Clockwork Genes: Discoveries in Biological Time and *Evolution: Constant Change and Common Threads*

Reviewed by Michalis Hadjimarcou, Cyprus

These two DVD sets, produced by the Howard Hughes Medical Institute as part of its Holiday Lectures on Science programme, address two highly interesting subjects which directly or indirectly affect our everyday lives: biological clocks and evolution.

Each DVD contains four full-length presentations by expert scientists, complemented by a variety of special features. The DVDs are easy to use, and provide direct access to the lecturer's biographies, interviews and the animations and video clips used in their presentations. Especially useful are the ideas for classroom activities. The scientists present to a high-school audience; they interact with the students and respond to their questions, making the presentations lively and interesting to view.

Clockwork Genes: Discoveries in Biological Time

This DVD contains four presentations conducted by two biomedical scientists who have made groundbreaking discoveries in understanding the molecular basis of biological clocks and specifically circadian clocks. The speakers explain in detail what circadian clocks are, how they work, and why it is important for human health to study them. The audience consists of students who attended the presentation or watched and participated by video conference both within and outside the USA.

The lectures start with the basics of what biological clocks are. From there, the speakers go into detail about the genetic mechanisms that are responsible for the appearance of this phenomenon. Therefore, the DVDs are best suited for biology teachers and advanced biology students with a strong background in molecular genetics.

In their presentations, the speakers include a variety of interesting topics, such as: a short historical account of experimental methodologies and strategies used in biological research; how the application of modern molecular techniques helps biologists acquire deep knowledge about organisms and their systems; how experimental results can be used to draw conclusions; how science can reveal information that allows us to understand how various biological phenomena affect our everyday lives; how real life events and phenomena are explained in terms of biological principles; and how knowledge from relatively simple organisms can be used to obtain valuable information about more complex organisms, such as mammals and, eventually, humans.

It is interesting to note that the vast majority of species studied so far exhibit circadian rhythms, which are set by Earth's rotation around its axis. This leads to the realisation that the planet is home to all its inhabitants, and reminds us that we must preserve Earth and share it with all living creatures. This issue would make a good topic for class discussion.

Evolution: Constant Change and Common Threads

Anyone with the slightest interest in evolution will love this DVD set. In fact, the language is so simple and the scientific content so basic that even individuals with no scientific background will appreciate and enjoy this product. Simple instructions and ideas on how to use the DVDs in the classroom and how to take advantage of their many features make this product even more useful.

The presentations include lively animations, graphics and models to captivate the audience's attention. They cover not only pure evolution topics but also relevant material from geology, genetics and other science disciplines. Some of the issues addressed include the pioneering work of Charles Darwin and the issue of human origins and evolution. And for those concerned that believing in the process of evolution is in conflict with religious beliefs, a discussion on evolution and religion between two theological experts will attempt to prove otherwise.

Darwin's 'The Origin of Species'

By Janet Browne

Reviewed by Dean Madden, National Centre for Biotechnology Education, UK

The choice of examples is quite successful as they bring evolution into our homes and lives. They show that evolution is not something from the distant past but an ongoing process which is closely related to human activity. Human fate is at least partly determined by evolution in other species; at the same time, humans actively determine the evolution of other species. The realisation that common human practices like hunting and fishing drive many species to extinction is especially shocking. This issue should be addressed in debates in science and non-science classrooms.

Details

Clockwork genes: Discoveries in Biological Time

Publisher: Howard Hughes Medical Institute

Publication year: 2000

Evolution: Constant Change and Common Threads

Publisher: Howard Hughes Medical Institute

Publication year: 2005

Ordering

These and other DVDs can be ordered free of charge from the Howard Hughes Medical Institute: www.hhmi.org/biointeractive/

This short book describes the development of Charles Darwin's *The Origin of Species* and examines its wider impact.

Janet Browne is the author of a large and highly acclaimed two-volume biography of Charles Darwin. Her new volume is slightly different – it is a biography of Darwin's most famous book, rather than the story of Darwin's life or indeed the development of evolutionary ideas. At times, the distinction is blurred because to understand the genesis of *The Origin* it is necessary to understand Darwin's personal journey. The book therefore includes much of the material from Browne's earlier works, but in far less detail. Curiously, it does not mention the meticulous way in which Darwin promoted *The Origin*, by sending copies and carefully worded covering letters to influential people. Also missing is any mention of the purchase of a substantial proportion of the first edition by Mudie's Select Circulating Library, which did much to encourage readership of the (then expensive) book in Victorian England.

The final chapter deals with *The Origin*'s fall from grace in the early part of the 20th century, only to be revitalised in the 1940s by the modern synthesis of genetics and natural selection. It also describes the somewhat surprising resurgence of opposition to Darwinism by fundamentalist religious groups in the United States. As Browne points out, although Darwin's ideas were hotly debated in Victorian England, organised opposition from fundamentalist religious groups is very much a late 20th century phenomenon.

This an enjoyable book which a teacher could read from cover to cover, but if you've read Janet Browne's biography of Darwin it might prove disappointing; I suspect that the format of this short book is more to blame than the author.

Details

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