

"What paleoneurology tells us about the evolution of the brain and cognition in hominins."

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Abstract

Bipedalism, associated changes in the motor development of infants, and the invention of language sparked brain evolution and the emergence of advanced cognitive abilities in human ancestors. Evolution of the cerebral cortex of our early relatives is discussed in light of information gleaned from casts of the interiors of their fossilized braincases (endocasts) and from comparative neuroanatomical and functional studies of the brains of living apes and humans. Connecting the dots between the endocasts of *Australopithecus* and the brains of living humans suggests that certain neurological changes facilitated our lineage's transition from relatively simple activities like knapping stone tools to increasingly complex ones that led, eventually, to the invention of modern technologies. These changes included a significant evolutionary increase in brain size, differential expansion of association cortices (e.g., prefrontal regions), and overall reorganization of the brain.