

Chromatin Signaling and Diseases

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Key Features

- Explains molecular mechanisms that regulate gene expression, which governs everything from embryonic development to growth and human pathologies associated with aging
- Educates clinicians and researchers about chromatin signaling, a molecular mechanism that is changing our understanding of human pathology
- Explores the addition and removal of chemical modifications on histones, the proteins that specifically recognize these, and the impact of gene expression defects associated with malfunctioning chromatin signaling

Chromatin Signaling and Diseases provides an overview of the molecular mechanisms that regulate gene expression, which govern everything from embryonic development to growth and human pathologies associated with aging, such as cancer. Although the sequencing of the human genome was completed more than a decade ago and its structure has been investigated for nearly half a century, molecular mechanisms that regulate gene expression remain largely misunderstood. An emerging concept called "chromatin signaling" proposes that small protein domains recognize chemical modifications on the genome scaffolding histone proteins, facilitating the nucleation of enzymatic complexes at specific loci that then open up or shut down the access to genetic information, thereby regulating gene expression. The addition and removal of chemical modifications on histones, as well as the proteins that specifically recognize these, are reviewed in *Chromatin Signaling and Diseases*. In addition, the impact of gene expression defects associated with malfunctioning chromatin signaling is explored.

To keep up with the changing landscape, clinicians and physicians need to remain familiar with genetic advances that translate into clinical practice, such as chromatin signaling. As there are now several epigenetic drugs in development that will regulate various classes of chromatin signaling factors for use in the treatment of cancer and other disease, *Chromatin Signaling and Diseases* is an especially helpful resource for clinicians, because they will be more capable of explaining the mechanisms of gene expression regulation to their patients to reassure them about new drug developments that target chromatin signaling mechanisms.



ACADEMIC PRESS

An imprint of Elsevier
elsevier.com

ISBN 978-0-12-802389-1



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