CLASSROOM MEDIA REVIEWS

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The Making of the Fittest (DVD, 2011, three short films: 37 minutes total; http://www.biointeractive.org)

With inquiry labs, bell ringers, group work, and discussions (not to mention pep rallies, fundraisers, sports, and bathroom breaks), what teacher has an hour to devote to an entertaining, well-made, educational film? Fortunately, HHMI has made it easy to incorporate excellent videos and inquiry-based activities with the release of their short-film series *The Making of the Fittest*, which was first screened at October's NABT conference.

While many of the resources produced by HHMI are popular, these break the mold. These high-quality, entertaining films, each shorter than 15 minutes, are devoted to the topic of evolution. Their content matter is suitable for grades 8–12. The first film focuses on adaptation and selective pressures, the second moves on to real-world examples of the link between mutations, gene expression, and adaptation, and the last one brings the story home, showing how all this applies to human populations. Despite "evolving" content, the films are tightly interrelated. Essentially, you can thematically orchestrate a module or unit of your evolution curriculum around these films and the activities associated with them.

Each film is linked to a set of activity worksheets that challenge groups of students to critically examine the film content. They are inquiry-based, relevant, and even offered at varying levels of specificity and rigor. The teacher can tailor the lesson to meet student needs. Whether you are teaching General Science or AP Biology, you can find an activity worksheet for your classroom, and teacher guides are also included. Depending on which one you select (you can use them all), you may want to consider setting aside 45 to 90 minutes of class time. By the time you have gone through the films and activities, you will effectively have covered the topic of evolution.

I highly recommend this series. I also encourage you to visit biointeractive.org, where the videos are available for free, and take 10 to 13 minutes to watch one of these exciting short films.

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EVO: Ten Questions Everyone Should Ask about Evolution (DVD, 2010, 107 minutes; http://www.humingbirdfilms.com)

If you are fortunate enough to teach high school or college biology or evolution, this DVD is for you! Its 10 wonderful chapters (each running about 10 minutes) provide a picture book of evolution, crammed with remarkable images and well-known narrators. Hummingbird Films divides this "book of life" into two sections, Part One: The Basics and Part Two: The Continuing Story. Each chapter can also be accessed separately from the "Chapters" menu.

I offer my own students' reviews: "The music gave it suspense"; "I liked how more than one scientist gave examples of evolution by natural selection." The graphics are memorable, especially the use of the human arm as a visual timeline for evolution.

Chapter 1 invites the student to contemplate an age-old question, "What Is Evolution?" Chapter 2, "Who Was Charles Darwin?", rewinds the development of Charles Darwin's thought. My students were tickled that the originator of the theory of evolution had started out as a creationist. Changing one's mind on the basis of evidence is the *modus operandi* of a scientist. The graphics of Darwin's journal and the visuals of the Galápagos Islands let the student share Darwin's experiences and dream they are alongside him. "What Is Natural Selection?" introduces Peter and Barbara Grant, whose studies of the Galápagos finches on Daphne Major Island have spanned 39 years. The work of these Princeton University evolutionary biologists concludes that rapid changes (mutations) in body structure and beak shape are affected by the finches' food supply.

The more visual or auditory learners in your classes will feast on "How Do Species Come About?", in which the Gaia hypothesis and 4 billion years of a self-regulating system are explored. An exciting classroom debate may result from this chapter, which concludes that human beings are not "higher" than other organisms; we are simply another species produced by evolution.

"Where Do Variations Come From?" reminds us of the diverse ways in which variations due to sexual reproduction occur: egg and sperm cells, DNA and gene mutations, errors in copying DNA, chromosome arrangement, and rearrangement. We are further reminded of the importance of variation to speciation. The late Lynn Margulis explains endosymbiotic theory and the evolutionary importance of symbiotic relationships between organisms from dissimilar phyla or kingdoms. The take-home message: Variation must exist in order for evolution to occur.

Part Two explores the role that cooperation plays in an organism's fitness and reproductive success. Students see how cooperation ensures the success of the group rather than the individual by watching worker ants assist in group survival by providing nutrition and caring for the young. In "What's a Brief History of Life?", 4.5 minutes of animation covers the 4.5 billion years of the earth's existence. The philosophical roots of the evolution/creationism controversy are developed in "What Is Controversy?" In "Is Evolution Random?" we learn that natural selection is anything but random. The message of natural selection driving evolution is well supported by the chapter's exceptional graphics.

The final chapter, "Why Should Anyone Care about Evolution?", is replete with convincing reasons why we should concern ourselves with protecting the biosphere. After viewing *EVO: Ten Questions Everyone Should Ask about Evolution*, one of my students opined, "This video taught me more about evolution than my evolution course." An additional teaching utility, "Hooks," accompany each chapter – Roger Bybee's "Engage" step from the five E's. Another outstanding feature is the addition of "sticky notes" to highlight the most important concepts. This video is a must-have.

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