Early agricultural piracy informs the domestication of rice

June 9 2011

The origins of rice have been cast in a new light by research publishing in the open-access journal *PLoS Genetics* on June 9, 2011. By reconciling two theories, the authors show that the domestication of rice occurred at least twice independently but with extensive "borrowing" between the two subspecies.

Indica and japonica are, respectively, the southern and northern varieties of rice and they are major staple crops in Asia. Whether they share a single origin of domestication or were domesticated independently twice interests both historians and biologists, and the two views had seemed mutually exclusive. However, researchers from Sun Yat-Sen University and Beijing Institute of Genomics (BIG) and the University of Chicago, are now suggesting that these two views may both be correct, depending on the traits or genes being discussed.

Using new-generation sequencing technology, Suhua Shi, Chung-I Wu, and their research teams studied the kinship of rice by examining the 50,000 or so genes in the rice genome. For most of the genes, indica and japonica are indeed no closer to each other in kinship than each is to wild rice, supporting the more popular view that the two cultivars were independently domesticated. However, when the gene regions for traits influenced by artificial selection were examined, indica and japonica appear to share a surprisingly strong kinship.

In light of this new data, the story of rice domestication may need to be revisited. Early northern and southern farmers may have cultivated rice

independently but it seems that they also borrowed desired traits extensively from rice farmed by others, resulting in the opposing kinships reported. This begs the question as to whether intellectual piracy has been with us since humans first became engaged in agricultural production.

More information: He Z, Zhai W, Wen H, Tang T, Wang Y, et al. (2011) Two Evolutionary Histories in the Genome of Rice: the Roles of Domestication Genes. PLoS Genet 7(6): e1002100. doi:10.1371/journal.pgen.1002100