

The 2009 Alliance for Science National High School Essay Contest

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In Darwin's Footsteps: Carrying forward a magnificent tradition

February 12, 2009 marks the 200th anniversary of the birth of Charles Darwin. The year 2009 also marks the 150th anniversary of the publication of Darwin's landmark book *Origin of Species*. Darwin's contribution was arguably a singular episode in the history of science, yet on another level it was merely the beginning of a new phase in the long march of scientific progress. There were important scientists who came before Darwin and many more who followed in the 19th and 20th centuries.

But this year's Alliance for Science essay contest is not about the past. Today, evolutionary biology is an exciting, vibrant area where scientists continually expand and deepen our understanding of nature in ways Darwin could never have imagined. We want you to focus on today, and the scientists who carry on Darwin's legacy of scientific excellence in our lifetime. Your task will be to identify and write about a single scientist, a group of scientists, or a scientific organization that best exemplifies the character and quality of work that sustained Darwin throughout his career.

What are the qualities that enabled Darwin to achieve his extraordinary breakthrough? There are many, and it isn't possible to answer this question comprehensively in this short article, but here a few to consider:

Patience Darwin did not expect instant success or fame. He built his knowledge slowly through careful observation, study, and experiment. For example, Darwin spent eight years studying every variety of barnacle he could obtain, dissecting them and studying them daily under his microscope. This was not glamorous work and brought him recognition only within a small circle of experts. But this work gave Darwin a strong foundation of experience in zoology and gave him insights into the variability of nature that supported his later work.

Perseverance While many scientists have accomplished great things working only in the laboratory or the library, Darwin was not one of them. At the start of his career, Darwin spent five years (1831 to 1836) on an around-the-world voyage on the *HMS Beagle*. Darwin was prone to seasickness, and grew to hate every wave. He could easily have opted to return early to the comforts of England, but he stuck it out because he was fascinated by what he saw on his expeditions on land. Darwin also struggled against serious illness for much of his later life, suffering from an undiagnosed illness with symptoms such as stomach pain, headaches, and vertigo. These symptoms were so severe that Darwin was at times unable to work

for months at a time. Yet, Darwin persevered and continued his investigations throughout his life.

Originality

It’s a common misunderstanding that Darwin originated the idea of evolution. However, long before Darwin’s time people found fossil remains of strange animals unlike any that were now living. Clearly, animal species had changed over time, i.e. they evolved. But no one could explain how such changes could come about.

Darwin was the first one to solve this puzzle. He understood that even small variations in the characteristics of a given species might give some individuals an advantage in the struggle for survival, and that if those individuals passed on those particular traits to their offspring, that over time, an accumulation of many such changes could lead to entirely new forms of life. We now call this idea evolution by natural selection, and it is one of the most singularly brilliant ideas in the history of science.

Courage

Darwin was not naive. He understood the religious and cultural attitudes of his time, and he knew that his ideas would be perceived by many as a threat, even sacrilegious. Before his voyage on the Beagle, Darwin had studied to be a clergyman, and his wife whom he loved dearly was deeply religious

Darwin was a quiet scholarly type who would have preferred to avoid social controversy. But he could not ignore the truth that he had uncovered. He firmly believed in following the facts and the evidence wherever it led him. As expected, his *Origin of Species* drew praise from many but was received with anger and ridicule by others. Darwin held firm to his conclusions, despite the fact that the primitive science of his time could offer only scant physical evidence to support his theory. It was well after Darwin’s death that new discoveries and systematic analysis of evidence from fossils and DNA established conclusively that Darwin was correct.

Humility

Darwin sought the respect of others, particularly his professional colleagues. However, he was quick to praise others for their accomplishments, while tending to downplay his own achievements. Even at what was perhaps the crowning moment of his career when he unveiled his theory, he willingly shared credit with a younger scientist, Alfred Russell Wallace, who had recently arrived at conclusions very similar to Darwin’s. He did so despite knowing that he had worked out his ideas long before Wallace, a fact that is documented by his private correspondence with his friends.

Compassion

Darwin was in many ways a typical 19th century upper-class male, and harbored many of the prejudices common to that time and social class.

However, Darwin clearly had a strong sense of compassion for those less fortunate than himself. He hated slavery, and was deeply troubled by the inhumane treatment of slaves that he witnessed while on his voyage on the Beagle.

In looking for a candidate to write about for your essay, don’t expect to find a modern-day clone of Darwin. We are looking for an essay about an individual or group who capture the spirit, dedication, and vision that characterized Darwin’s work. This contest is a chance for you to think “outside the box” and to write something truly original. Follow Darwin’s example yourself --research thoroughly, take detailed notes, think carefully about what you want to say, then write the best essay you possibly can.

Remember, don’t write an essay about Darwin’s life or other scientists of the long past! Write about a person or group who is expanding the horizons of knowledge today, and show how their work reflects the values and principles Darwin demonstrated during his life.

Good Luck!