

**Louisiana High School Science
Curriculum Standards**

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Biology	Boardworks High School Biology Presentations
The Cell	
1. Compare prokaryotic and eukaryotic cells (LS-H-A1)	Eukaryotic Cells Prokaryotic Cells
2. Identify and describe structural and functional differences among organelles (LS-HA1)	Organelles Eukaryotic Cells
3. Investigate and describe the role of enzymes in the function of a cell (LS-H-A1)	Enzymes Enzyme Shape Eukaryotic Cells
4. Compare active and passive cellular transport (LS-H-A2)	Active Transport Diffusion Osmosis
5. Analyze the movement of water across a cell membrane in hypotonic, isotonic, and hypertonic solutions (LS-H-A2)	Osmosis
6. Analyze a diagram of a developing zygote to determine when cell differentiation occurs (LS-H-A3)	Cell Differentiation
The Molecular Basis of Heredity	
7. Identify the basic structure and function of nucleic acids (e.g., DNA, RNA) (LS-H-B1)	Nucleic Acids DNA
8. Describe the relationships among DNA, genes, chromosomes, and proteins (LS-HB1)	DNA Proteins Protein Synthesis Transcription and Translation DNA Replication 1
9. Compare mitosis and meiosis (LS-H-B2)	Mitosis Meiosis The Stages of Mitosis The Stages of Meiosis
10. Analyze pedigrees to identify patterns of inheritance for common genetic disorders (LS-H-B3)	Patterns of Inheritance Inherited Diseases
11. Calculate the probability of genotypes and phenotypes of offspring given the parental genotypes (LS-H-B3)	Gregor Mendel Patterns of Inheritance Population Genetics

12. Describe the processes used in modern biotechnology related to genetic engineering (LS-H-B4) (LS-H-B1)	Genetic Engineering Genetic Engineering for Health Care GM Organisms
13. Identify possible positive and negative effects of advances in biotechnology (LS-HB4) (LS-H-B1)	GM Organisms Genetic Engineering for Health Care
Biological Evolution	
14. Analyze evidence on biological evolution, utilizing descriptions of existing investigations, computer models, and fossil records (LS-H-C1)	Evolution Fossil Record The Process of Evolution
15. <i>Compare the embryological development of animals in different phyla (LS-H-C1) (LSH-A3)</i>	–
16. Explain how DNA evidence and fossil records support Darwin’s theory of evolution (LS-H-C2)	Darwin Evolution Fossil Record
17. Explain how factors affect gene frequency in a population over time (LS-H-C3)	Population Genetics
18. Classify organisms from different kingdoms at several taxonomic levels, using a dichotomous key (LS-H-C4)	Classification
19. Compare characteristics of the major kingdoms (LS-H-C5)	Classification
20. <i>Analyze differences in life cycles of selected organisms in each of the kingdoms (LSH-C6)</i>	–
21. <i>Compare the structures, functions, and cycles of viruses to those of cells (LS-H-C7)</i>	–
22. Describe the role of viruses in causing diseases and conditions (e.g., AIDS, common colds, smallpox, influenza, warts) (LS-H-C7) (LS-H-G2)	HIV and AIDS Infectious Disease
Interdependence of Organisms	
23. Illustrate the flow of carbon, nitrogen, and water through an ecosystem (LS-H-D1) (SE-H-A6)	Carbon Cycle Nitrogen Cycle Water Cycle
24. Analyze food webs by predicting the impact of the loss or gain of an organism (LS-HD2)	Food Webs Loss of Diversity Extinction
25. Evaluate the efficiency of the flow of energy and matter through a food chain/pyramid (LS-H-D2)	Food Chains Energy Loss in Food Chains Energy Transfer in Food Chains
26. Analyze the dynamics of a population with and without limiting factors (LS-H-D3)	Describing Populations Human Populations

	Human Impact on the Environment Loss of Diversity Extinction Climate Change Air Pollution Water Pollution The Impact of Mining The Impact of Using CFCs Over-fishing Sustainability
27. Analyze positive and negative effects of human actions on ecosystems (LS-H-D4) (SE-H-A7)	
Matter, Energy, and Organization of Living Systems	
28. Explain why ecosystems require a continuous input of energy from the Sun (LS-H-E1)	Food Chains Energy Loss in Food Chains
29. Use balanced equations to analyze the relationship between photosynthesis and cellular respiration (LS-H-E1)	Photosynthesis 2 Aerobic Respiration
30. Explain the role of adenosine triphosphate (ATP) in a cell (LS-H-E2)	Aerobic Respiration Cell Theory
31. Compare the levels of organization in the biosphere (LS-H-E3)	Cells to Organisms Ecosystems
Systems and the Behavior of Organisms	
	Cells to Organisms Digestion The Brain The Endocrine System Controlling Movement Homeostasis Hormones The Kidneys The Nervous System The Respiratory System Ventilation The Skeleton
32. Analyze the interrelationships of organs in major systems (LS-H-F1) (LS-H-E3)	
33. Compare structure to function of organs in a variety of organisms (LS-H-F1)	–
34. Explain how body systems maintain homeostasis (LS-H-F2)	Homeostasis Thermoregulation Glucoregulation

35. Explain how selected organisms respond to a variety of stimuli (LS-H-F3)	Reflexes Behavior
36. Explain how behavior affects the survival of species (LS-H-F4)	Behavior
Personal and Community Health	
37. Explain how fitness and health maintenance can result in a longer human life span (LS-H-G1)	Alcohol Abuse Digestion Nutrition Smoking
38. Discuss mechanisms of disease transmission and processes of infection (LS-H-G2) (LS-H-G4)	Infectious Disease
39. Compare the functions of the basic components of the human immune system (LSH-G3)	Immune System Immune Responses
40. Determine the relationship between vaccination and immunity (LS-H-G3)	Vaccinations Antibodies and Vaccination
41. Describe causes, symptoms, treatments, and preventions of major communicable and noncommunicable diseases (LS-H-G4)	Antibodies and Vaccination Vaccinations Infectious Disease HIV and AIDS Tuberculosis Superbugs Inherited Diseases
42. Summarize the uses of selected technological developments related to the prevention, diagnosis, and treatment of diseases or disorders (LS-H-G5)	Genetic Engineering for Health Care Antibodies and Vaccination Inherited Diseases