

Pack 10: Inside Your Brain

Your brain helps control and coordinate everything you do, from breathing and moving to feeling, remembering and learning. It's made up of many different kinds of cells, and there are two big groups: neurons that carry messages, and glia that support and protect the neurons. The first two cards are neurons, and the third is the synapse, where they connect. The next four are glia, named after the Greek word for glue, because scientists once thought they only held neurons in place. The last card is the neural stem cell, which makes both new neurons and new glia.



Neuron

A brain cell that carries signals. A neuron picks up messages with short branches called dendrites, then sends them on through a long cable called the axon, which reaches the next cell.



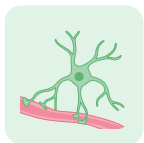
Purkinje cell

A large neuron in the cerebellum, the part at the back of your brain that helps coordinate balance and movement. Its branches spread out in one flat layer, like a pressed leaf.



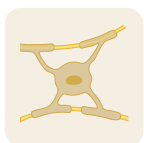
Synapse

The tiny gap where one neuron passes a message to the next. At most synapses, like this one, the sending neuron releases chemical messengers into the gap, and the cell on the other side picks them up.



Astrocyte

The "star cell," named for its shape. An astrocyte helps supply neurons with energy and recycles the chemical messengers they send. Its tips wrap around blood vessels and help maintain the border between blood and brain, called the blood-brain barrier.



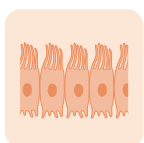
Oligodendrocyte

The "cell with few branches." Its branches wrap around parts of axons to form a fatty coat called myelin, which helps signals travel faster, like the plastic coating on a wire.



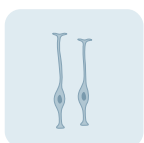
Microglia

The brain's own immune cells. Microglia respond to infection and injury, and can swallow up germs and damaged cells. As a baby's brain develops, they also help shape it by removing some extra connections between neurons.



Ependymal cell

A cell that lines the small chambers deep inside the brain. Its tiny hairs, called cilia, help move the clear liquid in the chambers, which cushions the brain and spinal cord. The liquid is called cerebrospinal fluid, from the Latin words for brain and spine.



Neural stem cell

A cell that can copy itself and also make in-between cells, called progenitor cells, that go on to become neurons and glia. Neural stem cells are busiest before birth, while the brain is forming.

Pack 10: The Brain Map

Different parts of your brain are involved in different things, like seeing, moving, feeling and remembering, and they always work together. Most brain map cards color in one part. The deep inside card shows two parts you can't see from the outside, and the last card puts them all together.



Frontal lobe

The front of the brain, right behind your forehead. It is involved in movement, speaking and planning. Its very front part, called the prefrontal cortex, helps with reasoning and self-control, including learning to manage big feelings. This area continues developing through childhood and adolescence and into adulthood, which is one reason young children are still learning how to regulate their emotions.



Parietal lobe

The top of the brain, behind the frontal lobe. It helps make sense of touch, and of where your body and the things around you are.



Temporal lobe

The part on each side of the brain, just above your ears. It is involved in hearing, understanding words and recognizing faces.



Occipital lobe

The very back of the brain. It is the brain's main area for vision, helping turn signals from your eyes into the shapes, colors and movement you see.



Cerebellum

The small, finely folded part low at the back of the brain. It helps coordinate movement and balance, and it is involved in learning new movements, like a toddler's first steps. Purkinje cells live here.



Brainstem

The stalk that connects the brain to the spinal cord. It helps control the things you never have to think about, like breathing, your heartbeat, and falling asleep and waking up.



Hippocampus

A curved part deep inside the brain, one on each side, shaped a bit like a seahorse, which is what its name means. It is involved in turning experiences into lasting memories and in finding your way around.



Amygdala

A small almond-shaped structure deep inside the temporal lobe, near the front of the hippocampus, with one on each side of the brain. It is involved in emotions, like noticing danger and feeling afraid, and it helps strong moments stick in your memory.

The whole brain

All eight regions featured in these cards, shown together on one brain.