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Why Do We Invoke Darwin?

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Darwin's theory of evolution offers a sweeping explanation of the history of life, from the earliest microscopic organisms billions of years ago to all the plants and animals around us today. Much of the evidence that might have established the theory on an unshakable empirical foundation, however, remains lost in the distant past. For instance, Darwin hoped we would discover transitional precursors to the animal forms that appear abruptly in the Cambrian strata. Since then we have found many ancient fossils - even exquisitely preserved soft-bodied creatures - but none are credible ancestors to the Cambrian animals.

Despite this and other difficulties, the modern form of Darwin's theory has been raised to its present high status because it's said to be the cornerstone of modern experimental biology. But is that correct? "While the great majority of biologists would probably agree with Theodosius Dobzhansky's dictum that 'nothing in biology makes sense except in the light of evolution,' most can conduct their work quite happily without particular reference to evolutionary ideas," A.S. Wilkins, editor of the journal *BioEssays*, wrote in 2000.[1] "Evolution would appear to be the indispensable unifying idea and, at the same time, a highly superfluous one."

I would tend to agree. Certainly, my own research with antibiotics during World War II received no guidance from insights provided by Darwinian evolution. Nor did Alexander Fleming's discovery of bacterial inhibition by penicillin. I recently asked more than 70 eminent researchers if they would have done their work differently if they had thought Darwin's theory was wrong. The responses were all the same: No.

I also examined the outstanding biodiscoveries of the past century: the discovery of the double helix; the characterization of the ribosome; the mapping of genomes; research on medications and drug reactions; improvements in food production and sanitation; the development of new surgeries; and others. I even queried biologists working in areas where one would expect the Darwinian paradigm to have most benefited research, such as the emergence of resistance to antibiotics and pesticides. Here, as elsewhere, I found that Darwin's theory had provided no discernible guidance, but was brought in, after the breakthroughs, as an interesting narrative gloss.

In the peer-reviewed literature, the word "evolution" often occurs as a sort of coda to academic papers in experimental biology. Is the term integral or superfluous to the substance of these papers? To find out, I substituted for "evolution" some other word - "Buddhism," "Aztec cosmology," or even "creationism." I found that the substitution never touched the paper's core. This did not surprise me. From my conversations with leading researchers it had became clear that modern experimental biology gains its strength from the availability of new instruments and methodologies, not from an immersion in historical biology.

When I recently suggested this disconnect publicly, I was vigorously challenged. One person recalled my use of Wilkins and charged me with quote mining. The proof, supposedly, was in Wilkins's subsequent paragraph:

> *"Yet, the marginality of evolutionary biology may be changing. More and more issues in biology, from diverse questions about human nature to the vulnerability of ecosystems, are increasingly seen as reflecting evolutionary*

> *events. A spate of popular books on evolution testifies to the development. If we are to fully understand these matters, however, we need to understand the processes of evolution that, ultimately, underlie them."*

In reality, however, this passage illustrates my point. The efforts mentioned there are not experimental biology; they are attempts to explain already authenticated phenomena in Darwinian terms, things like human nature. Further, Darwinian explanations for such things are often too supple: Natural selection makes humans self- centered and aggressive - except when it makes them altruistic and peaceable. Or natural selection produces virile men who eagerly spread their seed - except when it prefers men who are faithful protectors and providers. When an explanation is so supple that it can explain any behavior, it is difficult to test it experimentally, much less use it as a catalyst for scientific discovery.

Darwinian evolution - whatever its other virtues - does not provide a fruitful heuristic in experimental biology. This becomes especially clear when we compare it with a heuristic framework such as the atomic model, which opens up structural chemistry and leads to advances in the synthesis of a multitude of new molecules of practical benefit. None of this demonstrates that Darwinism is false. It does, however, mean that the claim that it is the cornerstone of modern experimental biology will be met with quiet skepticism from a growing number of scientists in fields where theories actually do serve as cornerstones for tangible breakthroughs.

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References

1. A.S. Wilkins, "Evolutionary processes: a special issue," *BioEssays*, 22:1051-2, 2000.
