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# Science Teaches

The Best Implications Science Has to Offer

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Monday, November 14, 2016

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## The Real Driving Force: Determination

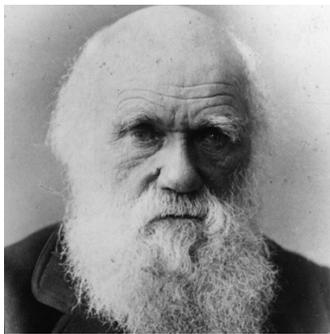
### Darwin's Struggle for Acceptance

Michael Sherman

#### **BOSTON, MASSACHUSETTS** –

In 1835 aboard the HMS Beagle, the naturalist, Charles Darwin, arrived at the Galapagos Islands to study different animals. From his research, he proposed the theory of natural selection, which states that those animals better adapted to their environment tend to live on while those without adaptations tend to go extinct.

Darwin's theory has been summarized in a popular saying: survival of the fittest. This theory is widely believed to be the leading factor of evolution.



Charles Darwin

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Over a century and a half later at the Tufts School of Medicine, Sean Carroll, a 2009 graduate student, worked with fruit fly genes to unravel a new branch

a universally accepted theory, but drawing on results from fossil records and DNA tests between humans and animals, it is far more plausible than it was in the mid-1800's when Darwin suggested it.

How did Darwin do it? Darwin rejected what the church and others believed, that every creature on Earth was designed specifically for different reasons. "Instead, Darwin said no, species are changeable, and the introduction of new species is a completely natural process that follows natural laws just the way physics does" (Weintraub 1).

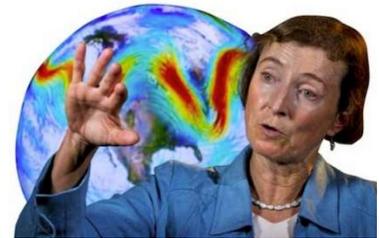
How is Carroll carrying on Darwin's legacy? Well, "Carroll also devotes increasing energy to telling the public about his field's remarkable discoveries" (Weintraub 1). It is only through such scientists' resolve as that of Carroll and Darwin, that scientific progress can be made.

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### Scientist Shocks Climate Community with New Proposal

Michael Sherman

**WASHINGTON, D.C.** – With her new idea linking climate change and weather, Jennifer Francis, an atmospheric scientist, can



Jennifer Francis

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### Let's Compare the Two

Michael Sherman

**ATLANTA, GEORGIA** – In reviewing the two articles, "Into the Maelstrom" and "DNA Agrees With All Other Sciences," I discovered the importance of analyzing them separately *and* uniting them.

In "Into the Malestrom," Eli Kintisch uses different sections to explain the low and high points of Jennifer Francis' time trying to prove her hypothesis. For instance, most of the sections discuss people's disbelief of her ideas, such as "Checking the Barometer" and "40-Knot Winds," but finally in "Batten the Hatches," her work is a given credit from the White House itself.

Kintisch argues that Francis demonstrated determination by very clearly sectioning off times when Francis was determined and when others doubted her.

<p>of science, evolutionary developmental biology.</p> <p>According to Carroll's research, the same genes that form various appendages of fruit flies, namely legs, wings, and antennae, are shared by all animals, which helps prove evolution: "beneath these extremely diverse exteriors [is] a deeply shared common genetic tool kit" (Weintraub 3).</p> <p>In an interview, Pamela Weintraub and Carroll discuss the public's view of evolution and Carroll criticizes the hypocrites who doubt evolution based on DNA when DNA science <i>itself</i> is so prevalent in other serious issues. For instance, convicting criminals and testing for terminal illnesses or paternity all require DNA testing. We even sentence people to death based on DNA findings.</p> <p>It is through the determination of such pioneer's as Carroll and Darwin that scientific progress can occur. Evolution may not be</p>	<p>attest to the need to challenge opposition with determination.</p> <p>At the 2014 GRL conference in Washington, D.C., Francis suggested that "the warming Arctic is changing weather patterns in temperate latitudes by altering the behavior of the northern polar jet stream" (Kintisch 154). Although her hypothesis could be flat out wrong, the scientific community doesn't seem to be giving Francis a chance to explain. For instance, Kevin Trenberth of the National Center for Atmospheric Research adamantly claimed that "the notion that it can alter the jet stream 'is just plain wrong'" (Kintisch 160).</p> <p>By shooting down her idea immediately, all the predisposed naysayers are essentially inhibiting the progress of science. Francis could be on the verge of a revolutionary discovery, but people are not allowing her to explain herself, which can be a dangerous game to play given the gravity of global warming.</p> <p>Thankfully for Francis, "seeking out adversity is part of [her] character," which is what scientists need to have when faced with opposition: grit, resilience, and determination (Kintisch 156).</p>	<p>Additionally, in "DNA Agrees With All Other Sciences," Pamela Weintraub interviews Sean Carroll. The form of an interview lets the reader view an overall summary of the topic combined with instant, on-the-spot answers to questions. By being able to answer these questions so quickly and well-thought-out, Carroll shows how determined he is to convince people evolution is real.</p> <p>Both of the previously-mentioned pieces share similar arguments, namely that you shouldn't back down in the face of opposition. Additionally, both argue explicitly that it is crucial to reach out and connect with a wider audience through large-scale communication. Both Francis and Carroll claim that their success was attributed to informing the public and raising awareness.</p> <p>The combination of reading a hard-copied book section-by-section and an online interview provides a good contrast. It bridges long periods of time together by showing how <i>Darwin</i> needed determination 150 years ago and how <i>we</i> need it today. It also shows how gaining followers and through continued determination can lead to scientific progress. After all, it <i>really</i> feels like there is something to take away from these pieces when the <i>both</i> emphasize the same argument in a well-developed and researched article <i>and</i> a more casual interview.</p>
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