Some ‘junk’ DNA more than just extra baggage in genome

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Some of our genes don’t encode proteins; instead, they create long RNA molecules that don’t serve as protein templates. They have different jobs.

One of these so-called long-noncoding RNAs (lncRNAs, for short) is vital to women’s health. Women carry two copies of the X chromosome, of course, while men have only one. Yet both sexes produce the same number of proteins from X chromosomes. The cause of that balance is a lncRNA called Xist.

In each cell in a woman’s body, Xist locks onto one of the two X chromosomes and inactivates it. Then the cell is able to produce proteins only from the X chromosome free of Xist. If that bit of RNA fails, women produce extra proteins. Studies on mice suggest this can lead to cancer.

Some researchers point out that a lot of DNA in the human genome is little more than padding between genes. LncRNA doubters maintain that sometimes a cell’s protein-making machinery accidentally reads a stretch of this so-called junk DNA and spews out a useless RNA molecule. The cell promptly destroys the molecule, correcting its mistake.

“A lot of scientists think this all may be noise,” said Howard Y. Chang, a geneticist at Stanford University.

Dr. Chang is not one of them. In a study published in the journal Genes & Development, he and his colleagues were able to discover a number of functional lncRNAs. To do so, they used an innovative method to explore millions of years of RNA evolution.

Read full, original post: Telling Jewels From Junk in DNA