# University of Toronto finds humans and chimps differ at level of gene splicing

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Researchers are closer to understanding why humans differ so greatly from chimpanzees in the way they look, behave, think, and fight off disease, despite having genes that are nearly 99% identical.

Innovative research from the University of Toronto's Centre for Cellular and Biomolecular Research has uncovered potential new explanations for these glaring differences. In comparing brain and heart tissue from humans and chimpanzees, U of T Professor Benjamin Blencowe and his team, including graduate student researcher John Calarco, have discovered significant differences in the way genetic material is spliced to create proteins.

"It's clear that humans are very different from chimpanzees on several levels, but we wanted to find out if it could be the splicing process that accounts for some of these fundamental differences," says Blencowe, a professor with the Banting and Best Department of Medical Research and Department of Molecular Genetics.

"The surprising thing we found was that six to eight per cent of the alternative splicing events we looked at were showing differences, which is quite significant. And those genes that showed differences in splicing are associated with a range of important processes, including susceptibility to certain diseases."

Splicing is the process by which the coding regions of genes are joined to generate genetic messages that specify the production of proteins, the

key structural and functional constituents of cells. Splicing can occur in alternative ways in the same genetic message to generate more than one type of protein. The new findings reveal that the alternative splicing process differs significantly between humans and chimpanzees.

The study, appearing tomorrow in the *Journal of Genes and Development*, could have implications for the future study of disease in humans and chimpanzees, Blencowe says.

“Identifying what makes us different can be very important to understanding why certain diseases affect one species and not the other,” he says.

Source: University of Toronto