

Animal Behavior

EK	Evidence	Illustrative Example/LO
Essential knowledge 2.C.2: Organisms respond to changes in their external environments.		
	a. Organisms respond to changes in their environment through behavioral and physiological mechanisms.	
		• Hibernation and migration in animals • Taxis and kinesis in animals • Nocturnal and diurnal activity: circadian rhythms ✗ <i>No specific behavioral or physiological mechanism to is required for teaching the above concept. Teachers are free to choose mechanism that best fosters student understanding.</i>
		LO 2.21 The student is able to justify the selection of the kind of data needed to answer scientific questions about the relevant mechanism that organisms use to respond to changes in their external environment. [See SP 4.1]
		LO 2.42 The student is able to pose a scientific question concerning the behavioral or physiological response of an organism to a change in its environment [See SP 3.1]

Essential knowledge 2.E.2: Timing and coordination of physiological events are regulated by multiple mechanisms.		
	b. In animals, internal and external signals regulate a variety of physiological responses that synchronize with environmental cycles and cues.	
		• Diurnal/nocturnal and sleep/awake cycles • Seasonal responses, such as hibernation, estivation and migration • Release and reaction to pheromones • Visual displays in the reproductive cycle
		LO 2.35 The student is able to design a plan for collecting data to support the scientific claim that the timing and coordination of physiological events involve regulation. [See SP 4.2] LO 2.36 The student is able to justify scientific claims with evidence to show how timing and coordination of physiological events involve regulation. [See SP 6.1] LO 2.37 The student is able to connect concepts that describe mechanisms that regulate the timing and coordination of physiological events. [See SP 7.2]

Essential knowledge 2.E.3: Timing and coordination of behavior are regulated by various mechanisms and are important in natural selection.		
	a. Individuals can act on information and communicate it to others.	
	1. Innate behaviors are behaviors that are inherited.	
	2. Learning occurs through interactions with the environment and other organisms.	
	b. Responses to information and communication of information are vital to natural selection. [See also 2.C.2]	
	3. Behaviors in animals are triggered by environmental cues and are vital to reproduction, natural selection and survival.	
		• Hibernation • Estivation • Migration • Courtship
		LO 2.38 The student is able to analyze data to support the claim that responses to information and communication of information affect natural selection. [See SP 5.1] LO 2.39 The student is able to justify scientific claims, using evidence, to describe how timing and coordination of behavioral events in organisms are regulated by several mechanisms. [See SP 6.1] LO 2.40 The student is able to connect concepts in and across domain(s) to predict how environmental factors affect responses to information and change behavior. [See SP 7.2]

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EK	Evidence	Illustrative Example/LO
Essential knowledge 3.E.1: Individuals can act on information and communicate it to others.		
	a. Organisms exchange information with each other in response to internal changes and external cues, which can change behavior.	
		• Predator warnings • Protection of young • Avoidance responses
	b. Communication occurs through various mechanisms.	
	1. Living systems have a variety of signal behaviors or cues that produce changes in the behavior of other organisms and can result in differential reproductive success.	
		• Territorial marking in mammals
	2. Animals use visual, audible, tactile, electrical and chemical signals to indicate dominance, find food, establish territory and ensure reproductive success.	
		• Bee dances • Birds songs • Territorial marking in mammals • Pack behavior in animals • Herd, flock, and schooling behavior in animals • Predator warning • Colony and swarming behavior in insects • Coloration
	c. Responses to information and communication of information are vital to natural selection and evolution. [See also 1.A.2]	
	1. Natural selection favors innate and learned behaviors that increase survival and reproductive fitness.	
		• Parent and offspring interactions • Migration patterns • Courtship and mating behaviors • Foraging in bees and other animals • Avoidance behavior to electric fences, poisons, or traps
	2. Cooperative behavior tends to increase the fitness of the individual and the survival of the population.	
		• Pack behavior in animals • Herd, flock and schooling behavior in animals • Predator warning • Colony and swarming behavior in insects ✗ <i>The details of the various communications and community behavioral systems are beyond the scope of the course and the Exam.</i>
		LO 3.40 The student is able to analyze data that indicate how organisms exchange information in response to internal changes and external cues, and which can change behavior. [See SP 5.1] LO 3.41 The student is able to create a representation that describes how organisms exchange information in response to internal changes and external cues, and which can result in changes in behavior. [See SP 1.1] LO 3.42 The student is able to describe how organisms exchange information in response to internal changes or environmental cues. [See SP 7.1]