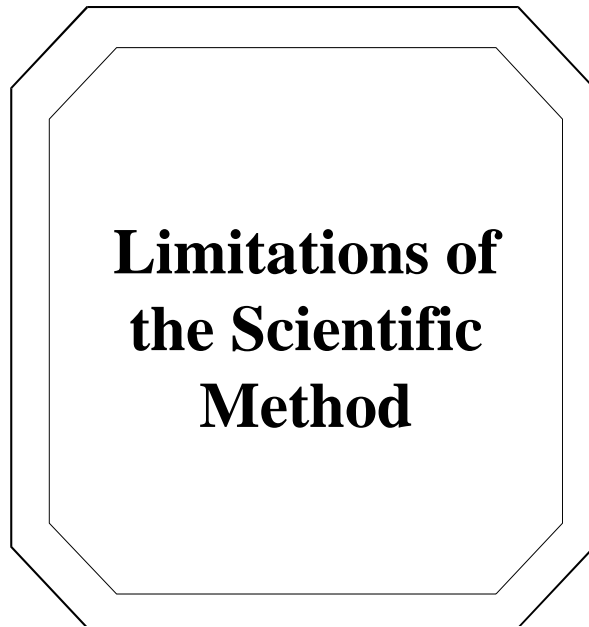
What is wrong with this statement:

“Science has proven that energy must always be conserved.”

### Question #7

**Briefly describe the scientific method.**

## Questions #8-10



**Questions #11-16**

	<p>C L A S S I F I C A T I O N</p>	<p>Name the classification groups in our hierarchal classification scheme in order.</p>
		<p>An organism is a multicellular consumer made of eukaryotic cells. To what kingdom does it belong?</p>
		<p>If we were using the three-domain system of classification, in which domain would the organism in the above question belong?</p>
		<p>An organism is a single-celled consumer made of prokaryotic cells. To what kingdom does it belong?</p>
		<p>If we were using the three-domain system of classification, could you determine the domain of the organism in the question above? If so, give the domain. If not, give the possible domains in which it could be placed.</p>
		<p>Use the biological key in the appendix of the book to classify the organisms pictured on page 36 of the book.</p>



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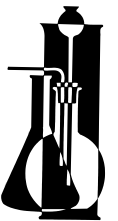
**The following section is:**

**Biology 2<sup>nd</sup> Edition  
Module 1**

**Study Guide Lapbook  
Background Page  
(print as many as needed)**

# Module #1: Biology: The Study of Life

## Study Guide Lapbook







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**The following section is:**

**Biology 2<sup>nd</sup> Edition  
Module 1**

**Study Guide Journal Pages**

**You MAY choose to use these  
INSTEAD of the preceding  
Study Guide Lapbook Pages.**

## **Biology 2<sup>nd</sup> Edition - Module 1 Study Guide Journal**

**1. Write down the definitions for the following terms. You will be expected to have them memorized for the test!**

**A. Metabolism:**

**B. Anabolism:**

**C. Catabolism:**

**D. Photosynthesis:**

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**E. Herbivores:**

**F. Carnivores:**

**G. Omnivores:**

**H. Producers:**

**I. Consumers:**

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**J. Decomposers:**

**K. Autotrophs:**

**L. Heterotrophs:**

**M. Receptors:**

**N. Asexual reproduction:**

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## **Study Guide Journal**

**O. Sexual reproduction:**

**P. Inheritance:**

**Q. Mutation:**

**R. Hypothesis:**

**S. Theory:**

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Study Guide Journal**

**T. Scientific law:**

**U. Microorganisms:**

**V. Abiogenesis:**

**W. Prokaryotic cell:**

**X. Eukaryotic cell:**

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**Y. Species:**

**Z. Taxonomy:**

**AA. Binomial nomenclature:**

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**2. What are the four criteria for life?**

**3. An organism is classified as a carnivore. Is it a heterotroph or an autotroph? Is it a producer, consumer, or decomposer?**

**4. An organism has receptors on tentacles that come out of its head. If those tentacles were cut off in an accident, what life function would be most hampered?**

**5. A parent and two offspring are studied. Although there are many similarities between the parent and the offspring, there are also some differences. Do these organisms reproduce sexually or asexually?**



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**6. What is wrong with the following statement?**

**"Science has proven that energy must always be conserved."**

**7. Briefly explain the scientific method.**

**8. Why does the story of spontaneous generation illustrate the limitations of science?**

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Study Guide Journal**

**9. Where does the wise person place his or her faith: science or the Bible?**

**10. Why is the theory of abiogenesis just another example of the idea of spontaneous generation?**

**11. Name the classification groups in our hierarchical classification scheme in order.**

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**12. An organism is a multicellular consumer made of eukaryotic cells. To what kingdom does it belong?**

**13. If we were using the three-domain system of classification, in which domain would the organism in question #12 belong?**

**14. An organism is a single-celled consumer made of prokaryotic cells. To what kingdom does it belong?**

**15. If we were using the three-domain system of classification, could you determine the domain of the organism in question #14? If so, give the domain. If not, give the possible domains in which it could be placed.**

**16. Use the biological key in the appendix to classify the organisms pictured on page 36 of your textbook.**



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## **Biology 2<sup>nd</sup> Edition Module 1**

### **Lab Reports (partially completed)**

**\*\*You may choose to print these reports double-sided or single-sided. Some lab reports have more than 2 pages, so be aware when printing.**

# Exploring Creation With Biology 2<sup>nd</sup> Edition

## Lab Report Experiment # 1.1 Using a Biological Key

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

### Supplies:

\*Photographs on the page 25-26 of your textbook

\*Biological key in Figure 1.7 on pages 21-23 of your textbook

### Object:

Identify fifteen living things by using the biological key in the text. Keys vary in their style and content. This key is applicable to all five kingdoms, made especially for use in this course. A good library exercise would be to check other keys and how they are used.

### Procedure:

The chart below gives you an example of how to identify the elephant that was described for you in the text. Reread the section on how to identify the elephant and note how the chart has been completed for the elephant. Once you understand how the chart is filled in, identify each of the pictures below by working through the key. As you work through the key, make a chart in your laboratory notebook like on page 25 of your textbook.

Continue the chart so that you have an entry for each specimen. Please note that you may not be able to answer every question in the biological key based on the picture alone. You might have to do a little research to classify some of the specimens. Also, because of the nature of the key, you will not have a kingdom, phylum, class, and order for every specimen. For some specimens, listing the kingdom may be the best that you can do. Once you have completed the chart in your laboratory notebook, check the answers that are provided after the answers to the "On Your Own" questions.

Specimens for the lab: See Fig. Page 25 and 26

# Exploring Creation With Biology 2<sup>nd</sup> Edition

## Lab Report Experiment # 1.1 Using a Biological Key

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

**Observations:**

**Diagram:**

**Summary:**

# Exploring Creation With Biology 2<sup>nd</sup> Edition

## Lab Report Experiment # 1.2 Introduction to the Microscope

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

### Supplies:

\*Microscope      \*Lens paper      \*Slides      \*Coverslips  
\*Cotton swabs      \*Eyedropper      \*Water      \*Small pieces of bright thread  
\*Methylene blue stain

### Object:

To learn the various parts of the microscope and to learn to use the microscope properly

### Procedure:

A. Place the microscope on your table with the arm of the microscope nearest you. With the aid of the illustration, locate all the parts of the microscope and become familiar with them.

1. The **eyepiece (called the ocular)** is what you look through. It usually contains a 10x lens.
2. The **body tube** starts at the eyepiece and runs to the part that holds the revolving nosepiece.
3. The **revolving nosepiece** is the disc that holds the lenses (which are called objectives).
4. The **coarse focus** is controlled by two large knobs on each side of the microscope. It allows for quick focus, but it does not make the image as sharp as it could be.
5. The **fine focus** knobs are used to produce sharp focus. They are usually smaller and lower than the coarse focus knobs, but in some scopes they are mounted on top of the coarse focus knobs.
6. The **arm** supports the body and stage and is attached to the base.
7. The **base** is the heavy structure at the bottom that supports the microscope and makes it steady.
8. The **stage with clips** is a platform just below the objectives and above the light source. The clips are used to hold the slide in place.
9. The **objectives** are found on the revolving nosepiece. They are metal tubes that contain lenses of varying powers, usually 4x, 10x, and 40x. Some microscopes have a 100x objective as well.
10. The **diaphragm** regulates the amount of light that passes through the specimen. It is located between the stage and the light source. It might be a disc that has several holes (a disc diaphragm), or it might be a single hole whose diameter can be varied (an iris diaphragm).
11. The **condenser** is also located between the light source and stage. It is a lens system that bends and concentrates the light coming through the specimen.
12. The **light source** is on the base and provides necessary light for the examination of specimens.

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## Lab Report Experiment # 1.2 Introduction to the Microscope

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

Magnification is an important feature of any microscope. In your laboratory notebook, write down the magnifications of the objectives on your microscope. You calculate the total magnification of the scope by taking the power of the ocular (usually 10x) and multiplying it by the power of each objective. Thus, if your ocular is 10x and your objectives are 4x, 10x, and 40x, your three magnifications are 40x, 100x, and 400x. Label your three magnifications as low, medium, and high.

B. Now that you are familiar with the parts of the microscope, you are ready to use it to view thread.

1. Rotate the low-power objective so that it is in line with the eyepiece. Listen for a click to make sure it is in place.
2. Turn your light on. If you have a mirror instead of a light, look through the eyepiece and adjust the mirror until you see bright light.
3. Using the coarse focus, raise the stage (or lower the body tube) until it can move no more. (*Never force the knobs.*)
4. Place a drop of water on a clean slide and add several short pieces of brightly-colored thread.
5. Add a coverslip (a thin piece of plastic or glass that will cover the water and press it against the slide). This works best if you hold the coverslip close to the drops of water and then drop it gently. If air bubbles form, tap the coverslip gently with the lead of your pencil.
6. Put the slide on the stage and clip it down, making sure the coverslip is over the hole in the stage.
7. Looking in the eyepiece, gently move the stage down (or body tube up) with the coarse focus. If you do not see anything after a couple of revolutions, move your slide a little to make sure the threads are in the center of the hole in the stage. This indicates that the threads are in the field of view.
8. Once you have the image in focus using the coarse focus, "fine tune" it with the fine focus.
9. Place the threads in the very center of the field of view by moving the slide as you look at it through the microscope. Make sure that the threads are at the center of the field, or you will lose them when you change to a higher magnification.
10. Turn the nosepiece so that the medium-power objective is in place. Until you are very familiar with any microscope, do not turn the nosepiece without checking to make sure it will not hit the slide. Always move the nosepiece slowly, making sure that it does not touch the slide in any way. A lens can easily be damaged if it hits or breaks a slide.



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## Lab Report Experiment # 1.2 Introduction to the Microscope

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

11. Once the medium-power objective is in place, you should use only the fine focus to make the image sharp. Once again, move the slide so that the thread is at the center of the field.
12. Again, watching to make sure you don't hit the slide, turn the nosepiece so that the high magnification objective is in place. You should use only the fine focus to refocus.
13. (Optional) If you like, repeat steps 1-12 using a strand of your own hair rather than thread.

If we wanted to look at the threads at high magnification, why didn't we just start with the high-power objective? Had we tried to bring the threads into focus under high magnification without first looking at them under low and then medium magnification, we almost certainly would have never found the threads. When you look at the slide at high magnification, you are looking at a very, very tiny portion of the slide, and it is unlikely that what you are looking for will be there. As a result, you should always start your microscope investigation with the lowest magnification and then work your way up, centering the specimen in the field of view each time before you increase magnification.

C. Now it is time to get your first look at cells! (The course website discussed in the "Student Notes" section of this book has some magnified images of cheek cells. They may be of some help to you.)

1. Collect some cheek cells by rubbing a cotton swab back and forth on the walls of your cheek inside your mouth. Use only one side of the swab.
2. Remove the swab carefully without getting a lot of saliva on it.
3. Rub the wet side of the swab on the slide. You should see a smear where you rubbed the slide.
4. If you were to look at the cells under the microscope right now, it would be hard to find them, because they are almost transparent. To help make them easier to see, you will add a dye to them. This dye is called a **stain**, and it will help contrast the cells against the light, making them much easier to see. Place a drop of methylene blue stain on the area where you placed the cells. (This stain will not come out of most fabric, so use it with care.)
5. Add the coverslip carefully.
6. Place the slide on the microscope and begin the procedure outlined in section B, looking at the cells under low, then medium, and then high magnifications. At low magnification, the cells will look like dots. Once you find some dots, center them and increase the magnification. At high magnification, you should see a dark blob (the nucleus) and a ring outlining the cell (the plasma membrane). Note the irregular shape of the cells. Draw what you see at each magnification.
7. Rinse the slides that you used in water and wipe them dry with a paper towel. Wipe the lenses of the scope with lens paper, and put everything away. Clean up any mess you made.

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## Lab Report Experiment # 1.2 Introduction to the Microscope

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

**Observations:**

**Diagram:**

**Summary:**



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**Lab Reports  
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## Lab Report Experiment # 1.1 Using a Biological Key

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

**Supplies:**

**Introduction:**

**Procedure:**

# Exploring Creation With Biology 2<sup>nd</sup> Edition

## Lab Report Experiment # 1.1 Using a Biological Key

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

**Procedure...continued...**

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## Lab Report Experiment # 1.1 Using a Biological Key

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

**Observations:**

**Diagram:**

**Summary:**

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## Lab Report Experiment # 1.2 Introduction to the Microscope

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

**Supplies:**

**Introduction:**

**Procedure:**

# Exploring Creation With Biology 2<sup>nd</sup> Edition

## Lab Report Experiment # 1.2 Introduction to the Microscope

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

**Procedure....continued...**



# Exploring Creation With Biology 2<sup>nd</sup> Edition

## Lab Report Experiment # 1.2 Introduction to the Microscope

**Date:** \_\_\_\_\_ **Name:** \_\_\_\_\_

**Procedure....continued...**

# Exploring Creation With Biology 2<sup>nd</sup> Edition

## Lab Report Experiment # 1.2 Introduction to the Microscope

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

**Observations:**

**Diagram:**

**Summary:**

# MODULE SUMMARIES

## Summary of Module #1

*Review the vocabulary words listed in Question #1 of the study guide*

Fill in the blanks. Many blanks contain more than one word.

**Please note: We suggest that you actually write these paragraphs out rather than just filling in the blanks in the book. The act of writing these things out is a form of studying.**

1. Four characteristics of life:

- All life forms contain \_\_\_\_\_, which is called \_\_\_\_\_.
- All life forms have a method by which they \_\_\_\_\_ from the surroundings and convert it into \_\_\_\_\_.
- All life forms can \_\_\_\_\_ in their surroundings and \_\_\_\_\_.
- All life forms \_\_\_\_\_.

2. DNA provides the \_\_\_\_\_ necessary to take a bunch of lifeless chemicals and turn them into \_\_\_\_\_.

3. \_\_\_\_\_ can be split into two categories: (1) \_\_\_\_\_, which involves using energy and simple chemical building blocks to produce large chemicals and structures and (2) catabolism, which involves \_\_\_\_\_.

4. The vast majority of energy that sustains life comes from \_\_\_\_\_. \_\_\_\_\_ use that energy to make food for themselves via a process called \_\_\_\_\_. Consumers get energy from the producers by \_\_\_\_\_. Consumers can be split into three categories: \_\_\_\_\_ (which eat only plants), \_\_\_\_\_ (which eat only nonplants), and \_\_\_\_\_ (which eat plants and nonplants). The energy of dead producers and consumers is recycled back into creation by the \_\_\_\_\_.

5. Producers are often called \_\_\_\_\_, the Greek roots of which literally mean “self-feeder.” Consumers and decomposers are often called \_\_\_\_\_, which literally means “\_\_\_\_\_.”

6. Living organisms are equipped with structures called \_\_\_\_\_, which receive information about their surroundings. God’s creation is always \_\_\_\_\_, which is why these structures are necessary for survival.

7. In asexual reproduction, the characteristics and traits inherited by the offspring are, under normal circumstances, \_\_\_\_\_ to the parent. In sexual reproduction, under normal circumstances, the offspring’s traits and characteristics are \_\_\_\_\_. When \_\_\_\_\_ occur, the offspring can possess traits that are incredibly different from those of the parent or parents.

8. In the scientific method, the scientist starts by \_\_\_\_\_ the world around him. He then forms a \_\_\_\_\_ to explain some aspect of how the world functions. He then \_\_\_\_\_ in an attempt to test his \_\_\_\_\_. If a large amount of \_\_\_\_\_ confirms the \_\_\_\_\_, it

becomes a \_\_\_\_\_, which is tested with even more \_\_\_\_\_. If it continues to be confirmed over several generations, it might become a \_\_\_\_\_.

9. Scientists once believed that life could spring from non-living things. This was called \_\_\_\_\_, and it was refuted in the mid 1800s by a scientist named \_\_\_\_\_. The story of how the scientific community believed in it for so long demonstrates that science has \_\_\_\_\_.

10. The newest version of spontaneous generation is called \_\_\_\_\_, and it claims that long ago, \_\_\_\_\_.

11. The groups used in our classification scheme, from largest to smallest are: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

12. The five kingdoms we use in this course are: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

13. A cell with no membrane-bounded organelles is \_\_\_\_\_, while one with membrane-bounded organelles is a \_\_\_\_\_. Members of kingdom Monera are composed of \_\_\_\_\_.

14. A unit of one or more populations of individuals that can reproduce under normal conditions, produce fertile offspring, and are reproductively isolated from other such units is called a \_\_\_\_\_.

15. A series of questions that is designed to classify organisms is called a biological \_\_\_\_\_.

16. When we call wolves "*Canis lupus*," we are using \_\_\_\_\_.

17. In the \_\_\_\_\_ - \_\_\_\_\_ system of classification, the three basic groups are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_. Members of kingdom Monera are placed in either \_\_\_\_\_ or \_\_\_\_\_, and all of the other kingdoms are placed in \_\_\_\_\_.

18. A creationist taxonomy scheme that attempts to classify organisms based on the kind of organisms that God made during creation is called \_\_\_\_\_.

19. Multicellular autotrophs are typically placed in kingdom \_\_\_\_\_.

20. Single-celled creatures made of eukaryotic cells are placed in kingdom \_\_\_\_\_.

21. Multicellular consumers are typically placed in kingdom \_\_\_\_\_.

22. Decomposers made of eukaryotic cells are mostly found in kingdom \_\_\_\_\_.

23. Organisms made of prokaryotic cells are found in kingdom \_\_\_\_\_.