

The brain

In this week's Pop-Up Science edition, we are dealing with our brain and how it is structured.

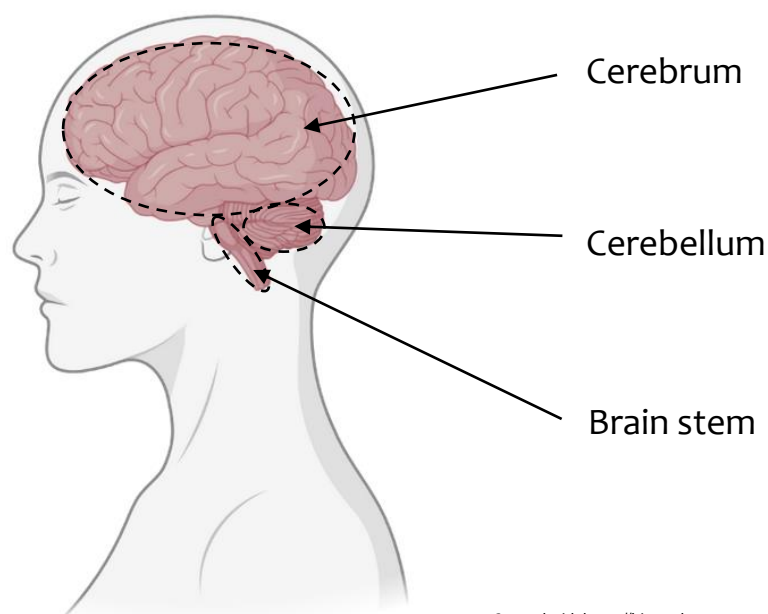
Did you know that the sperm whale has the largest brain of all animals in the world? It weighs almost 8 kilograms! The human brain is the most developed brain in vertebrates, but it only weighs about 1.3 kilograms.

The octopus has the highest developed brain in invertebrates. Although its structure is completely different from the brain of a vertebrate, its intellectual abilities are sometimes even compared to those of dogs.



Henner Damke/Fotolia, <https://www.geo.de>

Simplified, the human brain looks like this:

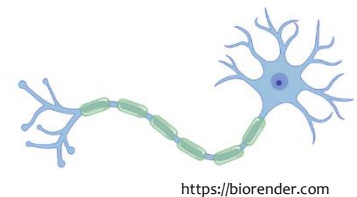


A. Read the following text and underline the most important pieces of information!

The brain collects information that the body receives either from the outside world or from its interior. It processes this information and sends commands to control organs and pretty much everything that is going on in our bodies. In addition, also our thinking and feeling takes place in the brain.

Our brain consists of different cells. The most famous cells of the brain are called nerve cells, the "workers" of the brain. They send and receive information. Another type of brain cells is called glial cells. They form the supporting tissue for the nerve cells and help them in many other ways, for instance with repairing broken structures. Did you know that the human brain has about 100 billion nerve cells and just about as many glial cells? That's a total of 200,000,000,000 cells!

A nerve cell is also called a neuron and looks something like this:



Nerve cells are linked to one another via connections called synapses. Altogether, the nerve cells form a huge network. This network is connected to the spinal cord via twelve brain nerves. This way, the brain can send commands to all organs and regions in the body.

The brain can roughly be divided into the cerebrum, the cerebellum and the brain stem.

- The **cerebrum** is the largest part of the brain. It consists of two halves. It is responsible for our movements, feelings and thoughts, seeing, hearing, and language. Interestingly, the left half of the cerebrum is responsible for the right side of our body, and the other way around.
- The **cerebellum** is the second largest part of the brain. Together with the cerebrum, it controls our movements. It is also responsible for our sense of balance.
- The **brain stem** controls automatic body functions, such as breathing, digestion, heartbeat, our body temperature, and our reflexes. It forms the transition to the spinal cord.

B. Try to answer the following questions. Check the correct answers.

1. Nerve cells send and receive information.

true false

2. Glial cells form the supporting tissue for the nerve cells and repair broken brain structures.

true false

3. Nerve cells are also called ...

glial cells thought cells neurons

4. The connections between nerve cells are called s_____..

5. The network of nerve cells is connected to the spinal cord via _____ brain nerves.

15 12 21

6. Connect each box on the left with the correct box on the right.

The cerebrum ...

... controls automatic body functions, such as breathing, digestion, heartbeat, our body temperature, and our reflexes.

The cerebellum ...

... controls our movements, feelings and thoughts, seeing, hearing, and language.

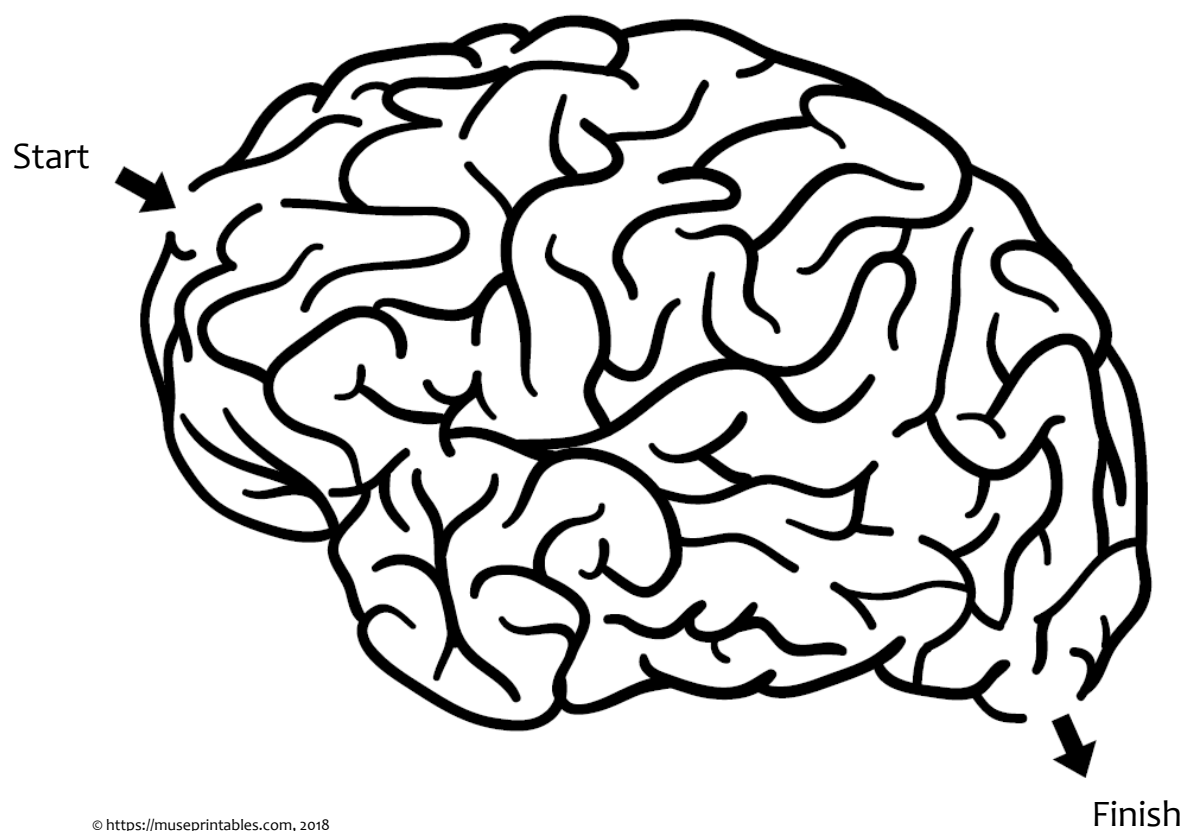
The brain stem ...

... controls our movements and is responsible for our sense of balance.

C. Concentration training

Can you find the way through the brain maze?

Draw a line from start to finish without crossing a black line.



D. Word search

Can you discover all the hidden words in our word search this time?

NERVE CELL

CEREBRUM

CONCENTRATION

BRAIN

CEREBELLUM

THOUGHTS

NEURON

BRAIN STEM

MOVEMENT

SPINAL CORD

GLIAL CELLS

INFORMATION

Circle each word. Good luck!

Z	P	R	S	C	E	R	E	B	E	L	L	U	M	C	E	D	R	R	Z
U	C	D	J	A	E	T	S	W	S	E	H	M	N	H	Y	H	E	Z	I
G	F	W	S	C	T	R	T	C	F	H	S	K	I	Y	L	U	S	K	G
K	T	L	C	P	W	D	E	E	W	E	W	E	R	S	G	F	V	B	Z
R	T	R	G	H	I	G	M	B	M	C	F	Q	X	K	E	U	I	T	Q
S	A	I	S	T	P	N	K	M	R	M	T	Z	X	R	W	W	T	K	Q
X	G	S	N	X	K	W	A	R	M	U	R	I	I	A	U	O	M	I	I
T	T	P	G	F	C	N	D	L	C	E	M	P	R	L	I	R	H	E	T
V	B	L	X	O	O	T	J	N	C	N	Q	L	V	J	Y	S	B	I	J
H	R	W	Q	M	N	R	T	U	E	O	L	W	U	F	G	Z	R	P	W
E	I	T	J	T	C	E	M	C	B	R	R	N	D	G	X	N	A	R	G
J	W	Q	R	L	E	U	O	A	A	X	V	D	X	K	U	H	I	X	M
X	W	I	C	T	N	N	V	W	T	J	N	E	U	R	O	N	N	S	W
R	C	Q	Z	D	T	F	E	G	L	I	A	L	C	E	L	L	S	U	A
K	L	N	M	L	R	Y	M	O	B	U	O	S	L	E	C	J	T	Y	R
V	U	L	I	I	A	Z	E	V	G	D	H	N	M	R	L	W	E	C	N
K	K	S	E	E	T	I	N	P	O	Q	I	P	T	B	A	L	M	Q	B
I	H	N	R	K	I	D	T	R	W	D	T	H	O	U	G	H	T	S	Y
G	M	H	A	R	O	B	R	V	H	S	L	Y	V	G	U	N	P	J	Y
B	B	R	A	I	N	I	F	S	T	I	Q	C	A	Q	B	A	U	J	G

E. Color the pictures of the brain and the nerve cells! Have fun!

