

CHRISTIANITY AND THE AVATAR INTERPRETATION OF THE BRAIN v2

José del Carmen Rodríguez Santamaría

<https://www.ejristos.com>

Bogotá, Colombia

May 24, 2023

Abstract

Christianity maintains that we do not think with the brain. Instead, the brain is a communication system of the body with the spirit. We offer an interpretation of the brain compatible with this view. We compare this proposal with the results in Neuroscience. A falsifiable prediction is made in terms of neurons. Version 2: Added a subsection to improve comprehension.

Contents

1	INTRODUCTION	3
2	THE AVATAR HYPOTHESIS	3
3	BASIC ASSUMPTIONS	4
4	EXPECTED PROPERTIES	5
4.1	The communication system must be parallel	5
4.2	Emissions and reception subsystems must be separated	5
5	REALIZATION OF THE AVATAR INTERPRETATION	6
5.1	Parallelism according to modern technology	7
6	DISCONTINUITY AS A FALSIFIABLE PREDICTION	7
6.1	Discontinuity in terms of anatomy	9
6.2	Discontinuity in terms of cells	9
6.3	Cellular composition of the communication system .	12
6.4	Problems	13
6.5	How to exit from rhetoric	14
7	Final comparison	15
8	CONCLUSION	16

1 INTRODUCTION

With the continuous and striking advances of Science, Materialism is well positioned in regard to the conception of the nature of man: it is matter and only matter. In modern terminology, it is just a robot, a very sophisticated system with excellent computing machinery that allows a high degree of independence. By contrast, Christianity claims that the human body is an avatar, a complex system designed to be controlled from the outside, by the spirit. Our purpose is to propose a materialistic interpretation of the brain that is compatible with this Christian belief.

2 THE AVATAR HYPOTHESIS

Science teaches that *we think with the brain*. This is the **Robot Interpretation of the Brain**. Contrary to this, Christianity teaches that we think with the spirit, which controls the body. In this view, the body is an avatar, a piece of complex machinery that is controlled from the outside. So, what could be the possible role of the brain under this insight?

One might imagine that we have two separate organs of thought, the brain, and the spirit. This belief contradicts the lack of support of Frankenstein projects. This is also contrary to Christianity. In fact, Jesus said: *The Spirit gives life; the flesh counts for nothing. The words I have spoken to you—they are full of the Spirit and life.* Therefore, we must assume that we have only one organ of thought and that it is the spirit. So, what could be the possible role of the brain under this insight? *The brain is the body-spirit communication system that is involved in high-level control functions.* This is the **Avatar Interpretation of the Brain**.

Given that the weight of the brain can be near 1.5 kilograms, an objection is immediate: If we are an avatar, why is our brain so big?

Our answer is:

According to Christianity, we all must undergo a final judgment to decide our eternal fate. This implies that all higher functions of a human being must be tied to the spirit and not to the body, which might undergo destruction while the spirit is eternal. Therefore, all higher psychological functions must be represented in the body-spirit intercommunication system that we suppose is located in the brain.

Now, the commands of the spirit might be very succinct: *Get the cup, fill it with some water, and drink!* Once the brain receives the command, it must devise a whole program for problem-solving: set a goal, recursively divide it into sub-goals until all of them could be realizable, and fire the corresponding actions (Vasković [17] 2023).

By the same token, the eye sees pixels over pixels, but the spirit receives a simple report: *there is a tree with mountains and shifting clouds in the distance.* To attain this level of abstraction, incredible computer power must be in operation.

And so on.

3 BASIC ASSUMPTIONS

Two basic and fundamental suppositions for the sequel are:

1. Neural cells are the elementary unit of brain computing. This idea is at the basis of the neural networks that are under the armor of chatbots. The proposal that organelles might be involved in (quantum) computing did not prosper (Frixione [4] 2014). So, we postulate that the expected body-spirit communication system is made of neuron cells.
2. We also follow the known result that information across brain neural cells comes from dendrites, arrives at the body cell and goes through the axon that by means of neurotransmitters excites the dendrites of the next cell in the neural pathway. This

means that neuronal information flows directionally (Neurotechedu [13] 2023).

4 EXPECTED PROPERTIES

Let us bring forth two important restrictions of the supposed body-spirit communication system.

4.1 The communication system must be parallel

Since our building blocks are cells, we must consider that these operate mainly on molecules whose diffusion, free or induced, is extremely slow. That is why the communication system must be parallel.

4.2 Emissions and reception subsystems must be separated

It is usual in communication systems that the emission and reception facilities are separated either in space or in time. For instance, we have a mouth with a larynx and ears that are quite different and located in separate regions. Similarly, the bat has a system for the emission of ultrasonic waves and a receptor for capturing the echo and both subsystems commute one with another, i.e., when one system works, the other is shut down otherwise the emission subsystem would destroy the receiving one which is very sensitive. That is why we suppose that the supposed brain-spirit communication system must observe a separation in space between the emission and receiving systems. Because of massive parallelism, commuting on time is not necessary.

We are ready now to assign a part of the brain to the supposed spirit-body communication system.

5 REALIZATION OF THE AVATAR INTERPRETATION

A communication system between two clients must be bidirectional and have independent implementations of emitting and receiving subsystems in each client. In the brain, the emission subsystem transmits information to the spirit about the state of the body and its environment. Likewise, the reception system of the brain receives commands from the spirit and interprets and executes them. On the other hand, the personality of a human being is too complex and, therefore, the body-spirit communication system in the brain must be very extended. Now, let us inquire about a part of the brain with the following characteristics:

- Very extended.
- Hosting parallel computing.
- Related to the high-level functions of the brain.
- With two complementary functions related to control that could be naturally reinterpreted in terms of a communication system.

We find only one option: the neocortex, which is the most extended tissue of the brain, covers it and is held by Science to be responsible for high-level functions of the brain (Ocran [14] 2022). Its structure is complex but admits *grosso modo* a division into three regions, one for sensory information, another for motor responses, and a third for intercommunication, which is called the associative area (Gordon et al. [6] 2023).

The immediate interpretation is that the sensory area receives information from the senses and transmits it to the spirit. On the other hand, the motor area captures the commands from the spirit, processes them, and deploys the corresponding orders.

Let us remark that the neocortex is a parallel structure, such as demanded by our interpretation.

5.1 Parallelism according to modern technology

The modern technique of Diffusion Tensor Imaging allows us to see that a brain is definitively a parallel machine from the bottom to the top, including the neocortex. Its model of computing can be named *Massive Columnar Parallel Computing* because each column or fiber is, at the level of the neocortex, a more or less separate unit of computing which is a conglomerate of many interconnected cells. And the columns are also interconnected (Ranzenberger et al. [15] 2002, Hagmann et al. [7] 2007, Neurodome [12] 2015).

Massive parallelism can be found in video cards and in functional programming. But these models seem primitive with respect to columnar parallelism. The great computing power of the brain might be an emerging result of the large number of repeated microcomputing columnar units (Bennett [1] 2020).

The massive parallelism and long range integration of the neocortex and of layer 1 implies that there is no upper manager in the brain. In other words, the human brain does not have and cannot have consciousness. The brain, in the best case, is just a bunch of coordinated reflexes.

We have found the Avatar Interpretation to be very natural. But more is needed to surpass the level of rhetoric.

6 DISCONTINUITY AS A FALSIFIABLE PREDICTION

The Robotic and Avatar Interpretations produce quite different predictions about the continuity of neural fluxes when consciousness comes into play.

Let us imagine a pathway of neural information from a receptor in the foot to the brain to its reaction to the evoked action in some part of the body. The robotic Interpretation of the brain predicts that those pathways are continuous because everything is material.

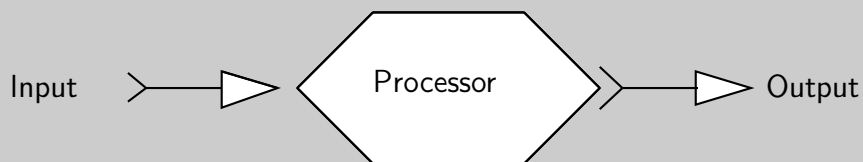


Figure 1: According to Materialism, the processing of neural signals must go through a continuous path that obeys the usual description of a control system. An exterior stimulus (sound = the name of a baby) hits a transducer (the inner ear), which creates a neural signal that is input into a processor (the brain). This reacts with a stream of commands that controls an effector (both legs) and the overall organism produces a reaction (the baby approaches her mother). Continuity is the key concept. This implies that the **Connectome**, the communication structure of the brain, is connected from sensory streams to output ones.

Quite contrary, the Avatar Interpretation of the Brain predicts that every pathway that reaches the consciousness is discontinuous because at some place the signal leaves the material world in the sensory area to enter the spiritual realm that is invisible, i.e., undetectable until this date. By the same token, a decision of the spirit appears from nothing and causes the firing of a motor neuron with the ensuing movement of a leg. See figure 2, next page.

6.1 Discontinuity in terms of anatomy

Korbinian Brodmann published 1909 a monograph in which the brain was divided by regions. His criterion was the differences in the cytoarchitectural organization of neurons in the cerebral cortex that became visible after appropriate staining (Feng [3] 2022). Later, researchers associated different areas with functionality. This is a daunting task that continues up to our days.

Two regions are essential for us now: the visual cortex in the occipital region in the back of the head, and the motor cortex on its top. The two regions work cooperatively at every instant but are separated by more than 15 cm. This causes a large discontinuity of every signal of information. The Avatar Interpretation offers an alternative explanation: the path is continuous but needs to enter the spirit. For this very reason, the material trace of the pathway is discontinuous. Please take a look at Figure 3, two pages below.

6.2 Discontinuity in terms of cells

The number of neurons in the brain counts in the range of billions, and each neuron might be connected to thousands of other neurons. Amidst this jungle we must dare to make testable predictions in regard to the discontinuity of directional informational neuronal fluxes. To achieve this, we proceed further with our Avatar Interpretation of the Brain:

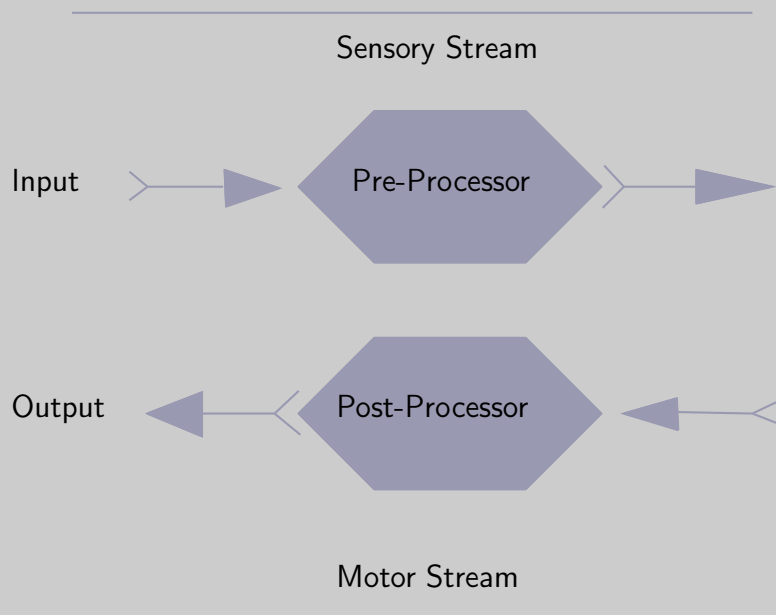


Figure 2: According to Christianity, the Connectome must have disconnected paths because those paths that go into or come from the spirit have no material trace. In more detail, transducers in sensory systems create inputs that are preprocessed by the brain that sends a high level inform to the spirit (a fly is bugging) . The spirit takes decisions and communicates them to the brain in the form of high-level macros (stretch the left arm to scare the fly!). The brain implements the macros with the help of a post-processor and produces an output to control effectors. The key concept of Christianity is that the Connectome is interrupted, and disconnected because the sensory paths end in blind alleys, while motor signals are born in orphan nodes that receive no signal.

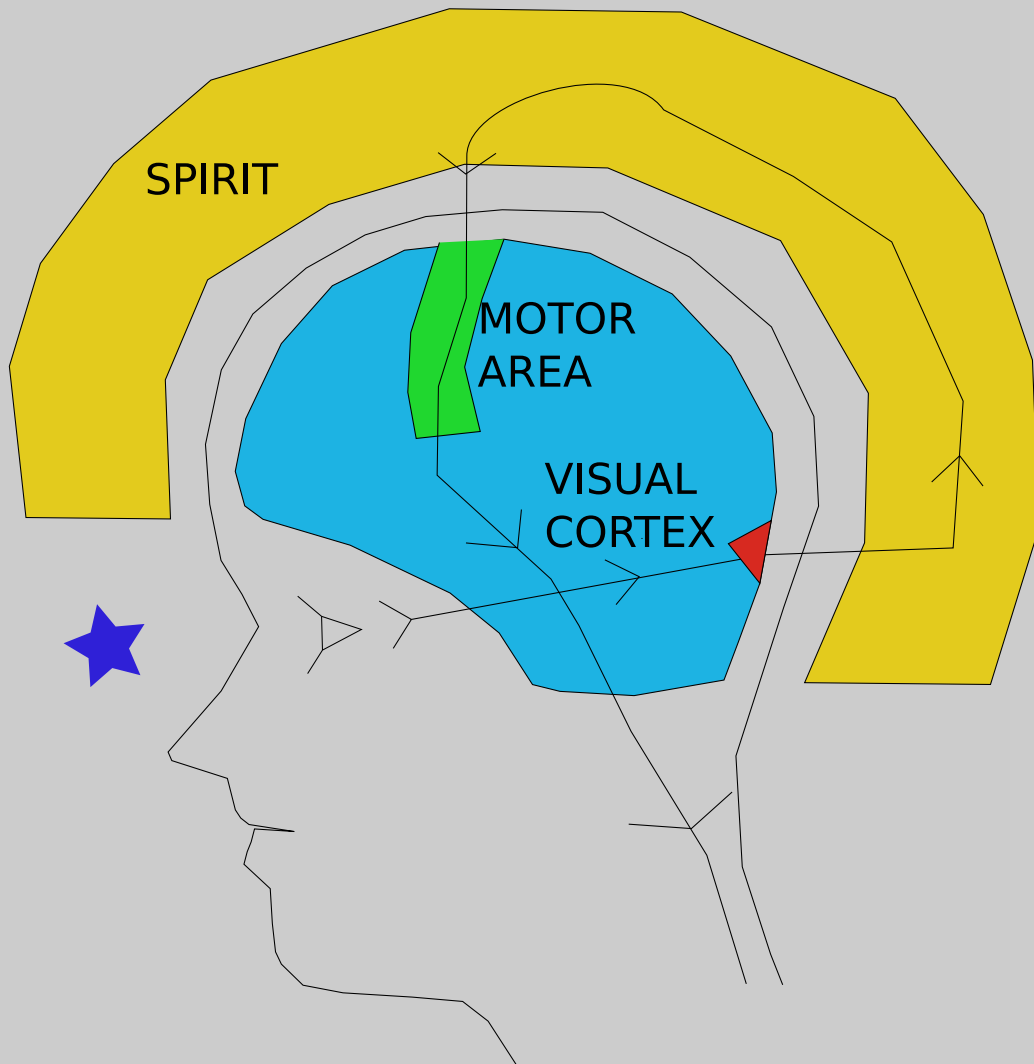


Figure 3: The eye sees an object, say, a star. A signal is sent to the visual cortex. After that, at the motor cortex, a command appears from nothing to move the arm to reach the star. The pathway of the signal is predicted to be continuous according to the Robot Interpretation. But no one has exactly tracked the signal from the visual to the motor cortex. We suspect that, apart from feedback, there is a discontinuity of some 15 cm long. By contrast, the Avatar Interpretation claims that the signal goes from the eye to the visual cortex, and from there to the spirit which is the top manager of the body so, it takes a decision, which is communicated to the motor cortex for execution. The whole path is continuous but traverses the spirit.

- The reception subsystem of the brain must be filled with cells that are orphans, receiving no message from other cells because they capture commands from the spirit. These cells are self-excitatory and must be located in the motor area or patches.
- The emission subsystem must be filled in terminal cells, which are blind alleys of neuronal communication fluxes that run over corresponding terminal pathways because they send signals to the spirit that is invisible. These cells are preferentially located in the sensory area of the neocortex.

6.3 Cellular composition of the communication system

Our falsifiable prediction reads: neurons of the reception or motor area are orphans because their dendrites are excited by the spirit, and those of the emission or sensory regions are terminal, blind alleys because they transmit a signal to nothing in this world, but the spirit catches them. So, what and where are these cells?

The problem is that there are some 1000 different types of cells in the neocortex (Masland [10] 2015). From them, neurologists exhibit around 10 in their vitrine. Of them, 3 types of neurons are enough to propose an implementation of our bidirectional communication system in the brain: pyramidal, Martinotti, and neurons with autapses, synapses with themselves. Why?

In the first place, the neocortex has six layers, locally parallel to the skull. The concept of a hierarchy by layers from the top, Layer 1 in the vicinity of the skull, to the bottom, Layer 6 at the end of the gray matter, seems to acceptably work. Therefore, if orphan and terminal neuron cells exist, they must be in the upper layers of the neocortex.

Layer 1 is very rich in long dendrites, most of which come from pyramidal cells in Layer 3 while their axons go down into the inner brain (Schuman [16] 2021). Pyramidal cells exist in other parts of the brain apart from the neocortex. In particular, disorders in those

that exist in the hippocampus are tied to epilepsy (Lillis et al. [9] 2012). This is one reason why pyramidal cells are considered to be necessary for conscious activities.

Thus, the pyramidal cells are our candidates for the orphan cells that exercise motor activities. They read the commands of the spirit with their dendrites in Layer 1, and produce an excitation that goes down through their axons into the inner brain.

In the second place, Somatostatin (SST)-expressing Martinotti cells do just the opposite to pyramidal ones, with the axons going up to Layer 1 and their dendrites receiving information from the inner brain. So, these might be the predicted terminal neurons that gather information from the body and send signals to the spirit.

In the third place, we have that some neural cells have autapses (Bekkers [2] 2003). These cells seem appropriate for self-excitation, a property that is good to build clocks, a fundamental piece of every computer.

By having candidates for orphan and terminal neurons, we consider that we have reached the level of acceptable rhetoric. Nevertheless, it immediately casts doubts.

6.4 Problems

In the first place, we have that the dendrites of Layer 1 are not presented by neurologists as orphans, but as forming a great interconnection board that provides long-range inputs. But, it seems to me that this interconnection board is more a supposition forced to avoid a mystery than a verified fact.

In the second place, the proportion of pyramidal cells is 80%. Since we have assigned them the role of orphan cells that are viewed by Science as motor excitatory cells, the motor area should occupy more than half of the neocortex. But this is false, the motor area is

even less extended than the sensory one. Our rhetoric allows us to respond: pyramidal cells are a family with possibly 5 or more members and play the same role in the neocortex that transistors in integrated circuits so, their function does not depend on themselves but on the way they are interconnected. We just need a minor proportion of them to be orphan. Besides, the nervous system has one peculiarity: part of its encoding is by assigning different channels or fibers to different tasks.

6.5 How to exit from rhetoric

Our Interpretation was built upon some knowledge and too much imagination. To leave this state, we need precise knowledge about the neocortex, concretely about the synaptic structure allowing us to respond: Are there in Layer 1 of the neocortex multitudes of orphan cells, whose dendrites have no interconnection, and of terminal cells, whose axons have no synapse whatsoever? Judging by all that we know, this is a stupid question because the synapses in a neuron cell, pyramidal ones included, count in the order of trillions (Zhang [18] 2019, Hawkins et al, [8] 2016).

Nevertheless, Layer 1 is very strange. And so is Layer 2. Therefore, they must be accurately investigated, dendrite by dendrite. Is that possible?

Yes, it is. Precisely, producing a detailed structure of form and connectivity of neurons is the defining objective of **Connectomics**, which already has presented amazing results (Max Planck Gesellschaft [11] 2023, Das Gehirn [5] 2021).

If the Connectome program shows that there are in Layer 1 neither orphan dendrites nor disconnected axons, our prediction would be clearly falsified.

In that case, we must invent another important and falsifiable prediction. Precisely, the retina presents us with a challenge: it is an electromagnetic antenna array whose receptor cells are orphan and have pigments, which are the distinctive molecular markers of vision.

Hence, we must predict that orphan and terminal cells, the antennas of our communication system, must have distinctive molecular markers. We must advance a lot to make this intrigue into a falsifiable prediction because we cannot single out at present the expected properties of those markers.

7 Final comparison

The word *avatar* comes from Sanskrit and means an incarnation of a god: the spirit of the god controls the body of its incarnation. This is precisely the meaning of our discourse.

Let us consign the contrast between the Robot and Avatar interpretations of the brain into a table:

INTERPRETATIONS	
Robot	Avatar
Motor Area	Reception subsystem
Sensory Area	Emission subsystem
Associative Area	Associative Area
Motor cell	Orphan self-exciting cell
Sensory cell	Terminal cell
Nothing	Molecular marker for emission
Nothing	Molecular marker for reception

8 CONCLUSION

We have presented an implementation of the idea that the brain can be interpreted as a bidirectional communication system of the body with something else that is invisible and that Christians call the spirit. It seemingly works. But to surpass the level of cheap rhetoric, a confirmation of Connectomics is needed: in Layer 3 of the neocortex exist orphan pyramidal cells whose dendrites reach Layer 1, but that do not receive stimulation from any other neuron because they catch signals from the spirit. And, there must be also terminal neurons, say of the SST Martinotti class, whose axons reach Layer 1 but that stimulate no other neuron because they send signals to the spirit. We need moreover to determine the molecular markers that enable body-spirit communication.

References

- [1] BENNETT, M. 2020
An Attempt at a Unified Theory of the Neocortical Microcircuit in Sensory Cortex. *Frontiers in Neural Circuits*, 14..
<https://www.frontiersin.org/articles/10.3389/fncir.2020.00040/full>
7
- [2] BEKKERS, J. M. 2003
Synaptic Transmission: Functional Autapses in the Cortex. *Current Biology*, 13(11), R433-R435.
[https://doi.org/10.1016/S0960-9822\(03\)00363-4](https://doi.org/10.1016/S0960-9822(03)00363-4)
13
- [3] ALICE FERNG 2022
Broadmann Areas Kenhub.
<https://www.kenhub.com/en/library/anatomy/brodmann-areas>
9
- [4] FRIXIONE 2014
Consciousness and Neuronal Microtubules: The Penrose-Hameroff Quantum Model in Retrospect. In: Smith, C., Whitaker, H. (eds) *Brain, Mind and Consciousness in the History of Neuroscience*. History, Philosophy and

Theory of the Life Sciences, vol 6. Springer, Dordrecht.
https://doi.org/10.1007/978-94-017-8774-1_16
4

- [5] DAS GEHIRN 2021
Das Connectome. Das Gehirn 30.04.2021, video 7 minuten.
<https://www.dasgehirn.info/grundlagen/das-konnektom/das-Connectome>
14
- [6] GORDON, E.M., CHAUVIN, R.J., VAN, A.N. ET AL. 2023
A somato-cognitive action network alternates with effector regions in motor cortex. Nature .
<https://doi.org/10.1038/s41586-023-05964-2>
6
- [7] HAGMANN P, KURANT M, GIGANDET X, THIRAN P, WEDEEN VJ, MEULI R, THIRAN JP. 2007
Mapping human whole-brain structural networks with diffusion MRI. PLoS One. 2007 Jul 4;2(7):e597. doi: 10.1371/journal.pone.0000597. PMID: 17611629; PMCID: PMC1895920.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1895920/>
7
- [8] HAWKINS, J., AHMAD, S. 2016
Why Neurons Have Thousands of Synapses, a Theory of Sequence Memory in Neocortex.
Frontiers in Neural Circuits, 10. .
<https://www.frontiersin.org/articles/10.3389/fncir.2016.00023/full>
14
- [9] LILLIS, K. P., KRAMER, M. A., MERTZ, J., STALEY, K. J., WHITE, J. A. 2012
Pyramidal cells accumulate chloride at seizure onset.
Neurobiology of Disease, 47(3), 358-366.
<https://doi.org/10.1016/j.nbd.2012.05.016>.
<https://www.sciencedirect.com/science/article/abs/pii/S0969996112002021>
13
- [10] RICHARD H. MASLAND 2015
Neuronal cell types.
Cell, Magazine R497.

[https://www.cell.com/current-biology/pdf/S0960-9822\(04\)00440-3.pdf](https://www.cell.com/current-biology/pdf/S0960-9822(04)00440-3.pdf)
12

- [11] MAX PLANCK GESELLSCHAFT 2023
The brain: with all its cells and their connections .
<https://www.mpg.de/7491772/Connectome-retina>
14
- [12] NEURODOME 2015
Diffusion Tensor Imaging (DTI) revealing connectivity in the brain.
Youtube video 1 minute
<https://www.youtube.com/watch?v=atLQVgUwnrY>
7
- [13] NEUROTECHEDU 2023
Introduction to Neuroscience.
<http://learn.neurotechedu.com/introtoneuroscience/>
5
- [14] EDWIN OCRAN 2022
Cerebral Cortex Kenhub 2022.
<https://www.kenhub.com/en/library/anatomy/cerebral-cortex>
6
- [15] RANZENBERGER LR, SNYDER T. [UPDATED 2022 JUL 26]
Diffusion Tensor Imaging. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: .
<https://www.ncbi.nlm.nih.gov/books/NBK537361/>
7
- [16] SCHUMAN, B., DELLAL, S., PRÖNNEKE, A., MACHOLD, R., RUDY, B.
2021
Neocortical Layer 1: An Elegant Solution to Top-Down and Bottom-Up Integration. Annual review of neuroscience, 44, 221.
<https://doi.org/10.1146/annurev-neuro-100520-012117>.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9012327/>
12
- [17] JANA VASKOVIĆ MD APRIL 12 2023,
Cytoarchitecture of cerebral cortex, Kenhub .
<https://www.kenhub.com/en/library/anatomy/cortical-cytoarchitecture>
4

- [18] JIAWEI ZHANG 2019
Basic Neural Units of the Brain: Neurons, Synapses and Action Potential
Arxiv.
<https://arxiv.org/pdf/1906.01703.pdf>
14

All cited links were active by 19/V/2023