Arabia Mountain High School
9th Grade Biology Summer Assignment

Welcome to 9th Grade Biology! In order to increase your academic success in this course complete this packet and turn it in on your first day of Biology class. You will need to do your best work and follow all instructions completely. Failure to follow instructions or turn in assignment will **result in a failing grade.**

Biology is an introductory life science course. This course will prepare students for the critical thinking and problem solving skills required in higher-level high school and college courses. We will study everything from the microscopic organelles of a cell to the complexity of living organisms! But, due to the large amount of material that needs to be covered during the year, a summer assignment is essential. The summer assignment will introduce you to many of the topics that we will visit this year and give you a much needed head-start that will ensure your success in the course.

The purpose of this assignment is to give students an opportunity to show that they are proactive and, therefore, do not need constant supervision to do quality work on time. What you get out of this class will be based solely on what you are willing to put into class. The students who have been most successful in this class and on the End of Course (EOC) exams are those students who were willing to work steadily throughout the summer, the school year, and are willing to work independently. As your teacher, I expect my students to be prepared and well behaved during class so I can concentrate on teaching and help you get the most out of this course. If you come to class eager to learn, focused, and prepared, you will learn a great deal about Biology and have a good time in the process.

To complete this assignment, you may use ANY resources that you wish. You may even collaborate with each other, but I absolutely do not want to see identical work from any students! Students with plagiarized or copied work from each other will ***automatically be receive a grade of zero.*** The best way to contact me is at my school email: jacqueline_johnson@dekalbschoolsga.org. Feel free to contact me over the summer with ANY QUESTIONS about this assignment, but please don't worry if I don't respond immediately because I may not check my email every day. I will check my email multiple times a week, so if you don't hear back from me, just be patient and I will respond soon.

Make sure that you complete all parts of the summer assignment. If your assignment is incomplete or not turned in, you will be a failing grade and/or a grade of zero. The best advice is **DO NOT** wait until the end of summer to start working!

I look forward to seeing you next school year!

Mrs. J. Johnson
Lead Biology Teacher

Your assignment consists of Five (5) sections. The assignment will also count for Five (5) grades: 3 Daily Grades, 1 Project Grade & 1 Test Grade

The Grade Breakdown (Grading Rubric) is as follows:

1. Vocabulary Review 100 points (one DAILY grade)

Part 1: Vocabulary Flash Cards – 50 points

50 Flash Cards @ 1 Point each Total = 50 points

Part 2: Prefix/Suffix Chart – 50 points

30 Prefix @ 1 points* each = 30 points

20 Suffix @ 1 points* each = 20 points

Total = 50 points

*1/2 point for Meaning & 1/2 point for Example

2. Element & Macromolecule Chart – 96 points (one DAILY grade)

4 Elements with 3 Blanks each – 12 Blanks

4 Macromolecules with 3 Blanks each – 12 Blanks

Total – 24 Blanks

Each Blank = 4 Points

Total = 96 Points

3. Hypothesis & Variable Statements – 102 points (one DAILY grade)

6 Statements @ 17 points each Total = 102 points

Breakdown of Points:

- Each Hypothesis = 9 points
- Each Independent Variable = 4 points
- Each Dependent Variable = 4 points

Total = 17 points

4. Cell Structure and Function – 100 points (one PROJECT grade)

Cell Book Part	Points Earned	Total Possible Points	Comments
Title page with name		1	
Table of Contents		3	
Cell Theory Description (Leeuwenhoek, Hooke, Schleiden, Schwann, & Virchow)		8	
"Cell Comparison" Title Page		5	
Prokaryote vs. Eukaryote		5	
Plant vs. Animal		5	
"Organelles" Title Page		5	
Nucleus		3	
Nucleolus		3	
Endoplasmic Reticulum		6	
(smooth and rough)		3	
Ribosomes		3	
Golgi Apparatus		3	
Vacuole		3	
Lysosomes		3	
Cytoskeleton		3	
Centriole		3	
Chloroplast		3	
Mitochondrion		3	
Cell wall		3	
Cell Membrane		3	
Labeled Eukaryotic Cell		8	
Labeled Prokaryotic Cell		5	
Spelling		4	
Neatness		4	
Sketches/Detail/Color		5	
		100	

Section 5: Cell Structure and Function – 100 points (one Test grade)

You will be given a test at the end of the first week of school that covers all content from Sections 1-4 of the summer assignment. Please study the information throughout the summer.

Section 1: Biology Vocabulary

Create flash cards of the definitions for the following terms:

Abiotic factors
Biotic factors
Adaptation
Polarity
Biodiversity
Succession
Producer
Niche
Photosynthesis
Cellular respiration
Mitochondria
Chloroplast
Cellulose
Homeostasis
Diffusion
Osmosis
Cell membrane
parasite
host
herbivore
carnivore
omnivore
scavenger
decomposer
aerobic
anaerobic
chemosynthesis
carbohydrate
eukaryote
prokaryote
flagella
lipid
ribosome
mutation
mutualism
commensalism
biomass
cell wall
monosaccharide
radiation
cilia
pseudopodia
protein
enzyme
nucleic acids
nucleus
binary fission
budding
meiosis
mitosis

Biology Prefixes and Suffixes

Learning science vocabulary can feel like learning a different language, mainly because it is! The roots of most of these words are either Latin or Greek. By breaking them down and learning the meaning of their prefixes and suffixes we can begin to "speak scientist!"

Look up the meaning of each prefix and suffix below and give an example of how they are used.

Prefix	Meaning	Example Using Prefix
Ab-		
Anti-		
Auto-		
Bi-		
Cyto-		
Di-		
Macro-		
Meta-		
Micro-		
Mono-		
Hemi-		
Hetero-		
Homo-		
Hydro-		
Hyper-		
Hypo-		
Inter-		
Intra-		
Iso-		
Neuro-		
Path-		
Poly-		
Photo-		
Pseudo-		
Sub-		
Therm-		
Trans-		
Tri-		
Un-		
Zoo-		

Suffix	Meaning	Example Using Suffix
-asis		
-blast		
-emia		
-genic		
-gram		
-graph		
-ism		
-ist		
-itis		
-kinesis		
-lysis		
-meter		
-oma		
-osis		
-otomy		
-ous		
-phyll		
-philic		
-phobic		
-scope		

Section 2: Elements and Macromolecules

The following Elements and Macromolecules are essential to our studies this year and must be mastered prior to the beginning of class. Fill out the table correctly, completely, and know their content.

ELEMENT	STRUCTURE	FUNCTION	HOW DOES THE BODY ACQUIRE IT
Carbon			
Oxygen			
Nitrogen			
Hydrogen			
MACRO MOLECULE	**STRUCTURE**	**FUNCTION**	**HOW DOES THE BODY ACQUIRE IT**
Carbohydrates			
Proteins			
Lipids			
Nucleic Acids			

Section 3: Hypothesis & Variable Statements

A hypothesis is usually written as an "If this, then that" statement. For the following questions, create a hypothesis and identify the independent and dependent variables.

1. **Will loud music affect the height of corn plants?**
   a. Hypothesis: _____
   _____
   b. Independent Variable: _____
   c. Dependent Variable: _____

2. **Will nicotine affect mold growth?**
   a. Hypothesis: _____
   _____
   b. Independent Variable: _____
   c. Dependent Variable: _____

3. **Will growing tomato plants in water affect mass size?**
   a. Hypothesis: _____
   _____
   b. Independent Variable: _____
   c. Dependent Variable: _____

4. **Will salt in water affect the breathing rate of a goldfish?**
   a. Hypothesis: _____
   _____
   b. Independent Variable: _____
   c. Dependent Variable: _____

5. **Will the use of bug spray attract fewer mosquitoes?**
   a. Hypothesis: _____
   _____
   b. Independent Variable: _____
   c. Dependent Variable: _____

6. **Will eating cake every day increase a person's health?**
   a. Hypothesis: _____
   _____
   b. Independent Variable: _____
   c. Dependent Variable: _____

Section 4: Cell Structure and Function

Since this section is graded as a project, it includes more 'hands-on' work and requires more time input on your part than the other sections do. The instructions should explain all steps in detail, please read them and follow directions!

Cell Structure and Function Project

You will prepare a booklet on cell structure and function. The following format should be followed for your book:

Page 1	Title page with title (be creative), your name, class period and date
Page 2	Table of contents (starting with page 3)
Page 3	Page with the title "Cell Theory" Major contributions of Anton von Leeuwenhoek, Robert Hooke, Matthias Schleiden, Theodor Schwann, and Rudolf Virchow should be included in addition to the three parts of the cell theory.
Page 4	Page with the title "Cell Comparisons"
Page 5	Page with the title "Comparison of Prokaryotic and Eukaryotic Cells" (Use a chart!)
Page 6	Page with the title "Comparison of Plant and Animal Cells" (use a chart!)
Page 7	Page with the title "Organelles"

For pages 8-20: These pages will each have a drawing of the organelle (with anything labeled that is in parentheses) as well as the name of the organelle (as the title of the page – should be underlined) and a description of its role in the cell.

Page 8	Nucleus (with nuclear membrane, nucleolus, and chromatin labeled)
Page 9	Nucleolus
Page 10	Endoplasmic Reticulum (smooth and rough)
Page 11	Ribosomes
Page 12	Golgi Apparatus
Page 13	Vacuole
Page 14	Lysosome
Page 15	Cytoskeleton
Page 16	Centriole
Page 17	Chloroplast
Page 18	Mitochondrion
Page 19	Cell wall
Page 20	Cell membrane
Page 21	SKETCH of a labeled animal and plant cell
Page 22	SKETCH of a labeled prokaryotic cell

****DRAWINGS and SKETCHES MUST be original work. *NO* computer generated or photocopying is allowed!**

**Unlined paper must be used (so no notebook paper)!!!

**Turn in completed cell book in a 3-prong folder or report cover.

IF YOU NEED HELP WITH THIS ASSIGNMENT PLEASE ASK ME! Also, if you have ANY problem finishing this section or have a problem with finding the information, please let me know ASAP so I can help you or come up with a solution. DO NOT wait and tell me a week or two before school starts that you are having problems completing the project.