

Sex differences determined not simply by gender

September 16 2010

(PhysOrg.com) -- Researchers at Imperial College London have uncovered an inherent difference in the way the genes of males or females can be "switched off" or silenced in the body's developing immune system. This finding will have a significant impact on the way researchers approach diseases that have a disproportionate effect on one sex over the other, such as lupus, rheumatoid arthritis or multiple sclerosis, which all occur more frequently in women than men.

The results of the study show that the sex chromosomes, XY in males and XX in females, have a highly significant influence on how hundreds of [genes](#) behave in males and females. Distinguishing characteristics between males and females, such as face shape or body outline are often been put down to either differences in development or hormones.

The research team, based at the MRC Clinical Sciences Centre on Imperial's Hammersmith campus, found that more genes were switched off or "silenced" in males rather than females. These differences could help explain how the body's [immune system](#) can cause rather than prevent diseases and in the future help to tailor treatments for [autoimmune diseases](#). The research was funded by the Medical Research Council (MRC).

Professor Richard Festenstein, who led the study, says:

"Many diseases affect more men than women or vice versa, and we don't really know why. These findings could help researchers find

explanations for the subtle differences in the way males and females physically respond when the body is under attack from disease. It will also help us identify if disease-causing genes are dependent on female (XX) or male (XY) chromosomes in order to work, allowing us to move towards developing drugs that will stop them in their tracks."

The study is published today in the journal, [Developmental Cell](#).

Provided by Imperial College London

Citation: Sex differences determined not simply by gender (2010, September 16) retrieved 24 April 2024 from <https://phys.org/news/2010-09-sex-differences-simply-gender.html>

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