

Ancient plant breeders made corn kernels edible with only minor selections

If not for a single genetic mutation, each kernel on a juicy corn cob would be trapped inside a inedible casing as tough as a walnut shell. The mutation switches one amino acid for another at a specific position in a protein regulating formation of these shells in modern corn's wild ancestor, according to a study published in the July 2015 issue of *GENETICS*, a publication of the Genetics Society of America.

"Humans completely reshaped the ancestor of corn, effectively turning the cob inside out. Our results show that a small genetic change has had a big effect on this remarkable transformation," says study leader John Doebley of the University of Wisconsin-Madison.

The domestication of corn has long fascinated biologists studying evolution. Corn can provide clues to how organisms change under selection—whether it's natural selection or selection by humans choosing the most delicious and productive plants to grow in next year's crop.

Corn was domesticated in Mexico around 9,000 years ago from the wild grass teosinte. Teosinte seeds are protected by a hard casing that makes them impractical to eat, but ancient plant breeders developed varieties with "naked kernels." In these plants, the structures that form the seed case instead turn into the cob in the center of the ear, leaving the seed exposed for us to eat.

Besides having lost the inconvenient seed case, corn kernels today remain firmly attached to the cob, rather than scattering easily as they do in teosinte. The cobs are also much larger, and the corn plant has fewer leaf branches than its ancestor.

The team compared the *tga1* DNA sequence in 16 different varieties of corn and 20 varieties of teosinte. The researchers found that levels of the corn version of the *tga1* gene control the size of the corn structures that would normally form the seed case in teosinte.

These results provide an example of how selection by ancient plant breeders triggered profound structural change in an organism through relatively minor genetic alterations, allowing new traits to evolve rapidly.

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis. Read full, original post: [Tiny genetic tweak unlocked corn kernels during domestication](#)