Meet the Scientists

Rachel Carson

Rachel Carson once said, “The more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction.” An outdoorswoman and ecologist, she has been called the mother of the modern environmental movement. Her writings about nature and the environment have inspired people through the ages to appreciate and protect the natural world.

She was the first woman to work as a full-time junior biologist for the Bureau of Fisheries and, within fifteen years, she was chief editor of all U.S. Fish and Wildlife Service publications.

She believed strongly that human beings were part of nature but had the awesome power to change it, sometimes with devastating effects. She was upset by the use of chemical pesticides and began to write about this to warn the public about the long-term effects of pesticide use. In 1962 she published the now famous book, *Silent Spring*, where she challenged the use of pesticides and called for a change in the way we looked at the natural world.

She was severely attacked by the chemical industry for her views. They called her an alarmist, but she stood firm and caught the attention of President Kennedy, who was so moved by her book that he ordered the testing of the chemicals in question. In 1963 Rachel Carson testified before Congress, calling for new policies to protect the environment and people from the use of chemicals.

Ironically, Rachel Carson developed breast cancer and died in 1964. But her life work and books have inspired ongoing vigilance to protect human health and the environment.

George Washington Carver

George Washington Carver (1864 - 1943) experienced many ‘firsts’ in his lifetime, besides for his many inventions that proved of wide range and importance. He was an *Agricultural chemist*, which meant that he did a lot of experiments on food crops. He discovered some hugely important things for mankind. He had to overcome some huge barriers to do the important work he did. He was born during the civil war and had to leave home to find a school that would accept a black student. He was the first black student at his college, Simpson College in Indianola, Iowa. He went on to teach college and again was the first black faculty member of the Iowa State College of Agriculture and Mechanics. Then he became Director of Agriculture at Tuskegee Normal and Industrial Institute in 1897.

George Washington Carver's work for the improvement of agriculture was profoundly important. He may be most famous for discovering three hundred uses for peanuts, but he did much more than that. His development of the concept of crop rotation to keep soils from becoming depleted of minerals has been used ever since. He developed dyes during WWI when textile dyes from Europe became unavailable. He came up with uses for soybeans and other food crops, while helping farmers improve farming techniques.

Carver received many well-deserved awards in his lifetime and afterward. In 1943 President Franklin Delano Roosevelt dedicated a national monument dedicated to Carver's accomplishments, the first national monument to an African American in the United States.
**Dr. Clark R. Chapman**

Dr. Clark R. Chapman gets to “space out” for a living. He is a *planetary scientist* at the Southwest Research Institute in Boulder, Colorado. He looks at the risks of asteroid impacts on the earth. He is involved with a project to find all the “near-Earth asteroids” big enough to do real damage on impact with the Earth. He also compares asteroid impact risks to other risks we face every day. He has discovered some interesting things. Most significantly, he estimated that we are much more likely to be killed in a car accident, war or from smoking than we are from an asteroid impact. However, you ARE more likely to be killed by an asteroid than win your state lottery. There’s something to think about. (Svitil, Kathy A. “Asteroid Watcher Worries.” Discover March 2006: P. 20-21)

**Dr. Francis Crick**

In 1953, *Dr. Francis Crick and Dr. James Watson made history by discovering and making a model of DNA*, the basic unit of our genes. Dr. Crick coined the term “Central Dogma of Molecular Biology,” which is that “DNA makes RNA makes proteins,” a surprisingly simple concept with huge scientific significance. After winning the Nobel Prize in 1962 for their work, Crick moved on to study RNA. Then in 1976 he moved to the Salk Institute in California to study the brain and the understanding of consciousness. He worked there until his death in 2004 at the age of 88.

**Richard Dawkins**

Richard Dawkins was born in Africa. He went to Oxford University and went on to teach zoology at the University of California and Oxford. He is the Charles Simonyi Professor of the Public Understanding of Science at Oxford University. He wrote a series of books about evolution and science including: *The Selfish Gene*, *The Extended Phenotype*, *The Blind Watchmaker*, *River Out of Eden*, *Climbing Mount Improbable*, and *Unweaving the Rainbow*. Richard Dawkins has won many awards for his writing and his contribution to the understanding of science. One of his books, *The Blind Watchmaker*, was adapted for television and won the Sci-Tech Prize for the Best Science Programme of 1987. Since 1996, he has been Vice President of the British Humanist Association, became a Fellow of the Royal Society of Literature in 1997 and that year also won Fifth International Cosmos Prize in Commemoration of Expo’ 90.

**Dr. Rosalind Franklin**

Everyone knows about Watson and Crick discovering the structure of DNA, but few people know that their work was built upon the work of Rosalind Franklin, a research associate at King’s College. She used X-ray crystallography to map atoms under an X-ray beam. When she applied this technique to DNA, she discovered that the sugar-phosphate backbone of DNA was outside of the molecule and that the molecule was helix-shaped. Her yet unpublished work was used by Watson and Crick to help complete their model of the DNA molecule, that later won them the 1962 Nobel Prize. After working with unshielded X-rays for many years, in 1958 Franklin developed cancer and died at the age of 37. Unfortunately, for whatever reason, she never got the credit for her essential work, so it is through acknowledgements such as this that Rosalind Franklin’s legacy lives on.
**Dr. Jane Goodall**

Jane Goodall observed chimpanzee behavior for a quarter century in the jungles of the Gombe Game Reserve in Africa. Her observations, discoveries and consequential writing led to huge changes in how we think about the evolution of humans, conservation and the treatment of primates throughout the world. She discovered that chimpanzees battle among themselves in “wars” and watched as one group of chimpanzees succeeded in killing off the members of another group. This was a characteristic that before that time was attributed only to humans. She received a Ph.D. from Cambridge University in 1965 and many honorary awards internationally for her ground-breaking research. She published dozens of scientific papers and many books and articles. In 1977 she founded the Jane Goodall Institute to increase habitat conservation, environmental education, primate research and protection. To this day, Jane Goodall spends much of her time lecturing around the world and sharing her message of hope for the future. She hopes to encourage young people to make a difference in their world.

**Dr. Stephen Jay Gould**

Dr. Stephen Jay Gould liked to think about evolution (the changes in populations of living things over time that might make them better adapted for their environment). For most scientists, evolution has always been thought to be a slow, steady process of change over time. Dr. Gould however, after studying the fossil record, proposed a different theory. The theory of “punctuated equilibrium.” This is where evolutionary change (as seen in the fossil record) comes in fits and starts with sudden appearances of new species followed by long periods with little changes at all. This would explain why there seems to be such incompleteness in the fossil record. Dr. Gould, who passed away in May 2002 after a battle with cancer, wrote many books including *Wonderful Life, The Mismeasure of Man, Bully for Brontosaurus*, and his last work, *The Structure of Evolutionary Theory*.

**Dr. Robert Max Holmes**

Dr. Robert Max Holmes studies cold places. His field research finds him in northern Canada, Alaska and Russia. Ironically, his research often addresses how these cold places are warming up. He studies climate change by looking closely at arctic ecosystems and studying the river water flowing out of Russian, Alaskan, and Canadian rivers into the Arctic Ocean. Dr. Holmes also has become involved in TREC Programs (Teachers and Researchers Exploring and Collaborating), where K-12 teachers take part in Arctic research and working with scientists. This is meant to improve science education and awareness of arctic issues with students and the public. Dr. Holmes presently is an associate scientist at the Woods Hole Research Center.

**Dr. Carl Sagan**

Carl Sagan was a man who made science interesting, understandable and exciting to millions of people around the world. Science educated or not, people watched his 1970s television show “*Cosmos*” with wonder and a new sense of excitement about space and our connection to it. An astronomer and professor at Cornell University, he published 600 scientific papers, worked on 20 books, and in 1978, won a Pulitzer Prize. He worked with NASA on the space shuttle missions, did research on Venus, Mars, Titan, the origins of life on earth, and nuclear war. He received 22 honorary degrees from colleges and universities all over America. He co-founded The Planetary Society, a huge organization with members from all over the world interested in space, the search for extraterrestrial life, the detection of near-earth asteroids and robotics exploration on Mars. He died in 1996 at
the age of 62 after battling cancer for two years. This was terrible loss to the science community and the world, because though Carl Sagan won countless awards and medals in his lifetime, his greatest work was making science accessible to everyone.