

## Sex chromosomes get messy when they swap DNA

Variety is the spice of life—especially when it comes to genetics. Our species needs DNA to intermingle to create genetic diversity, which is key to population-wide health and hardiness. As cells divide and grow, all 22 pairs of [chromosomes](#) in a human can perform genetic swaps along their entire lengths, except for the sex chromosomes. Because X and Y differ in size and in the genes they carry, these two genetic bundles remain aloof.

But research has been showing how the sex chromosomes do sometimes trade genetic data in select spots—and it seems their swapping is sloppier than originally thought.

A team led by Melissa Wilson Sayres at Arizona State University offers new details about what happens when X and Y chromosomes swap DNA during the cell division that gives rise to eggs and sperm. Intriguingly, their work confirms that when the sex chromosomes converse, a particular gene that is critical for male development sometimes gets accidentally moved around. The results could help explain why some people have female DNA—a pair of X chromosomes—but develop physically as male.

Millions of years ago, our X and Y chromosomes were roughly equivalent and were able to freely swap genetic material. In most cases, evolution favors this exchange of DNA between chromosomes because it boosts diversity. But today, the X chromosome is much longer than the Y chromosome, and only two small matching regions remain at the tips. “We often talk about how different X and Y are,” says Wilson Sayres. “But there are two regions in which they are identical,” called pseudoautosomal regions. This is where the X and Y chromosomes can partner and swap DNA.

**The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis. Read full, original post: [Human Sex Chromosomes Are Sloppy DNA Swappers](#)**