

Examples of potential biology topics in *Finding Nemo* (Pixar Animation Studios 2003, G).

	Level			
Topic	Basic	Intermediate	Advanced	Open
Clownfish mating	What is a typical clownfish “family” like?	How common is sex-changing in fish?	What are other complex mating systems in fishes (e.g., Would Bruce have known his father)?	Can you compare and contrast reproductive strategies employed by other animals?
Anemone symbiosis	What is a symbiosis? (Note: a-NEMO-ne)	What are the benefits for the clownfish? For the anemone?	How does the clownfish avoid being stung?	How do mutualisms and symbioses evolve?
Vegetarian sharks	Are there vegetarian sharks?	Do shark species cooperate with each other?	What is the role of apex predators in marine ecosystems?	What is the impact of overfishing in shark and marine populations?
Whales	Are whales fish? What do they eat?	Could Marlin and Dory go from the throat to the blowhole?	What are the implications of feeding on krill?	What are the challenges of studying large pelagic species in the oceans?
Communication	Do fish talk?	How do fish communicate?	What messages can be conveyed?	Can you describe some general concepts of animal communication?
Short term memory loss	Do fish have memory?	Are fish capable of learning?	What would the consequences of Dory’s “memory” be?	What is the comparability of “learning” and “self-awareness” among humans and other species?
Nemo's “lucky” fin	Do fish have individual variations?	What are some natural selection pressures in the wild?	Would parents care for or accept malformed offspring?	What is the role of social organization in alleviating certain selection pressures?

Marine turtles	Can you describe the basic life history of turtles?	Why are turtles reproductively vulnerable?	What are the population estimates and dynamics of marine turtles?	What criteria are used to define endangered species?
-----------------------	---	--	---	--

Examples of potential biology topics in *Jurassic Park* (Universal Pictures 1993, PG–13).

	Level			
Topic	Basic	Intermediate	Advanced	Open
Types of penguins	How many penguin species are there? Are they birds or mammals?	Do they co-occur and intermingle?	How are species defined?	What is the evolutionary history of penguins?
Monogamy	Are penguins “faithful” to their partners?	What is the difference between seasonal and lifelong monogamy?	What are the fitness consequences of monogamy?	How do environmental pressures shape animal behavior?
Singing	Do penguins sing?	Can they achieve individual recognition by vocal cues?	What kind of communication occurs among individuals?	At what point do we consider communication “complex”?
Reproduction	Does the father care for the egg?	What are the foraging expeditions by one of the partners?	What is the benefit of this reproductive strategy?	How do environmental pressures shape animal behavior?
Molting feathers	Do penguins change their fur as they grow up?	What are the differences in the feather types?	Can you discuss the various roles feathers have for birds?	What is the adaptive significance of molting?
Penguin movement	Do penguins fly?	Do penguins slide to move?	What do penguins hunt, and what hunts penguins?	What is the adaptive significance of flightlessness?

Regional accents of characters	What are the accents given to various characters (e.g., leopard seals, elephant seals, etc.)?	Do these correspond to ranges of the animals?	What is the biological significance of regional accents?	How do anthropomorphic characteristics influence our perception of animals in movies?
Humans in the Antarctic	What activities do humans conduct in the Antarctic?	What are the potential impacts of these activities?	What are some general overfishing issues (not just Antarctic) and food web consequences?	Do animals perceive us as “aliens” in their natural environments?
Human leaders and intervention	How could fishing affect penguins?	What are some methods of determining “sustainable” fishing practices?	What is the United Nation’s role in protecting species?	What are the “moral” obligations to take action regarding endangered species?
Feeding	What do penguins eat?	What is regurgitation?	How does regurgitation benefit the offspring?	Can you compare feeding methods among birds and mammals?

Examples of potential biology topics in *A Bug's Life* (Pixar Animation Studios 1998, G.)

	Level			
Topic	Basic	Intermediate	Advanced	Open
Ant anatomy	Ants have six legs, so why are they shown in the film with four?	What is the general anatomy of insects?	What is the taxonomy and inter-relatedness of insect groups? (Note: <i>Atta</i> is an actual ant genus.)	What are the ecological and adaptive implications of basic insect body structure?
Raindrops on ants	Are ants in danger from rain?	What is their size perspective (e.g., are ants in danger of falling from heights)?	How do ants survive environmental and seasonal changes?	How have animals adapted to general environmental variability?

Cooperation of ants within a colony	Do ants cooperate with each other?	What is the basic social structure of ant colonies?	What is the importance of playing “your part” in ants’ society?	Can you describe the evolution of social structure and emergent properties in ants?
Cooperation of ants with other species	Do ants cooperate with other species? Do ants have aphid “pets”?	Do ants “need” grasshoppers (or vice-versa)?	What are some examples and explanations of mutualisms (e.g., ants and aphids)?	What is functional ecology? What is the role of “guilds” in ecosystems?
Ants outnumbering grasshoppers	Are there more ants or grasshoppers?	How does size compare among types of insects?	What is the biomass of ants worldwide?	What is the ecological significance of small “unseen” fauna?
Glowing fungi	Do they exist?	What is the role of bioluminescence for the fungus?	What is bioluminescence production?	Can you describe the evolution of bioluminescence?
Metamorphosis	What is metamorphosis?	What are the stages of metamorphosis?	What is the timing of metamorphosis and molting in insects?	What is adaptive significance of metamorphosis?
Wing development in ants	Do some ants have wings?	What is the reproductive system in ants?	Why is this a good strategy for ants?	How does this compare to other reproductive and social systems?

Examples of potential biology topics in *Outbreak* (Universal Pictures 1995, R).

	Level			
Topic	Basic	Intermediate	Advanced	Open
Epidemiology	What is epidemiology?	How are diseases transmitted?	How do viruses “jump” across species? How do they evolve resistance to	What were some historical virus outbreaks? What are current epidemics (e.g., HIV/AIDS)

			our drugs?	
Viruses	What is a virus?	Are viruses “alive”?	Why do viruses have high rates of mutation?	Are we susceptible to an outbreak? (e.g., SARS, H5N1)
Vaccinations and antibodies	What is a vaccine?	How are vaccines developed?	Which diseases should be a priority for funding and research?	Should vaccines be distributed to poorer countries?
Biological warfare	What is biological warfare?	What are some biological agents used or developed as weapons?	How are these designed or tested?	Should national security outweigh national health?
Quarantine	What is the purpose of quarantine?	What technologies keep medical workers safe?	What factors should be considered when deciding to design a quarantine?	Should society be able to impose involuntary quarantine (or worse) on infected populations?
The Centers for Disease Control and Prevention (CDC)	What is the CDC?	What role does the CDC play in disease research and prevention?	What are the current priorities of the CDC?	How do developed nations compare to developing nations with respect to disease control and prevention?