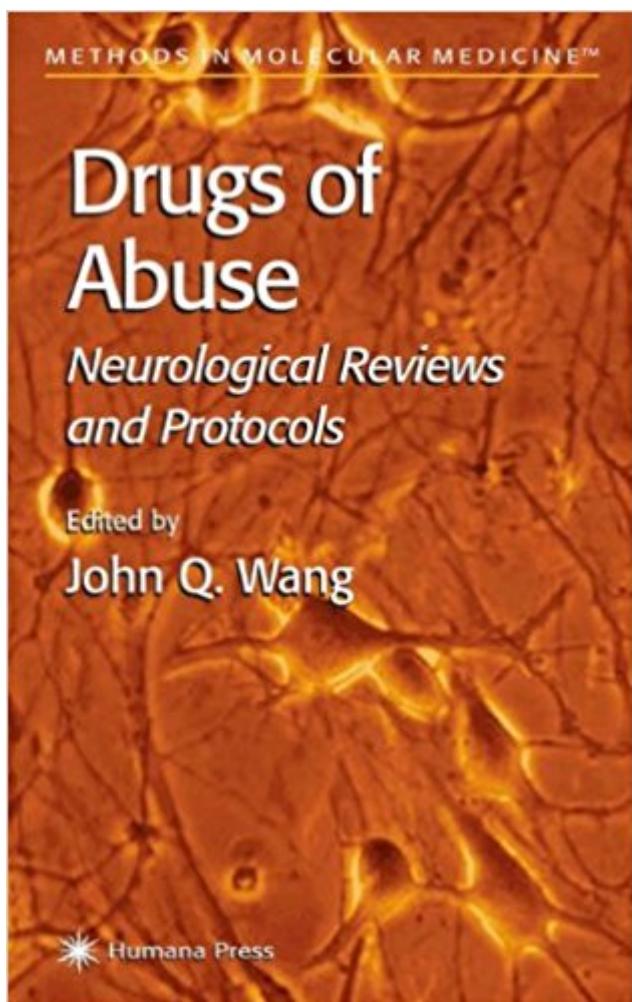


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Drugs Of Abuse: Neurological Reviews And Protocols (Methods In Molecular Medicine)



Synopsis

Drugs of Abuse: Neurological Reviews and Protocols is intended to provide insightful reviews of key current topics and, particularly, state-of-the-art methods for examining drug actions in their various neuroanatomical, neurochemical, neurophysiological, neuropharmacological, and molecular perspectives. The book should prove particularly useful to newcomers (graduate students and technicians) in this field, as well as to those established scientists (neuroscientists, biochemists, and molecular biologists) intending to pursue new careers or directions in the study of drugs. The book's protocols cover a wide variety of coherent methods for gathering information on quantitative changes in proteins and mRNAs at both tissue and cellular levels. Inducible gene expression in striatal neurons has been a hot topic over the last decade. Alterations in gene expression for a wide range of proteins in the striatum have been investigated in response to drug administration. Altered expression of given mRNAs and their product proteins constitutes essential molecular steps in the development of neuroplasticity related to long-term addictive properties of drugs of abuse. With the multiple labeling methods that are also described in the book, gene expression can be detected in a chemically identified cell phenotype; the expression of multiple genes of interest can be detected in a single cell simultaneously. Hundreds or thousands of gene expression products can today be detected in one experimental setup using the powerful systematic cDNA macroarray or microarray screening technology. Moreover, protocols useful in analyzing the functional roles of genes and proteins (e.g.

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"It describes in detail laboratory methods used by researchers working in the area of drug abuse and drug addiction. This is a unique book. Few books deal in detail with the methods underlying experiments. It will be of primary value to active investigators with active laboratories." -Doody's Health Sciences Book Review Journal

New molecular technologies have transformed our understanding of the neurological impact of drugs of abuse and opened many new possibilities for research. In *Drugs of Abuse: Neurological Reviews and Protocols*, leading scientists from all over the world review these novel research areas and provide a cutting-edge collection of updated and core techniques for the neurological study of drugs of abuse. Described in step-by-step detail, these readily reproducible protocols cover a wide variety of coherent methods for gathering information on quantitative changes in protein and mRNA at both tissue and cellular levels. There are various methods for detecting single and multiple alterations in single and multiple gene expression, for analyzing the functional roles of genes and proteins, for studying the release kinetics of striatal dopamine, and for the quantitative measurement of such neurotransmitters as acetylcholine. Additional methods are provided for primary neural cell culture preparation, for an immunohistochemical method to examine cellular proliferation and differentiation, and for a culture method to grow viable neural progenitors. All contributors have considerable experience with the protocols covered, and each protocol has been thoroughly tried and successfully tested in the laboratory. Helpful notes for each method discuss tricks-of-the-trade, pitfalls to avoid, and troubleshooting. State-of-the-art and highly practical, *Drugs of Abuse: Neurological Reviews and Protocols* offers insightful reviews of key current topics and a core collection of readily reproducible techniques essential for any neurobiological laboratory carrying out either basic analyses or seeking novel research approaches.

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