Exploring Creation with Biology, 3rd Edition – Errata File

This file contains the corrections for the 7th Printing (January 2023), of the **Textbook**. The printing for the Solutions and Tests Manual and Student Notebook may not be the same as the Textbook. Corrections for the Solutions and Tests Manual and Student Notebook are in separate files. (Posted 2024).

Clarifications:

Page 10 – The answer to On Your Own question #1.1 can be found in the section "The Limitations of Science" following the questions.

Page 69 – in the paragraph following the definition of Amino acids, revise the first sentence to the following:

> "There are about 20 different amino acids in the proteins that make up life. The shape and function of a protein are determined by the type, number, and order of amino acids linked together."

Page 78 – Figure 2.36 was enhanced with labels and arrows to Phosphate group and Deoxyribose sugar. See the revised figure on the page at the end of this file.

Page 192 – Add the following clarification after the first sentence:

> "…so it doesn't require energy. **Remember, this is called facilitated diffusion, a form of passive transport.** As ATP synthase rotates…"

Page 268 – Insert the following clarification between the 3rd and 4th sentences of the first full paragraph as follows:

> "is dominant or recessive). **A shaded circle or square indicates the individual shows the genetic trait being studied.** Look at Figure 7.11…"

Page 277 – font size on some squares in in the chart at the bottom of the page are wrong. See the revised chart of the page at the end of this file.

Page 298 – at the top of the page 'This' refers to '**Complementary base pairing**…'

Page 300 – at the end of the explanation to the OYO 7.5 answer, add the following:

> "This is a 1:1 (or 2:2) ratio, 1 purple-flower pea plant (*Ff*) for every 1 white-flower pea plant (*ff*) produced."

Page 358 – In Table 9.1, two lines were edited for clarity. (same edit for page 667)

1. Change the first line of #9 to: Does it have protective external plates **(exoskeleton)**? Phylum Arthropoda.
2. Change the 2nd line of #14 to: Does it have three pairs of **legs on the thorax**? Class Insecta.

Page 388 – Shifting of the title above the chart occurred and was pushed to the next page. Answers to Experiment 9.1.

Page 389 – The heading of this page was pushed down below the first section:
Study Guide for Module 9

1. Define the following terms:
   a., b. c,…m.

Page 437 – Question #15 – insert "(multicellular)" between macroscopic and algae so it reads:

> What two groups of protists principally contain macroscopic **(multicellular)** algae?

Page 441 – In the 3rd paragraph, 1st sentence, add the word 'gametophyte' after …into a new plant…" so the sentence reads:

> Remember that, like spores of fungi, haploid spores of plants can develop into a new plant **gametophyte** without fusing with another spore.

Page 565 – Change the 2nd bullet point to: "Two body segments: a cephalothorax (fused head and thorax) and abdomen."

Corrections:

Page 284 – In the second paragraph, change misspelled word and pronunciation of pleiotrophy to **pleiotropy** (ply ´ah truh pee). [make the same spelling edit to page 706 in the index.]

Page 569 – OYO question #14.10: change poison to venom (two times) and poisonous to venomous so the sentence reads:

> "Most spiders have **venom** glands and produce **venom** that they inject into their prey. Does that mean that we must fear most spiders because they are **venomous**?"

Page 583 – make the same changes to **venom** and **venomous** in the answer to OYO 14.10.

Nucleic Acids

Our discussion of the chemistry of life would not be complete, of course, without a brief description of DNA, the molecule that forms the basis of life. If you thought proteins were complex, you haven't seen anything until you have studied DNA! DNA is one of two macromolecules in the category of nucleic acids. RNA is the second important nucleic acid, and you'll learn more about both in Module 6, but for now this will be an overview. Nucleic acids contain carbon, hydrogen, oxygen, nitrogen, and phosphorus. Just like polysaccharides are composed of many monosaccharides, nucleic acids have building block molecules they're composed of. The building blocks of DNA and RNA are called **nucleotides** (noo' klee uh tides). Let's focus on DNA by studying Figure 2.36.

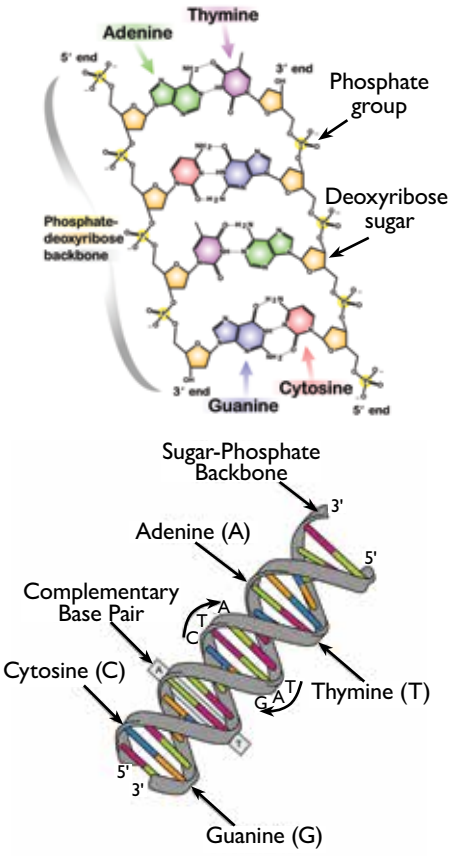

FIGURE 2.36
Schematic Representations of DNA

Nucleotides—The building blocks of DNA and RNA

DNA stands for deoxyribonucleic (dee' ox ee rye boh noo klay' ik) acid. It is a double chain of chemical units known as nucleotides. These two chains twist around one another in the double helix that is so familiar to most people who have studied any amount of biology. The nucleotides that make up these two chains are composed of three basic constituents: **deoxyribose** (a simple sugar that contains five carbons), a **phosphate group** (an arrangement of phosphorus, hydrogen, and oxygen atoms), and a **nitrogenous base**. A nucleotide's base can be one of four different types: **adenine** (ad' uh neen), **thymine** (thye' meen), **guanine** (gwah' neen), or **cytosine** (sye' toh seen).

In the top diagram of Figure 2.36, you can see that the phosphate groups link to the deoxyribose units, which support the bases. The two nucleotide chains are partially held together because the bases link together by hydrogen bonding in the same way water molecules form hydrogen bonds. (See the Chemical Bonds section in this module if you need to review this concept.) It is important to note that the attraction between the atoms in hydrogen bonding is about one-tenth as strong as the attraction between two atoms that have a true chemical bond (ionic or covalent) linking them. Notice that I said the weak hydrogen bonding is only partly responsible for holding the two nucleotide chains together. Recent research suggests that the fact that DNA nucleotides are hydrophobic and exist in the watery environment of the cell also plays a role in how the double helix maintains its shape. That is, until the cell needs it to separate. You'll learn more about that in Module 6.

Hydrogen bonding is important in DNA for another reason. Because hydrogen bonds are dependent on the molecules involved, only certain nucleotide bases can link together using hydrogen bonds. The nucleotide base adenine can only hydrogen bond to thymine. It cannot hydrogen bond to cytosine or guanine. In the same way, thymine can only hydrogen