# Exploring the wonders of the human brain: A comprehensive review of anatomy and neurosciences.

**Ebrahimi Farz***

Department of Scientometics, Faculty of Social Sciences, Yazd University, Yazd, Iran

## Introduction

We hypothesized that FC reflects the interplay of at least three types of components: (i) a backbone of anatomical connectivity, a stationary dynamical regime directly driven by the underlying anatomy, and other stationary and non-stationary dynamics not directly related to the anatomy. We showed that anatomical connectivity alone accounts for up to of FC variance; that there is a stationary regime accounting for up to an additional of variance and that this regime can be associated to a stationary that a simple stationary model of better explains than more complex models; and that there is a large remaining variance which must contain the non-stationarities of FC evidenced in the literature. We also show that homotopic connections across cerebral hemispheres, which are typically improperly estimated, play a strong role in shaping all aspects of FC, notably indirect connections and the topographic organization of brain networks [1].

Cannabinoid receptors were distributed in a heterogeneous fashion throughout the adult human brain and spinal cord. The allocortex contained very high concentrations of cannabinoid receptor binding sites in the dentate gyrus, Ammons's horn and subiculum of the hippocampal formation; high concentrations of receptors were also present in the entorhinal cortex and amygdaloid complex. Cannabinoid receptor binding sites were also present throughout all regions of the neocortex, where they showed a marked variation in density between the primary, secondary and associational cortical regions [2].

The greatest densities of receptors were present in the associational cortical regions of the frontal, limbic and temporal lobes, with moderate densities in the secondary sensory and motor cortical regions, and with the lowest densities of receptors in the primary sensory and motor cortical regions. Relatively high concentrations of cannabinoid receptors were consistently seen in cortical regions of the left (dominant) hemisphere, known to be associated with verbal language functions. In all of the cortical regions, the pattern and density of receptor labelling followed the neocortical laminar organization, with the greatest density of receptors localized in two discrete bands-a clearly delineated narrow superficial band which coincided with lamina I and a deeper broader, conspicuous band of labelling which corresponded to laminae. Labelling in the intervening cortical laminae showed lower densities, with a well delineated narrow band of label in the middle of laminae in the associational cortical regions [3].

The thalamus showed a distinctive heterogeneous distribution of cannabinoid receptors, with the highest concentration of receptors localized in the mediodorsal nucleus, anterior nuclear complex, and in the midline and intralaminar complex of nuclei, i.e. in thalamic nuclei which have connectional affiliations with the associational cortical areas. The basal ganglia showed a distinctive heterogeneous pattern of receptor binding, with the very highest concentrations in the globus pallidus internus, moderate concentrations in the globus pallidus externus and ventral pallidum, and moderately low levels of binding throughout the striatal complex. In the midbrain, very high levels of cannabinoid receptor binding were present in the substantia nigra pars reticulata, with low levels of labelling in all other midbrain areas [4, 5].

## Conclusion

The highest densities of cannabinoid receptor binding in the hindbrain were localized in the molecular layer of the cerebellar cortex and the dorsal motor nucleus of the vagus, with moderate densities of receptors in the nucleus of the solitary tract. The spinal cord showed very low levels of receptor binding. Studies on the distribution of cannabinoid receptors in the fetal and neonatal human brain showed similar patterns of receptor distribution to that observed in the adult human brain, except that the density of receptor binding was generally markedly higher, especially in the basal ganglia, substantia nigra and cerebellar cortex. The pattern of cannabinoid receptor labelling in the striatum showed a striking patchy pattern of organization which was especially conspicuous in the fetal brain.

## References

1. Zheng J, Gänzle MG, Lin XB et al. Diversity and dynamics of bacteriocins from human microbiome. Environ Microbiol. 2015;17(6):2133-43.
2. Petersen SE, Posner MI. The attention system of the human brain: 20 years after. Annu Rev Neurosci. 2012;35:73-89.
3. Shen EH, Overly CC, Jones AR. The Allen Human Brain Atlas: comprehensive gene expression mapping of the human brain. Trends Neurosci. 2012;35(12):711-4.

***Correspondence to:** Ebrahimi Farz, Department of Scientometics, Faculty of Social Sciences, Yazd University, Yazd, Iran, E-mail: Farz@gmail.com

***Received:** 25-Apr-2023, Manuscript No. aabmcr -23-104482; **Editor assigned:** 27-Apr-2023, Pre QC No. aabmcr -23-104482 (PQ); **Reviewed:** 11-May-2023, QC No. aabmcr -23-104482; **Revised:** 15-May-2023, Manuscript No. aabmcr -23-104482 (R); **Published:** 22-May -2023, DOI: 10.35841/aabmcr-7.3.145*

***Citation:** Farz E. Exploring the wonders of the human brain: A comprehensive review of anatomy and neurosciences. Biol Med Case Rep. 2023;7(3):145*

4. Alexander-Bloch A, Giedd JN, Bullmore E. Imaging structural co-variance between human brain regions. Nat Rev Neurosci. 2013;14(5):322-36.

5. Achard S, Salvador R, Whitcher B et al. A resilient, low-frequency, small-world human brain functional network with highly connected association cortical hubs. J Neurosci. 2006;26(1):63-72.