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Neural-Immune Interactions in Brain Function and Alcohol Related Disorders

 Springer

Neural Immune Interactions In Brain Function And Alcohol Related Disorders

Nadja Reissland, Barbara S. Kisilevsky



Neural Immune Interactions In Brain Function And Alcohol Related Disorders:

Neural-Immune Interactions in Brain Function and Alcohol Related Disorders Changhai Cui,Lindsey Grandison,Antonio Noronha,2012-11-14 Recent studies have provided clear evidence on the role of neural immune interactions in normal brain function and neuropathological conditions Neuroimmune factors which play an essential role in neuroinflammatory response have been implicated in the regulation of neuronal function and plasticity Thus neural immune interactions provide a new frame work for understanding the role of the neuroimmune system in normal brain function neurodevelopment and a variety of neurological disorders These advances have a far reaching impact on many areas of neuroscience including alcohol research Studies using human alcoholic brains gene knockout mice and gene expression profiling have established a clear link between alcoholism and an altered neuroimmune profile This book integrates emerging knowledge on neural immune interactions with key discoveries in alcohol research and provides a comprehensive overview of neural immune interactions in brain function and behavior associated with alcohol use disorders While Neural Immune Interaction in Brain Function and Alcohol Related Disorders focuses on neural immune interactions in areas directly related to alcohol use disorders it is not intended to be all inclusive Several areas including sleep disorders pain and cholinergic anti inflammatory pathways are not covered as independent chapters but briefly mentioned in the text The close relevance of these topics to neural immune interactions and alcohol use disorders warrants future discussion and more research efforts

Effects of Alcohol on the Brain across the Lifespan C. Fernando Valenzuela,David N. Linsenbardt,Jeffrey L. Weiner,2025-03-24 This book delves into the intricate relationship between alcohol and the brain across different stages of life offering groundbreaking insights from preclinical and clinical studies From prenatal development to the complexities of aging it unravels how alcohol interacts with neural networks neurotransmitters and cellular processes that govern behavior Starting with the prenatal period the book will explore the effects of alcohol on the developing brain shedding light on the potential cognitive and behavioral consequences that may persist into adulthood It unravels the intricate mechanisms through which alcohol impacts neurodevelopment including alterations in brain structure neuronal connectivity and synaptic plasticity Moving into adolescence and early adulthood the book will examine how alcohol affects crucial brain regions involved in decision making impulse control and memory formation It will explore the neurological changes associated with excessive alcohol consumption during this sensitive period offering insights into the long term risks of alcohol abuse and addiction Throughout middle adulthood and into later life the book will delve into the nuanced interplay between alcohol and age related disorders including neurodegenerative disorders such as Alzheimer s disease and dementia Researchers in neuroscience psychology and related fields will find this book invaluable for its comprehensive exploration of alcohol s effects on the brain It is an essential read for scholars practitioners and anyone interested in understanding the profound implications of alcohol consumption across the lifespan *The Gut-Brain Axis* Niall Hyland,Catherine Stanton,2016-05-13

The Gut Brain Axis Dietary Probiotic and Prebiotic Interventions on the Microbiota examines the potential for microbial manipulation as a therapeutic avenue in central nervous system disorders in which an altered microbiota has been implicated and explores the mechanisms sometimes common by which the microbiota may contribute to such disorders Focuses on specific areas in which the microbiota has been implicated in gut brain communication Examines common mechanisms and pathways by which the microbiota may influence brain and behavior Identifies novel therapeutic strategies targeted toward the microbiota in the management of brain activity and behavior Neuroimmune Signaling in Drug Actions and Addictions

,2014-08-28 This well established international series examines major areas of basic and clinical research within neuroscience as well as emerging and promising subfields This volume concentrates on Neuroimmune Signaling in Drug Actions and Addictions This book looks at neuroimmune signaling in drug actions and addictions in the light of the newest scholarly discoveries and insights **Perspectives and Recent Advances in Fetal Alcohol Spectrum Disorders**

Research Hermes H. Yeh,Lisa Akison,Carlos Fernando Valenzuela,Paola A. Haeger,Kirsten A. Donald,2024-01-03

Alcohol George F. Koob,Michael A. Arends,Mandy L McCracken,Michel Le Moal,2021-07-07 A current survey and synthesis of the most important findings in our understanding of the neurobiological mechanisms of addiction is detailed in our Neurobiology of Addiction series each volume addressing a specific area of addiction Alcohol Volume 3 in the series explores the molecular cellular and neurocircuitry systems in the brain responsible for alcohol addiction using the heuristic three stage cycle framework of binge intoxication withdrawal negative affect and preoccupation anticipation Outlines the history and behavioral mechanism of action of alcohol relevant to the neurobiology of alcohol addiction Includes neurocircuitry cellular and molecular neurobiological mechanisms of alcohol addiction in each stage of the addiction cycle Explores evolving areas of research associated with all three stages of the alcohol addiction cycle including neurobiological studies of neurodevelopmental effects of early exposure to alcohol sleep disturbances caused by alcohol pain interactions with alcohol sex differences in the response to alcohol and epigenetic genetic interactions with alcohol Glutamate and Neuropsychiatric Disorders

Zoran M. Pavlovic,2022-04-10 This volume provides a comprehensive overview of recent advances in targeting glutamate signaling for the treatment of major psychiatric and neurological disorders It draws on the latest findings in glutamate neurobiology and offers valuable insights into the application of translational principles in neuroscience drug discovery and development In each chapter glutamate as a neurotransmitter its receptors and transporters and their interplay with other neurotransmitters and neurotrophic factors are discussed in the context of a specific highly prevalent and disabling CNS disease Most recent and detailed information is provided on Ischemic Stroke Chronic Stress Major Depressive Disorder Bipolar Disorder Autism Spectrum Disorders ASD Posttraumatic Stress Disorder PTSD Alzheimer s Dementia Schizophrenia Impulsive Aggression Substance Use Disorders SUD Amyotrophic Lateral Sclerosis ALS Chronic Pain Multiple Sclerosis Parkinson s Disease Attention Deficit Hyperactivity Disorder ADHD Migraine

Epilepsy and Anxiety disorders Moreover the book includes an extensive overview of glutamatergic treatments already available on the market and those which are currently in pharmaceutical drug development pipelines The primary beneficiaries will be neurology and psychiatry specialists and residents neuroscientists neuropharmacologists pharmaceutical industry and clinical research organization professionals academics and clinicians working with psychiatric and neurological patients with comorbidities such as cardiologists pulmonologists and endocrinologists This book will also appeal to psychiatry and neurology subspecialists and clinicians working in neuroscience labs seeking an easy to understand yet comprehensive overview of contemporary evidence based clinical insights backed by basic science preclinical research evidence Given its scope the book is also a unique and indispensable resource for both preclinical and clinical neuroscientists medical advisors and clinical research specialists in the pharmaceutical industry In addition it will appeal to neuroscience and neuropsychopharmacology students and guide them through the complexities of glutamate involvement in the pathophysiology of the most common debilitating brain diseases with high unmet medical needs

Neuroscience of Alcohol Victor R Preedy, 2019-03-19 Neuroscience of Alcohol Mechanisms and Treatment presents the fundamental information necessary for a thorough understanding of the neurobiological underpinnings of alcohol addiction and its effects on the brain Offering thorough coverage of all aspects of alcohol research treatment and prevention and containing contributions from internationally recognized experts the book provides students early career researchers and investigators at all levels with a fundamental introduction to all aspects of alcohol misuse Alcohol is one of the world's most common addictive substances with about two billion individuals worldwide consuming it in one form or another and three million annual deaths that are associated with alcohol misuse Alcohol alters a variety of neurological processes from molecular biology to cognition Moreover addiction to alcohol can lead to numerous other health concerns and damage virtually every organ system in the body making diagnosis and treatment of individuals addicted to alcohol of critical importance Integrates cutting edge research on the pharmacological cellular and molecular aspects of alcohol use along with its effects on neurobiological function Discusses alcohol use as a component of dual use and poly addictions Outlines numerous screening and treatment strategies for alcohol misuse Covers both the physical and psychological effects of alcohol use and withdrawals to provide a fully formed view of alcohol dependency and its effects

Fetal Development Nadja Reissland, Barbara S. Kisilevsky, 2016-03-15 This book provides an overview of fetal psychobiological research focusing on brain and behavior genetic and epigenetic factors affecting both short and long term development and technological breakthroughs in the field These focal points intersect throughout the chapters as in the challenges of evaluating the fetal central nervous system the myriad impacts of maternal stressors and resiliencies and the salience of animal studies It also discusses specific monitoring and assessment methods including cardiotocography biomagnetometry 4D ultrasound in utero MRI and the KANET test Spanning assessment identification and pre and postnatal intervention the book weighs the merits

of standardized evaluations and argues for more integrative research in the future Included in the coverage Effects on the fetus of maternal anxiety depression and stress during pregnancy Clinical and experimental research in human fetuses and animal models Observational research including the use of behaviors in developing tests to assess fetal health Fetal auditory processing and implications for language development Fetal effects of prenatal exposure to selective SRI antidepressant exposure Structural and functional imaging of the prenatal brain The effects of alcohol exposure on fetal development Fetal Development Research on Brain and Behavior Environmental Influences and Emerging Technologies is an essential resource for researchers clinicians and related professionals as well as students in a wide range of fields such as developmental psychology pediatric and obstetrical medicine neuroscience nursing social work and early childhood education

Neuropathology of Drug Addictions and Substance Misuse Volume 1 Victor R Preedy, 2016-03-07 Neuropathology of Drug Addictions and Substance Misuse Volume One Foundations of Understanding Tobacco Alcohol Cannabinoids Opioids and Emerging Addictions provides the latest research in an area that shows that the neuropathological features of one addiction are often applicable to those of others The book also details how a further understanding of these commonalities can provide a platform for the study of specific addictions in greater depth all in an effort to create new modes of understanding causation prevention and treatment The three volumes in this series address new research and challenges offering comprehensive coverage on the adverse consequences of the most common drugs of abuse with each volume serving to update the reader's knowledge on the broader field of addiction while also deepening our understanding of specific addictive substances Volume One addresses tobacco alcohol cannabinoids and opioids with each section providing data on the general molecular cellular and structural functional neurological aspects of a given substance along with a focus on the adverse consequences of addictions Provides a modern approach on the pathology of substances of abuse offering an evidence based ethos for understanding the neurology of addictions Fills an existing gap in the literature by providing a one stop shopping synopsis of everything to do with the neuropathology of drugs of addiction and substance misuse Includes a list of abbreviations abstracts applications to other addictions and substance misuse mini dictionary of terms summary points 6 figures and tables and full references in each chapter Offers coverage of preclinical clinical and population studies from the cell to whole organs and the genome to whole body Neuroimmune Interface in Health and Diseases Ihssane Zouikr, Sanae Hasegawa-Ishii, Atsuyoshi Shimada, 2017-12-06 It is now well appreciated that the immune system in addition to its traditional role in defending the organism against pathogens communicate in a well organized fashion with the brain to maintain homeostasis and regulate a set of neural functions Perturbation in this brain immune interactions due to inflammatory responses may lead to psychiatric and neurological disorders Microglia are one of the essential cells involved in the brain immune interactions Microglial cells are now not simply regarded as resident tissue macrophages in the brain These cells are derived from myeloid progenitor cells in the yolk sac in early gestation travel to the brain parenchyma and

interact actively with neurons during the critical period of neurogenesis Microglia provide a trophic support to developing neurons and take part in the neural wiring through the activity dependent synapse elimination via direct neuron microglia interactions Altered microglial functions including changes in the gene expression due to early life inflammatory events or psychological and environmental stressors can be causally related to neurodevelopmental diseases and mental health disorders This type of alterations in the neural functions can occur in the absence of infiltration of inflammatory cells in the brain parenchyma or leptomeninges In this sense the pathogenetic state underlying a significant part of psychiatric and neurological diseases may be similar to para inflammation an intermediate state between homeostatic and classical inflammatory states as defined by Ruslan Medzhitov Nature 454 428 35 2008 Therefore it is important to study how systemic inflammation affects brain health and how local peripheral inflammation induces changes in the brain microenvironment Chronic pain is also induced by disturbance in otherwise well organized multisystem interplay comprising of reciprocal neural endocrine and immune interactions Especially early life insults including exposure to immune challenges can alter the neuroanatomical components of nociception which induces altered pain response later in life Recently the discrete roles of microglia and blood monocyte derived macrophages are being defined The distinction may be further highlighted by disorders in which the brain parenchymal tissue is damaged Therefore studies investigating the dynamics of immune cells in traumatic brain injury and neurotropic viral infections including human immunodeficiency virus etc as well as neurodegenerative diseases such as amyotrophic lateral sclerosis are promising to clarify the interplay between the central nervous and immune systems The understanding of the histological architecture providing the infrastructure of such neuro immune interplay is also essential This Frontiers research topic brings together fourteen articles and aims to create a platform for researchers in the field of psychoneuroimmunology to share the recent theories hypotheses and future perspectives regarding open questions on the mechanisms of cell cell interactions with chemical mediators among the nervous immune and endocrine systems We hope that this platform would reveal the relevance of the studies on multisystem interactions to enhance the understanding of the mechanisms underlying a wide variety of neurological and psychiatric disorders

Glucose Homeostasis Leszek Szablewski,2014-06-18 Most tissues and organs such as the brain need glucose constantly as an important source of energy The low blood concentrations of glucose hypoglycemia can cause seizures loss of consciousness and death On the other hand long lasting elevation of blood glucose concentrations hyperglycemia can result in blindness renal failure cardiac and peripheral vascular disease and neuropathy Therefore blood glucose concentrations need to be maintained within narrow limits The process of maintaining blood glucose at a steady state level is called glucose homeostasis This is accomplished by the finely hormone regulation of peripheral glucose uptake glucose utilization hepatic glucose production and glucose uptake during carbohydrates ingestion Is Early Onset of Alcohol Use Associated with Later Alcohol Use? Ricardo Marcos Pautassi,Angelina Pilatti,Adrian Jorge Bravo,Elio Acguas,2020-10-12 This eBook is a

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Autism Spectrum Disorders: From Genotypes to Phenotypes Valsamma Eapen, Andrew J. Whitehouse, Charles Claudianos, Rudi Crnec, 2015-12-10 This Research Topic covers the pathogenetic processes in Autism Spectrum Disorder ASD that underpin the translation of genetic vulnerability to clinically significant symptoms Available research data in ASD suggests that it is a neural connectivity disorder and that the social communication and related neurobehavioural symptoms result from reduced synchronization between key social brain regions These interconnected neural systems can be understood through the relationship between functionally relevant anatomic areas and neurochemical pathways the programming of which are genetically modulated during neurodevelopment and mediated through a range of epigenetic and environmental modulators Elucidating the underlying molecular mechanisms can provide an invaluable window for understanding the neural wiring that regulates higher brain functions and consequent clinical phenotypes In keeping with the multi modal and diverse origins of ASD this Research Topic explores the genetic underpinnings and environmental modulation in the aetiology neural substrates biomarkers and endophenotypes that underlie clinical characteristics as well as neurochemical pathways and pathophysiological mechanisms that pave the way for therapeutic interventions Furthermore since genetically mediated deficits and consequent functional impairments involve activity dependent synapse development that depends on postnatal learning and experience the trajectory towards the final clinical expression could be modulated by early interventions that exploit the neuronal maturation and brain plasticity However identifying these diverse pathogenetic processes and tailoring interventions would require subtyping ASD into homogeneous subgroups In this regard this topic covers the current state of evidence in the literature through topic reviews as well as ongoing original work that provides tangible hypotheses and directions for future research

Advances in Computational Intelligence Ignacio Rojas, Gonzalo Joya, Andreu Catala, 2019-06-05 This two volume set LNCS 10305 and LNCS 10306 constitutes the refereed proceedings of the 15th International Work Conference on Artificial Neural Networks IWANN 2019 held at Gran Canaria Spain in June 2019 The 150 revised full papers presented in this two volume set were carefully reviewed and selected from 210 submissions The papers are organized in topical sections on machine learning in weather observation and forecasting computational intelligence methods for time series human activity recognition new and future tendencies in brain computer interface systems random weights neural networks pattern recognition deep learning and natural language processing software testing and intelligent systems data driven intelligent transportation systems deep learning models in healthcare and biomedicine deep learning

beyond convolution artificial neural network for biomedical image processing machine learning in vision and robotics system identification process control and manufacturing image and signal processing soft computing mathematics for neural networks internet modeling communication and networking expert systems evolutionary and genetic algorithms advances in computational intelligence computational biology and bioinformatics

Experimental models of early exposure to alcohol: a way to unravel the neurobiology of mental retardation Alberto Granato, Andrea De Giorgio, 2015-01-27 Excessive alcohol drinking represents a major social and public health problem for several countries Alcohol abuse during pregnancy leads to a complex syndrome referred to as fetal alcohol spectrum disorders FASD chiefly characterized by mental retardation The effects of early exposure to ethanol can be reproduced in laboratory animals and this helped to answer several key questions concerning the human pathology The interest of experimental models of FASD is twofold First they increase our knowledge about the dose and modality of alcohol consumption able to induce damaging effects on the developing brain Second experimental models of FASD can provide useful hints to elucidate the basic mechanisms leading to the intellectual disability In fact experimental exposure to alcohol can be carried out during discrete often very restricted time windows As a consequence FASD models though depending on the multifaceted interference of alcohol with several molecular pathways can provide valuable information about which specific developmental periods and brain areas are critically involved in the genesis of mental retardation Putting together data obtained through several experimental paradigms of alcohol exposure and those deriving from other genetic and non genetic models one can figure out to what extent different types of mental retardation share common pathogenetic mechanisms The present Research Topic is aimed at establishing the state of the art of the current research on experimental FASD focusing on differences and homologies with other types of intellectual disability The ultimate goal is to find out a common roadmap in view of future therapeutical approaches *Frontiers in Computational Neuroscience - Editors' Pick 2021* Si Wu, Misha Tsodyks, 2022-01-21 *Perinatal Programming* Deborah Hodgson, Christopher Coe, 2005-12-20 Perinatal factors are critical in the programming of behavioral endocrine and immunologic outcomes of adult life Exposure to many factors in utero can drive fetal development along specific trajectories Perinatal factors can also affect many diverse systems that have significant implications for long term health outcomes The findings from basic research are so diverse and suggest implications in many different arenas Bringing together these findings this book explores the evidence linking the role of early life events to long term physical and psychological health outcomes It pulls the research together and communicates the findings to the wider scientific and clinical communities

Endocrine and Neuropsychiatric Disorders, An Issue of Endocrinology and Metabolism Clinics Eliza B. Geer, 2013-09-28 This issue of Endocrinology Clinics brings the reader up to date on the important advances in research in endocrinology topics covered include reproduced psychiatry Guest edited by Eliza Geer the topics covered include stress sleep disorders antipsychotic medications eating disorders insulin resistance drug and alcohol addictions and

more **Application and Evaluation of Acupuncture in the Treatment of Neurological Diseases** Liming Lu, Nenggui Xu, Myeong Soo Lee, Chunzhi Tang, Yong Tang, Bing Zhu, 2023-06-21 Neurological disorders such as Alzheimer's disease and Parkinson's disease are an important cause of disability and death worldwide and pose a serious burden on the global health system over the past 30 years. Acupuncture, as the most widely used traditional Chinese medicine therapy in the world, has been widely used in 183 countries and regions. Acupuncture can treat more than 300 kinds of diseases, especially for neurological diseases. Due to the unique advantages of acupuncture, such as good therapeutic effect and low side effects, many researchers have conducted extensive clinical studies on the effectiveness and safety of acupuncture in the treatment of neurological diseases, laying a foundation for the practicability and scientific vigor of this complementary and alternative therapeutic approach. There are still many problems unanswered in the current clinical research on acupuncture for the treatment of neurological diseases. First of all, clinical research is lagging behind due to the lack of emphasis on modern advanced methods and analytical techniques, e.g., artificial intelligence, omics analysis, bioinformatics analysis, data mining, and multidisciplinary integration process. Secondly, the quality of reports on most clinical studies of acupuncture treatment for neurological diseases is extremely low. Most clinical studies have not adopted standardized methodological evaluations, authoritative disease diagnosis standards, and efficacy evaluation standards. The lack of compliance regulations and strict study design reduces the accuracy and authenticity of the research. Thirdly, there is a lack of integrated assessment of the distribution of evidence for acupuncture treatment of neurological diseases. Therefore, strictly designed clinical research and in-depth and systematic analysis methods are currently needed to provide high-quality evidence for acupuncture treatment of neurological diseases. In this Research Topic, we hope to further understand the role of acupuncture in the treatment of neurological diseases through clinical research and secondary research. The range of acupuncture includes manual acupuncture, electroacupuncture, body needling, auricular acupuncture, scalp acupuncture, laser acupuncture, and acupressure, etc. Neurological diseases include stroke, meningitis, encephalitis, tetanus, Alzheimer's disease, and other dementias, Parkinson's disease, epilepsy, multiple sclerosis, motor neuron disease, migraine, tension-type headaches, headaches from drug overuse, and others.

Unveiling the Magic of Words: A Overview of "**Neural Immune Interactions In Brain Function And Alcohol Related Disorders**"

In a global defined by information and interconnectivity, the enchanting power of words has acquired unparalleled significance. Their ability to kindle emotions, provoke contemplation, and ignite transformative change is actually awe-inspiring. Enter the realm of "**Neural Immune Interactions In Brain Function And Alcohol Related Disorders**," a mesmerizing literary masterpiece penned by way of a distinguished author, guiding readers on a profound journey to unravel the secrets and potential hidden within every word. In this critique, we shall delve into the book is central themes, examine its distinctive writing style, and assess its profound impact on the souls of its readers.

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Neural Immune Interactions In Brain Function And Alcohol Related Disorders Introduction

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