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History of Paleoneurobiology and Brain Shape, Intelligence, and Cognitive Performance

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DESCRIPTION

The study of brain evolution through the analysis of brain endocasts to determine endocranial traits and volumes is known as paleoneurobiology. Paleoneurobiology, which is considered a subfield of neuroscience, combines techniques from other fields of study such as palaeontology and archaeology. It reveals specific information about human evolution. The cranium is unique in that it grows in response to brain tissue growth rather than genetic guidance, as are bones that support movement. Fossil skulls and endocasts can be compared to one another, to the skulls and fossils of recently deceased individuals, and even to those of other species to infer functional anatomy, physiology, and phylogeny. Paleoneurobiology is heavily influenced by advances in neuroscience as a whole; making inferences about the functionality of ancient brains would be impossible without substantial knowledge about current functionality. Humans have long been fascinated by the brain and its functions.

DESCRIPTION

The first recorded study of the brain and its functions came from an ancient Egyptian papyrus text written in the 17th century BCE. The document describes 48 medical conditions and includes information on how to treat head wounds. The ancient Greeks began to focus on brain studies and the relationship between the optic nerve and the brain much later, in the 6th century BCE. However, studies of brain evolution did not begin until much later. Comparative anatomy emerged in the latter part of the nineteenth century. Two major worldviews emerged: rationalism and transcendentalism. These served as the foundation for scientists' thinking during this time period. In the new field of comparative anatomy, Georges Cuvier and Étienne Geoffrey St. Hilaire were pioneers. Cuvier was confident in his ability to develop a functional morphology based solely on empirical evidence. He emphasised that the organ's function and form must be compatible. Geoffroy, on the other hand, placed a strong emphasis on intuition as a method of comprehension. His reasoning was founded on two principles: the principle of connections and the principle of plan unity. Geoffroy was among the first to look for homologies in organs across species, but he thought this was evidence of a universal plan rather than descent with modification. In the late nineteenth century, comparative anatomy was heavily influenced by Charles Darwin's work in On the Origin of Species, published in 1859. Comparative anatomists' perspectives were completely altered as a result of this work. Within eight years of the publication of Darwin's Origin of Species, his views on descent from a common ancestor were widely accepted. This resulted in a shift in how scientists attempted to understand how different parts of the brain evolved. The microscope was the next major advancement that aided in the development of paleoneurobiology. Camillo Golgi began cellularly detailing the brain and perfecting axonal microscoping techniques with this ftoofl fin 1873 [1-4].

CONCLUSION

Ludwig Edinger capitalised on this by developing a new branch of anatomy known as comparative neuroanatomy. Edinger believed that vertebrates evolved in a straight line. He also believed that brain changes were the result of a series of additions and differentiations, and that the most highly complex brains were the most encephalized. Between 1885 and 1935, there was an explosion of ideas in comparative neuroanatomy. This epoch culminated in the publication of Arienns, Kappers,

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Huber, and Cosby's "The Comparative Anatomy of the Nervous System." Tilly Edinger was influenced by this paper, and she later ffounded.

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CONFLICT OF INTEREST

The author's declared that they have no conflict of interest

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