

## Academy Biology 2024-2025

### Summer Reading Assignment

**Your Academy Biology Summer Reading Assignment will be two-fold. Your first assignment (Part A) is to access an article from a scientific journal on a topic related to what we will be discussing in class next year. For this article, you will write a response. Your second assignment (Part B) will be to read Why We Get Sick: The New Science of Darwinian Medicine, by Nesse and Williams. We will refer to this book periodically throughout the year.**

#### **Part A**

Several times throughout the upcoming school year, you will be asked to access electronic or hard copies of scientific journals, in an effort to summarize and reflect on research that relates to the topic we are discussing in class. Your summer assignment is to choose **one** of the thirteen topics that we will be covering next year in Academy Biology and write a reflection paper.

For your topic, you will choose an article that is a minimum of 3 pages (including graphics) and write a 1-pg minimum reflection paper with size 12 Times New Roman font, 1 inch margins. Your paper will have two components: summary and response. Your summary is **not** to be directly copied from the article, rather it should be in your own words and make up no more than 1/3 of your reflection paper. Your personal response should include at least twelve full sentences with thoughtful reflection. **Your assignment should be mostly your reflection on the article with the summary only making up a small fraction of your response.**

Ask yourself and address these questions when writing your reflection:

*What is the scientific/medical/ecological significance of the information in this article?*

*What are the implications of the information in this article? What does it mean to me?*

*Have my perceptions of this topic (if I had any) changed since reading this article?*

**\*Do not forget to identify article with journal name, date, article title and author's name!\***

#### Topic List

Below is the list of topics that we will be covering next year that you may choose from to write your reflection paper. Beside each topic are suggested keywords or key phrases that you may want to use when electronically or manually searching for articles on each topic.

**Biological Principles** (Themes of Biology, Scientific Method, Research Tools)

**Biochemistry** (Composition of Matter, Carbon Compounds, Energy Transformations, Chemical Reactions & Enzymes)

**Cell Structure & Function** (Parts of Plant/Animal Cells, Active/Passive Transport, Multicellular Organization)

**Photosynthesis & Respiration** (Calvin Cycle, Krebs Cycle, Glycolysis, Fermentation)

**DNA, RNA, Protein Synthesis** (Structure of DNA, Chromosomes and DNA Replication, Transcription, Translation)

**Cell Cycle** (Cell Growth, Cell Division, Mitosis, Meiosis)

**Heredity** (Genetic Crosses, Chromosomes and Inheritance, Human Genetics, DNA Technology)

**Ecology** (The Biosphere, Ecosystems and Communities, Symbiosis, Energy Flow in Ecosystems, Biogeochemical Cycles)

**Population Growth** (Human Population Growth, Humans in the Biosphere, Biodiversity Crisis)

**Evolution** (The History of Life, Evidence of Evolution, Evolution of Populations and Species)

**Classification, Viruses & Bacteria** (History of Taxonomy, Modern Phylogenetic Taxonomy, Dichotomous Keys, Kingdoms and Domains, Viral/Bacterial infections, Viral/Bacterial Anatomy)

**Animal Kingdom** (Invertebrates, Chordates)

**Human Biology** (Nervous System, Skeletal System, Muscular System)

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Below is the list of scientific or current issue journals (many of which are published for high school and college students) that you may choose from to locate and read articles on the above topics:

- Scientific American**
- Science**
- Smithsonian**
- Science News**
- Discover**
- National Geographic**
- Natural History**
- Time**
- Newsweek**

If you would like to access your articles electronically, the Henry Clay Media Center provides an excellent database with free access to all of the periodicals above. Follow the directions on the next page to access articles using our school library's online research databases.

## **How to Research using Henry Clay's Media Center**

1. Go to <https://henryclay.fcps.net/media-center>
2. Under the database section, click Academic Search Complete
3. Authenticate you are a FCPS user by typing your name in the username box. (there is a [video](#) posted if you want to see the process)
4. Click into the password box and you will be prompted to click the “Log in with school or ky.gov email”
5. Click on the blue *Advanced Search* link.
6. Search for an article by title, author, topic etc.
7. Access the full text of the article.

**On the first day of class, you will turn in your typed article reflection.** We will spend some time in class discussing the articles you read, and how they relate to Biology. If you write your articles at the beginning of the summer, please review them shortly before we meet so that your reflection will be fresh on your mind. I look forward to our first classroom discussion!

### **Part B**

Have you ever wondered if the symptoms that you treat (coughing, fever, sneezing, diarrhea) should be better left untreated? When may a fever be beneficial? How do certain viruses “manipulate” their hosts into infecting others? Why We Get Sick: The New Science of Darwinian Medicine is a collaboration between a practicing physician and an evolutionary biologist to answer these questions. Why We Get Sick explores the basic principles of evolutionary biology, modern population biology, and behavioral genetics and then probes the evolutionary significance of various aspects of disease.

**Your assignment is to access a copy of this book and read it. The first week of school, we will briefly discuss the book and you will complete a multiple-choice assessment of the major themes in the book.** You will be allowed to use your copy of the book for the quiz, so be sure to bring it to class with you during the first week. It would be a good idea to make annotations in the margins to refresh your memory for our discussion and quiz.

Copies of Why We Get Sick are available for check-out from the Lexington Public Library; and for purchase on Amazon. Mr. Davis also has several copies available for free checkout, just send an email request.

R. Nesse and G. Williams, Why We Get Sick: The New Science of Darwinian Medicine, New York: First Vintage, 1996.