

EVOLUTION & ADAPTATION (2012)

EEB 214S - Assessment 3

Writing a Popular Science Article

Objective: This assignment is intended to increase your critical awareness of the scientific world around you, in particular the aspects of evolution that may have relevance to everyday life. By exploring evolutionary issues in a popular science format you will gain greater awareness and appreciation of how basic biological principles apply to all living organisms, and in some cases, influence the choices you make each day. This assignment should also give you a chance to demonstrate your understanding of general evolutionary concepts and practice your writing skills in a way that will help others in the general public to understand the technical issues around evolution.

Background: Scientific knowledge and understanding is disseminated through both oral and written mechanisms. Scientists do this as a natural part of their professional life, both presenting their research in scientific forums and as articles in scholarly journals. Most research is expected to make a significant contribution to our understanding of the world, and as such, will be published. Although the publication of research entails a lengthy, rigorous review process, it does not always guarantee that scientific work is without flaws. Scientific knowledge is almost always imbued with subjective assessment, personal bias, and in some cases strong dogma. It is the task of the non-scientist (you) to take this scientific information, critically evaluate it, and inform others as to its relevance and value for society. While not always the most reliable source, Wikipedia does provide an excellent review of popular scientific articles (http://en.wikipedia.org/wiki/Popular_science). Some common aspects of such articles (outlined below) may be of help in preparing your own article:

- * Provide generalized, simplified science concepts
- * Generally forgo mathematical formulas or complicating details
- * Emphasize uniqueness of research
- * Provide entertainment value or personal relevance to the audience
- * Assume the audience has no science background and explain concepts thoroughly
- * Explore ideas that have been overlooked by specialists or that fall outside of established disciplines
- * Synthesize new ideas that cross multiple fields and offer novel implications for various academic specialisms

Requirements: After attending a mock press conference in class on Wednesday 7th November you are tasked with writing the following (Assessment worth 35% of final grade):

- 1. 140 character tweet summing up what *you* consider to be the most important idea from the press conference in an entertaining/attention grabbing way. (5% of final grade).**

Take a look at the people I am following on Twitter (<https://twitter.com/#!/JennyCarpy>) and get a feel for the types of things they tweet about and the style that they use. Remember that you have to get the whole story across in just 140 characters (including spaces). If your tweet is even one character over 140 your tweet is rejected and you will score no points. There is no minimum number of characters.

2. 'Top four' of a BBC news article with headline. (10% of the final grade)

You must write your news story in 80 words (if you write less than 72 words or more than 88 words you will be disqualified). It is necessary to have four separate paragraphs within which you need to tell the whole story. You will also be asked to write a headline, which is between 30 and 33 characters long (including spaces). If you are one character over 33 characters on the headline you will score no points.

3. 400 word news story in the style *New York Times*, *Globe & Mail*, *Toronto Star*, *Washington Post* or magazines (e.g. *Scientific American*, *Discovery*, *New Scientist*, *Natural History*, *Newsweek*, *Time*). (10% of the final grade)

This is your chance to write something slightly longer, to tell more of a story. The story must be less than 400 words (no less than 360 or more than 440). You should have a couple of quotes from Prof. Sharp and you can also pretend that you spoke to a scientist that wasn't involved in the work to get an outside opinion – to do this make up a name, and a quote; it can be either a positive or a critical comment.

Articles should be 12 pt type font, 1.5 spaced and arranged as in the example (Example Pop Sci). You are allowed to provide inline links and remember to always link to the original source material.

Remember to underline or italicize Latin generic and specific names (scientific names), e.g., *Homo* and *Homo sapiens*, or *Homo sapiens*. Note, the first part of a scientific or specific name is always capitalized whereas the second part is never, even if it is a proper noun (e.g. *Empidonax hammondi*—named in honor of a man named Hammond, which is capitalized) and that *data* is a plural word (e.g., The data show that...).

Evaluation: Articles are due by **23:59 21st November 2012 and are submitted online on Blackboard**. Unless previously arranged, **10% per week will be deducted for late papers (to a maximum of 50%)**; thus, it is always better to hand something in by end of term rather than to forego this part of the course completely. Articles are expected to be grammatically correct.

List of Notable Popularisers of Science

- * Isaac Asimov, author and biochemist
- * David Attenborough, broadcaster and naturalist
- * David Bellamy, broadcaster, author and botanist
- * David Bodanis, author
- * Bill Bryson, author
- * Robert Bud, curator of bioscience at the Science Museum, London
- * Brian Clegg, author
- * Jack Cohen, reproductive biologist
- * Paul Davies, physicist, author and broadcaster
- * Richard Dawkins, evolutionary biologist and author
- * Jared Diamond, evolutionary biologist, physiologist, biogeographer and author
- * Sir Arthur Eddington, astrophysicist
- * Peter Fairley, journalist and broadcaster
- * Richard Feynman, physicist and author
- * George Gamow, physicist and cosmologist

- * Martin Gardner, mathematician and author
- * Stephen Jay Gould, paleontologist, evolutionary biologist and science historian
- * Brian Greene, physicist
- * John Gribbin, astronomer and author
- * Mary Gribbin, author
- * Heinz Haber, physicist and author
- * Bas Haring, philosopher and author
- * Don Herbert, aka Mr. Wizard, broadcaster
- * Jay Ingram, broadcaster and author
- * Steve Jones, evolutionary biologist and author
- * Michio Kaku, theoretical physicist and author
- * Stephen Hawking, theoretical physicist and author
- * Douglas Hofstadter, computer scientist, cognitive scientist and author
- * Horace Freeland Judson, historian of molecular biology and author
- * Olivia Judson, evolutionary biologist, broadcaster and author
- * Lawrence Krauss, physicist and author
- * Karl Kruszelnicki, aka Dr Karl, broadcaster
- * Richard Lewontin, evolutionary biologist, geneticist and author
- * Chris Lintott, astrophysicist
- * Robert A. J. Matthews, physicist, mathematician, computer scientist and journalist
- * Bob McDonald, CBC journalist
- * Fulvio Melia, physicist, astrophysicist and author
- * Sir Patrick Moore, amateur astronomer and broadcaster
- * Tor Nørretranders, author
- * Bill Nye, broadcaster and mechanical engineer
- * Steven Pinker, experimental psychologist, cognitive scientist and author
- * Robert Pollack, biologist and author
- * Fred Pearce, journalist at New Scientist
- * Magnus Pyke, author
- * Matt Ridley, zoologist, journalist and author
- * Steven Rose, biologist, neurobiologist, broadcaster and author
- * Oliver Sacks, neurologist and author
- * Carl Sagan, astronomer, astrobiologist, broadcaster and author
- * Kirsten Sanford, neurophysiologist and broadcaster
- * Simon Singh, physicist, mathematician and author
- * Ian Stewart, mathematician and author
- * Julius Sumner Miller, broadcaster
- * David Suzuki, broadcaster and environmental activist
- * Colin Tudge, biologist and author
- * Neil deGrasse Tyson, astrophysicist and author
- * Kevin Warwick, biomedical scientist, roboticist and author
- * Robert Winston, scientist and broadcaster
- * Lewis Wolpert, developmental biologist, author and broadcaster

Some Sources of Popular Science

- * BBC Horizon - TV series
- * Cosmos Magazine - Australian magazine
- * Diffusion Science Radio Show - Science radio program and podcast
- * Discover (magazine)
- * Discovery Channel - Cable/satellite television channel
- * Explorations in Science - Michio Kaku radio program
- * Exploratorium - Museum in San Francisco

- * Frontiers of Science - Comic strip
- * HowStuffWorks - Website
- * Mr Science Show - Radio show and podcast from China Radio International
- * New Scientist - Magazine
- * Nova - Television show on PBS
- * Popular Science - Magazine
- * PopSci.com - Website
- * Popular Science - Website on books and authors
- * Popular Science Historic Film Series - Film shorts
- * Reasoned Cognition - Web comic
- * Science Fantastic - Michio Kaku radio program
- * Science Friday - US radio show on NPR
- * Scientific American - Magazine
- * Smithsonian (magazine) - Published by the Smithsonian Institution
- * This Week in Science - US radio show and podcast

List of Popular Science Books on Evolution

- * Brian and Deborah Charlesworth. (2003). Evolution: A Very Short Introduction.
- * Charles Darwin. (1859). The Origin of Species; (1871). The Descent of Man.
- * Richard Dawkins. (1976). The Selfish Gene; (1982). The Extended Phenotype; (1986). The Blind Watchmaker; (1995). River Out of Eden; (1996). Climbing Mount Improbable; (2004). The Ancestor's Tale.
- * Daniel Dennett. (1995). Darwin's Dangerous Idea.
- * Jared Diamond. (1992). The Third Chimpanzee: The Evolution and Future of the Human Animal; (2002) Guns, Germs & Steel; (2005) Collapse.
- * Stephen Jay Gould. (1977). Ever Since Darwin; (1989). Wonderful Life; (1996). Full House.
- * Steve Jones. (1995). The Language of the Genes.
- * Kenneth R. Miller. (2000). Finding Darwin's God.
- * Richard Lewontin, Steven Rose and Leon J. Kamin. (1984). Not in Our Genes.
- * John Maynard Smith. (1958). The Theory of Evolution. 3rd edition; (1972). On Evolution; (1978). The Evolution of Sex; (1982). Evolution and the Theory of Games; (1989). Evolutionary Genetics.
- * John Maynard Smith and Eörs Szathmáry. (1997). The Major Transitions in Evolution; (1999). The Origins of Life: From the Birth of Life to the Origin of Language.
- * Matt Ridley. (1994). The Red Queen: Sex and the Evolution of Human Nature; (1997). The Origins of Virtue; (1999). Genome; (2003). Nature Via Nurture: Genes, Experience, and What Makes Us Human.
- * Carl Sagan. (1977). The Dragons of Eden.
- * Jonathan Weiner. (1994). The Beak of the Finch.
- * Carl Zimmer. (2001). Evolution: The Triumph of an Idea.

Additional Titles of Popular Science Books on Evolution (*Formatted in Suggested Reference Style*)

- Alvarez, W. 1997. *T. rex* and the Crater of Doom. Princeton Univ. Press, Princeton, NJ. 186 pp.
- Angier, N. 1994. The Beauty and the Beastly. Houghton Mifflin Co., Boston, MA, 278 p
- Baker, R. 1996. Sperm Wars: The Science of Sex. HarperCollins Pub., TO. 319 pp.
- Bakker, R. T. 1986. The Dinosaur Heresies. Wm. Morrow and Co., Inc., NY. 481 pp.
- Dawkins, R. 1986. The Blind Watchmaker. W. W. Norton, New York, NY. 332 pp.
- Diamond, J. 1997. Why is Sex Fun? Basic Books, NY. 165 pp.

Etcoff, N. 1999. *Survival of the Prettiest*. Doubleday, NY. 336 pp.
 Fisher, H. 1998. *Anatomy of Love: A Natural History of Mating and Marriage and Why We Stray?* Ballantine Books, NY. 432 pp.
 Forsyth, A. 1986. *A Natural History of Sex*. Charles Scribner's Sons, NY. 190 pp.
 Ghiselin, M. T. 1969. *The Triumph of the Darwinian Method*. Univ. California Press, Berkeley, CA. 347 pp.
 Gould, S. J. 1989. *Wonderful Life. The Burgess Shale and the Nature of History*. W. W. Norton, New York, NY. 347 pp.
 Gould, S. J. 1987. *Time's Arrow Time's Cycle*. Harvard Univ. Press, Cambridge, 222 p
 Grant, S. 1984. *Beauty and the Beast. The Coevolution of Plants and Animals*. Chas. Scribner's Sons., NY. 215 pp.
 Hull, D. L. 1973. *Darwin and His Critics. The Reception of Darwin's Theory of Evolution by the Scientific Community*. Univ. Chicago Press, Chicago, 473 pp.
 Hrdy, S. B. 1981. *The Woman That Never Evolved*. Harvard Univ. Press, Cambridge 256.
 Michod, R.E. 1995. *Eros and Evolution: A Natural Philosophy of Sex*. Addison-Wesley, MA. 241 pp.
 Potts, M. and R. Short. 1999. *Ever Since Adam and Eve: The Evolution of Human Sexuality*. Cambridge Univ. Press, NY. 358 pp.
 Pollan, M. 2001. *The Botany of Desire: A Plant's-Eye View of the World*. Random House, NY. 271 pp.
 Quammen, D. 1996. *The Song of the Dodo: Island Biogeography in an Age of Extinction*. Chas. Scribner's Sons., NY. 702 pp. [Note: Do to the length of this book, we suggest that you write only on the first three chapters, 258 pp.]
 Raup, D. M. 1991. *Extinction. Bad Genes or Bad Luck?* WW. Norton, New York 210 p
 Ridley, M. 1993. *The Red Queen*. Viking Books, Harmondsworth, UK. 404 pp.
 Rose, M.R. 1998. *Darwin's Spectre: Evolutionary Biology in the Modern World*. Princeton Press, NJ. 233 pp.
 Ruse, M. 1979. *The Darwinian Revolution*. Univ. Chicago Press, Chicago, IL. 320 pp.
 ----- 1982. *Darwinism Defended: A Guide to the Evolution Controversies*. Addison-Wesley Publ. Co., Reading, MA. 356 pp.
 Russell, S.A. 2001. *Anatomy of a Rose: Exploring the Secret Life of Flowers*. Perseus 215 pp.
 Shlain, L. 2003. *Sex, Time and Power: How Women's Sexuality Shaped Human Evolution*. Viking, NY. 420 pp.
 Sulloway, F.J. 1996. *Born to Rebel: Birth Order, Family Dynamics, and Creative Lives*. Vintage Books, NY. 653 pp
 Weiner, J. 1994. *The Beak of the Finch*. Knopf, New York, NY. 332 pp.
 Williams, G. 1997. *The Pony Fish's Glow (And Other Clues to Plan and Purpose in Nature)*. Basic Books, NY. 184 pp.
 Wilson, E. O. 1978. *On Human Nature*. Harvard Univ. Press, Cambridge, MA. 260 pp.
 Zahavi A., and A. Zahavi. 1997. *The Handicap Principle: A Missing Piece of Darwin's Puzzle*. Oxford Univ. Press, Toronto. 286 pp.