

Inappropriate Comparison

In *The American Biology Teacher* (September 2008, p. 398), Gregory Pryor compared Charles Darwin's biological fitness (10 children) with English pop idol Mick Jagger (seven children by three women, two being wives). Of Darwin's children by his only wife Emma Wedgwood, three were married and had children, three were married and had no children, three died before adulthood, and one did not marry and had no children. If children do not survive to have children of their own, their genes die with them, and so also do the genes of their parents. Thus, Darwin's genes were only passed on through three of his children to his grandchildren. The evolutionary fitness of an individual must always be specified relative to other living individuals in that same local population. If Darwin's children have survived and reproduced in greater numbers than the average of other members of his local population, then it could be said that he had above average evolutionary fitness. Jagger was born in 1943 in Dartford, Kent County, England. Coincidentally, Darwin (1809-1882) lived most of his adult life in the same county. However, Jagger and Darwin were never members of the same local population (living at different times with different available health services, contraception options, etc.), so it is inappropriate to try to compare their relative fitness values.

William D. Stansfield
Emeritus
Biological Sciences Department
California Polytechnic State University
San Luis Obispo, CA
wstansfi@calpoly.edu

Response

My "evolutionary fitness challenge" was a light-hearted analysis intended to engage introductory, non-

majors students in a discussion on the topic of evolutionary fitness, in contrast to physical fitness. Having said that, William Stansfield's comments regarding my analysis echo the frustration of many biologists when they attempt to define and quantify fitness, including J.B.S. Haldane (the first to quantify fitness), who reportedly described fitness as "a bugger" (Kohn, 2004). Simply put, no single definition or means of measurement of fitness has been accepted by all. As Stansfield asserts, fitness is indeed relative and should be considered within the context of a single population. In my analysis, then, a direct comparison between the fitness of Charles Darwin and Mick Jagger – individuals from different populations – would not be appropriate. However, Stansfield's claim that fitness cannot be represented as the number of offspring produced by an individual misses the mark. He says, for instance, that Darwin's fitness should not be expressed as the 10 children he sired, but as the three children who reproduced. A quick perusal of the literature shows that fitness is often quantified as the number of offspring produced, regardless of their fates. In fact, some biologists ignore the lives and deaths of individuals altogether and instead focus on genes. Perhaps Haldane's student, John Maynard Smith, put it best: "If the first human infant with a gene for levitation were struck by lightning in its [baby carrier], this would not prove the new genotype to have low fitness, but only that the particular child was unlucky."

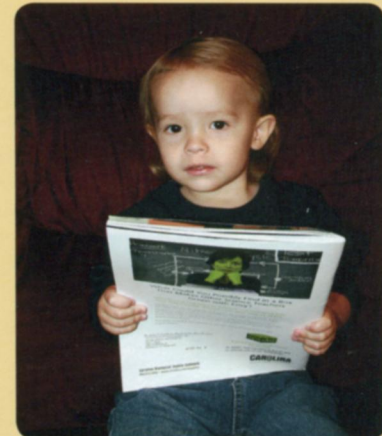
References

Kohn, M. (2004). *A Reason for Everything: Natural Selection and the English Imagination*. UK: Faber & Faber.

Smith, M.J. (1998). *Evolutionary Genetics*. Oxford, UK: Oxford University Press.

ABT Attracting Young Readers

Some of you know that I'm now a full-time "manny" for my 19-month-old grandson, Nicholas. I got my September issue of *The American Biology Teacher* yesterday and was reading the last of it this morning



NICHOLAS BIGGS

while watching Nicholas play. Every three or four minutes he'd toddle toward me and just laugh and laugh. I thought he was just in a playful mood. After several bouts of laughter, he came up and pointed to the Carolina ad on the back of the journal, the one with [the] science teacher green with envy. He knew that people shouldn't be green and thought this was the funniest thing he'd seen in a long time. It's now two hours later and he's still coming to the table to point to the green woman. I thought you'd find that as interesting as I did!

Alton L. Biggs, President
Biggs Educational Consulting
Commerce, Texas 75428-3947
altonbiggs@earthlink.net

SAVE
THE DATE
FOR

Denver!

NABT PROFESSIONAL DEVELOPMENT CONFERENCE

See page 572 for details.