



## Left-Handed Life: Is the Chirality Problem Near Solution?

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Cells use only left-handed amino acids and right-handed sugars. A new hypothesis involving the weak nuclear force tries to address this asymmetry.

The chirality (handedness) of life (see illustration on [PhysOrg](#)) is a severe problem to naturalistic origin-of-life scenarios. Dr. James F. Coppedge wrote about this in his book *Evolution: Possible or Impossible?* chapters 3–5 ([available online here](#)), showing that without natural selection's help—leaving chance as the only option—the probability of getting a complete left-handed protein out of a racemic mix (a mixture of both hands) was nil. But the first edition of his book dates from 1973. Has the problem been solved in the meantime?

We've reported whenever a new hypothesis comes along (e.g., [4/23/13](#) or search on "[homochirality](#)"). The only hope to avoid the improbability is to find some natural law that would produce an excess of one hand over the other ("enantiomeric excess"). So far, each of these attempts have failed. A new one has just appeared, written up in [Nature](#) and on [PhysOrg](#), involving the weak nuclear force. In certain types of beta-decay, the electron has a preference for left-handed spin. Could this impart chirality to molecules with which it interacts?

One problem is that an electron is like a flea on an elephant compared to an amino acid. Its mass is so low, it seems inconceivable it could have any effect. The [Nature](#) article explains how Timothy Gay and Joan Dreiling (U of Nebraska-Lincoln) have been trying for 13 years to get a measurable result out of electron spin. Only with a highly-contrived setup, in which the electron energies were tightly controlled, could they see an excess in bromocamphor molecules (unrelated to amino acids). Even then, the excess was only 3 out of 20,000 molecules—about .015 of 1%, far too low when the requirement is 100% purity of one hand.

Both John Hewitt on [PhysOrg](#) and Elisabeth Gibney in [Nature](#) took whatever encouragement they could from this feeble result, but it's clear they are hoping against hope for some future theory with a stronger effect. What's most instructive is their full awareness of the seriousness of the chirality problem. Hewitt writes:

Handedness is a complicated business. **To simply say life is left-handed doesn't even begin to capture the blooming hierarchy of binary refinements** it continues to evolve. **Over the years there have been numerous imaginative theories** for how life's amino acids, nucleic acids, and sugars came to favor one orientation over another. **Everything from circularly polarized UV light, magnetism of the Earth, oriented clays or quartzes, to the weak nuclear force itself has been considered, but none has yet to securely emerge into realm of plausibility.** A recent paper by Dreiling and Gay in *Physical Review Letters* has now **thrown a life jacket to the weak force making it a theoretically viable possibility.** To fully vet the author's conception **a little work needs to be done.** Effort well spent we might say, because **to understand where and when the handedness of life's molecules originated is to know the origin of life.**

Gibney writes:

Many organic molecules, including glucose and most biological amino acids, are 'chiral'. This means that they are different than their mirror-image molecules, just like a left and a right glove are. Moreover, in such cases **life tends to consistently use one of the possible versions** — for example, the DNA double helix in its standard form always twists like a right-handed screw. **But the reason for this preference has long remained a mystery.**

**Many scientists think that the choice was simply down to chance.** Perhaps, in one of the **warm little ponds** filled with organic chemicals **where life arose, a statistical fluke** generated a **small imbalance** in the relative amounts of the two versions of one chemical. This small imbalance **could** have then amplified over time.

She's dreaming, because mixed-handed polypeptides (chains of amino acids) don't work. They cannot fold into a functional shape. We know from observation with living things that a single wrong-handed amino acid can destroy a protein. In fact, when such a "typo" occurs, the cell quickly fixes the error or sends the polypeptide to the trash.

Gibney admits that this experiment cannot really shed light on the origin of life:

But even demonstrating how a common physical phenomenon **would** have **favoured** left-handed amino

acids over right-handed ones **would not tell us that this was how life evolved**, adds Laurence Barron, a chemist at the University of Glasgow, UK. **“There are no clinchers. We may never know.”**

Hewitt agrees. “Finding evidence that direct beta interactions can transmit chirality to organic molecules **has been difficult**,” he admits, and in this latest attempt, “**the effect was small**”—not enough to provide more than a distant glimmer of hope that some day, this century-long puzzle will find a solution. **“Determining the far more complex mechanisms that underlie life’s handedness will likely remain a significant challenge for some time.”**

Got evidence?

Look, those of you who respect science, and who criticize creationists for trusting “religion” over “science” ([false dichotomy](#), [loaded words](#), [glittering generalities](#)). Here’s evidence! Here is math. Here is the law of probability. Here is *prima facie* evidence for design, but these secular materialists do not want to face the music. They have been trying since Pasteur discovered chiral molecules in 1860 (a year after Darwin’s little black book) to get around this “little problem” that Dr. Coppedge calculated. A single protein has 1 chance in  $8.7 \times 10^{34}$  of being all left-handed, but the smallest known living cell has 239 proteins. The chance of all of those being left-handed in the simplest conceivable living cell is 1 in  $10^{8295}$ . This is clearly impossible. Are you going to follow the evidence where it leads, or continue to hope against hope that materialistic science will find an answer, when they’ve been trying for over 150 years, and are no nearer a solution now than they were then? *What does evidence mean to you?*

Coppedge points out that chance would need 10 billion tries to arrange ten numbered coins in order, on average. One could expect one success in 1,500 years, drawing coins day and night, one every five seconds. “Consider the difference intelligence makes—even a limited intelligence,” he wrote. “Give an eight-year-old the coins, and ask the child to arrange and pick up each one in order and return it. Chance is blind, and has no intelligence. The child is not thus limited. The child can do it in a few moments. Chance takes 1,500 years—just to count to ten once.”

This one piece of evidence about the improbability of getting left-handed proteins was sufficient to change someone’s life. Salvador Cordova was on the way to losing all faith and becoming an evolutionist under the onslaught of evolutionary indoctrination at college. When he read these chapters of Coppedge’s book, he was stunned! It was like turning on the lights. Suddenly, the power of the design argument made sense. He tested these arguments and found them solid. He became a prominent voice in the intelligent design movement on his campus and, after he graduated, as a blogger.

This is the power of intelligent design. The difference is clear. Trust design, not chance.

*Exercise 1:* Materialist Christoph Adami is at it again, trying to make the origin of life look simple. Read about his ideas on [New Scientist](#) about how “weighted dice” made the origin of life far less improbable than it seems. Can you see through his arguments? Feel free to add a Comment to the discussion, for or against his ideas.

*Exercise 2:* A book review in [Science Magazine](#) discusses a new book probability. It describes certain ways improbabilities can be reduced. Which of them involve “sneaking in” information into the system? How do the examples given relate to realistic scenarios for an origin of life by chance?