

To: jeevacation@gmail.com[jeevacation@gmail.com]
From: [REDACTED]
Sent: Sun 5/2/2010 1:20:20 AM
Subject: Mutation in a single gene causes double movements

Weird - why would nature care?

A study reported in *Science* this week attempts to pinpoint the cause of mirror movements, a condition that causes people to involuntarily move both sides of the body when they intended to move only one. Mirror movements are common in babies but rare in adults, and scientists have found that a particular gene mutation is at the root of mirror movements' tendency to persist into adulthood.

Mirror movements are not unusual for infants or small children—kicking one leg voluntarily while the other involuntarily does the same, or making a grasping motion at something with one hand as the other follows suit, reaching for nothing. For the problem to continue into adulthood, though, is very unusual, and scientists have been uncertain about what causes it.

To sort out the adult mirror movement cause, a group of researchers sequenced the DNA of two families, one French Canadian and one Iranian, who seemed to have congenital mirror movement issues. They looked for genetic similarities between family members with mirror movements, and compared their DNA to other controls of the same ethnicity.

Researchers noticed that the family members who had mirror movements shared a common haplotype on one region of chromosome 18, 18q21.2. The affected area spanned 2.5 million base pairs and contains three genes, one of which controls for the presence of colorectal cancer, called the DCC gene. When they sequenced this particular gene, they found there was an unusual nucleotide substitution that they did not find in control subjects.

Although it was first associated with colon cancer, the protein encoded by DCC can act as a receptor for a nerve cell guidance signal. One of its roles seems to be to help nerve cells on one side of the spinal cord stay on that side as they extend processes up and down the developing spine.

The paper's authors speculate that the mirror movements are the result of a development problem caused by changes in the protein the DCC gene encodes. Because the protein is malformed, the body develops neural connections that route one-sided connections to both sides, producing the mirrored activity.

Science, 2010. DOI: [10.1126/science.1186463](https://doi.org/10.1126/science.1186463) (About DOIs).

[Read the comments on this post](#)

[View article...](#)