

## Alleged scientific opposition to evolution

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Biological evolution — descent with modification — became generally accepted in the scientific community in the same fashion as all other major theories, i.e. it survived repeated testing against research data. Creationists, especially creationists who support the notion of ‘intelligent design’, are so desperate for this kind of secular credibility that they will trumpet any quote, citation, or scientist that can be interpreted or misinterpreted as authoritative dissent from the mainstream evolutionary theory. This occurs whether or not the cited authority is actually dissenting, or is actually an authority. In an almost automaton-like fashion, creationists compile collections of such ‘authorities’ and deploy them in an attempt to convince school boards, teachers, students, and eventually judges that there is scientific ‘controversy’ over evolution.

The most spectacular recent example is a 2007 supplemental textbook for high-school biology classes, misleadingly entitled *Explore Evolution: the Arguments for and Against Neo-Darwinism*. The book is produced by the Discovery Institute, authored by a collection of prominent ‘intelligent design’ proponents who are actually a collection of young-earth and old-earth creationists committed to Biblical inerrancy, and published by a creationist so strict that he still believes in species fixity. Despite this, the terms ‘creationism’ and ‘intelligent design’ are avoided, and instead well-worn and long-refuted creationist objections to evolution are presented as being the arguments of ‘critics’ of evolution.

The ‘critics’ listed in these sorts of citation collections end up, on investigation, being a wild hodgepodge. A great many of them are mainstream scientists who fully accept descent with modification, but are being misquoted or misinterpreted. This sort of distortion has been dealt with elsewhere (see The Quote Mine Project, [www.talkorigins.org/faqs/quotes/mine/project.html](http://www.talkorigins.org/faqs/quotes/mine/project.html)). Some of the critics are actually creationists/intelligent design proponents, but their cited works are portrayed as if they are authoritative, secular research. Instead, they are typically books published by trade and religious presses, conference proceedings, publications in philosophy or social science venues, web articles, and other publications short of actual peer-reviewed biological research.

The ‘authorities’ that creationists most adore are non-creationist scientists who nevertheless reject evolution. Such figures are rarer than cold fusion proponents, but nevertheless exist. A somewhat notorious case was the famous iconoclastic physicist Fred Hoyle and his student (later colleague) Chandra Wickramasinghe. In the 1970s, during important work on cosmic dust spectra, they became convinced the dust included not just organic molecules but full bacteria — a highly ambitious conclusion which met with widespread scepticism. Reacting against the ‘dogmatism’ of the scientific community, the pair went on to argue that the origin of life and major evolutionary changes were impossible because such events were as likely as a tornado in a junkyard assembling a Boeing 747 by chance. This analogy, endlessly repeated by creationists ever since, was a spectacularly egregious mischaracterization of evolution, which is a gradual, stepwise process, and nothing at all like random, all-at-once chance assembly. Immune to correction and counterevidence, the pair went on to propose that life and major evolutionary events must have been seeded by genes and microbes that rained down on Earth from interstellar space, that various recent disease epidemics were the product of viruses from space, and, since evolution didn’t work and major transitions were impossible, the feathers on the famous dinosaur/bird transitional fossil *Archaeopteryx* must have been faked. In 1981, Wickramasinghe testified as an expert witness in *McLean v. Arkansas* in defence of a state law requiring equal time for ‘creation science’ in biology classrooms. Wickramasinghe is still at it, for example in suggesting that SARS came from space, but expressed mild regret about the creation science and *Archaeopteryx* episodes in his recent autobiography.

A few other figures are regularly invoked by creationists. Christian Schwabe is a biochemist who believes that minor incongruencies in molecular phylogenies mean that common ancestry is false, and maintains instead that species have somehow originated billions of times independently

from chemical precursors through chemical laws. *Explore Evolution* blithely cites Schwabe as if this bizarre view was a serious contender in the scientific community. Schwabe’s most surprising molecular incongruity was his finding of pig relaxin in tunicates, but this finding has not been replicated in the *Ciona* genome and thus was probably due to contamination. Michael Denton’s 1985 book *Evolution: A Theory in Crisis* assembled quote-mines and misunderstandings in support of the contention that evolution was about to collapse and be replaced by a typological view of biology. For example, Denton thought that on evolutionary theory, frog sequences should be intermediate between fish and mammal sequences, not realizing that living fish have been evolving for just as long as living frogs and mammals, and thus a tree is the expected pattern, not a linear series. (This misunderstanding was copied by Schwabe and in the ‘intelligent design’ textbook *Of Pandas and People: the Central Question of Biological Origins*.) Denton was influential in the early ‘intelligent design’ movement, but later fell away when he reversed himself by embracing common ancestry, and argued that natural laws explained features of biology such as protein folds. Hubert Yockey did some important work connecting information theory to molecular biology, but claimed that the origin of life was outside of science, again based on the improbability of a whole protein assembling at once by random all-at-once assembly.

Although this group of dissidents may seem disparate and unconnected, we can note several prominent commonalities. First, although they are cited as authorities, none of them can really claim expertise in evolution by training, study systems (e.g. fossils or thorough comparative biology, as opposed to lab work on one model system), or publication. Indeed, their primary anti-evolution works tend to be trade books. Secondly, as might be expected, various amateur errors about evolution are at the basis of their arguments — most prominently, they all think of evolution as ‘random’, and then set up their arguments against this straw man. This is coupled with a strong emotional antipathy for explanations invoking randomness, and a preference for law-like explanations. Thirdly, they have a tendency to essentialize DNA sequences and the idea of genetic ‘information’ by overplaying the analogy to human language, leading to an inability to see how new genetic ‘information’ (i.e. new genes) could evolve through combinations of duplication, mutation, and selection processes. All of these tendencies are also prominent amongst creationists, which probably accounts for their popularity in creationist circles. But these sorts of misconceptions are extremely widespread in general — in the popular culture, and even amongst a fair number of mainstream scientists who have no problem with evolution. Recognizing and correcting these kinds of misconceptions is an important goal for science education. ■