

Academic Vocabulary

CONTENT BUILDER FOR THE PLC

SCIENCE
BIOLOGY

PLEASE NOTE: The words contained in **Academic Vocabulary** are words/concepts/terms essential for concept development; this list is not intended to be comprehensive. The “new to grade level” vocabulary suggestions are a starting point, and educators are encouraged to refer to their district curriculum resources for additional words/concepts/terms.

Cell Structure and Biochemistry

B.5 Biological structures, functions, and processes. The student knows that biological structures at multiple levels of organization perform specific functions and processes that affect life.

important words for concept development					
subcluster	standards	new to grade level		previously introduced	
Cellular Complexity	B.5(A), B.5(B), B.5(C)	active transport*	homeostasis	carbon*	nucleus*
		ATP (adenosine triphosphate)	lipid*	cell membrane	organelle*
		biomolecule*	lysosome*	cell wall	prokaryote*
		carbohydrate*	macromolecule	chloroplast	ribosome*
		concentration gradient*	metabolism	cytoplasm	vacuole*
		dehydration synthesis*	monomer	eukaryote*	
		deoxyribose sugar*	nitrogenous base*		
		diffusion	nucleic acid*		
		DNA/genetic material	nucleotide*		
		endocytosis	osmosis		
		endoplasmic reticulum*	permeable/semi-permeable		
		enzyme	plasma membrane*		
		exocytosis	polymer*		
		fatty acid*	simple organic molecule		
		glucose*	synthesis*		
		Golgi apparatus*	vesicle*		
Viruses	B.5(D)	antibiotic	immune cells*	cell*	
		bacteriophage*	influenza	genome	
		capsid*	pathogen *	host*	
		chicken pox	retrovirus	immune system*	
		Covid-19	T-cell*		
		DNA virus*	vaccine		
		genetic material*	virus*		
		herpes			
		HIV (human immunodeficiency virus)			

Organism Growth and Cell Differentiation

B.6 Biological structures, functions, and processes. The student knows how an organism grows and the importance of cell differentiation.

important words for concept development				
subcluster	standards	new to grade level		previously introduced
Cell Cycle	B.6(A), B.6(C)	anaphase* apoptosis benign* cancer cell cycle* (G0 stage/phase, G1 stage/phase*, S stage/phase*, G2 stage/phase*, M stage/phase*) cell division disease cellular process* centriole* centromere* chromatid* complementary base pair cytokinesis	daughter cell* diploid* DNA (deoxyribonucleic acid)* DNA replication* interphase* malignant* metaphase* mitosis* nucleotide prophase* somatic cell spindle fibers* telophase transcription* tumor*	chromosome hydrogen bond nucleus organelle
Cell Differentiation	B.6(B)	cell differentiation cell specialization DNA environmental factor RNA somatic cell*		gene

Mechanisms of Genetics

B.7 Mechanisms of genetics. The student knows the role of nucleic acids in gene expression.

important words for concept development				
subcluster	standards	new to grade level		previously introduced
DNA	B.7(A)	adenine* amino acid* complementary strand* cytosine* DNA (deoxyribonucleic acid)* double helix* genetic code*	guanine* hydrogen bond(ing)* nitrogenous base* nucleotide* phosphate* polypeptide chain thymine*	chromosome* protein* trait*
Gene Expression	B.7(B)	amino acid codon mRNA* gene expression* nitrogen bases	transcription* translation* tRNA uracil	allele* protein* trait*
Mutations	B.7(C)	adenine anticodon* base sequence* chromosomal mutation cytosine DNA* DNA codon* DNA triplet* gamete* gene mutation	genetic change* guanine insertion mutation* mRNA codon* non-disjunction somatic cell* silent mutation transcription translation* uracil	chromosome*
Molecular Technologies	B.7(D)	DNA fingerprinting DNA mapping gel electrophoresis	genetic engineering genetic modification polymerase chain reaction (PCR)	

Heredity and Diversity

B.8 Mechanisms of genetics. The student knows the role of nucleic acids and the principles of inheritance and variation of traits in Mendelian and non-Mendelian genetics.

important words for concept development			
subcluster	standards	new to grade level	
Genetic Diversity	B.8(A), B.8(B)	chromatid*	allele*
		chromosome reduction	diversity
		codominance	gene*
		crossing over*	genotype
		dihybrid cross*	offspring*
		diploid*	phenotype*
		dominance*	Punnett square*
		dominant trait	recessive (trait)*
		gamete*	variation*
		genetic variety*	
		haploid*	
		heterozygous*	
		homozygous*	
		incomplete dominance	
		independent assortment	
		inherited trait	
		law of dominance	
		law of independent assortment	
		law of segregation	
		meiosis	
		Mendel's law of inheritance	
		monohybrid cross	
		non-Mendelian inheritance	
		sex cell	

Evolutionary Theory

B.9 Biological evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple lines of evidence.

important words for concept development			
subcluster	standards	new to grade level	
Evolution	B.9(A), B.9(B)	abrupt appearance	genome map*
		analogous structure	genus*
		anatomical homology	gradualism
		ancestor*	homologous structure
		biogeography	molecular homology
		cladogram*	native*
		dendrogram*	phylogenetic*
		descended*	phylogram
		developmental homology	punctuated equilibrium*
		DNA sequence*	speciation
		embryo	species*
		evolution	spindle diagram
		fossil record	stasis*
		gene flow*	transitional fossils*
		genetic drift*	

Evolutionary Mechanisms

B.10 Biological evolution. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life that has multiple mechanisms.

important words for concept development					
subcluster	standards	new to grade level		previously introduced	
Natural Selection	B.10(A), B.10(B), B.10(C)	directional selection disruptive selection environmental resource fitness gene frequency* inherited variation	isolation mortality rate* reproduce* reproductive success speciation stabilizing selection	adapt/adaptation* competition* diversity environment* evolutionary theory habitat* mutation	natural selection* offspring* population* predator* prey* species* survive*
Nonadaptive Mechanisms	B.10(D)	artificial selection gene flow* genetic drift genetic variation* non-random mating recombination		mutation	

Energy Conversions in Organisms

B.11 Biological structures, functions, and processes. The student knows the significance of matter cycling, energy flow, and enzymes in living organisms.

important words for concept development				
subcluster	standards	new to grade level		previously introduced
Cellular Respiration	B.11(A), B.11(B)	activation energy ATP (adenosine triphosphate) carbon dioxide catalyst cellular process*	cellular respiration* enzyme inhibitor* enzyme* glucose oxygen substrate*	organelle* product reactant
Photosynthesis	B.11(A)	ATP (adenosine triphosphate) carbon dioxide cellular process* glucose oxygen		organelle* photosynthesis* product radiant energy reactant

Interactions Among Biological Systems

B.12 Biological structures, functions, and processes. The student knows that multicellular organisms are composed of multiple systems that interact to perform complex functions.

important words for concept development				
subcluster	standards	new to grade level		previously introduced
Animal Structure and Function	B.12(A)	feedback loop homeostasis* nutrient absorption pathogen regulation		circulatory system* defense digestive system* endocrine system* excretory system* immune system* integumentary system* interaction* lymphatic system muscular system* nervous system* reproductive system* respiratory system* skeletal system*
Plant Structure and Function	B.12(B)	cellular reproduction* cuticle filament* gamete geotropism* gravitropism guard cell* hormone hydrotropism mesophyll cell* ovule*	phototropism* pith pollen response* shoot system* stigma* stoma* thigmotropism transpiration transport* vascular system*	phloem reproductive system* roots* stem* system* xylem*

Interdependence and Ecosystem Stability

B.13 Interdependence within environmental systems. The student knows that interactions at various levels of organization occur within an ecosystem to maintain stability.

important words for concept development				
subcluster	standards	new to grade level		previously introduced
Ecosystem Stability	B.13(A), B.13(B), B.13(C), B.13(D)	atmospheric nitrogen*	10% energy rule	heterotroph
		carbon cycle	abiotic factor	impact*
		detritivore*	autotroph	mutualism*
		diversity-stability relationship	biotic factor	nitrogen cycle
		dynamic equilibrium	carnivore	nitrogen fixation*
		ecological pyramid*	commensalism*	omnivore*
		ecosystem instability*	competition for resources	organism*
		environmental resistance	consumer	parasitism*
		invasive species	cycling of matter	population*
		predation*	decomposer*	primary consumer*
		reduction factor	ecosystem	producer*
		resistance*	ecosystem stability	respiration
			energy pyramid*	secondary consumer*
			environmental change	stability
			flow of energy	symbiotic relationship
			food chain/web*	tertiary consumer*
			herbivore	trophic level*