

Slow-wave sleep



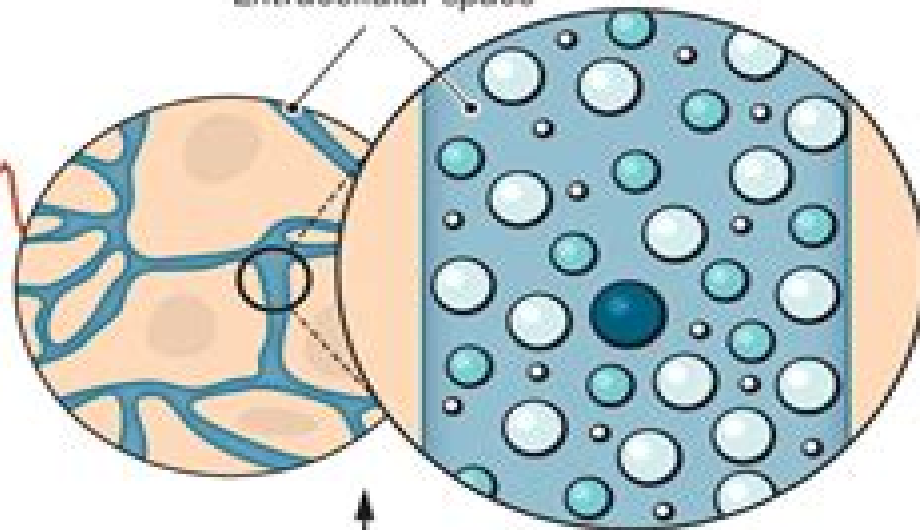
Electrical activity
(EEG)

Decreased
neuromodulator
activity

Neuromodulators
produced by
basal forebrain,
hypothalamus,
and brain stem

Acetylcholine
Hypocretin
Histamine
Serotonin
Noradrenaline

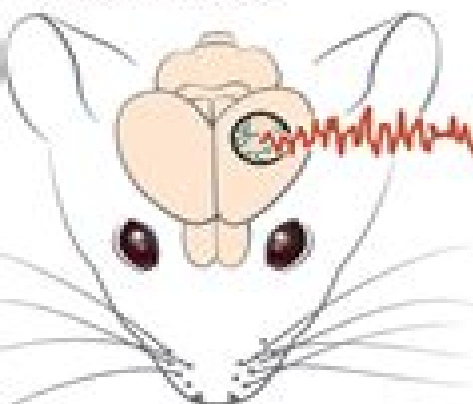
Extracellular space



Sleep-wakefulness
transitions are accompanied
by changes in extracellular
space volume and concentration
of extracellular ions

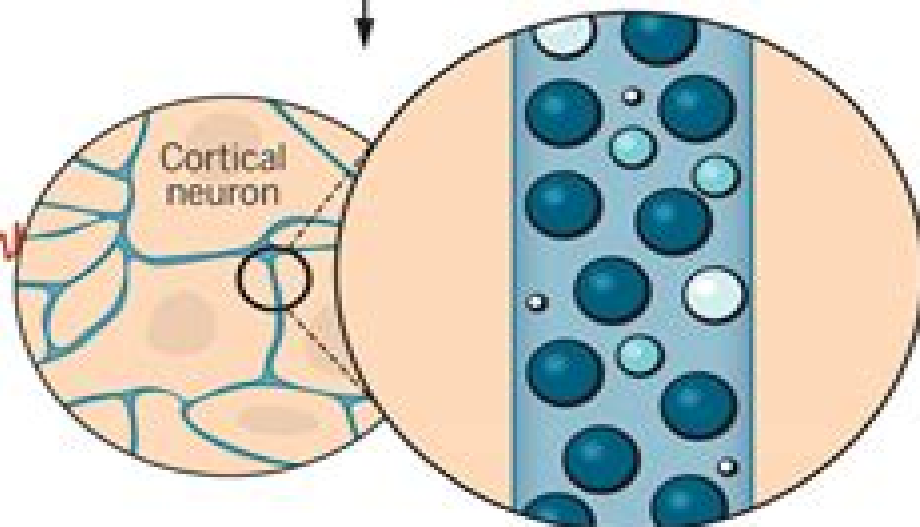
K^+
 Ca^{2+}
 Mg^{2+}
 H^+

Wakefulness



Increased
neuromodulator
activity

Electrical activity
(EEG)



Sleep And Wakefulness

Johan Verbraecken, Jan Hedner



Sleep And Wakefulness:

Sleep and Wakefulness Nathaniel Kleitman, 1987-09-15 For half a century Sleep and Wakefulness has been a valuable reference work It discusses phases of the sleep cycle experimental work on sleep and wakefulness sleep disorders and their treatment and such sleep like states as hypnosis and hibernation *Local Aspects of Sleep and Wakefulness* Giulio Bernardi, Francesca Siclari, Michele Bellesi, 2020-03-24 [Brainstem Control of Wakefulness and Sleep](#) Mircea M. Steriade, Robert W. McCarley, 2013-03-09 This book is part of an ongoing history of efforts to understand the nature of waking and sleeping states from a biological point of view We believe the recent technological revolutions in anatomy and physiology make the present moment especially propitious for this effort In planning this book we had the choices of producing an edited volume with invited chapter authors or of writing the book ourselves Edited volumes offer the opportunity for expression of expertise in each chapter but we felt would not allow the development of our ideas on the potential and actual unity of the field and would not allow the expression of coherence that can be obtained only with one or two voices but which may be quite difficult with a chorus assembled and performing together for the first time Unlike musical works there is very little precedent for rehearsals and repeated performances for authors of edited volumes or even for the existence of conductors able to induce a single rhythm and vision of the composition We thus decided on a monograph The primary goal was to communicate the current realities and the future possibilities of unifying basic studies on anatomy and cellular physiology with investigations of the behavioral and physiological events of waking and sleep In keeping with this goal we cross reference the basic cellular physiology in the latter chapters and in the last chapter we take up possible links to relevant clinical phenomenology [The Gating and Maintenance of sleep and Wake: New Circuits and Insights](#) Michael Lazarus, Sakiko Honjoh, Kaspar Emanuel Vogt, Ada Eban-Rothschild, Yu Hayashi, Qinghua Liu, Takeshi Sakurai, 2020-10-09 This eBook is a collection of articles from a Frontiers Research Topic Frontiers Research Topics are very popular trademarks of the Frontiers Journals Series they are collections of at least ten articles all centered on a particular subject With their unique mix of varied contributions from Original Research to Review Articles Frontiers Research Topics unify the most influential researchers the latest key findings and historical advances in a hot research area Find out more on how to host your own Frontiers Research Topic or contribute to one as an author by contacting the Frontiers Editorial Office [frontiersin.org/about/contact](#) **Sleep-Wake Neurobiology and Pharmacology** Hans-Peter Landolt, Derk-Jan Dijk, 2019-09-03 This volume connects current ideas and concepts about sleep functions and circadian rhythms with the search for novel target selective sleep wake therapeutics To do so it provides a timely state of the art overview of sleep wake mechanisms in health and disease ongoing developments in drug discovery and their prospects for the clinical treatment of sleep disordered patients It particularly focuses on the concept that sleep and wakefulness mutually affect each other and the future therapeutic interventions with either sleep or wake promoting agents that are expected to not only improve the quality

of sleep but also the waking behavior cognition mood and other sleep associated physiological functions The chapter Sleep Physiology Circadian Rhythms Waking Performance and the Development of Sleep Wake Therapeutics available open access under a CC BY 4.0 license at link.springer.com

Neuroendocrine Correlates of Sleep/Wakefulness Daniel P. Cardinali, S. R. Pandi-Perumal, 2010-03-14 As the title suggests and unlike other existing books on sleep medicine *Neuroendocrine Correlates of Sleep/Wakefulness* will be devoted primarily to endocrine regulation of the behavioral state control It will address a wide spectrum of sleep wakefulness phenomena both animals and humans including pathogenesis diagnosis and management From molecular biology to applied clinical therapy sleep research has been transformed in the last few years from a research backwater to an important interdisciplinary field Anyone who regularly reads the literature on sleep biological rhythms or neuroendocrinology is aware that one of the subspecialties within sleep medicine the neuroendocrine correlates of sleep wakefulness has in particular experienced a growth rate that is even faster than that of the field as a whole To a significant extent this has been due to the introduction of new research technologies The widespread adoption of a range of new methods in sleep research has opened a window into activities at the cellular and molecular level which previously had been tightly closed Consequently these activities are being characterized with a degree of precision and sensitivity that is without precedent This volume invites the reader to explore the new vistas that have been opened onto the neuroendocrine frontier of sleep medicine The editors have selectively identified a number of key articles having a citation frequency which is considerably above the norm or which otherwise have contributed importantly to defining the neuroendocrine perspective This new volume on *Neuroendocrine Correlates of Sleep/Wakefulness* is an up to date resource of research summaries and reviews written by major contributors to the fields of sleep biological rhythms and neuroendocrinology Its coverage is broad and its basic and clinical science reviews are detailed In this volume an international team of experts discuss their latest ideas concepts methods and interpretations with supporting examples This volume is intended for advanced students and specialists in psychobiology neuroscience neuroendocrinology and psychiatry but might also be of interest to anyone concerned with understanding the neuroendocrine correlates of sleep wakefulness The contributions are directed more towards providing an integrated view of the field from the perspective of the authors rather than being a compendium of recent results The intent is to provide a reference book for recent and future workers in this and related areas of medicine and biology Each topic in this volume has received the attention of a panel of authors who have responded to our request to review and place into perspective the major issues which will undoubtedly confront newcomers to the field The topics dealt with in *Neuroendocrine correlates of Sleep/wakefulness* are both diverse and complex The editors hope that this volume will provide an authoritative summary of important issues in the neuroendocrine correlates of sleep wakefulness We also hope that it will motivate new researchers to join the quest for solutions to the problems that have been identified by our contributing authors

The Timing of Sleep and Wakefulness J. T. Enright, 2012-12-06 The brain functions like a computer

composed of subsystems which interact in a hierarchical manner But it is not a single hierarchy but a complex system of hierarchies each of which has its very own and unique feature One of these concerns the cyclic or rhythmic control of neuronal activities which among others give rise to alternating states of wakefulness and sleep The phenomenon of sleep still remains a mystery The present monograph does not give us any new insights into its meaning and significance Yet sleep research may not be the same after the appearance of this book because it gives us a comprehensive mathematical theory which opens our eyes to new insights into the mechanism of the rhythm generation that underlies the wake sleep cycle No one who has worked his way through this book can again look at experimental data without recognizing features which the models developed in its various chapters so strikingly reveal

Medications and their Effects on Sleep and Wake, An Issue of Sleep Medicine Clinics Johan Verbraecken, Jan Hedner, 2018-05-23 This issue of Sleep Medicine Clinics focuses on Medications and their Effects on Sleep and Wake with topics including Sleep wake neurochemistry Effect of sleep and circadian rhythm on pharmacokinetics and pharmacodynamics Drugs used in insomnia and non restorative sleep Drug induced excessive sleepiness Drug induced insomnia Drug induced sleep disordered breathing and ventilatory impairment Drug induced parasomnias and movement disorders Abuse and dependency on sleep and waking Sleep related drug therapy in special conditions children Sleep related drug therapy in special conditions pregnancy Sleep related drug therapy in special conditions the elderly Medicolegal and social consequences of sleep disorders and Tapering sleep related drug therapy

The Behavioral, Molecular, Pharmacological, and Clinical Basis of the Sleep-Wake Cycle Eric Murillo-Rodriguez, 2019-03-26 The Behavioral Molecular Pharmacological and Clinical Basis of the Sleep Wake Cycle provides the first comprehensive overview on the molecular methodologies used to evaluate sleep while also examining the cellular biochemical genetic and therapeutic aspects of the sleep wake cycle There have been profound changes in the landscape of approaches to the study of sleep mainly in the areas of molecular biology and molecular techniques With this great focus on using multidisciplinary molecular methods chapters address significant advances in the molecular mechanisms underlying sleep and the techniques researchers use to study this phenomenon Written by world leading experts in the area this book is of great interest to researchers working in the sleep field and to anyone interested in one of the most mysterious phenomena in science why we sleep and why we cannot survive without it Reviews the neurobiological and cellular mechanisms of the sleep wake cycle Provides the implications of sleep in health and disease Contrasts different techniques to study molecular mechanisms Contains case studies to better illustrate points Covers sleep disturbance and health problems involved in sleep Includes chapters on the ontogeny of sleep along with multiple mechanisms for sleep generation

Functional Anatomy of the Sleep-Wakefulness Cycle: Wakefulness Fernando Reinoso-Suárez, Isabel de Andrés, Miguel Garzón, 2010-11-05 Sleep is a necessary active diverse and periodic condition homeostatically regulated and precisely meshed with waking time into the sleep wakefulness cycle The authors present a detailed and updated review of

the structures involved in the phase of wakefulness including their morphological functional and chemical characteristics as well as their anatomical connections

Immerse yourself in the artistry of words with is expressive creation, Immerse Yourself in **Sleep And Wakefulness** . This ebook, presented in a PDF format (Download in PDF: *), is a masterpiece that goes beyond conventional storytelling. Indulge your senses in prose, poetry, and knowledge. Download now to let the beauty of literature and artistry envelop your mind in a unique and expressive way.

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