

# **Cancer: Gender differences at the molecular level**

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Chapter 28 in: Legato MJ & Dauber W (Eds). Principles of Gender-Specific Medicine - Gender in the Genomic Era. Third Edition. Elsevier (ISBN: [9780128035061](#)), 2017

## **Abstract**

Epidemiological evidence consistently shows that males have a higher susceptibility to non-sex-specific cancers. For some cancers, the sex difference is clearly due to behavioral differences. Differences in morphology such as greater weight and height, and genetic and physiology also play a role, but exact details are missing. The differences between males and females at transcriptomics, epigenomics, proteomics, and metabolomics levels are emerging and should shed light on the mechanisms of the sex difference in cancer susceptibility. This chapter provides an overview of the epidemiologic background, differences between males and females relevant to cancer development, with a focus on gene expression and epigenetics, and specific examples of molecular mechanisms in liver and kidney cancers. Despite strong calls by agencies and journals, sex-specific analysis of research data is still only rarely done. Only more experimental data will help to gain the information about on the exact nature of this difference, which can then be used for better diagnosis and treatment.

## **Keywords**

Cancer susceptibility; gender effect; sex ratio; sex hormones; sex chromosomes; hepatocellular cancer; renal cell cancer