



WASHINGTON D.C.
Science - Biology
***Biology: An Everyday Experience* © 2003**

| PERFORMANCE STANDARDS | ESSENTIAL SKILLS | PAGE REFERENCES | |
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| <i>Biology</i> | | | |
| <i>Content Standard 2: Each student observes and investigates organisms, their characteristics, life cycles and environments.</i> | | | |
| The student: <ul style="list-style-type: none"> • completes investigations that demonstrate understanding of the life sciences; • demonstrates an understanding of cells as the basic structure of all living things and have specialized parts that perform specific functions; • explains the structures and functions of deoxyribonucleic acid (DNA) and illustrates how information for specifying the traits of an organism is carried in the DNA; • demonstrates an understanding of the theory of biological evolution; • illustrates interdependence among organisms; • explains metabolic processes and energy transfers that occur in organisms; • explains how organisms maintain homeostasis. | <u>Cells</u> | | |
| | <ul style="list-style-type: none"> • differentiates structure and function in plant and animal cells; | SE: 33, 35 <i>Lab</i> 36 TWE: MO 32, 33 AS 36 | |
| | <ul style="list-style-type: none"> • identifies and investigates cellular processes including homeostasis, permeability, energy production, transport of molecules, disposal of wastes, function of cellular parts, and synthesis of new parts; | SE: 27, 32-36, 37, 38-40, 264, 406-408 <i>Mini Lab</i> 39 TWE: CFU 35 | |
| | <ul style="list-style-type: none"> • compares the structures and functions of viruses and bacteria and their roles in causing diseases and maintaining health; | SE: 72-75, 77-78, 79-88 <i>Lab</i> 76 TWE: AS 76 PO 80 MO 83 | |
| | <u>Biological Organization</u> | | |
| | <ul style="list-style-type: none"> • compares cells from different parts of plants and animals to show specialization of structure and function; | SE: 247-251, 294-295, 312-313, 402, 424, 429 <i>Lab</i> 246, 432, 511 TWE: PO 294 | |
| | <ul style="list-style-type: none"> • identifies cell differentiation in the development of organisms; | SE: 524-525, 532 TWE: AC 524 OP 524 | |

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| | <ul style="list-style-type: none"> sequences the levels of organization in multicellular organisms to relate the parts to each other and to the whole; | SE: 40-41 TWE: SJ 40 | |
| | <u>Structure and Function of Nucleic Acids in the Mechanisms of Genetics</u> | | |
| | <ul style="list-style-type: none"> describes the components of deoxyribonucleic acid (DNA), and illustrates how information for specifying the traits of an organism is carried in the DNA; | SE: 586-587, 589-594 <i>Lab</i> 588 <i>Mini Lab</i> 591 TWE: CD 589, 591 | |
| | <ul style="list-style-type: none"> explains replication, transcription, and translation using models of DNA and ribonucleic acid (RNA); | SE: 592-594 TWE: PO 593 | |
| | <ul style="list-style-type: none"> identifies and illustrates how changes in DNA cause mutations and evaluates the significance of these changes; | SE: 595-596, 609-610 <i>Mini Lab</i> 596 TWE: AS 596 | |
| | <ul style="list-style-type: none"> compares genetic variations observed in plants and animals; | SE: 616 <i>Mini Lab</i> 616 TWE: AS 616 | |
| | <ul style="list-style-type: none"> compares the processes of mitosis and meiosis and their significance to sexual and asexual reproduction; | SE: 465-466, 468-475 <i>Lab</i> 467, 598 TWE: SJ 473 | |
| | <ul style="list-style-type: none"> identifies and analyzes karyotypes. | SE: 567 TWE: MO 567 | |
| | The student demonstrates mastery of previous skills in addition to the following: <u>Biological Evolution</u> | | |
| | <ul style="list-style-type: none"> identifies evidence of change in species using fossils, DNA sequences, anatomical similarities, physiological similarities and embryology; | SE: 617, 619-621 TWE: SJ 620 | |
| <ul style="list-style-type: none"> illustrates the results of natural selection in speciation, diversity, phylogeny, adaptation, behavior, and extinction; | SE: 606-607, 609-614, 615-616 <i>Lab</i> 608 TWE: MO 607 PO 607 OP 611 | | |

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| | <u>Classification</u> | |
| | <ul style="list-style-type: none"> collects and classifies organisms of several taxonomic levels such as species, phylum, and kingdom, using dichotomous keys; | SE: 53-55, 696-699 <i>Lab</i> 49 TWE: AS 58 |
| | <ul style="list-style-type: none"> analyzes relationships among organisms and develops a model of a hierarchical classification system based on similarities and differences using taxonomic nomenclature. | SE: 56-57 TWE: CD 58 |
| | The student demonstrates mastery of previous skills in addition to the following: | |
| | <ul style="list-style-type: none"> identifies characteristics of kingdoms including monerans, protists, fungi, plants, and animals; | SE: 60-62, 71, 93, 113, 134-135 <i>Mini Lab</i> 58 <i>Technology</i> 61 TWE: GP 61 |
| | <u>Metabolic Processes and Energy Transfer</u> | |
| | <ul style="list-style-type: none"> compares the structures and functions of different kinds of organic molecules such as carbohydrates, lipids, proteins, and nucleic acids; | SE: 185-186, 586-587, 592 <i>Lab</i> 588 TWE: GP 587 |
| | <ul style="list-style-type: none"> compares the energy flow in photosynthesis to the energy flow in cellular respiration; | SE: 27, 114, 264, 406-408, 641-643, 658 <i>Lab</i> 659 TWE: CQ 641 |
| | <ul style="list-style-type: none"> investigates and identifies the effects of enzymes on food molecules; | SE: 206, 210 <i>Lab</i> 207 TWE: AS 207 |
| | <ul style="list-style-type: none"> analyzes the flow of matter and energy through the different trophic levels between organisms and the nonliving environment. | SE: 641-643, 655-656, 658 TWE: CQ 641 PO 655 |

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| | The student demonstrates mastery of previous skills in addition to the following: | |
| | <u>Natural Living Systems</u> | |
| | <ul style="list-style-type: none"> interprets the functions of systems in organisms including the circulatory, digestive, nervous, endocrine, reproductive, integumentary, skeletal, respiratory, muscular, excretory, and immune systems; | SE: 203-206, 208-212, 225-234, 256-259, 267-271, 274-277, 286-289, 292-297, 312-318, 320-322, 513-516, 518 <i>Lab 213</i> <i>Applying Technology 326-327</i> |
| | <ul style="list-style-type: none"> compares the interrelationships of organ systems to each other and to the body as a whole; | SE: 203-206, 208-212, 225-234, 256-259, 267-271, 274-277, 286-289, 292-297, 312-318, 320-322, 513-516, 518 |
| | <ul style="list-style-type: none"> analyzes and identifies characteristics of plant systems and subsystems. | SE: 401-403, 405-409, 421-422, 424-425, 428-430, 431, 440-441, 443-444 TWE: RT 425 |
| | <u>Homeostasis</u> | |
| | <ul style="list-style-type: none"> identifies and describes the relationships between internal feedback mechanisms in the maintenance of homeostasis; | SE: 29, 250, 257-258, 320-322, 402, 403 *Feedback mechanisms can be discussed with regards to the topics on these pages. |
| | <ul style="list-style-type: none"> investigates and understands how organisms respond to stimuli. | SE: 310-318, 332-333, 452-454 <i>Lab 319</i> <i>Applying Technology 326-327</i> TWE: SJ 318 MO 353 |
| | <u>Interdependence</u> | |
| | <ul style="list-style-type: none"> analyzes the flow of energy through various cycles including the carbon, oxygen, nitrogen, and water cycles; | SE: 655-658 <i>Mini Lab 657</i> <i>Lab 657</i> TWE: MO 655 PO 655 |
| <ul style="list-style-type: none"> interprets interactions among organisms including predation, parasitism, commensalism, and mutualism; | SE: 644-649 <i>Skill Check 646</i> <i>Lab 649</i> TWE: SJ 647 | |
| <ul style="list-style-type: none"> compares variations and adaptations of plants and animals in different biomes; | SE: 664-665 TWE: PO 665 | |

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| | <ul style="list-style-type: none"> investigates and explains the interactions in an ecosystem including food chains, food webs and food pyramids. | SE: 639-643 <i>Mini Lab 640</i> <i>Lab 649</i> TWE: PO 642 AC 643 |
| | <u>Plants in the Environment</u> | |
| | <ul style="list-style-type: none"> evaluates the significance of plants to the environment; | SE: 639, 641, 643, 656, 658 <i>Lab 659</i> |
| | <ul style="list-style-type: none"> explains reproduction in plants. | SE: 484-487, 488-491 <i>Lab 497</i> TWE: PO 490 SJ 490 |

Codes Used for TWE Pages

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| AC | Activity |
| AS | Assessment |
| CD | Concept Development |
| CFU | Check for Understanding |
| CQ | Convergent Question |
| GP | Guided Practice |
| MO | Motivation |
| OP | Options |
| PO | Portfolio |
| RT | Reteach |
| SJ | Student Journal |