

Sunlight adaptation region of Neanderthal genome found in up to 65 percent of modern East Asian population

December 17 2013

With the Neanderthal genome now published, for the first time, scientists have a rich new resource of comparative evolution. For example, recently, scientists have shown that humans and Neanderthals once interbreed, with the accumulation of elements of Neanderthal DNA found in up to 5 percent in modern humans.

Are there any advantages to the retention of Neanderthal DNA that favors [modern humans](#)? In a new article published in *Molecular Biology and Evolution*, authors Jin, et. al., present evidence for the accumulation of a Neanderthal DNA region found on chromosome 3 that contains 18 genes, with several related to UV-light adaptation, including the Hyal2 gene. Their results reveal this region was positively selected and enriched in East Asians, ranging from up to 49 percent in Japanese to 66 percent in Southern Chinese.

Interestingly, the authors note, the geographic distribution of the Neanderthal genomic region suggests that UV-light mutations were shown to be lost during the exodus of modern human from Africa, and reintroduced to Eurasians from Neanderthals. "Overall, it is still very controversial whether there is more Neanderthal DNA contributions to Asians than Europeans, as we have evidence to argue against this," said Lin. "Although in the case of the Hyal2 variant, it did indeed have a higher frequency in Asians."

From 45,000 years to 5,000 years before present, effective population sizes of the Neanderthal region increased at a steady rate. Notably, the growth rate of the effective population size increased at around 5,000 to 3,500 years before present, which suggests a population expansion event. This Asian-specific Neanderthal evolutionary event is also consistent with previous reports of higher levels of Neanderthal ancestry in East Asians than in Europeans.

Provided by Oxford University Press

Citation: Sunlight adaptation region of Neanderthal genome found in up to 65 percent of modern East Asian population (2013, December 17) retrieved 3 May 2024 from <https://phys.org/news/2013-12-sunlight-region-neanderthal-genome-percent.html>

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