

## Sexual differences in mammals

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In many cases, we can tell an animal's gender just by its appearance. For example, a peacock has more beautiful feathers than a peahen. A male mallard has an unmistakable green head. We can distinguish a male lion by its mane. The difference between sexes in the same species is called sexual dimorphism.



Besides appearance, sexual dimorphisms are also involved in brain and behavior, such as feeding behavior, emotion, memory. In principle, all sexual dimorphisms are determined by sex chromosomes. In mammals the female has two X chromosomes, and the male has one X chromosome and one Y chromosome. Most sex differences are regulated by sex hormones or genes which locate on X and Y chromosomes. Some studies also found that extensive sex differences in rodent brain are hormone independent. In my study, I measured gene expression of seven X-chromosome located genes in liver and lung samples from female and male mice. These genes were already known to express higher in the brains of female mice than in the brain of male. In my experiments, I found that there genes were also female up-regulated in the lung and tissues. This proves that then female-biased expression of the seven genes in mouse brain is not regulated by a brain specific mechanism, but rather regulated by a more general mechanism that is common to several parts of the body. In addition to studying the regulation of X-chromosome encoded genes, I compared the gene content of the Y-chromosome in humans, chimpanzees and mice using genes sequence databases. Interestingly, I found conserved Y genes in all three species. This indicates that these conserved genes might be important for male sexual development in mammals.