

Khan Academy Video Correlation / Alignment Biology

TEKS/SE	Curriculum Unit(s)	Video Title	Rationale <i>(e.g., explanation, justification, etc.)</i>
<p>Ⓢ BIOL.4A Compare and contrast prokaryotic and eukaryotic cells.</p>	Unit 2	D-4 Bacteria	This video begins with a very general description of harmful vs. beneficial bacteria, then continues with a general overview of characteristics of prokaryotes and eukaryotes, and then continues by contrasting archaea to bacteria. The video also contains a general discussion of bacterial reproduction and the control of bacteria through the use of antibiotics.
<p>Ⓡ BIOL.4B Investigate and explain cellular processes including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules.</p>	Unit 2	F-1 ATP: Adenosine Triphosphate	This video outlines the function and structure of the ATP molecule and the manner in which energy is released when the bonds between an ADP and a phosphate ion are broken during hydrolysis.
<p>Ⓡ BIOL.4C Compare the structure of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases, such as human immunodeficiency virus (HIV) and influenza.</p>	Unit 4	D-5 Viruses	In this video the question of whether or not viruses are alive is examined. The structure of viruses is outlined as is the comparison to other cells. Viral reproduction and diseases are also detailed, including the fact that HIV is caused by a retrovirus.
<p>Ⓡ BIOL.6A Identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA.</p>	Unit 5	A-5 DNA	This video explores the general nature and shape of DNA as well as the nature and structure of nucleotides, complimentary base pairing of DNA and RNA, transcription, translation, and the use of codons to specify for particular amino acids which are joined to form proteins.
<p>Ⓢ BIOL.6B Recognize that components that make up the genetic code are common to all organisms.</p>	Unit 5	A-5 DNA	This video explores the general nature and shape of DNA as well as the nature and structure of nucleotides, complimentary base pairing of DNA and RNA, transcription, translation, and the use of codons to specify for particular amino acids which are joined to form proteins.

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<p>© BIOL.6B Recognize that components that make up the genetic code are common to all organisms.</p>	Unit 5	D-6 Human Prehistory 101: Prologue	In this video evidence of common ancestry is examined between apes and humans as well as fossil and biogeographical evidence for modern human common ancestry.
<p>© BIOL.6C Explain the purpose and process of transcription and translation using models of DNA and RNA.</p>	Unit 6	A-5 DNA	This video explores the general nature and shape of DNA as well as the nature and structure of nucleotides, complimentary base pairing of DNA and RNA, transcription, translation, and the use of codons to specify for particular amino acids which are joined to form proteins.
<p>© BIOL.6D Recognize that gene expression is a regulated process.</p>	Unit 6	A-6 Variation in Species	This video enters into a discussion on variation within a population. Mutation is described as one way that variation is achieved though a more powerful method is sexual reproduction. Mention is made of the fact that though all somatic cells contain an entire complement of genes not all genes are expressed in all cells. The discussion turns to an examination of the 23 pairs of chromosomes contained within a human somatic cell and the source of those chromosomes as half from male parent and half from the female parent. A discussion of meiosis ensues in very general terms with a conclusion that sexual reproduction is the dominate source of variation with mention to segregation of genes and crossing over of genes which drives natural selection.
<p>© BIOL.6G Recognize the significance of meiosis to sexual reproduction.</p>	Unit 8	A-6 Variation in Species	This video enters into a discussion on variation within a population. Mutation is described as one way that variation is achieved though a more powerful method is sexual reproduction. Mention is made of the fact that though all somatic cells contain an entire complement of genes not all genes are expressed in all cells. The discussion turns to an examination of the 23 pairs of chromosomes contained within a human somatic cell and the source of those chromosomes as half from male parent and half from the female parent. A discussion of meiosis ensues in very general terms with a conclusion that sexual reproduction is the dominate source of variation with mention to segregation of genes and crossing over of genes which drives natural selection.

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<p>Ⓡ BIOL.7A Analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies including anatomical, molecular, and developmental.</p>	Unit 10	D-6 Human Prehistory 101: Prologue	In this video evidence of common ancestry is examined between apes and humans as well as fossil and biogeographical evidence for modern human common ancestry.
<p>Ⓢ BIOL.7C Analyze and evaluate how natural selection produces change in populations, not individuals.</p>	Unit 9	A-1 Introduction to Evolution and Natural Selection	The video illustrates that natural selection produces change in populations by mutations of a species DNA and inheritance of beneficial traits by offspring.
<p>Ⓢ BIOL.7C Analyze and evaluate how natural selection produces change in populations, not individuals.</p>	Unit 9	A-4 Natural Selection and the Owl Butterfly	The video explores the origin of the eyespot of an owl butterfly. The phenotypic trait is tied back to a protein with an origin that goes back to a particular series of DNA base pairs. Mutations in those base pairs result in change of the protein which in turn causes a change in the phenotype for the butterfly.
<p>Ⓢ BIOL.7C Analyze and evaluate how natural selection produces change in populations, not individuals.</p>	Unit 9	A-6 Variation in Species	This video enters into a discussion on variation within a population. Mutation is described as one way that variation is achieved though a more powerful method is sexual reproduction. Mention is made of the fact that though all somatic cells contain an entire complement of genes not all genes are expressed in all cells. The discussion turns to an examination of the 23 pairs of chromosomes contained within a human somatic cell and the source of those chromosomes as half from male parent and half from the female parent. A discussion of meiosis ensues in very general terms with a conclusion that sexual reproduction is the dominate source of variation with mention to segregation of genes and crossing over of genes which drives natural selection.
<p>Ⓢ BIOL.7D Analyze and evaluate how the elements of natural selection including inherited variation, the potential of a population to</p>	Unit 9	A-4 Natural Selection and the Owl Butterfly	The video explores the origin of the eyespot of an owl butterfly. The phenotypic trait is tied back to a protein with an origin that goes back to a particular series of DNA base pairs. Mutations in those base pairs result in change of the protein which in turn causes a change in the phenotype for

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produce more offspring than can survive, and a finite supply of environmental resources result in differential reproductive success.			the butterfly.
<p>☉ BIOL.7D Analyze and evaluate how the elements of natural selection including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources result in differential reproductive success.</p>	Unit 9	A-6 Variation in Species	This video enters into a discussion on variation within a population. Mutation is described as one way that variation is achieved though a more powerful method is sexual reproduction. Mention is made of the fact that though all somatic cells contain an entire complement of genes not all genes are expressed in all cells. The discussion turns to an examination of the 23 pairs of chromosomes contained within a human somatic cell and the source of those chromosomes as half from male parent and half from the female parent. A discussion of meiosis ensues in very general terms with a conclusion that sexual reproduction is the dominate source of variation with mention to segregation of genes and crossing over of genes which drives natural selection.
<p>Ⓡ BIOL.7E Analyze and evaluate the relationship of natural selection to adaptation, and to the development of diversity in and among species.</p>	Unit 9	A-1 Introduction to Evolution and Natural Selection	The video illustrates that natural selection produces change in populations by mutations of a species DNA and inheritance of beneficial traits by offspring.
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<p>Ⓡ BIOL.7E Analyze and evaluate the relationship of natural selection to adaptation, and to the development of diversity in and among species.</p>	Unit 9	A-6 Variation in Species	This video enters into a discussion on variation within a population. Mutation is described as one way that variation is achieved though a more powerful method is sexual reproduction. Mention is made of the fact that though all somatic cells contain an entire complement of genes not all genes are expressed in all cells. The discussion turns to an

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			examination of the 23 pairs of chromosomes contained within a human somatic cell and the source of those chromosomes as half from male parent and half from the female parent. A discussion of meiosis ensues in very general terms with a conclusion that sexual reproduction is the dominate source of variation with mention to segregation of genes and crossing over of genes which drives natural selection.
<p>Ⓢ BIOL.8A Define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community.</p>	Unit 12	D-1 Taxonomy and the Tree of Life	This video describes and denotes the importance of the hierarchical classification system proposed by Carl Linnaeus to describe the similarities and differences between different groups of organisms at a variety of levels of classification. Also briefly discussed is the topic of binomial nomenclature.
<p>Ⓡ BIOL.8B Categorize organisms using a hierarchical classification system based on similarities and differences shared among groups.</p>	Unit 12	D-1 Taxonomy and the Tree of Life	This video describes and denotes the importance of the hierarchical classification system proposed by Carl Linnaeus to describe the similarities and differences between different groups of organisms at a variety of levels of classification. Also briefly discussed is the topic of binomial nomenclature.
<p>Ⓡ BIOL.8B Categorize organisms using a hierarchical classification system based on similarities and differences shared among groups.</p>	Unit 12	D-2 Species	In this video a species is defined as an organism that can breed with another to produce offspring that are fertile. The issue of two closely related species interbreeding to produce infertile offspring is also addressed.
<p>Ⓡ BIOL.8B Categorize organisms using a hierarchical classification system based on similarities and differences shared among groups.</p>	Unit 12	D-3 Ape Clarification	In this video a distinction is drawn between the great apes, which includes human beings and the lesser apes, like gibbons.
<p>Ⓢ BIOL.8C Compare characteristics of taxonomic groups including archaea, bacteria, protists, fungi,</p>	Unit 12	D-1 Taxonomy and the Tree of Life	This video describes and denotes the importance of the hierarchical classification system proposed by Carl Linnaeus to describe the similarities and differences between different groups of organisms at a variety of levels of classification.

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plants, and animals.			Also briefly discussed is the topic of binomial nomenclature.
<p>☉ BIOL.8C Compare characteristics of taxonomic groups including archaea, bacteria, protists, fungi, plants, and animals.</p>	Unit 12	D-4 Bacteria	This video begins with a very general description of harmful vs. beneficial bacteria, then continues with a general overview of characteristics of prokaryotes and eukaryotes, and then continues by contrasting archaea to bacteria. The video also contains a general discussion of bacterial reproduction and the control of bacteria through the use of antibiotics.
<p>☉ BIOL.9B Compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter.</p>	Unit 14	F-2 Photosynthesis	This video summarizes the reactants and products for the processes of photosynthesis and respiration. A very general overview for the light reactions and Calvin Cycle is also covered.
<p>☉ BIOL.9B Compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter.</p>	Unit 14	F-1 ATP: Adenosine Triphosphate	This video outlines the function and structure of the ATP molecule and the manner in which energy is released when the bonds between an ADP and a phosphate ion are broken during hydrolysis.
Not correlated directly with the SE but can be used to reinforce during BIOL.9B		F-3 Photosynthesis: Light Reactions 1	This video gives a fairly complete overview of the Light Reactions for photosynthesis. Attention is given to plant cell structure, the chloroplasts, and the included thylakoid and stroma structure.
Not correlated directly with the SE but can be used to reinforce during BIOL.9B		F-4 Photosynthesis: Light Reactions and Photophosphorylation	This video goes back and reexamines the previous video with a greater attention given to the electron transport chain in Photosystems I and II along with a discussion of the resonance energy generated by the absorption of photons in Photosystems I & II.
Not correlated directly with the SE but can be used to reinforce during BIOL.9B		F-5 Photosynthesis: Calvin Cycle	This video covers the Calvin Cycle of photosynthesis. An in depth accounting of six carbon atoms and 18 ATP molecules to form 2 PGAL molecules or glucose all the while recycling 10 PGAL molecules.
Not correlated directly with the SE but can be used to		F-6 Photorespiration	This video includes more detail on the Calvin Cycle followed by a discussion of photorespiration producing a 3 carbon

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reinforce during BIOL.9B			chain.
Not correlated directly with the SE but can be used to reinforce during BIOL.9B		F-7 C-4 Photosynthesis	This video explains how some plants avoid photorespiration and produce a 4 carbon chain molecule.
Not correlated directly with the SE but can be used to reinforce during BIOL.10B		F-8 CAM Plants	This video explores how CAM plants, usually desert plants, are able to fix carbon at night so that they do not have to open the stomata during the day when high levels of transpiration occurs.
NA		A-2 Intelligent Design and Evolution	This video equates evolution to a simple elegant description of a basic idea that does not eliminate God's hand in designing life.
NA		A-3 Evolution Clarification	Video begins with a comparison of societal fitness vs. evolutionary fitness then dissolves into a discourse on attempting to reconcile evolution, the cornerstone of modern Biology, and Intelligent Design, a non-testable belief system.
NA		D-7 Human Prehistory 101 Part 1: Out of (Eastern) Africa	This video traces the migration of early Homo sapiens out of eastern Africa to Southeast Asia and Europe.
NA		D-8 Human Prehistory 101 Part 2: Weathering the Storm	This video traces human migration 20,000 years ago during the last ice age when global temperature was some 15 degrees F cooler than it is today.
NA		D-9 Human Prehistory 101 Part 3: Agriculture Rocks Our World	This video traces human development from hunter gatherers to agricultural based society and the associated increase in human population.
NA		D-10 Human Prehistory 101: Epilogue	This video traces human migration from 500 years ago to today.