AP BIO INSTA-REVIEW

TOPIC 8.1

Responses to the Environment

ENE-3.D.1

Organisms respond to changes in their environment through behavioral and physiological mechanisms.

ENE-3.D.2

Organisms exchange information with one another in response to internal changes and external cues, which can change behavior.

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TOPIC 8.1

Responses to the Environment

IST-5.A.1

Individuals can act on information and communicate it to others.

IST-5.A.2

Communication occurs through various mechanisms–

a. Organisms have a variety of signaling behaviors that produce changes in the behavior of other organisms and can result in differential reproductive success.

b. Animals use visual, audible, tactile, electrical, and chemical signals to indicate dominance, find food, establish territory, and ensure reproductive success.

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TOPIC 8.1

Responses to the Environment

IST-5.A.3

Responses to information and communication of information are vital to natural selection and evolution–

a. Natural selection favors innate and learned behaviors that increase survival and reproductive fitness.

b. Cooperative behavior tends to increase the fitness of the individual and the survival of the population.

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TOPIC

8.1

What are the different types of communication between organisms?

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TOPIC 8.1

What are the different types of communication between organisms?

Visual

Tactile

Auditory

Chemical

Electrical

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TOPIC 8.1

Which is favorable for long distance in dark?

A. Auditory

B. Chemical

C. Tactile

D. Visual

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TOPIC 8.1

Which is favorable for long distance in dark?

A. Auditory

Auditory are noises. This means that it is able to take place in the dark and long distance. Tactile would be appropriate for dark but can **NOT** be done at long distances. Visual would **NOT** be appropriate for dark as you will be unable to see the signal. Chemical could take place in the dark, but it takes a long time for chemicals to diffuse which would be an inefficient communication method.

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TOPIC 8.1

Which is favorable for long distance underwater?

A. Auditory

B. Chemical

C. Tactile

D. Visual

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TOPIC 8.1

Which is favorable for long distance underwater?

B. Chemical

Chemical signals can diffuse in the water to travel long distances. Visual would be inefficient at long distances. Tactile would be inefficient at long distances. Sound waves do not travel long distances in water making auditory inefficient.

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TOPIC 8.1

Peacocks are brightly colored to attract a mate. Which does peacock use for mating?

A. Auditory

B. Chemical

C. Tactile

D. Visual

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TOPIC 8.1

Peacocks are brightly colored to attract a mate. Which does peacock use for mating?

D. Visual

The prompt states that the peacock is brightly colored which is a visual signal.

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TOPIC 8.1

Birds sing a song to attract a mate. Which does a bird use in mating?

A. Auditory

B. Chemical

C. Tactile

D. Visual

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TOPIC 8.1

Birds sing a song to attract a mate. Which does a bird use in mating?

A. Auditory

A song is a noise which would be an example of an auditory signal.

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TOPIC

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Why do organisms communicate?

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TOPIC 8.1

Why do organisms communicate?

Indicate dominance

Find food

Establish territory

Reproductive success

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TOPIC 8.1

Which signal is used by dogs for marking territory?

A. Auditory

B. Chemical

C. Tactile

D. Visual

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TOPIC 8.1

Which signal is used by dogs for marking territory?

B. Chemical

When the dog urinates on the item (tree, grass, fire hydrant, light pole, etc.), there are chemicals in their urine. This will be used as signal for other dogs in the area that this is their territory.

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TOPIC 8.1

Innate vs. Learned Behaviors?

A. Innate is trial/error & learned is born

B. Innate is born & learned is trial/error

C. Innate is taught by imprinting & learned is trial/error

D. Innate is trial/error & learned is taught by imprinting

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TOPIC 8.1

Innate vs. Learned Behaviors?

B. Innate is born & learned is trial/error

Innate behaviors usually involve basic life functions, such as finding food or caring for offspring. These are usually under genetic control because those unable to complete will not survive to reproduce. Examples: Spider spinning a web, bird building a nest, caterpillar making a cocoon.

Learning behaviors are trial and error. These develop during the organism's lifetime. Example: crow bending wire into a hook shape, chimp strip leaves from a twig and putting into a termite hole to get food

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TOPIC 8.1

What is altruism?

A. Behavior to increase fitness of self

B. Behavior to find food

C. Selfless behavior that increases fitness of population

D. Selfless behavior to feed another member to population

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TOPIC 8.1

What is altruism?

C. Selfless behavior that increases fitness of population

Altruistic behaviors are those selfless behaviors completed by organisms. Example: Belding squirrels will make an alarm call when a predator comes into an area which decreases the individual squirrel's fitness but increases the fitness for the population (inclusive fitness)

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TOPIC 8.1

Where a stimulus affects behavior (ex. bell ringing)

A. Classical conditioning

B. Conditional learning

C. Imprinting

D. Operant conditioning

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TOPIC 8.1

Where a stimulus affects behavior (ex. bell ringing)

A. Classical conditioning

Classical conditioning is associative learning in which the behavior is associated with an arbitrary stimulus. I always tell my students to remember the CLASSIC experiment with Pavlov and the dogs – ring the bell, feed the dog, repeat, then ringing the bell induces salvation (even without the introduction of food)

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TOPIC 8.1

Behavior affected by negative or positive outcomes

A. Classical conditioning
B. Conditional learning
C. Imprinting
D. Operant conditioning

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TOPIC 8.1

Behavior affected by negative or positive outcomes

D. Operant conditioning

Operant conditions is a type of associative learning. This refers to the behavior being associated with a reward or punishment. The wolf that attacks the porcupine and gets quills to the face will not attack another porcupine. The chick-a-dee that pecks at the milk carton getting the cream will continue to peck to get additional cream.

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TOPIC 8.1

A sensitive period where organism learns from parent

A. Classical conditioning

B. Conditional learning

C. Imprinting

D. Operant conditioning

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TOPIC 8.1

A sensitive period where organism learns from parent

C. Imprinting

a rapid learning process that takes place early in the life of a social animal (such as a goose) and establishes a behavior pattern (such as recognition of and attraction to its own kind or a substitute)

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TOPIC 8.1

What would happen if a bird was cross fostered during imprinting phase?

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TOPIC 8.1

What would happen if a bird was cross fostered during imprinting phase?

Prezygotic barrier...

The bird would be unable to mater. It has learned the mating song for another species of bird so it will be unable to reproduce with its own species nor the species of the mating song.

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TOPIC 8.1

Note:

"What does cross-fostering mean"

Basically being fostered by another species.

Here's the dictionary term...

cross-fostering (*uncountable*)

1. the technique of removing eggs from the nest of one species of bird, to be incubated in the nest of another. Usually done to aid the recovery of endangered species.

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TOPIC 8.1

Mating Calls

A. Auditory

B. Chemical

C. Tactile

D. Visual

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TOPIC 8.1

Mating Calls

A. Auditory

Mating calls for sounds, so this would be considered an auditory signal.

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TOPIC 8.1

Pheromone trail that ants follow to find food source

A. Auditory

B. Chemical

C. Tactile

D. Visual

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TOPIC 8.1

Pheromone trail that ants follow to find food source

B. Chemical

Pheromones are chemical signals that triggers a social behavior from other members of the same species.

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TOPIC 8.1

Mating Dance

A. Auditory

B. Chemical

C. Tactile

D. Visual

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TOPIC 8.1

Mating Dance

D. Visual

The mating dance will be seen by the opposite sex during intersexual selection.

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TOPIC
8.1

What is differential reproductive success?

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TOPIC 8.1

What is differential reproductive success?

A situation in which some individuals leave more offspring in the next generation than do others, often due to traits that provide advantages in survival and/or reproduction.

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TOPIC 8.1

Innate behaviors are

A. Associated arbitrary stimulus

B. Inborn

C. Learning through observations

D. Trial and Error

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TOPIC 8.1

Innate behaviors are

B. Inborn

Innate behaviors usually involve basic life functions, such as finding food or caring for offspring. These are usually under genetic control because those unable to complete will not survive to reproduce. Examples: Spider spinning a web, bird building a nest, caterpillar making a cocoon.

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TOPIC 8.1

Learning response to arbitrary stimulus

A. Classical conditioning

B. Imprinting

C. Innate behavior

D. Operant conditioning

AP BIO INSTA-REVIEW

TOPIC 8.1

Learning response to arbitrary stimulus

A. Classical conditioning

Classical conditioning is associative learning in which the behavior is associated with an arbitrary stimulus. I always tell my students to remember the CLASSIC experiment with Pavlov and the dogs – ring the bell, feed the dog, repeat, then ringing the bell induces salvation (even without the introduction of food)

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TOPIC

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Chick a dee learns if it pecks at milk carton, it will get milk

A. Classical conditioning

B. Imprinting

C. Innate behavior

D. Operant conditioning

AP BIO INSTA-REVIEW

TOPIC 8.1

Chick a dee learns if it pecks at milk carton, it will get milk

D. Operant conditioning

Operant conditions is a type of associative learning. This refers to the behavior being associated with a reward or punishment. The wolf that attacks the porcupine and gets quills to the face will not attack another porcupine. The chick-a-dee that pecks at the milk carton getting the cream will continue to peck to get additional cream.

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TOPIC 8.1

If a bird is cross fostered, what is the problem in terms of learned behaviors?

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TOPIC 8.1

If a bird is cross fostered, what is the problem in terms of learned behaviors?

Due to imprinting, the baby bird will learn the mating song of the foster parent and be unable to mate with their species. It will undergo behavioral isolation from its own species.

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TOPIC
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How does an altruistic behavior increase the inclusive fitness?

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TOPIC 8.1

How does an altruistic behavior increase the inclusive fitness?

Altruism is a self-less behavior. I use the example of the Belding Squirrels. If there is a predator present, one squirrel will make an alarm noise. The other squirrels will hide to protect themselves which ensures the colony is able to survive and reproduce.