DOES EVOLUTION EXPLAIN EVERYTHING ABOUT LIFE?

Answers from Ph.D. Scientists

Philip Bell (Contributing Editor)

Ph.D. Scientists:
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Response to the *New Scientist* book,
"How Evolution Explains Everything About Life"

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Christian worldview and the creation/evolution issue.

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Introduction

By Philip Bell

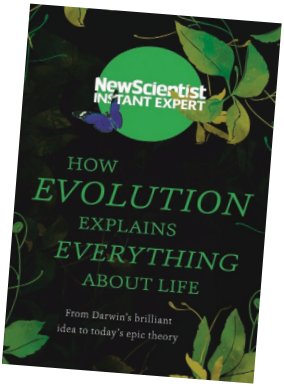

Fig. 1. *Front cover of* How Evolution Explains Everything About Life *(2017)*

This short book is a critical review of claims made by an expert panel of evolutionary scientists in the *New Scientist* 'Instant Expert' book, *How Evolution Explains Everything About Life: From Darwin's brilliant idea to today's epic theory.*[1] Those are massive claims, but can they be demonstrated? Well, by the end of the book, the *New Scientist* team feels sufficiently emboldened to conclude:

> *"Innumerable examples of evolution in action can be seen all around us … Evolution is as firmly established a scientific fact as the roundness of the Earth" (p. 245).*

How often have you encountered such grandiose claims? The implication is that even to doubt big-picture evolution (molecules-to-man), certainly to critique evolution, is preposterous. It is as daft as insisting that the Earth is flat.

Imagine evolution as a grand pudding: the real proof of the pudding is in the eating. It is not sensible simply to rely on what the 'pudding experts' may tell you: 'Oh it really is the very finest

of puddings, the combination of flavours and textures is simply superb. Cooked to perfection, it is quite mouth-watering. Once eaten, never forgotten. No bad aftertastes, easily digested, and reaches the parts that more inferior puddings cannot reach. Completely banishes hunger pangs, leaving you contented, without unpleasantly repeating on you later. Never did a more splendid pudding see the light of day!' Ah yes, but does it *really* live up to expectations? There's only one way to find out: eat some and test those mighty claims! Cut into it and sample the contents for yourself.

Similarly, to determine the sum and substance of *How Evolution Explains Everything About Life* (hereafter, HEEEAL), we must examine what the experts are saying. Without doubt, the book contains useful discussion on evolutionary topics, but can its lofty claims be substantiated? The very examination itself is an excellent opportunity both to showcase some fascinating scientific findings and, we are confident, to demonstrate the superiority of the case for supernatural creation.

Experts go head-to-head

This *New Scientist* 'Instant Expert' book represents the joint efforts of ten writers, the overall editor Dr Alison George (biochemist), and a panel of Ph.D. experts: Dr Susan Blackmore (psychologist), Dr Peter Bowler (science historian), Professors Adrian Bird (geneticist), Lee Alan Dugatkin (biologist), Steve Jones (geneticist), Kevin Laland (evolutionary biologist), George Turner (zoologist), and David Sloan Wilson (biologist and anthropologist), and Dr John van Wyhe (Darwin and Wallace historian).[2]

Consequently, it seemed fitting to assemble a panel of expert Ph.D.s (biblical creationists) to tackle the subjects raised—much as was done for the book and documentary project *Evolution's Achilles' Heels*.[3] A variety of audacious claims are made within the pages of HEEEAL, along with some telling admissions. Our own ten experts have responded in the very areas which are pertinent to their qualifications and professional experience:

- Dr Jonathan Sarfati (physical chemist)
- Dr Pierre Jerlström (molecular biologist)
- Dr Robert Carter (marine biologist and geneticist)
- Dr David Catchpoole (plant physiologist)
- Prof Stuart Burgess (mechanical engineer and biomimeticist)
- Dr Tasman Walker (mechanical engineer and geologist)
- Dr Jim Mason (nuclear physicist)
- Dr Donald Batten (plant and agricultural scientist)
- Dr Peter Borger (molecular biologist)
- Dr Samuel Gan (molecular biologist).

Not all of CMI's panel of experts read the book in full but all were provided with the chapter outlines and the full context pertaining to the quotations upon which they were invited to comment (shown hereafter in GREEN boxes). Therefore, in formulating their replies, each expert was fully cognizant of the scope and thrust of the writer(s) whom they were critiquing. In what follows, the headings and sub-headings are mine (not borrowed from HEEEAL) but are designed to capture the thrust of the quoted claims and admissions.

Audacious claims

Life's chemical origin was a cinch

A response by Dr Jonathan Sarfati

> *"The only thing we know for certain is that life must have popped into existence sometime between Earth's formation 4.5 billion years ago and the appearance of the first undisputed fossils, about 3.4 billion years ago" (p. 69).*

The above presupposes something they most certainly don't know for certain: that life evolved from non-living chemicals. This claim is called chemical *evolution*. However, it goes against what we do know about chemistry and information theory. So, arguments against chemical evolution are not appeals to ignorance, but about what really happens in chemistry.

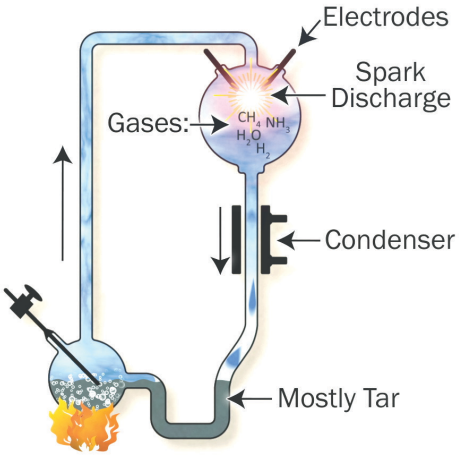

Fig. 2. *Spark discharge apparatus used in the famous Miller-Urey experiments of the 1950s, designed to simulate chemical reactions on the putative 'early Earth'.*

Many claims about chemical evolution sound impressive on the surface, but not so much after looking at the chemistry involved. Chemical evolution ('abiogenesis') is basically propaganda and includes the following:

1 Find a trace of compound A in a spark discharge experiment, and compound B in another simulation (sometimes with mutually incompatible conditions), then claim, "See, A and B can be produced under realistic primitive-earth conditions."

2 Obtain pure, homochiral,[4] concentrated A and B from an industrial synthetic chemicals company, react them to form traces of the more complex compound C. Then the news is trumpeted that C will form under primitive earth conditions.

3 Presume that dilute A and B can react that way, and that they won't react destructively with contaminants D, E, or F that were also formed in the first experiments.

4 Hope people don't notice that C didn't form abiotically (in the absence of life) but needed much intelligent interference.

5 Now that C has been 'proven' to form abiotically, chemical evolutionists purchase pure, homochiral C, and find ways of reacting it to produce traces of biopolymer X among many other things (biopolymer = many small biomolecules bonded together).

6 Purchase pure homochiral biopolymer X, and repeat these steps.

But any synthetic chemist knows that lots of intelligent work must go into a multi-step process. Real chemistry is not very cooperative.

> *"Life, it seems, is a matter of basic chemistry—no magic required, no rare ingredients, no bolt from the blue. And that suggests an even more intriguing possibility … life may have had many origins" (p. 75).*

Not so:

Information is a huge stumbling block for chemical evolution

Much of this is only the building blocks, and ignores the vital concept of *coded information* or *specified complexity*—how they are put together. The flaws can be illustrated by exactly analogous claims:

1 We have just mixed flour and water and applied heat, and formed the letters to make alphabet soup (i.e. assume for a moment that the building blocks of life really have been produced).

2 Sometimes a few letters can stick together (i.e. assume that the building blocks can combine to some extent).

3 Therefore we showed that the works of Shakespeare could also have formed naturalistically.

We can see that the works of Shakespeare are more than the component letters. We can't explain them by looking at the chemical properties of the alphabet soup, or of the ink molecules on a printed page, or the computer memory. Something clearly distinguishes the works of Shakespeare from a random agglomeration of alphabet soup letters. This something is information. Information is not matter or energy. See for yourself: arrange alphabet soup letters into a Shakespearean sonnet on a plate, weigh them all. Then scramble the letters, thus destroying

the information. Weigh it again. No change! So, information has no weight, therefore no mass.

Living cells require information, and decoding

Even the simplest living cell has an enormous quantity of information on its DNA (deoxyribonucleic acid)—about 600,000 'letters'. And it has the decoding machinery to 'read' this information. But the instructions to build this decoding machinery are encoded on its DNA. DNA can't be decoded without

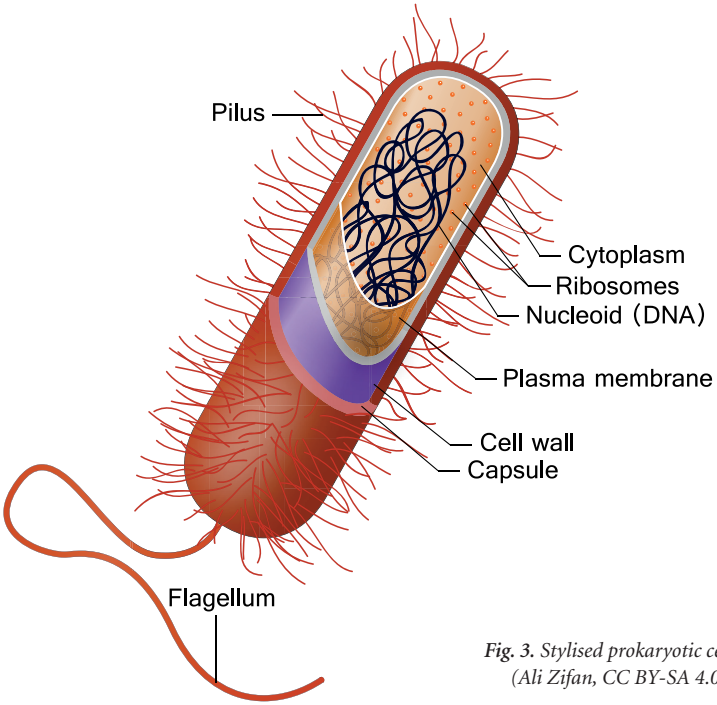

Fig. 3. Stylised prokaryotic cell (Ali Zifan, CC BY-SA 4.0).

machines, but the machines can't be built without the DNA coding for them. This is a vicious circle for chemical evolution.

Also, the machines must be extremely accurate right from the start. If not, then coding errors will creep in. Then the next generation of decoding machines will also have bugs, and they will do an even worse job of decoding, making even more bug-infested machines, which do a still worse job of decoding … This is called *error catastrophe,* and will result in extinction.

In general, if we have a genome of *n* letters, then the number of mistakes must be no more than 1/n. E.g. if it were 100 letters, then only a 1% error rate could be tolerated; 1,000 letters could tolerate 0.1%. Living cells have error-checking machinery, but they are encoded on 1,000 letters or more. This leads to the 'Eigen paradox': longer DNA polymers are more vulnerable to errors, leading to error catastrophe. But it needs a long polymer to code for any repair enzyme!

Science should be about the most logical explanation, not necessarily restricted to a materialistic explanation. The logical explanation for the above is that life could not have started imperfectly and improved. Rather, it must have started practically perfect (functional), otherwise it would not work at all. This is consistent with Genesis 1–3: God created everything "very good", and because of Adam's sin, things have been deteriorating ever since. Therefore, it is simply false to claim that life could have originated many times because it "is a matter of basic chemistry".

RNA world

> *"[Research] findings suggest that building a rudimentary RNA world may not have been the special, once-in-a-universe occurrence it is popularly made out to be. This raises an intriguing possibility: that life's earliest stages didn't happen just once, but over and over again. If this is true, then life's first epoch*

> *was one of great experimentation. Many different kinds of live molecular machines would have popped up in the primordial soup, some more successful than others" (pp. 80–81).*

The RNA world was proposed to try to answer the vicious circle described above. Its proponents hope that one molecule can perform the tasks of both coding and function. Modern cells have DNA and RNA (ribonucleic acid) for coding, and proteins for function.

A huge problem is that RNA is very unstable. DNA is not as unstable, because as the name suggests, an oxygen has been removed. That is, a hydroxy group[5] has been replaced by a hydrogen. This hydroxy group of RNA is easily attacked.

But DNA is also unstable. The 2015 Nobel Prize for Chemistry was awarded to three researchers for the discovery of the instability of DNA, which led scientists to realize that living things must have

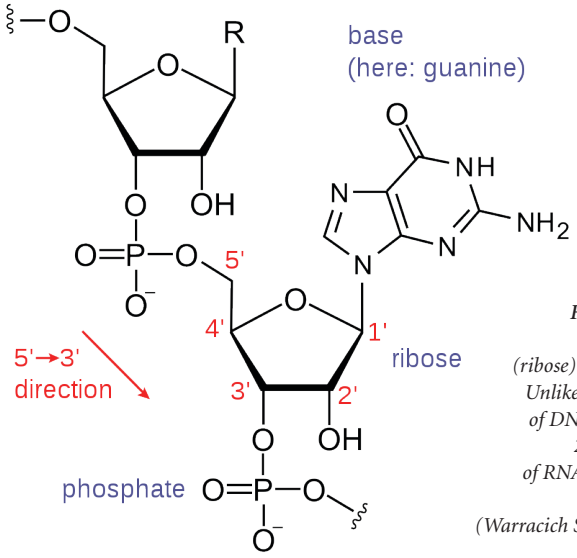

Fig. 4. The backbone of RNA is made of sugar (ribose) and phosphate (PO^4). Unlike the deoxyribose sugar of DNA (which has H at the 2'-position), the ribose of RNA has a hydroxyl (OH) group at this position (Warracich Sahib, CC BY-SA 3.0).

repair machinery. Even under favourable conditions—protected deep inside bones, and frozen at –5°C, it would be completely fragmented in 6.8 million years.[6] At higher temperatures DNA breaks down even more quickly. At the temperatures of hydrothermal vents, proposed by some as the beginning for life—forget about it! Since DNA is too unstable to persist for long, *a fortiori,* the idea of an RNA world is even more preposterous.

This is a good time to point out that chemical evolutionists often appeal to vast time periods. But deep time would be the enemy—more time for everything to break down.

Furthermore, even the component building blocks of RNA are unstable. Take ribose for example, the sugar in the RNA backbone. The usual explanation is that this originated by the polymerization of formaldehyde in an alkaline solution, called the formose or Butlerov reaction. But one problem is that this is one of the huge jumble of products produced, so we are back to asking how ribose was purified. And there are also several ways that ribose can be arranged (called isomers), and only one is suitable for RNA. An even worse problem is that the very same alkaline conditions quickly destroy aldose sugars—including ribose—via the Cannizzaro reaction. This problem is worse still under high temperatures, such as the alkaline hydrothermal vents.

RNA also has phosphate in its backbone. But where would that come from? Phosphate readily combines with metal ions in seawater to form an insoluble precipitate, so would be unavailable.

Then somehow we need to get ribose, phosphate, and the RNA 'letters' to combine into the building blocks, called ribonucleotides. But these chemicals don't readily combine at all, let alone in just the right way to form ribonucleotides. Then somehow the ribonucleotides must combine, although in water the reaction tends to go in the opposite direction. Then we have

the problem mentioned above: ribonucleotides are like alphabet soup, and RNA is like the works of Shakespeare.

Many claims about RNA's ability have been highly overstated in RNA world scenarios. We have no actual examples of a genuinely self-replicating RNA. The nearest is an engineered ribozyme 202 nucleotides (nt) long called tC9Y that could make an RNA strand 206 nt long from activated nt building blocks, with a maximum fidelity of 97.4%. This sounds high, but as explained earlier, to avoid error catastrophe, the copying fidelity must be 1 in 202, or 99.5%. Other experiments are not really replication but *ligation*—one RNA strand joining two halves that must have a matching sequence. Of course, there is no explanation of how a primordial soup could generate these matching RNA strands.

Although RNA can supposedly both reproduce and catalyze, for most applications, *a given RNA molecule* can't do both. Most enzymes need a 3D structure, which in turn needs the RNA molecule to bond with itself. But to reproduce, the RNA chain must be open to bond with new RNA building blocks.

In general, the RNA world has far too many problems to be a viable chemical evolutionary theory. It's no wonder that biochemist Harold Bernhardt, working in New Zealand, wrote a paper, "The RNA world hypothesis: the worst theory of the early evolution of life (except for all the others)".[7] Of course, he means, worse than any others that are *materialistic*.