Competition may be reason for bigger brain

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Professor David Geary finds that competitive ancestors may be blamed for today's big brain. Credit: David Geary

For the past 2 million years, the size of the human brain has tripled, growing much faster than other mammals. Examining the reasons for human brain expansion, University of Missouri researchers studied three common hypotheses for brain growth: climate change, ecological demands and social competition. The team found that social competition is the major cause of increased cranial capacity.

To test the three hypotheses, MU researchers collected data from 153 hominid (humans and our ancestors) skulls from the past 2 million years. Examining the locations and global climate changes at the time the fossil was dated, the number of parasites in the region and estimated population density in the areas where the skulls were found, the researchers discovered that population density had the biggest effect on

skull size and thus cranial capacity.

"Our findings suggest brain size increases the most in areas with larger populations and this almost certainly increased the intensity of social competition," said David Geary, Curator's Professor and Thomas Jefferson Professor of Psychosocial Sciences in the MU College of Arts and Science. "When humans had to compete for necessities and social status, which allowed better access to these necessities, bigger brains provided an advantage."

The researchers also found some credibility to the climate-change hypothesis, which assumes that global climate change and migrations away from the equator resulted in humans becoming better at coping with climate change. But the importance of coping with climate was much smaller than the importance of coping with other people.

"Brains are metabolically expensive, meaning they take lots of time and energy to develop and maintain, making it so important to understand why our brains continued to evolve faster than other animals," said Drew Bailey, MU graduate student and co-author of the study. "Our research tells us that competition, whether healthy or not, sets the stage for brain evolution."

More information: The study, "Hominid Brain Evolution," recently was published in *Human Nature* and co-authored by Geary and Bailey.

Source: University of Missouri-Columbia (news : web)