

# 5 things about left-handedness



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**G**ROWING UP as a left-hander (LH), the only adverse effect I can think of is smudging my writing as my hand passes over the fresh ink. Nonetheless, I don't plan to move to a country where they write from right to left (e.g. Hebrew). Seriously, I am happy to be a 'southpaw' (slang for a LH, in baseball and boxing especially), even if that means smudging my writing on the rare occasions I use a pen to write.

Some people are left-footed, but not left-handed, or vice versa. I am both (kicking a ball and writing), yet when it comes to skate- or snowboarding, I am regular—not 'goofy'.<sup>1</sup>

To determine which hand should be dominant in swinging a golf club (or baseball bat, playing a guitar, etc.) it is sometimes suggested to assess which hand you hold your fork or write with. But the first is often culturally determined (see below) and the latter does not necessarily work out well either. Better advice is to try both ways and decide what feels most natural to you.

# 1

## Genetics

My wife and I are both left-handed. About 1 in 10 people are. The chance of randomly putting two people together who are LH would be 1 in 100 ( $1/10 \times 1/10$ ). Interestingly, our young daughter appears to be LH as well, so genetics are likely involved, as twin studies indicate. A review of 35 other publications concluded that handedness is ~25% genetic and ~75% due to other factors.<sup>2</sup> It remains to be determined which genes are involved in left-handedness. Irrespective of the genes, typically the right part of the brain controls the left hand, and vice versa.

# 2

## Left-handed people

Of the last nine US presidents, from Gerald Ford to Joe Biden, five of them were LH (Reagan nonetheless wrote with his right hand).

Scientist Sir Isaac Newton and polymath Leonardo da Vinci were LH. In the world of IT, we can list Bill Gates, Mark Zuckerberg, and the late Steve Jobs. Sports stars include tennis champions Rod Laver, Rafael Nadal, John McEnroe, Jimmy Connors, Martina Navratilova, and Monica Seles; US baseballer Babe Ruth; and Argentinian footballers Lionel Messi and the late Diego Maradona. The latter two are particularly noted for their foot skills. In Maradona's infamous 'hand-of-god' goal in the 1986 World Cup match against England, he used—you guessed it—his left hand. King George VI of the UK was naturally left-handed, but as a child he was forced to write with his right hand.

# 3

## Chirality (left- and right-handed molecules)

Molecules are scientifically described by chemical formulas, listing the elements

and their number (e.g. carbon dioxide has one carbon atom linked with two oxygen atoms;  $\text{CO}_2$  or  $\text{O}=\text{C}=\text{O}$ ). Larger molecules may have more than one way to structure the individual atoms (different *isomers*), despite having the same formula. E.g.,  $\text{C}_4\text{H}_{10}$  may be butane or iso-butane; they have similar, but not identical properties.

In some situations, the arrangement of atoms, and the chemical properties, can be identical—other than one being a mirror image of the other. (These are called *enantiomers*, from the Greek word for 'opposite'). When looking in the mirror, my feet are at the bottom and my head at the top—as they should be. However, when raising my left hand, my image raises its right hand.

This is really important in the chemistry of life. Both DNA and proteins are long chains assembled out of subunits (amino acids in the case of proteins). Amino acids (except glycine, the smallest) come in two forms: left-handed and right-handed<sup>3</sup>—mirror images of each other (fig. 1.).

Although both forms have the same chemical properties, when a chain of amino acids is assembled, all of them must be homochiral, i.e. of the same 'handedness' (in this case, LH). RH ones are actively prevented from being incorporated.<sup>4</sup>

Interestingly, the enzyme that does this prevention is itself a homochiral-protein, so one could justifiably ask, 'Which came first, homochirality or the enzyme that ensures homochirality?'

Similarly, deoxyribose and ribose, the sugars that make up the backbones of DNA and RNA respectively, need to all be of the right-handed form.

When Stanley Miller and his supervisor Harold Urey performed their famous experiment in 1952, they found amino acids in the slurry produced by exposing a mix of gases to electrical discharges. Unfortunately for those



hopeful that life could have arisen from lifeless molecules after all, it turned out to be a disappointment. The amino acids present were a 50-50 mix of both LH and RH forms; no good for life.<sup>5</sup>

# 4

## Language and culture

Some superstition exists about LH people, which may have to do with the language assigned to it. More likely, though, the language followed the superstition.<sup>6</sup>

The Latin word for 'left' is *sinister* (right = *dexter*). In English we use 'sinister' with negative connotations. The French word for left is 'gauche', which can also mean 'clumsy' or 'awkward'. In English expressions, having two left feet implies moving awkwardly when dancing, and having two left hands means incredibly clumsy—also in my native Dutch.

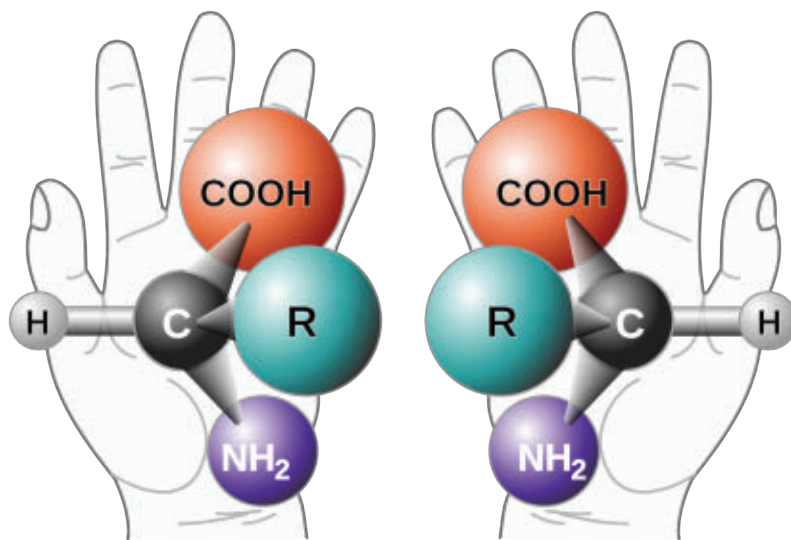
The etiquette for eating and the way tables are typically set in the West seems to reflect a RH 'bias'—fork on the left and knife (plus drinking glass) on the right. But this matches statistical reality for 90% of diners.

Some cultures use their hands rather than cutlery. In many of these places you must use the right hand for eating. Why? Because of the associated cultural norm that only the LH is used after a visit to the toilet. Seems sensible. But perhaps the development of the tradition in the first place reflected superstition.

# 5

## Left-handedness in the Bible

Ehud (Judges 3:15, 21) was a LH, and a Benjaminite, some of whom (the mighty bowmen) were ambidextrous (1 Chronicles



**Fig. 1. Illustration of 'handedness' (chirality) in the amino acids used in protein molecules (R is the variable side chain). The chemical properties of both forms are identical, so they naturally occur as a 50-50 mixture. But to make the proteins of life requires a pure source (100-0) of only one of the two. This is an insurmountable barrier to 'chemical evolution'. See [creation.com/chirality](http://creation.com/chirality).**

## Left-handed trivia: Is that right?

- "Language production has been found to be lateralized in the left hemisphere [of the brain] ... for 95% of right-handed people and about 75% of left-handers."<sup>1</sup>
- Compared to 10% of the general population, 25% of Apollo astronauts were LH.
- "Only 13% of left-handed surgeons were provided with left handed instruments while training".<sup>2</sup> Maybe this is why 10% of left-handed surgeons "expressed concerns when asked whether they would be comfortable being treated by another left-handed surgeon".<sup>3</sup> Is their anxiety getting a little out of hand?
- One study suggests that the hand you favour in the womb is likely the one you'll favour life-long. "Nine out of ten fetuses at 15 weeks' gestation preferred to suck their right thumbs."<sup>4</sup> Of 75 of these followed up, at 10–12 years old all 60 of the right thumb-suckers were RH, while 10 of the 15 left thumb-suckers were LH and the rest RH.
- "More than 95% of right-handers' hair whorls clockwise on the scalp", according to a (covert) survey around airports and shopping malls.<sup>5</sup> For lefties it whorls equally either way. Long-haired and bald people were ignored; I wonder why they were *left* out?

1. Van der Haegen, L., Cai, Q., Brysbaert, M., Colateralization of Broca's area and the visual word form area in left-handers: fMRI evidence, *Brain and Language Journal*, 122(3):171–178, 2012.
2. Dobson, R., The loneliness of the left-handed surgeon, *BMJ* 330(10), 2004.
3. Adusumilli, P., et al., Left-handed surgeons: are they left out? *Curr Surg.* 61(6):587–591, 2004.
4. Spinney, L., Handedness develops in the womb, [newscientist.com](http://newscientist.com), 22 Jul 2004.
5. Klar, A., Human handedness and scalp hair whorl direction develop from a common genetic mechanism, *Genetics* 165(1):269–276, 2003.



12:2). Incidentally, ‘ambidextrous’ (from words meaning ‘both’ and ‘right’) indicates that both one’s hands are equally as capable as the right hand is in most.

The attendants of King Eglon had not noticed Ehud’s secret message under his clothes—a two-edged sword on his right thigh. They were dismissed by their monarch, also unaware of the weapon that would kill him moments later (Judges 3:19). If security frisked Ehud at all, they would have concentrated on the left hip, where people normally carried their sword. Lefthanders sometimes had an advantage in battle with such hand-held weapons—people expect right-handedness. Similarly, a lefthander may enjoy an advantage in tennis, at least on first encounter.

A common superstition in ostensibly Christian cultures was that being LH was a work of the devil. It might have stemmed from passages such as Matthew 25:33, about the Final Judgment, where the ‘goats’ are those condemned:

And he will place the sheep on his right, but the goats on the left.

Given the preponderance of right-handedness, it is understandable that of the two available ‘directions’, the cultural norm from early times was that

the right hand or side denoted favour. Consider, e.g., the significance of the right hand in Jacob’s blessing of his grandson (Genesis Chapter 48).

This is perhaps no more surprising than the right side being favoured for drinking glasses. Even in modern languages, the words for ‘right’ (side, direction) and ‘right’ (correct, true) are often still the same. Jesus’ hearers would likely have been puzzled if His story had placed the ‘sheep’ on the opposite side without any explanation. Equally, Scripture refers to Jesus after His ascension being at the Father’s right hand (e.g. Acts 2:33, Matthew 26:64), a position that would have been widely understood as signalling the favour of a regent.

Of course there is absolutely nothing in the Bible to suggest that there is anything evil or satanic about a person using their *left* hand—which, as already mentioned, means their *right* brain is in control!

### So what is left to do?

Should we force left-handed children to write with their right hand? No. Should we celebrate left-handedness? No. Just make sure you are *right* before God. No-one is righteous (Romans 3:10).

The only way to be righteous is to be declared so by Him (e.g. Romans 5:17–19; 2 Corinthians 5:21).

Your handedness is of no concern to God; all who are *in Christ* are equal (Galatians 3:28). Hopefully, that includes you. ■

### References and notes

1. Goofy = left foot at the back (regular = the reverse). The rear foot is normally the dominant one, as it’s more important for control in such sports.
2. Medland, S. *et al.*, Handedness in twins: joint analysis of data from 35 samples, *Twin Res. Hum. Genet.* 9(1):46–53, 2006.
3. Levorotatory and dextrorotatory, respectively. That is, they rotate plane-polarized light to the left or right. See [creation.com/chirality](http://creation.com/chirality).
4. Ahmad, S., *et al.*, Mechanism of chiral proofreading during translation of the genetic code, *eLife* 2, 2013.
5. Batten, D., Origin of life: An explanation of what is needed for abiogenesis (or biopoiesis), [creation.com/origin-of-life](http://creation.com/origin-of-life), last updated 8 Nov 2021.
6. The Association of Left-Handers ([lefthanders.org](http://lefthanders.org)) lists as one of its objectives to eradicate these superstitions.

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