

## **Introduction:**

Few scientific endeavors have broader implications than the exploration into the human genome. Discovering the secret of how life works has driven scientific explorers for millennia, but only recently has total understanding of the human genome been so close. Within our grasp is the day when diseases like cancer are cured, when disorders like sickle cell anemia are corrected in the womb, and when guilt and innocence in criminal investigations are more certain.

And with the help of the exhibit *Genome: The Secret of How Life Works* and this guide, an understanding of the human genome is within the grasp of your students! The exhibit gives your students the opportunity to explore the depths of DNA in a way never possible. In turn, this guide is designed for you and your students to discover all there is in the exhibit by providing you with lesson plan ideas that link to your classroom objectives.

## **Overall Organization:**

Within its two distinct sections — one for grades 4-8 and another for grades 9-12 — this guide mirrors the organization of the exhibit. In other words, like *Genome: The Secret of How Life Works*, this guide follows a path that gradually digs deeper into DNA — beginning with an emphasis on what makes each of us unique and moving to what the future holds for thorough understanding of the human genome.

As a result of this organization, you will find eight science lesson plans that build on and enhance different parts of the exhibit. Each plan is independent, allowing for flexibility. At the same time, the lesson plans complement one another and give you the opportunity to explore the human genome using as many of the lesson plans as you feel are appropriate for your classroom and your goals.

Also, it may well be worth your time, to investigate the “other” curriculum unit (the high school section, if you are a middle school teacher – and vice versa). For example, with only minor modifications, lessons seven and eight in the elementary/middle school unit can be adapted into terrific high school lesson plans.

## **Lesson Plan Fields:**

All of the lesson plans include the following fields to help you pinpoint which are most beneficial for you and your students:

- Curriculum Connection outlines some of the ways a lesson plan can fit into your existing curriculum, often indicating whether students need any specific prior knowledge related to DNA.
- Exhibit Link explains the connection between the lesson plan and *Genome: The Secret of How Life Works*.
- Extensions & Modifications indicate many ways to tailor a lesson plan to better match your needs and your students' abilities, often including suggestions on how to extend a lesson into other areas of the curriculum. Additionally, the grades 4-8 section clearly delineates suggestions for making a lesson plan appropriate for elementary school or middle school.
- Discussion Questions/Writing Prompts provide topics to discuss and/or write about. In the course of the lesson, you should use them whenever you feel it is most appropriate because some may work best as a way to gauge prior knowledge while others may be better for assessing what students have learned.

In addition to the steps for completing the lesson and the fields mentioned above, you will see that the lesson plans also include helpful information such as:

- clear objectives
- important terms defined in the glossary
- additional resources for you and/or your students\*
- materials and time needed for completion
- links to national science standards
- resource lists

A glossary follows the lesson plans.

We hope that this guide provides you with many ideas on how your students can explore the exciting world of the human genome. In the process they are sure to discover more about themselves, more about the quest to crack the code, and more about the important role that science plays in our future.

\* All suggested web links were active at the time of this guide's publishing.