

Brain Versus Gut: Our Inborn Food Fight

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Photo by Florent Cros

(PhysOrg.com) -- The relatively larger human brain makes us the most intelligent of the primates. But if we're so smart, how come we've eaten our way into an obesity epidemic? One reason is the relatively smaller human stomach and shorter large intestines, says Emory anthropologist George Armelagos.

"Our [evolutionary history](#) has given us a brain that is focused much of the time on eating, and a gut that isn't designed for today's variety and volume of high-density food," explains Armelagos, a bioarcheologist and an expert in prehistoric diets.

Armelagos recently wrote a review of research on evolution and the human diet, published in the *Journal of Anthropological Research*.

Journalist Michael Pollan popularized the concept of "the omnivore's dilemma," the desire for dietary variety paired with the perilous search for new foods, in his best-selling book by the same name. Pollan primarily covered how today's abundance of food is fueling a national eating disorder.

Armelagos focuses on the prehistoric perspective. "Our current pattern of eating reflects the way in

which Homo sapiens evolved and resolved the omnivore's dilemma," he says. "Our cravings for certain foods don't go back just a few years, or even 10,000 years, but more than a million years."

For thousands of millennia, our ancestors subsisted as foragers, hunting and gathering in marginal environments. The expansion of the brain's [neocortex](#) in [early humans](#) facilitated [social cognition](#) and memory, supporting the task of finding edible plants and prey amid the vagaries of an unpredictable climate.

Larger brains, however, increased caloric demands: The human [brain](#), which represents only 2 percent of our body mass, consumes 20 percent of our energy. Around two million years ago, Armelagos says, our early ancestors began evolving a smaller total gut size, relative to other primates.

"The expensive-tissue hypothesis argues that our big brains are fueled by the energy saved by our having a smaller stomach and shorter large intestines," he says. "Whatever the reasons for the changes in the alimentary canal, there is no question that they necessitated diets of high-quality, high-density foods."

Fast-forward through millennia to the development of agriculture, cooking, the industrialization of food, and finally the advent of McDonalds. Today we're faced with a perfect storm that's capsizing the nutritional benefits of our adapted biology, Armelagos says.

"If you study our primitive pasts, the biological underpinnings of today's [obesity](#) epidemic become clear," Armelagos says. "But a solution to this complex bio-cultural problem is not so clear."

More information: quod.lib.umich.edu/j/jar/

Provided by Emory University

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