

## Male and female chromosomes do communicate with each other

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WASHINGTON: Scientists in the University of Leicester's Department of [Genetics](#) have for the first time revealed that the male and female do truly

communicate, at least at the fundamental genetic level.

The research counters scientific theory that the X and Y chromosomes - that define the sexes - do not communicate at all.

In the study, Dr. Zoe Rosser and colleagues have shown that exchange of [DNA](#) does actually occur between the X and Y in the regions previously thought to be completely isolated.

"Recently it was shown that the Y chromosome can talk to itself - swapping bits of DNA from one region to another, and potentially giving it a way to fix mutations that might affect male fertility. In this new research we've now shown that it actually maintains a genetic conversation with the X chromosome, potentially giving it a way to fix other kinds of mutations, too. So, maybe it's not quite the dysfunctional loner we have always imagined it to be," said Professor Mark Jobling, who led the study.

It is the Y chromosome in men that determines maleness by triggering development of testes rather than ovaries in the early embryo.

"These days the X and Y are a very odd couple, but long ago, before mammals evolved, they were an ordinary pair of identical chromosomes, exchanging DNA in a companionable way through the process of genetic recombination. However, once the Y chromosome took on the job

of determining maleness, they stopped talking to each other. The X remained much the same, but the Y set out on a path of degeneration that saw it lose many of its genes and shrink to about one third the size of the X. Some scientists have predicted that it will eventually vanish altogether," said Jobling.

"These new findings from the Department of Genetics of the University of Leicester now challenge this interpretation of the Y chromosome's fate," he added.

The researchers discovered that the conversation between the X and Y chromosome goes both ways, and it is also clear that mutations arising on a decaying Y chromosome can perhaps be passed to the X - the Y chromosome's revenge.

In future, the researchers will assess how widespread X-Y exchanges have been during [evolution](#), and what the likely functional effects might be.

The study has been published in the American Journal of Human Genetics.