

TRUTH OR MYTH?

Brain size does not determine intelligence.

TRUTH

Surprisingly, Albert Einstein's brain weighed less than the average brain. This genius' brain did, however, show relatively dense connections between brain areas.

Scientists attribute the connections between areas and their efficiency to intelligence more than they do size.



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TRUTH OR MYTH?

Human brains have shrunk over the last 20,000 years.

TRUTH

Scientists speculate that human brain shrinkage might be due to a number of factors:

- As populations became less aggressive, humans went through “domestication”, a process known in animals to be associated with shrinking brain sizes.
- Warmer climates caused smaller body size and thus smaller brains.
- Increased social networks are associated with smaller brain size. In other words, instead of dying out through natural selection, our smaller-brained ancestors survived with a little help from their friends.



FOLD ACROSS THIS LINE

TRUTH OR MYTH?

The brain is good at multitasking.

MYTH

If you define multitasking in terms of voluntary tasks which require attention, the brain is not a good multitasker. While involuntary tasks such as regulating blood pressure and breathing can be done simultaneously, the brain cannot attend to two or more attention-rich stimuli at the exact same time. Instead, the brain quickly switches back and forth between tasks, a process known as “context-switching.”



CUT ACROSS THIS LINE

TRUTH OR MYTH?

Learning occurs when new cells are added to the brain.

MYTH

New cells can, in fact, be added to the brain. However, learning doesn't require the addition of new brain cells. Learning occurs as the connections between brain cells change. When you learn a new skill, like a language or a sport, cells in your brain fire together and create associations. The more you practice something new, the stronger that connection becomes. A common saying describing learning in the brain is “cells that fire together, wire together.”



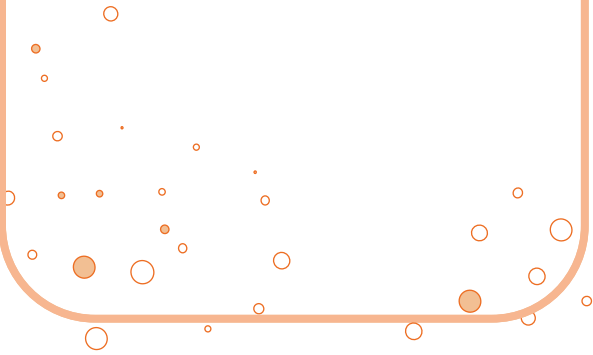
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TRUTH OR MYTH?

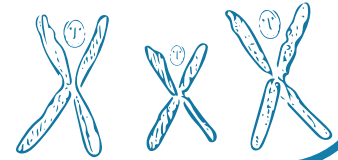
All human brains start off as female in the womb.



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TRUTH

Females have two X chromosomes (XX), while males have one X and one Y (XY). If the Y chromosome is present, it does not begin the process of sexual differentiation until 5-6 weeks. At this stage, specific parts of the genetic code on the Y chromosome become active and cause male reproductive hormone (testosterone) production.

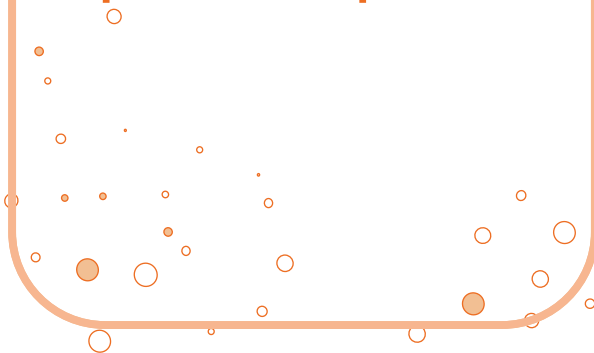


CUT ACROSS THIS LINE



TRUTH OR MYTH?

The brain does not have any pain receptors.



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TRUTH

Pain is felt via sensory nerve fibers called nociceptors. Interestingly, the brain can perceive pain signals from nociceptors sent from all over the body, but because the brain itself does not have any, it does not feel pain. If someone poked your brain tissue, you wouldn't feel it! However, structures surrounding the brain contain pain receptors, and when those are activated, it may feel like pain in your brain.





TRUTH OR MYTH?

Your brain is fully developed by the age of 18.

MYTH

Brain development continues well past adolescence and into adulthood. In particular, the prefrontal cortex, which is important for reasoning and decision-making, does not fully mature until we reach our mid-twenties.



TRUTH OR MYTH?

The brain is the fattiest organ in the body.

TRUTH

Overall, the brain is 75-80% water. The other 20-25% of the brain is solid tissue and is a minimum of 60% fat.



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TRUTH OR MYTH?

You only use 10% of your brain.

MYTH

The myth of 10% brain usage dates back almost a century. In 2013, 65% of Americans believed this myth. In reality, unless there is brain damage, most areas of the brain are active all the time to some degree. Even when you think you are not using your brain, such as during sleep, brain scans have revealed that widespread neural networks are active and working together.



TRUTH OR MYTH?

You are either left or right brain dominant. This will determine whether you are more creative or more logical.

MYTH

Contrary to popular belief and the hundreds of memes and images that perpetuate this myth, humans cannot easily be categorized as left or right brain dominant depending on their personalities. In fact, many talents once attributed to one side of the brain or the other, like creativity, language processing, spatial ability, and logic, require the integrated teamwork of both the left and right brain.



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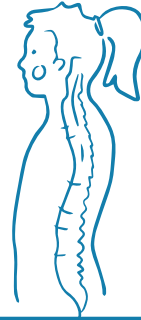
TRUTH OR MYTH?

The spinal cord
stops growing
around age
four or five.

FOLD ACROSS THIS LINE

TRUTH

Your spinal cord is part of your central nervous system, along with your brain. Your spinal cord will grow approximately 16-20 inches in the first four to five years of your life and then it stops. Your body continues to grow around it.



CUT ACROSS THIS LINE

TRUTH OR MYTH?

Some people can
taste shapes
and colors.

FOLD ACROSS THIS LINE

TRUTH

The phenomenon, known as synesthesia, comes from a Greek word meaning "to perceive together." People with this ability may hear, smell, taste, or feel pain in color. Others might taste shapes or experience colors or tactile sensations when in the presence of music.

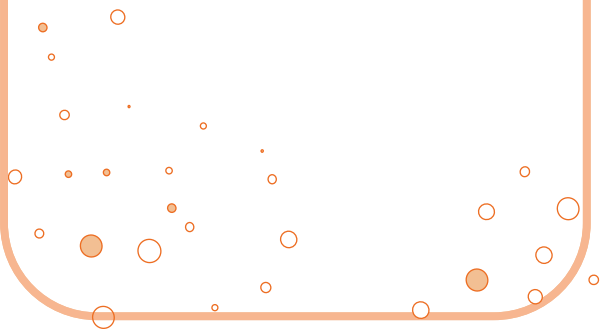
Although scientists are still trying to understand how this phenomenon works, they have found irregularities in the brains of synesthetes using neuroimaging studies. For example, in those who report colored hearing, visual areas of the brain show increased activation in response to sound.





TRUTH OR MYTH?

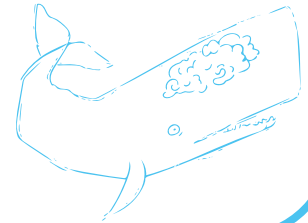
Humans have the largest brain of all mammals.



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MYTH

Sperm whales hold the trophy for the largest brain of any living species! Although sperm whale brains are more than five times as large as human brains, humans still hold the record for the species with the largest brain relative to body size, otherwise known as "encephalization quotient."

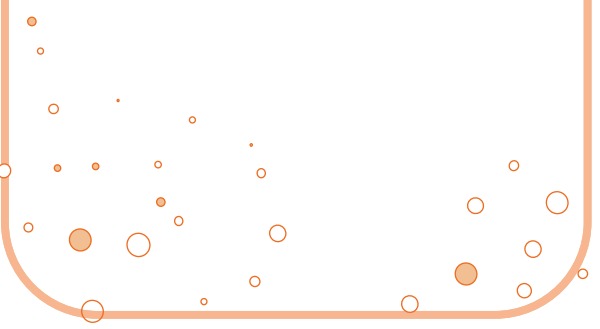


CUT ACROSS THIS LINE



TRUTH OR MYTH?

You are born with a set number of brain cells.



FOLD ACROSS THIS LINE

MYTH

Although the previous statement is true for many parts of the brain, there is a general consensus that humans do indeed produce new neurons in a brain region known as the hippocampus into adulthood. The hippocampus is involved in mood, memory, and reward.

