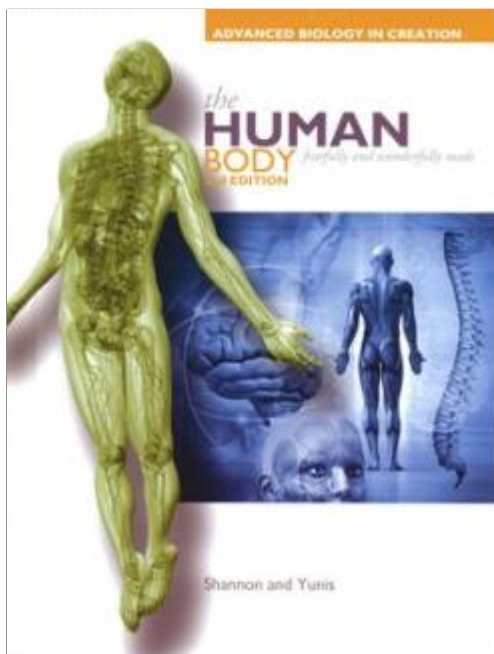


# Apologia Advanced Biology: The Human Body 2<sup>nd</sup> Edition Lapbook Journal



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

Designed by  
Cyndi Kinney  
of Knowledge Box Central  
with permission from Apologia Science



Apologia Exploring Creation With Advanced Biology: The Human Body  
2<sup>nd</sup> Edition  
Lapbook Journal  
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Welcome to our Lapbook Journal for Apologia's  
"Exploring Creation With Advanced Biology: The Human Body" 2<sup>nd</sup> Edition.  
We are very pleased to offer this product, as authorized  
by Apologia Science.

### **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*  
*Study Guides*  
*Lab Reports*

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 Journal Pages
3. Study Guide Questions Lapbook Pages - Booklet Templates
4. Study Guide Questions Lapbook Pages - Background 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)

**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 Journal Pages
3. Study Guide Questions Lapbook Pages - Booklet Templates
4. Study Guide Questions Lapbook Pages - Background 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)

## **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” 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 **OR** the Journal Pages – 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 Questions 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 Questions 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 Questions Journal Pages**

*Supplies Needed:* Regular White Copy Paper

This section is **OPTIONAL** and **could** replace the Study Guide Questions Lapbook Pages. These pages will be solely devoted to the Review 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.

### 3. Study Guide Questions Lapbook Pages Booklet Templates

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 Questions at the end of each module of the book. Instead of writing the questions and answers in a regular notebook or on the “Journal Pages” within this product, the student would complete these booklets to place in 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 Questions Journal Pages.*

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

- \* Study Guide Questions Lapbook Pages Booklet Templates: colored paper, any weight (we use 24#, multi-colored paper)
- \* Study Guide Questions Lapbook Pages Booklet Templates Instructions: white copy paper (these will ultimately be thrown away, so the weight of the paper isn't important)

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 Questions 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.

**4. The Study Guide Questions 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 he desires – be creative! You may need a bunch of these pages printed if he really gets the hang of this!

Printing Suggestion:

\* Study Guide Questions 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.)

## **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.

## **BOTTOM LINE:**

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

\*\* Section 1: On Your Own

\*\* Section 2: Study Guide Questions (either the lapbook booklets OR the journal pages)

\*\* Section 3: Lab Reports (either the ones that are partially completed OR the ones that you complete entirely on your own)

## **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 it's 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.

Our copyright states that any Ebook or CD is purchased for use by ONE household. If your Aunt Mary, Cousin Martha, and all of their children live in YOUR household (God Bless You!), then that includes them. You may print as many copies of the material as you need from the Ebook or CD for those in your household. However, PLEASE do not share these with friends and family who do NOT live with you.

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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 Questions 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?

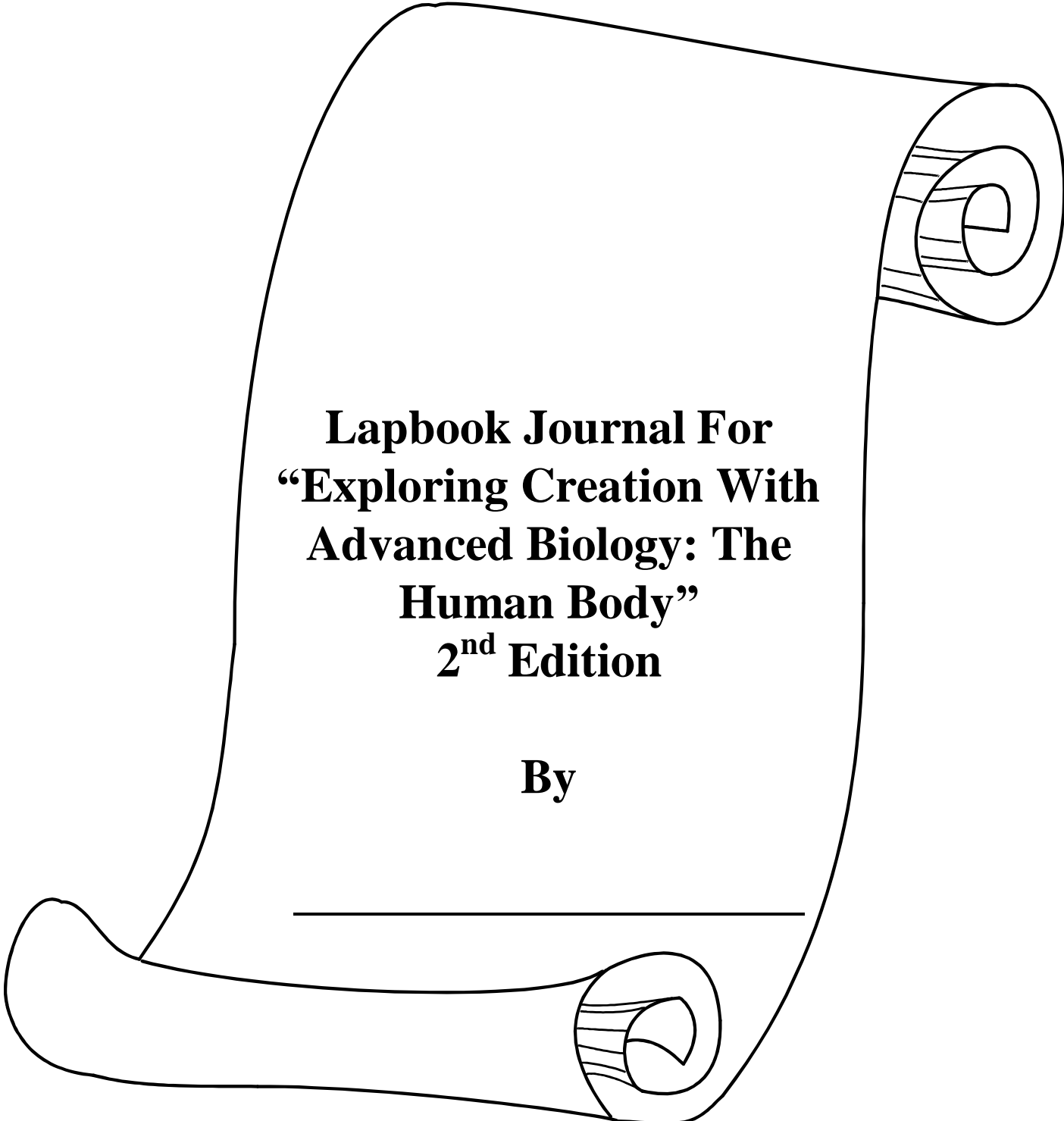
Yes, absolutely! In fact, I would suggest it. My computer crashed last year, and I lost SO many wonderful homeschool products that were in Ebook format!! (still crying!)

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!



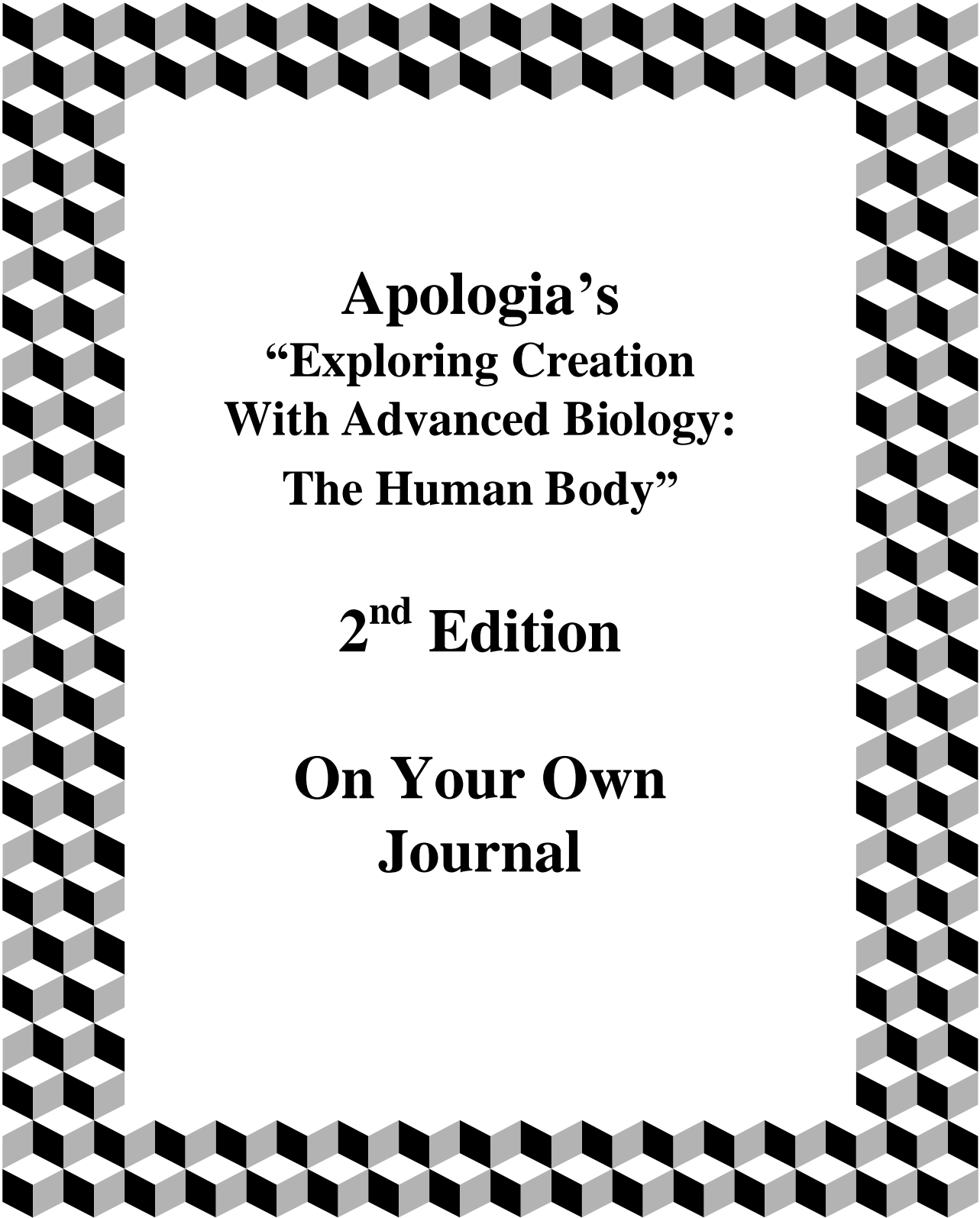
**Use the following  
pages at the  
beginning of each  
section of your  
notebook.**



**Lapbook Journal For  
“Exploring Creation With  
Advanced Biology: The  
Human Body”  
2<sup>nd</sup> Edition**

**By**

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**Apologia's**  
**“Exploring Creation**  
**With Advanced Biology:**  
**The Human Body”**

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

**On Your Own**  
**Journal**



**Apologia's**  
**“Exploring Creation**  
**With Advanced Biology:**  
**The Human Body”**

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

**Study Guide**  
**Questions**  
**Journal Pages**

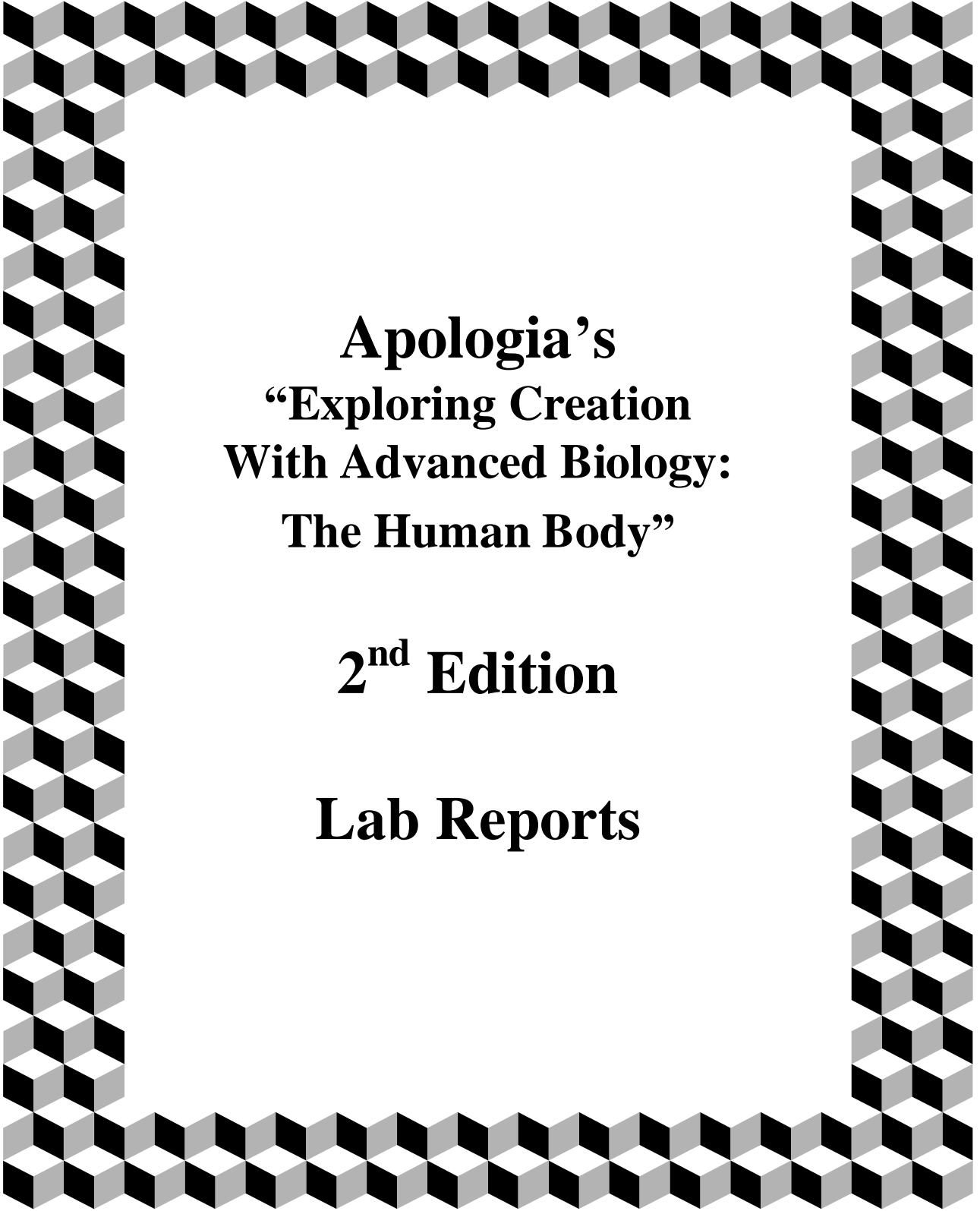


**Apologia's**  
**“Exploring Creation**  
**With Advanced Biology:**  
**The Human Body”**

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

**Study Guide**  
**Questions**  
**Lapbook**  
**Pages**





**Apologia's**  
**“Exploring Creation**  
**With Advanced Biology:**  
**The Human Body”**

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

**Lab Reports**



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**Apologia Exploring Creation With Advanced  
Biology: The Human Body  
2<sup>nd</sup> Edition  
Module 1**

**The following pages are divided into 6 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 OR #3 & #4 for these questions)*

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

**LAB REPORTS:**

*(Choose either #5 OR #6)*

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



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**The following section is:**

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With Advanced Biology: The  
Human Body  
2<sup>nd</sup> Edition**

**Module 1**

**On Your Own Journal Pages**



1.1 Certain muscles are attached to your skeleton by tendons. Of the four tissue types, which kind makes up tendons?

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1.2 Which three levels of organization in the human body are studied in gross anatomy?

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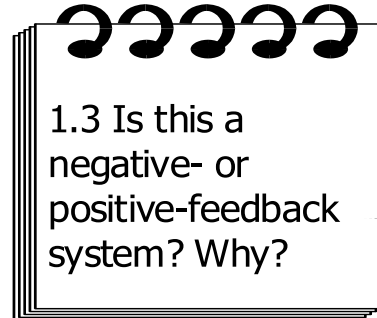
This paragraph corresponds with On Your Own Questions 1.3, 1.4, 1.5, and 1.6.

We already discussed shivering as a response to the body being cold. Here's how it works. Receptors in the skin send temperature information to the hypothalamus (hi poh thal' uh mus), a structure in the brain. If the hypothalamus "decides" that the temperature is too low, it can send instructions via the nerves to the muscles. These signals cause the muscles to start moving rapidly, which we observe as shivering. This increased movement produces a lot of heat, which warms the body.

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1.3 Is this a negative- or positive-feedback system? Why?

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1.4 What is the control center for the system?

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1.7 A microbiologist is looking at a cell under a microscope. It has a large number of Golgi apparatuses in it. What, most likely, is the cell's major function?



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1.8 Substances regularly are transported into and out of cells. If a substance is transported into a cell, what is the first structure it must pass through?

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1.9 A human cell has 46 chromosomes. If the illustrations in figure 1.9 were of a human cell, how many X shapes would there be in the prophase and metaphase illustrations?

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1.10 Suppose you placed a cell in a nonpolar fluid. Suppose furthermore that the plasma membrane was disturbed. In this kind of environment, could the plasma membrane reassemble? Why or why not?

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1.12 A chemical travels into a cell via a carrier protein. If that process required no ATP, what can you say about the relative concentrations of the chemical inside and outside of the cell?

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1.13 A cell uses exocytosis to secrete a hormone. This process requires ATP. What can you say about the relative concentration of the hormone inside and outside of the cell?

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**The following section is:**

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The Human Body  
2<sup>nd</sup> Edition  
Module 1**

**Study Guide Journal Pages**

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

**1. Define the following terms:**

**A. Gross Anatomy:**

**B. Microscopic anatomy:**

**C. Physiology:**

**D. Histology:**

**E. Organ:**

**F. Tissues:**

**G. Homeostasis:**

**H. Effector:**

**I. Selective permeability:**

**J. Endocytosis:**

**K. Exocytosis:**

**2. If this course taught you only the name of each organ and where it is in the body, would this be an anatomy course or a physiology course?**

**3. What are the seven levels of organization in a living organism?**

**4. Suppose you are using a 40x, 100x, 400x, 1000x microscope to study the human body. What levels of organization would you be studying?**

**5. What are the four types of tissue?**

**6. Identify the type of tissue that makes up the following:**

- a. The lining of a blood vessel or your sinuses**
- b. The trapezius muscle**
- c. The cartilage in your joints**
- d. The frontal lobe of the brain**

**7. What is the general term for the processes in our environment that threaten homeostasis?**

**8. Suppose your heart rate began to increase significantly. If the body initiated a negative-feedback response, would your heart rate go up or down? If the body initiated a positive-feedback response, would your heart rate go up or down?**

**9. What are the two organ systems are most involved in controlling the negative-feedback systems of the body?**

**10. When you exercise, your blood glucose levels tend to drop because you are using the glucose for energy. To counteract that effect, the pancreas monitors your blood glucose level. If the pancreas “decides” that the blood glucose level is too low, it can release a hormone called glucagon. This hormone stimulates the liver to release glucose into the blood.**

- a. What is the stress in this situation?**
- b. What is the control center?**
- c. What is the effector?**
- d. Is the endocrine system involved?**

**11. List the organelles discussed in Module 1, and briefly state the main function of each.**



**12. List the phases of mitosis in order.**

**13. In which phases of mitosis do chromosomes have the X shape that most people associate with chromosomes?**

**14. What property of phospholipids gives the plasma membrane the ability to automatically reassemble?**

**15. What is the function of a glycoprotein in the plasma membrane?**

**16. What is the function of a receptor protein in the plasma membrane?**

**17. The model of the plasma membrane that we discussed is the fluid mosaic model. What is the "fluid?" To what does "mosaic" refer?**

**18. There are essentially four basic ways a substance can get through the plasma membrane. What are they? If you get specific, you will end up listing 6. That's fine, too.**

**19. For each of the following substances, indicate how they will get through the plasma membrane and into the cell. In this case, consider channel proteins and charged channel proteins to be different, and use the two more precise terms for endocytosis.**

**a. water**

**b. protein**

**c. a  $Mg^{2+}$  ion**

**d. a monosaccharide (simple sugar)**

**e. an invading bacterium**

**f. a lipid**

**20. A protein enters a cell. The outside of the cell has a higher concentration of that protein than the inside of the cell, Did the protein enter through active transport or a passive transport process?**

**21. A glucose molecule enters a cell. The concentration of glucose inside the cell is lower than the concentration of glucose outside the cell. Did the cell use ATP to get the glucose inside?**



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**The following section is:**

**Apologia Exploring Creation  
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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. )**



# **Apologia Exploring Creation With Advanced Biology: The Human Body 2<sup>nd</sup> Edition - Module 1 Study Guide Lapbook Pages - Booklet Templates Assembly Instructions**

## **Question 1. a-k**

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. Fold along the center line so that the question is on the outside.

## **Question 3**

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 4**

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

## **Question 5**

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 6**

Cut out along the outer black line edges of the booklet. Fold along the center vertical line so that the words are on the outside. Now cut along the short horizontal dotted lines to create “flaps,” under which you will write your definitions.

### Questions 7-10

Cut out along the outer black line edges of each page of this booklet. Stack so that the pages are in the order of the questions. Along the left side, punch 2 holes. Secure with ribbon or metal brad fasteners. You may choose to just staple along the left side of the stack.

### Question 11

Cut out along the outer black line edges of each page of this booklet. Stack so that the question is on the front. Along the left side, punch 2 holes. Secure with ribbon or metal brad fasteners. You may choose to just staple along the left side of the stack.

### Questions 12-13

Cut out along the outer black line edges of the booklet and title text box. Fold the booklet along the center line so that the questions are on the inside. Glue the title text box on the outside front of the booklet.

### Questions 14-21

Cut out along the outer black line edges of the pages. Stack the pages so that the title is on the front and the questions are in order. The pages should get longer toward the back of the stack. Now punch 2 holes through the top of the stack. Secure with a ribbon or metal brad fasteners. You may choose to just staple along the top of the stack.

# Module 1

## Study Guide Questions – Lapbook Booklet Templates

Question #1: a-k

# Module # 1

## Definitions

a. Gross anatomy:

b. Microscopic anatomy:

c. Physiology:

d. Histology:

e. Organ:

## Question #1

**f. Tissues:**

**g. Homeostasis:**

**h. Effector:**

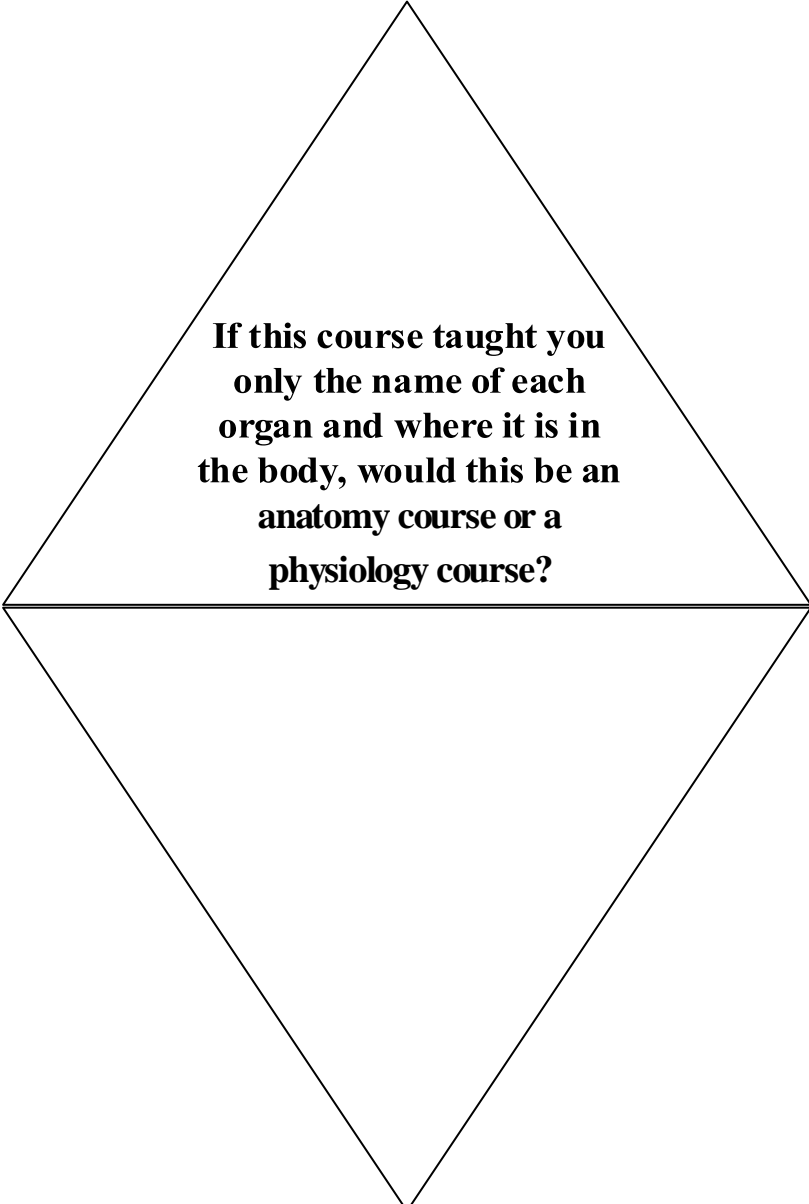
**i. Selective permeability:**

**j. Endocytosis:**

**k. Exocytosis:**



## Question #2



**If this course taught you only the name of each organ and where it is in the body, would this be an anatomy course or a physiology course?**

### Question #3

**What are the seven levels of organization in a living organism?**

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

### Question #4

**Suppose you are using a 40x, 100x, 400x, 1000x microscope to study the human body. What levels of organization would you be studying?**



**Question #5**

**What are the  
four types of  
tissue?**

**1.**

**2.**

**3.**

**4.**

## Question #6

|  |  |  |
|--|--|--|
|  | I<br>D<br>E<br>N<br>T<br>I<br>F<br>I<br>C<br>A<br>T<br>I<br>O<br>N | <b>The lining of a blood vessel or sinuses</b> |
|  |  | <b>The trapezius muscle</b>                    |
|  |  | <b>The cartilage in your joints</b>            |
|  |  | <b>The frontal lobe of the brain</b>           |

## Questions #7-10

**Steady as She Goes!**

**7. What is the general term for the processes in our environment that threaten homeostasis?**

**8. Suppose your heart rate began to increase significantly. If the body initiated a negative-feedback response, would your heart rate go up or down?**

**If the body initiated a positive-feedback response, would your heart rate go up or down?**

**9. What are the two organ systems that control the negative-feedback systems of the body?**

## Questions #7-10 (Continued)

**10. When you exercise, your blood glucose levels tend to drop because you are using the glucose for energy. To counteract that effect, the pancreas monitors your blood glucose level. If the pancreas “decides” that the blood glucose level is too low, it can release a hormone called glucagon. This hormone stimulates the liver to release glucose into the blood.  
See next page...**

**a. What is the stress in this situation?**

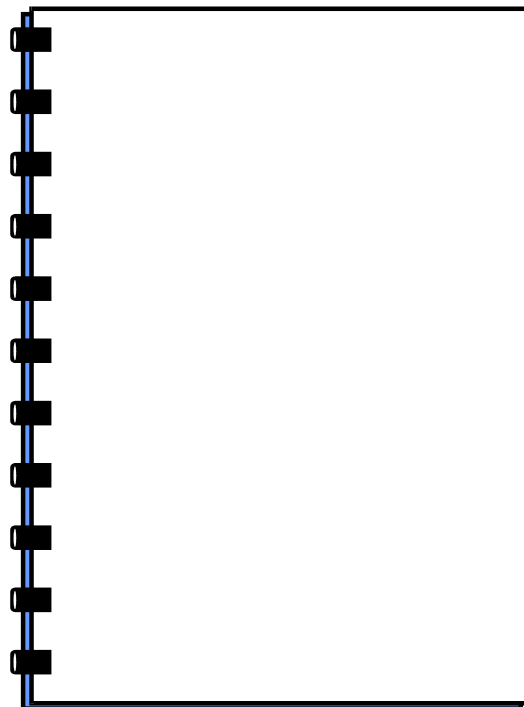
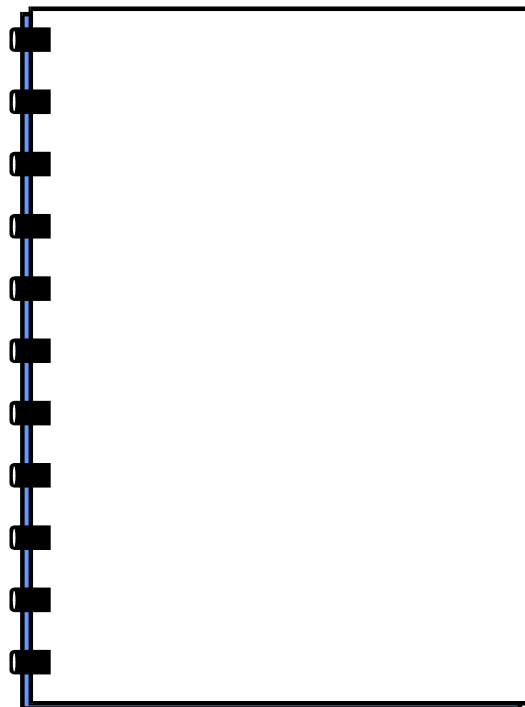
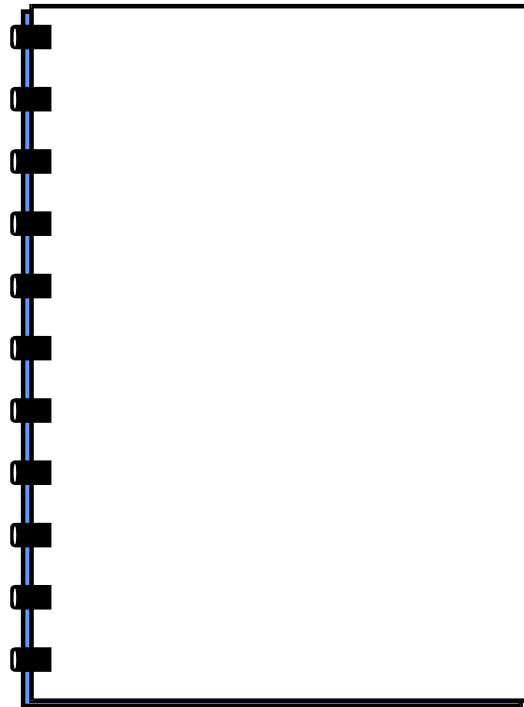
**b. What is the control center?**

**c. What is the effector?**

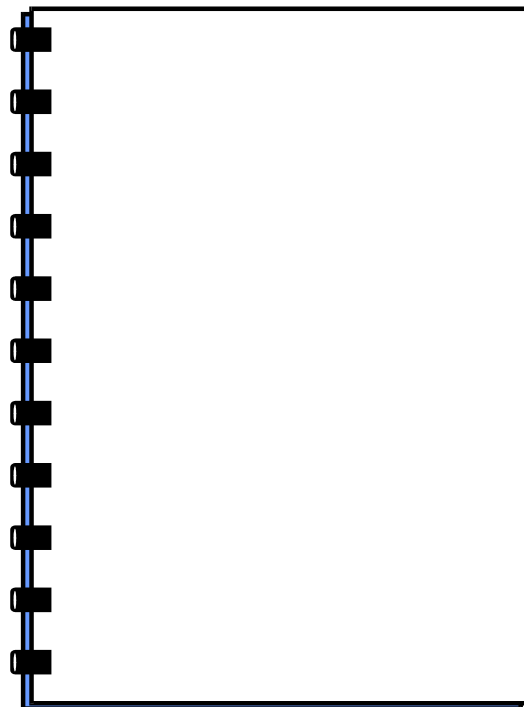
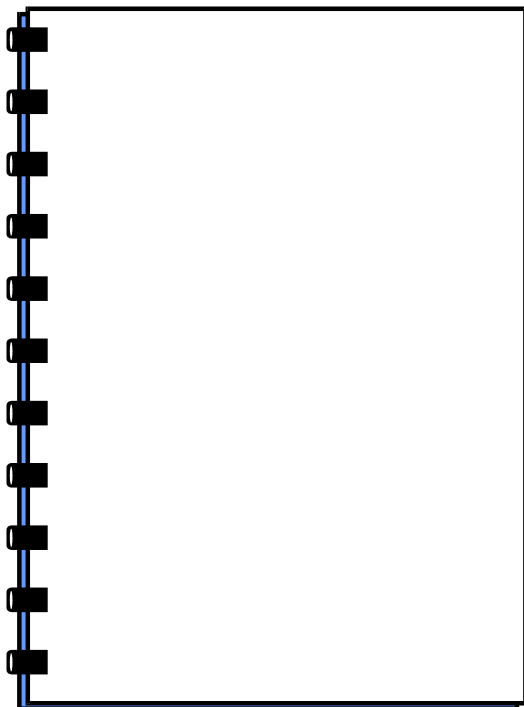
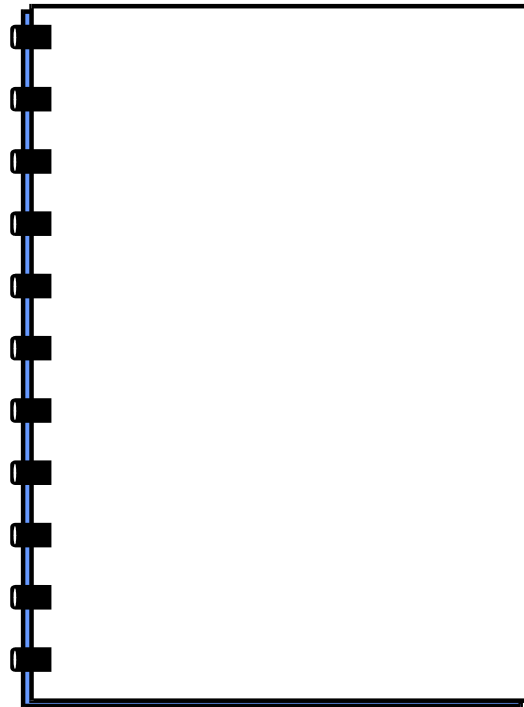
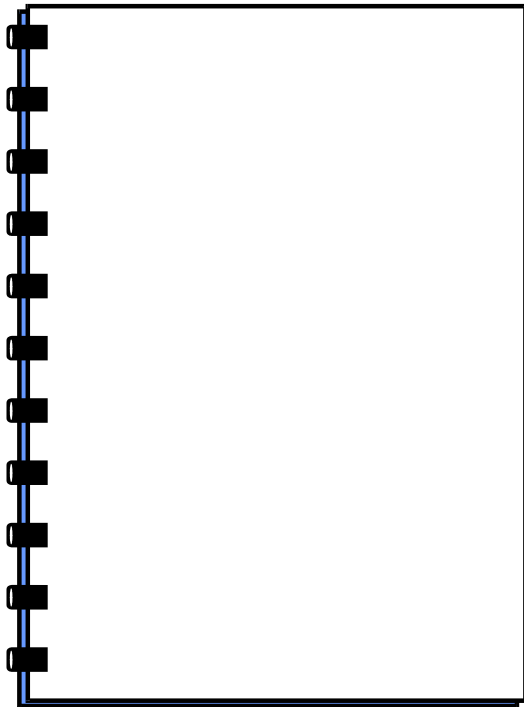
**d. Is the endocrine system involved?**

## Question #11

**List the organelles discussed in module 1, and briefly give their main functions.**

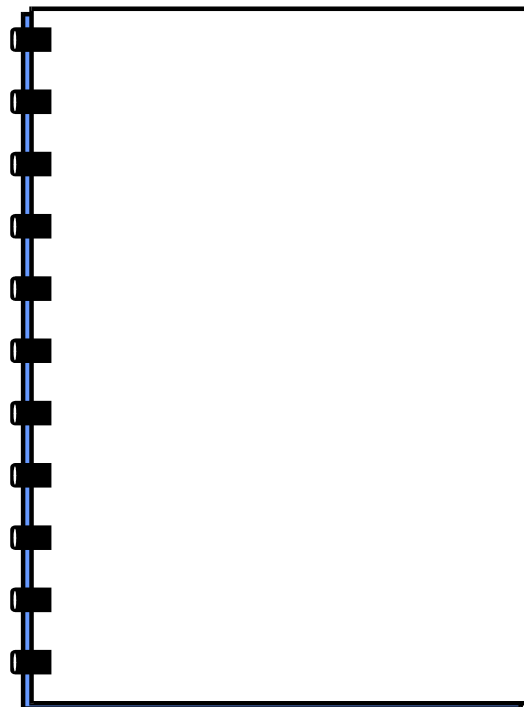
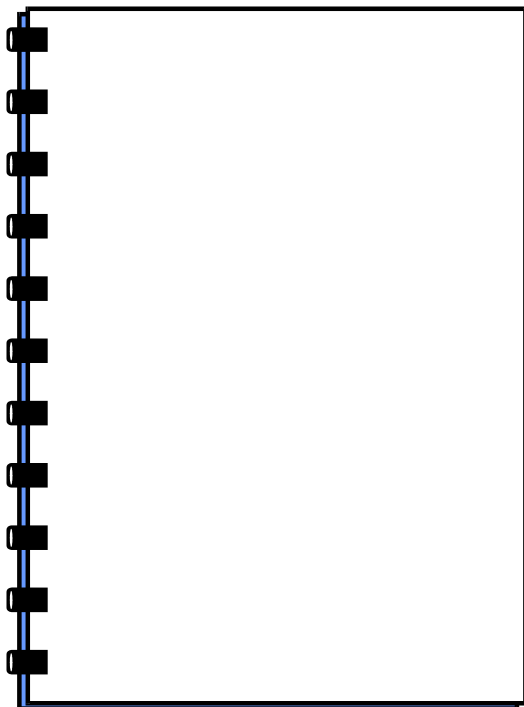
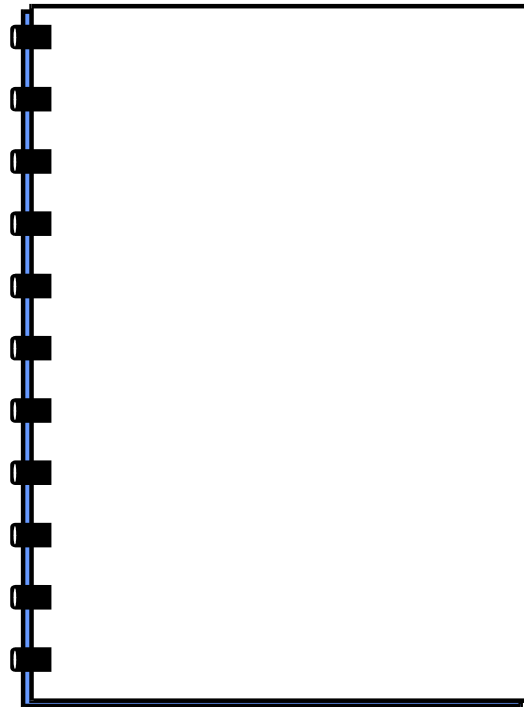
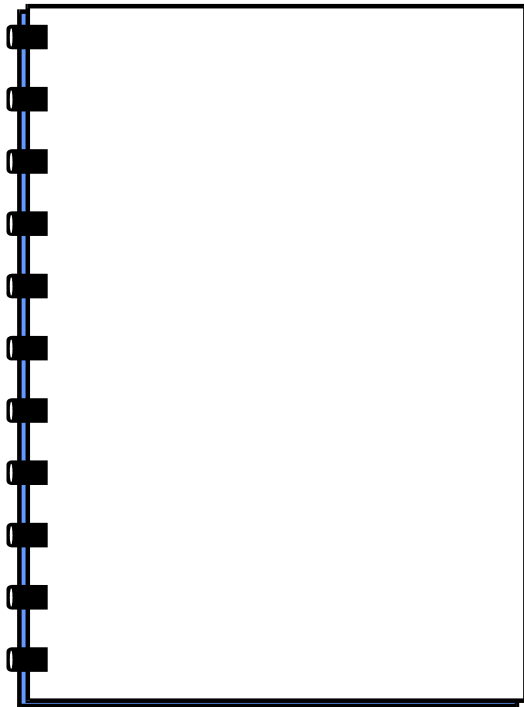


## Question #11 (Continued)

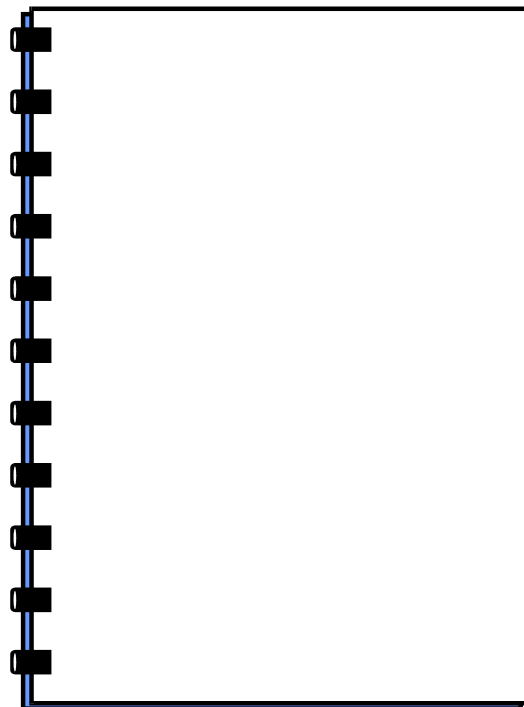
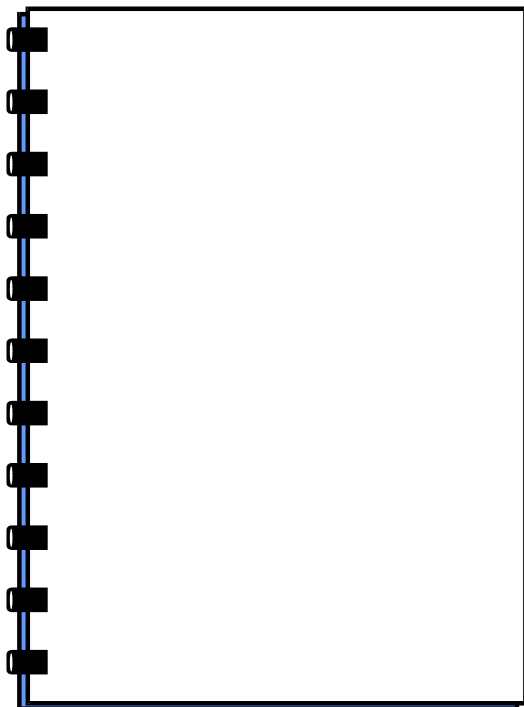
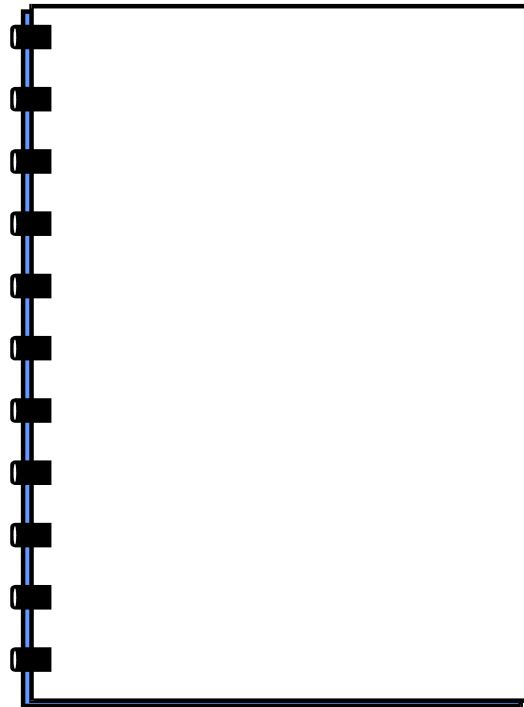
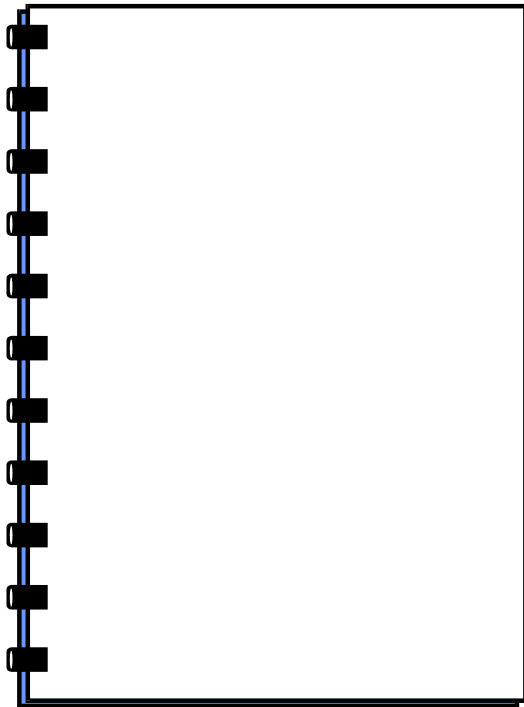




## Question #11 (Continued)



## Question #11 (Continued)



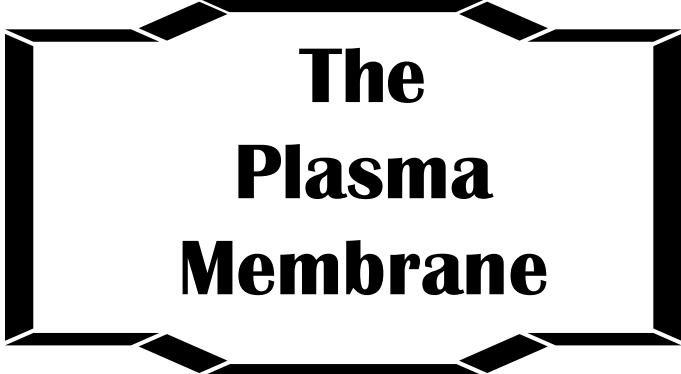
## Questions #12-13

# Mitosis

**List the phases of mitosis in order.**

**In which phases of mitosis do chromosomes have the X shape that most people associate with chromosomes?**

## Questions # 14-21



# The Plasma Membrane

**What property of phospholipids gives the plasma membrane the ability to automatically reassemble?**

**Question #14**

**What is the function of a glycoprotein in the plasma membrane?**

**Question #15**

**What is the function of a receptor protein in the plasma membrane?**

**Question #16**

## Questions #16-23 (Continued)

The model of the plasma membrane that we discussed is the fluid mosaic model. What is the "fluid?"

What does "mosaic" refer to?

**Question #17**

There are essentially four basic ways a substance can get through the plasma membrane. What are they? If you get specific, you will end up listing 6. That's fine, too.

**Question #18**

For each of the following substances, indicate how they will get through the plasma membrane and into the cell. In this case, consider channel proteins and charged channel proteins to be different, and use the two more precise terms for endocytosis.

- a. water
- b. a protein
- c. a  $Mg^{2+}$  ion
- d. a monosaccharide
- e. an invading bacterium
- f. a lipid

**Question #19**

## Questions #16-23 (Continued)

**A protein enters a cell. The outside of the cell has a higher concentration of that protein than the inside of the cell, Did the protein enter through active transport or a passive transport process?**

**Question #20**

**A glucose molecule enters a cell. The concentration of glucose inside the cell is lower than the concentration of glucose outside the cell. Did the cell use ATP to get the glucose inside?**

**Question #21**



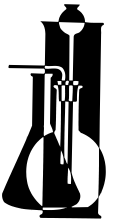
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**There are NO lab experiments  
in this module.**