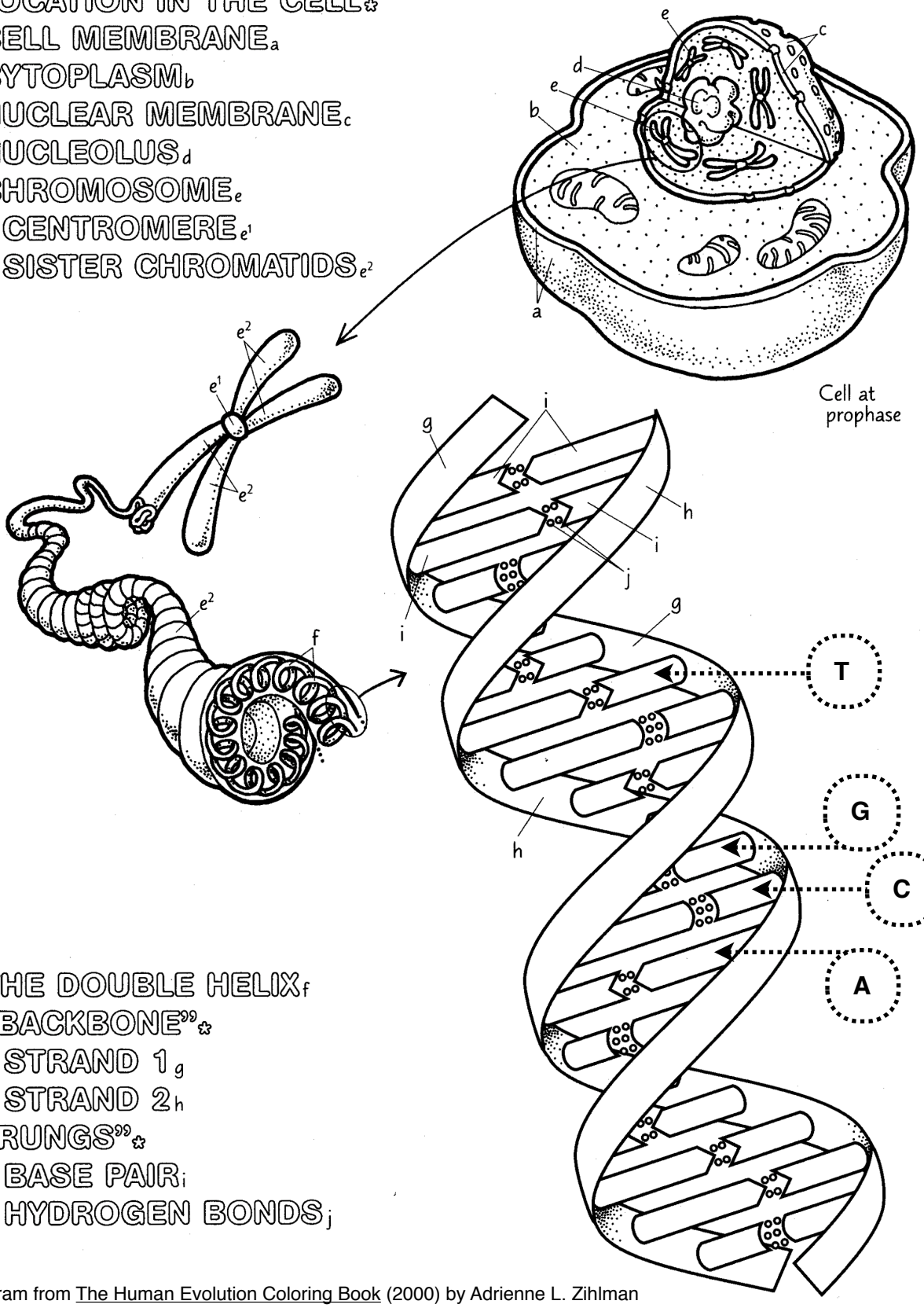
Genetics Name:

DNA: The Double Helix Period:

DNA: THE DOUBLE HELIX

LOCATION IN THE CELL☆
CELL MEMBRANE$_a$
CYTOPLASM$_b$
NUCLEAR MEMBRANE$_c$
NUCLEOLUS$_d$
CHROMOSOME$_e$
  CENTROMERE$_{e^1}$
  SISTER CHROMATIDS$_{e^2}$



THE DOUBLE HELIX$_f$
"BACKBONE"☆
  STRAND 1$_g$
  STRAND 2$_h$
"RUNGS"☆
  BASE PAIR$_i$
  HYDROGEN BONDS$_j$

diagram from The Human Evolution Coloring Book (2000) by Adrienne L. Zihlman

7.1e, 7.2e

Genetics Name:

DNA: The Double Helix Period:

Follow the instructions below to learn more about the structure of DNA, and the relationship between DNA and chromosomes. Use information from Chapter 7 to help you. Some of the questions are review from what we have studied earlier. *Check off each box ☑ as you finish that part of the instructions.*

1. Look at the cell in the upper right. Does it come from a prokaryotic or eukaryotic organism? *[p.118-119]*

The cell is _____ because _____

2. Color the NUCLEAR MEMBRANE orange ☐. What happens to the nuclear membrane during mitosis? *[p.154]*

First, the nuclear membrane _____ , then it _____ .

3. Color the CHROMOSOME (*e*), CENTROMERE(e^1), and CHROMATIDS(e^2) yellow ☐. How does the DNA of one sister chromatid compare to the DNA of the other one attached to it? *[p.153]*

The DNA is _____

4. What are chromosomes and chromatids made of? *[p.153]* _____

5. Now look at the long molecule of DNA. Notice that its shape is like that of a twisted ladder. The sides of the "ladder" are referred to as strands, which form the "backbone" of the DNA molecule, just like your spine helps to form your shape. Color the letters in the word BACKBONE by alternating pink and light blue ☐. Color STRAND 1 (*g*) pink ☐, and STRAND 2 (*h*) light blue ☐. This should help you to see how each one of the sides twists around the other. What are the strands made of? *[p.210]*

The strands are made of _____ parts and _____ parts.

6. How many strands are in a molecule of DNA? *[look on the diagram or check p.210]* _____

7. So, why is the molecule of DNA referred to as a ***double*** helix? *[p.210]*

It is called a double helix because _____

8. Next, look at the "rungs" of the double helix of DNA. These are made of parts called bases. A base can have one of four different labels: A, T, G, or C. These labels are abbreviations for longer names of the molecules that make them up. These bases can only fit together in certain ways. What are these ways? *[look on the diagram or check p.210]*

_____ always pairs with _____ _____ always pairs with _____

9. You are now going to color-code all of the bases (rungs) in the double helix on the coloring page. Use these colors:

A—use blue, if the base looks like a pointing arrow ☐.

T—use red, if the base looks like a pointing arrow can fit into it ☐.

G—use green, if the base looks like it has a bump on the end ☐.

C—use purple, if the base looks like it has a curved bite taken out of it ☐.

On the coloring page, one of each base has an arrow pointing to it so you can see what it looks like. You will need to color ALL of the bases, so every rung in the double helix has been colored. Last, color each of the letters in the words BASE PAIR in this color order: blue - red - green - purple ☐.