Study: Junk DNA is critically important

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A University of California-San Diego scientist says genetic material derisively called "junk" DNA is important to an organism's evolutionary survival.

Junk DNA is so-called because it doesn't contain instructions for protein-coding genes and appears to have little or no function. But Peter Andolfatto, an assistant professor of biology, says such DNA plays an important role in maintaining an organism's genetic integrity.

In studying the fruit fly Drosophila melanogaster, Andolfatto discovered such regions are strongly affected by natural selection -- the evolutionary process that preferentially leads to the survival of organisms and genes best adapted to the environment.

Andolfatto says his findings are important because the similarity of genome sequences in fruit flies, worms and humans suggests similar processes are probably responsible for differences between humans and their close evolutionary relatives.

"Sequencing of the complete genome in humans, fruit flies, nematodes and plants has revealed the number of protein-coding genes is much more similar among these species than expected," he said. "Curiously, the largest differences between major species groups appear to be the amount of 'junk' DNA, rather than the number of genes."

He details his research in the Oct. 20 issue of Nature.