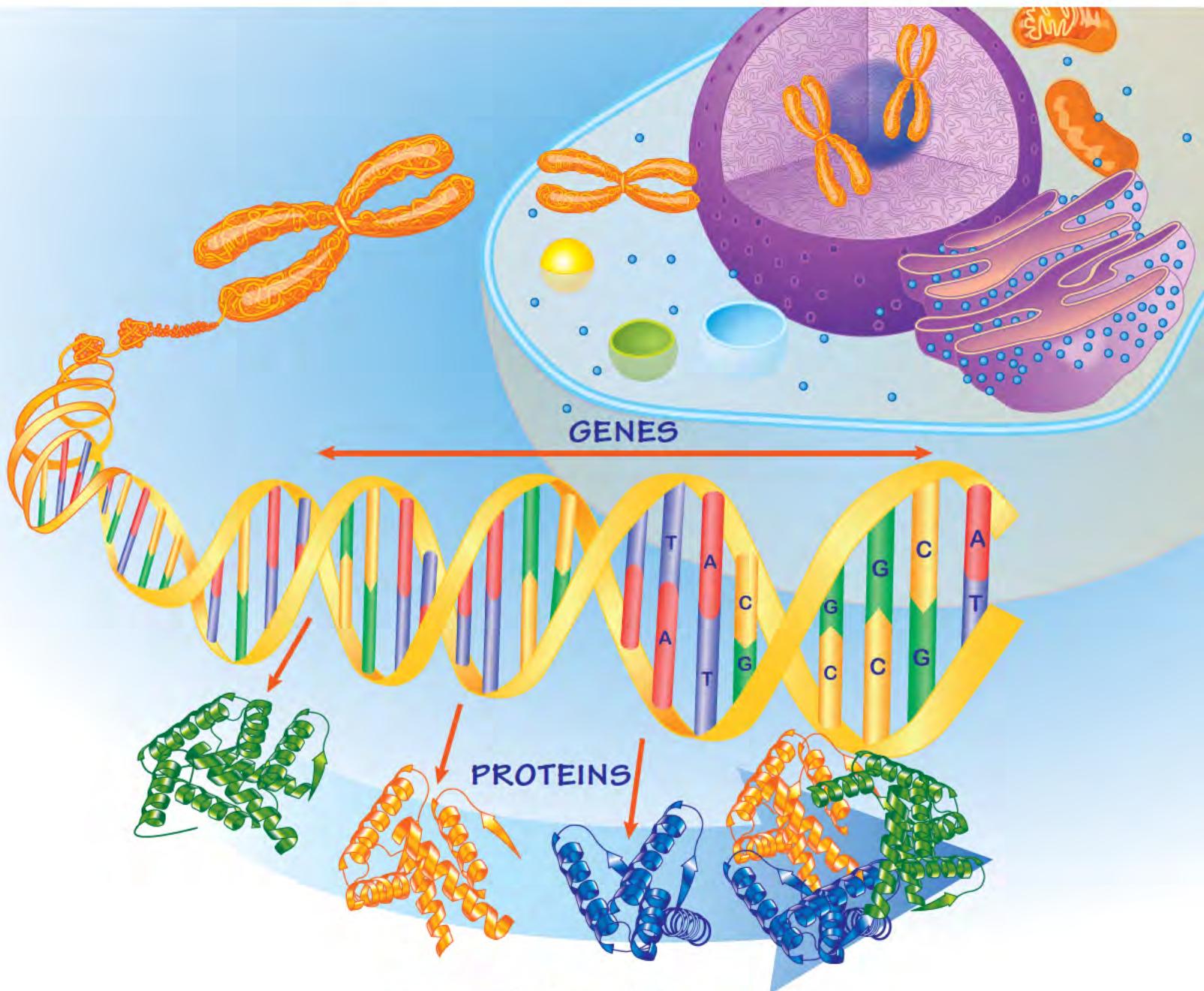


Chromosomes, Genes & DNA

Learning Guide



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TABLE OF CONTENTS

Lesson 1 - Chromosomes	2
Lesson 2 - Genes	3
Lesson 3 - DNA.....	4
Pause & Review - Chromosomes, Genes & DNA	5
Lesson 4 - Overview: From DNA to Protein	6
Lesson 5 - DNA Transcription: DNA to RNA	7
Pause & Review - DNA Transcription: DNA to RNA.....	9
Lesson 6 - Translation: From RNA to Protein	10
Pause & Review - Translation: From RNA to Protein.....	12
Lesson 7 - The Genetic Code	13
Pause & Review - The Genetic Code.....	14
Lesson 8 - Mutations.....	15
Pause & Review - The Genetic Code.....	17
Review Activities.....	18
Investigations - DNA/RNA Structure	20
Key Vocabulary Terms.....	22
Vocabulary Review	24
Assessment Review	26
Assessment.....	28
Assessment Key.....	30
NGSS Correlations	31



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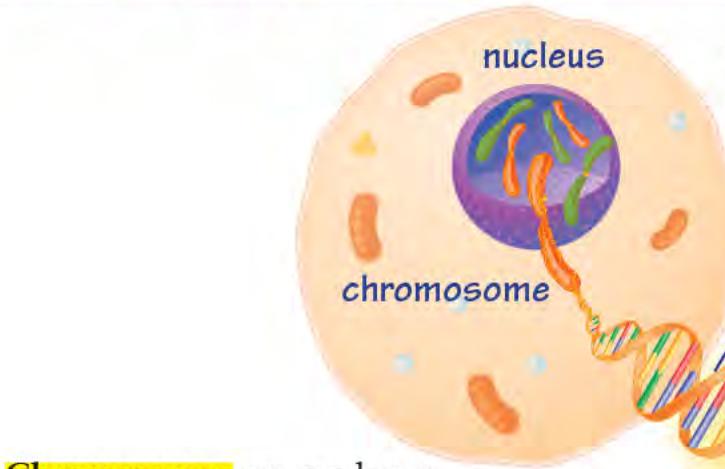
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ISBN 978-1-63212-056-4

Printed in the United States of America.

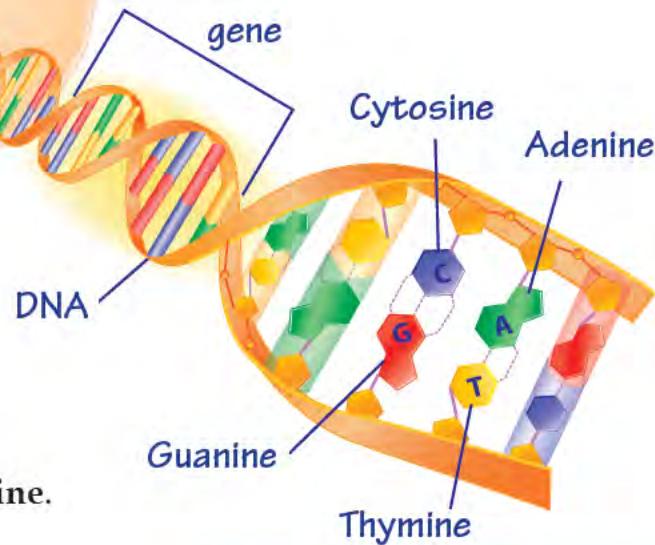
CHROMOSOMES



Pairs of **chromosomes** are found in the **nucleus** of a cell. One chromosome from each pair is inherited from each parent.

Chromosomes are made up of **DNA** (deoxyribonucleic acid), the hereditary material in humans and most other organisms.

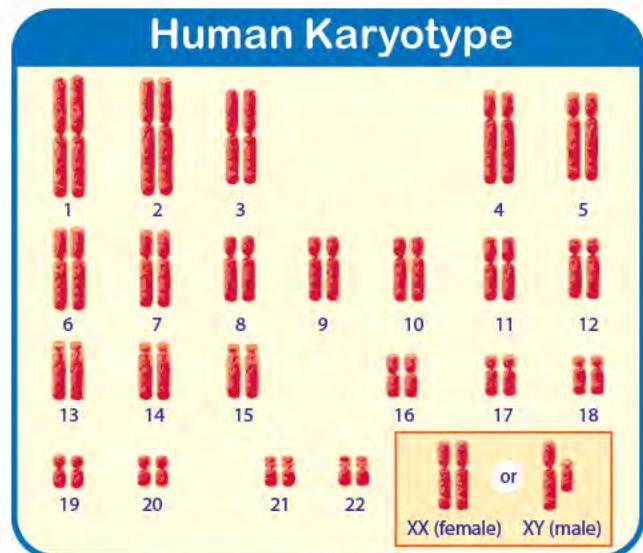
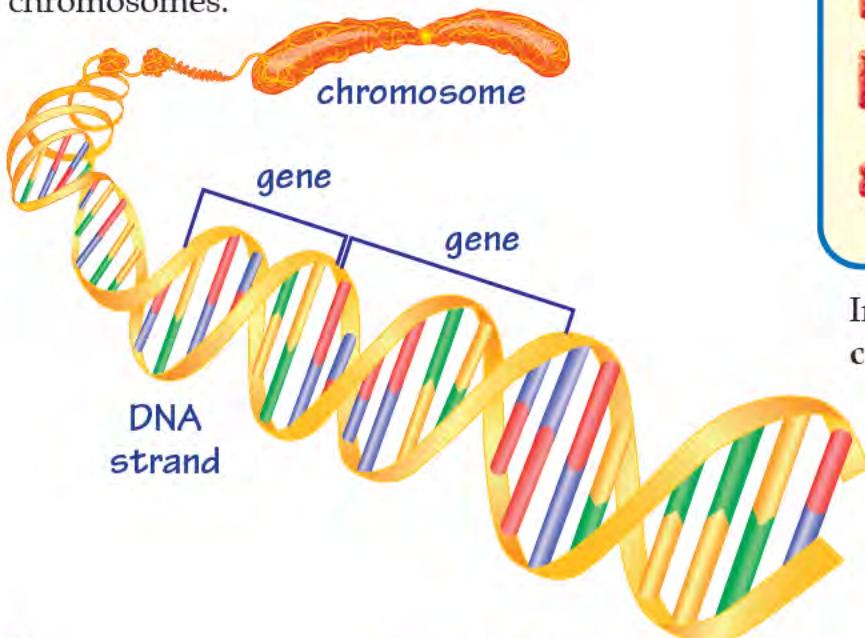
The hereditary information in DNA is stored as a code of four **nitrogen bases**: **Adenine**, **Guanine**, **Cytosine**, and **Thymine**.



What is a Gene?

Specific sections of the DNA are called **genes**. Each gene provides the cell with different information.

Each chromosome is made up of many genes. There are about **100,000 genes** found on human chromosomes.



In each human body cell, there are **46 chromosomes**, existing in **23 pairs**.

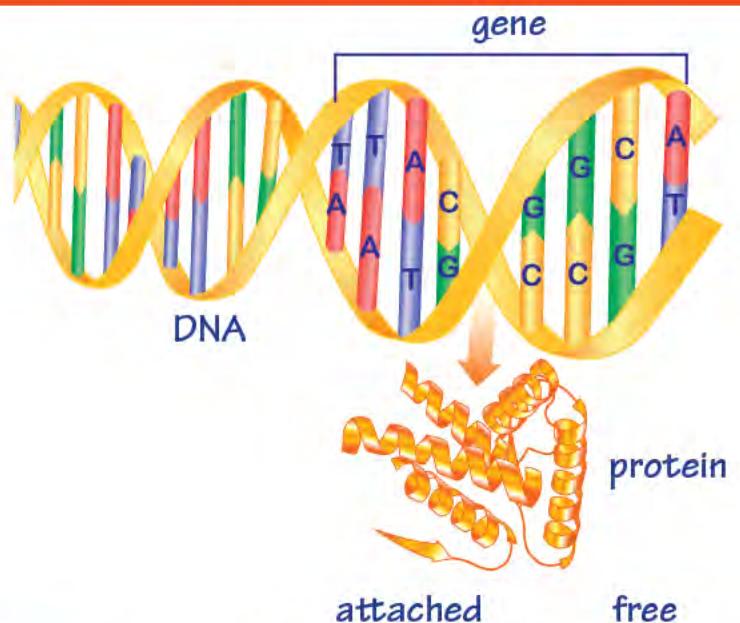
LESSON 2

GENES

Function of a Gene

Each gene along a strand of DNA has the information to tell the cell to produce a specific **protein**.

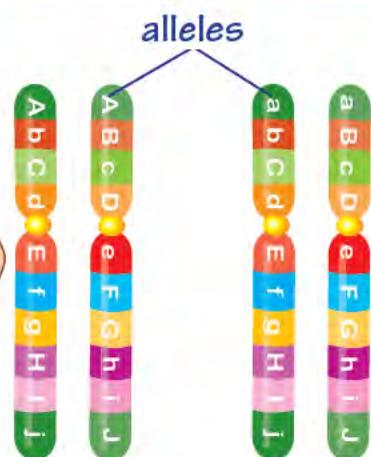
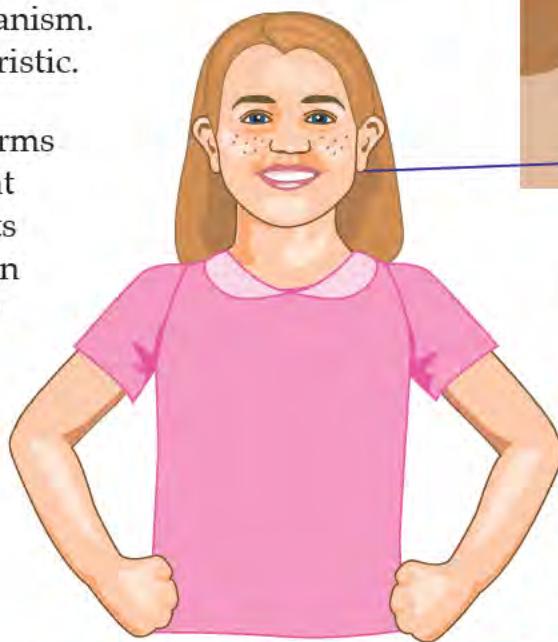
A gene is made up of a particular sequence of DNA bases. This sequence acts as a code for a protein.



What Is a Trait?

The production of different proteins determines the traits of an organism. A **trait** is an inherited characteristic.

Genes that exist in alternate forms are called **alleles**. The gene that determines earlobe shape exists in two alleles—one results in an attached earlobe and the other a free earlobe.



Human Blood Groups

Blood Group	Genotype (alleles - I ^A , I ^B , i)	Blood Group	Genotype (alleles - I ^A , I ^B , i)
A	I ^A I ^A or I ^A i	AB	I ^A I ^B
B	I ^B I ^B or I ^B i	O	ii

Multiple Alleles

Some genes have more than two, or multiple alleles. The human ABO blood group gene has three alleles that can combine into four types of blood groups.