

Pheromone Communication in Social Insects

Ants, Wasps, Bees, and Termites

Edited by
**Robert K. Vander Meer,
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Routledge

Pheromone Communication In Social Insects Ants Wasps Bees And Termites

Ann E. Hajek, David I. Shapiro-Ilan



Pheromone Communication In Social Insects Ants Wasps Bees And Termites:

Pheromone Communication In Social Insects Robert K Vander Meer, Michael D Breed, Mark Winston, Karl E Espelie, 2019-06-18 Bringing together for the first time prominent researchers in social insect pheromone communication including nestmate recognition this book looks at ants wasps bees and termites highlighting areas of convergence and divergence among these groups and identifying areas that need further investigation Presenting broad synthetic overviews as well as species specific studies the volume will be useful to natural scientists ecologists and those interested in pest management as well as to anyone interested in the fascinating chemically mediated behavioral interactions of social insects

Pheromones and Animal Behaviour Tristram D. Wyatt, 2003-02-27 We are entering one of the most exciting periods in the study of chemical communication since the first pheromones were identified some 40 years ago This rapid progress is reflected in this book the first to cover the whole animal kingdom at this level for 25 years The importance of chemical communication is illustrated with examples from a diverse range of animals including humans marine copepods *Drosophila* *Caenorhabditis elegans* moths snakes goldfish elephants and mice It is designed to be advanced but at the same time accessible to readers whatever their scientific background For students of ecology evolution and behaviour this book gives an introduction to the rapid progress in our understanding of olfaction at the molecular and neurological level In addition it offers chemists molecular and neurobiologists an insight into the ecological evolutionary and behavioural context of olfactory communication

Pheromones and Animal Behavior Tristram D. Wyatt, 2014-01-23 Pheromones and other kinds of chemical communication underlie the behavior of all animals Building on the strengths of the first edition widely recognized as the leading text in the subject this is a comprehensive overview of how pheromones work Extensively revised and expanded to cover advances made over the last ten years the book offers a thorough exploration of the evolutionary and behavioral contexts of chemical communication along with a detailed introduction to the molecular and neural basis of signal perception through olfaction At a time of ever increasing specialization Wyatt offers a unique synthesis integrating examples across the animal kingdom A final chapter critically considers human pheromones and the importance of olfaction to human biology Its breadth of coverage and readability make the book an unrivaled resource for students and researchers in a range of fields from chemistry genetics genomics molecular biology and neuroscience to ecology evolution and behavior

Encyclopedia of Entomology John L. Capinera, 2008-08-11 This text brings together fundamental information on insect taxa morphology ecology behavior physiology and genetics Close relatives of insects such as spiders and mites are included

The Chemistry of Pheromones and Other Semiochemicals I Stefan Schulz, 2004-10-22 This series presents critical reviews of the present position and future trends in modern chemical research

Signalers and Receivers Michael D. Greenfield, 2002-02-28 In most terrestrial and aquatic habitats the vast majority of animals transmitting and receiving communicative signals are arthropods This book presents the story of how this important group of animals use pheromones sound vibration and light for

sexual and social communication Because of their small to minute body size most arthropods have problems sending and receiving acoustic and optical information each of which have their own severe constraints Because of these restraints they have developed chemical signaling which is not similarly limited by scale Presenting the latest theoretical and experimental findings from studies of signaling it suggests that close parallels between arthropods and vertebrates reflect a very limited number of solutions to problems in behavior that are available within the confines of physical laws *Function and Regulation of Chemoreceptors* Dieter Wicher,Frédéric Marion-Poll,2019-02-08 To perceive environmental chemical compounds and to convert these external signals into an intracellular message might be the oldest way for a living being to get information from the outside world Chemoreceptors are proteins or protein complexes that detect molecules from the outside world either at distance olfaction or at close range gustation Chemoreceptors can operate as ionotropic or as metabotropic receptors Ionotropic receptors form ion channels that are activated via ligand binding Activation of a metabotropic receptor initiates an intracellular signaling cascade that could include a change of enzymatic activity production of second messenger or activation of ion channels The receptor performance has to be fine tuned according to the actual physiological requirements and the presentation of the chemical signal This Research Topic collects reports and reviews on structure and function of chemoreceptors in the animal kingdom and how these receptors are regulated The Superorganism Bert Holldobler,Edward O Wilson,2009 The Pulitzer Prize winning authors of *The Ants* render the extraordinary lives of the social insects ants bees wasps and termites in this visually spectacular volume 110 color and 100 black and white illustrations **Invertebrate Learning and Memory** Patrizia d'Ettorre,2013-06-18 Ants are among the most advanced social insects and are characterized by a very efficient recognition system allowing discrimination between group members and strangers thus protecting colonies from competitors and parasites Nestmate recognition cues are encoded in the complex hydrocarbon profile present on the cuticle of each ant The neural mechanisms allowing ants to distinguish between friends and enemies are still not completely understood and it is unclear whether learning plays a crucial role in this process However learning does play an important role when distinguishing individual identity is beneficial as in the case of co founding associations of ant queens that establish a dominance hierarchy Recently a set of experimental tools has been developed to study learning and memory in ants This will allow exploring cognitive abilities and their underlying mechanisms in this very diverse taxon Pheromones ,2010-10-22 First published in 1943 *Vitamins and Hormones* is the longest running serial published by Academic Press The Editorial Board now reflects expertise in the field of hormone action vitamin action X ray crystal structure physiology and enzyme mechanisms Under the capable and qualified editorial leadership of Dr Gerald Litwack *Vitamins and Hormones* continues to publish cutting edge reviews of interest to endocrinologists biochemists nutritionists pharmacologists cell biologists and molecular biologists Others interested in the structure and function of biologically active molecules like hormones and vitamins will as always turn to this series for

comprehensive reviews by leading contributors to this and related disciplines This volume focuses on insulin and IGFs
Longest running series published by Academic Press Contributions by leading international authorities **Wood Ant**
Ecology and Conservation Jenni A. Stockan, Elva J. H. Robinson, 2016-07-07 Wood ants play an ecologically dominant and
conspicuous role in temperate boreal forests making a keystone contribution to woodland ecosystem functions and processes
Wood ant taxonomy and global distributions set the scene for this text's exploration of wood ants as social insects examining
their flexible social structures genetics population ecology and behaviour from nest mate recognition to task allocation Wood
ants interactions with their environment and with other organisms are essential to their success competition predation and
mutualism are described and analysed Bringing together the expertise of ecological researchers and conservation
practitioners this book provides practical and theoretical advice about sampling and monitoring these insects and outlines
the requirements for effective conservation This is an indispensable resource for wood ant researchers entomologists
conservationists and ecological consultants as well as anyone interested in social insects keystone species and the
management and conservation of forest ecosystems **Organization of Insect Societies** Jürgen Gadau, Jennifer
Fewell, 2009-02-28 In this landmark volume an international group of scientists has synthesized their collective expertise and
insight into a newly unified vision of insect societies and what they can reveal about how sociality has arisen as an
evolutionary strategy Jürgen Gadau and Jennifer Fewell have assembled leading researchers from the fields of molecular
biology evolutionary genetics neurophysiology behavioral ecology and evolutionary theory to reexamine the question of
sociality in insects Recent advances in social complexity theory and the sequencing of the honeybee genome ensure that this
book will be valued by anyone working on sociality in insects At the same time the theoretical ideas presented will be of
broad ranging significance to those interested in social evolution and complex systems **Sociobiology of**
Communication Patrizia d'Ettorre, David P. Hughes, 2008-08-21 Communication is essential for all forms of social interaction
from parental care to mate choice and cooperation This is evident for human societies but less obvious for bacterial biofilms
ant colonies or flocks of birds The major disciplines of communication research have tried to identify common core principles
but syntheses have been few because historical barriers have limited interaction between different research fields
Sociobiology of Communication is a timely and novel synthesis It bridges many of the gaps between proximate and ultimate
levels of analysis between empirical model systems and between biology and the humanities The book offers the
complementary approaches of a distinguished group of authors spanning a large diversity of research programs addressing
for example the genetic basis of bacterial communication dishonest communication in insect societies sexual selection and
network communication among colonial vertebrates Other chapters explore the role of communication in genomic conflict
and self organisation and how linguistics psychology and philosophy may ultimately contribute to a biological understanding
of human mate choice and the evolution of human societies This highly interdisciplinary book highlights key examples of

modern research to explore the genetic neurobiological physiological chemical and behavioural basis of social communication It identifies where consensus on the general principles is emerging and where the major future challenges are to be found The book is therefore suitable for both for graduate students and professionals in evolutionary biology and behavioural ecology seeking novel inspiration and for a wider academic audience including social and medical scientists who would like to explore what evolutionary approaches can offer to their fields **Biocommunication of Animals** Guenther Witzany,2013-11-08 Every coordination within or between animals depends on communication processes Although the signaling molecules vocal and tactile signs gestures and its combinations differ throughout all species according their evolutionary origins and variety of adaptation processes certain levels of biocommunication can be found in all animal species a Abiotic environmental indices such as temperature light water etc that affect the local ecosphere of an organism and are sensed interpreted b Trans specific communication with non related organisms c Species specific communication between same or related species d Intraorganismic communication i e sign mediated coordination within the body of the organism This book gives an overview of the manifold levels of animal communication exemplified by a variety of species and thereby broadens the understanding of these organisms **Insect Hydrocarbons** Gary J. Blomquist,Anne-Geneviève Bagnères,2010-02-04 A unique and critical analysis of the wealth of research conducted on the biology biochemistry and chemical ecology of the rapidly growing field of insect cuticular hydrocarbons Authored by leading experts in their respective fields the twenty chapters show the complexity that has been discovered in the nature and role of hydrocarbons in entomology Covers in great depth aspects of chemistry structures qualitative and quantitative analysis biochemistry biosynthesis molecular biology genetics evolution physiology taxonomy and ecology Clearly presents to the reader the array of data ideas insights and historical disagreements that have been accumulated during the past half century An emphasis is placed on the role of insect hydrocarbons in chemical communication especially among the social insects Includes the first review on the chemical synthesis of insect hydrocarbons The material presented is a major resource for current researchers and a source of ideas for new researchers **Hormones, Brain and Behavior Online** ,2002-06-18 Hormones Brain and Behavior Second Edition is a comprehensive work discussing the effect of hormones on the brain and subsequently behavior This major reference work has 109 chapters covering a broad range of topics with an extensive discussion of the effects of hormones on insects fish amphibians birds rodents and humans To truly understand all aspects of our behavior we must take every influence including the hormonal influences into consideration Donald Pfaff and a number of well qualified editors examine and discuss how we are influenced by hormonal factors offering insight and information on the lives of a variety of species Hormones Brain and Behavior offers the reader comprehensive coverage of growing field of research with a state of the art overview of hormonally mediated behaviors This reference provides unique treatment of all major vertebrate and invertebrate model systems with excellent opportunities for relating behavior to molecular genetics The topics cover an

unusual breadth from molecules to ecophysiology ranging from basic science to clinical research making this reference of interest to a broad range of scientists in a variety of fields Available online exclusively via ScienceDirect A limited edition print version is also available Comprehensive coverage of a growing field of research Unique treatment of all major vertebrate and invertebrate model systems with excellent opportunities for relating behavior to molecular genetics Covers an unusual breadth ranging from molecules to ecophysiology and from basic science to clinical research **Ecology of Invertebrate Diseases** Ann E. Hajek, David I. Shapiro-Ilan, 2018-01-16 A rapidly growing interdisciplinary field disease ecology merges key ideas from ecology medicine genetics immunology and epidemiology to study how hosts and pathogens interact in populations communities and entire ecosystems Bringing together contributions from leading international experts on the ecology of diseases among invertebrate species this book provides a comprehensive assessment of the current state of the field Beginning with an introductory overview of general principles and methodologies the book continues with in depth discussions of a range of critical issues concerning invertebrate disease epidemiology molecular biology vectors and pathogens Topics covered in detail include Methods for studying the ecology of invertebrate diseases and pathogens Invertebrate pathogen ecology and the ecology of pathogen groups Applied ecology of invertebrate pathogens Leveraging the ecology of invertebrate pathogens in microbial control Prevention and management of infectious diseases of aquatic invertebrates Ecology of Invertebrate Diseases is a necessary and long overdue addition to the world literature on this vitally important subject This volume belongs on the reference shelves of all those involved in the environmental sciences genetics microbiology marine biology immunology epidemiology fisheries and wildlife science and related disciplines **Social Cognition** Jessica Sommerville, Jean Decety, 2016-09-13 Social Cognition brings together diverse and timely writings that highlight cutting edge research and theories on the development of social cognition and social behavior across species and the life span The volume is organized according to two central themes that address issues of continuity and change both at the phylogenetic and the ontogenetic level First it addresses to what extent social cognitive abilities and behaviors are shared across species versus abilities and capacities that are uniquely human Second it covers to what extent social cognitive abilities and behaviors are continuous across periods of development within and across the life span versus their change with age This volume offers a fresh perspective on social cognition and behavior and shows the value of bringing together different disciplines to illuminate our understanding of the origins mechanisms functions and development of the many capacities that have evolved to facilitate and regulate a wide variety of behaviors fine tuned to group living **Insect Ecology** Peter W. Price, Robert F. Denno, Micky D. Eubanks, Deborah L. Finke, Ian Kaplan, 2011-08-18 Combining breadth of coverage with detail this logical and cohesive introduction to insect ecology couples concepts with a broad range of examples and practical applications It explores cutting edge topics in the field drawing on and highlighting the links between theory and the latest empirical studies The sections are structured around a series of key topics including behavioral ecology

species interactions population ecology food webs communities and ecosystems and broad patterns in nature Chapters progress logically from the small scale to the large from individual species through to species interactions populations and communities Application sections at the end of each chapter outline the practicality of ecological concepts and show how ecological information and concepts can be useful in agriculture horticulture and forestry Each chapter ends with a summary providing a brief recap followed by a set of questions and discussion topics designed to encourage independent and creative thinking

The Nature of Biological Systems as Revealed by Thermal Methods Dénes Lőrinczy, 2006-02-21 After a kind motivation by Judit Simon Editor in Chief of the Journal of Thermal Analysis and Calorimetry Kluwer Academic Publisher and negotiations with possible contributors lasting for more than one year it was decided to write a book about the application of thermal methods in biology Its aim was to be a guide how to perform experiments and what kind of information might be gained by them We tried to collect information that could be achieved only during a long personal practice In this way scientists from biology and medicine e.g. who are not so skilled in physics and mathematics may realize very soon the beauty and power of this tool at one hand On the other hand those scientists with better background in natural sciences can be more sensitive to find out exciting biological problems

This book delves into Pheromone Communication In Social Insects Ants Wasps Bees And Termites. Pheromone Communication In Social Insects Ants Wasps Bees And Termites is a crucial topic that needs to be grasped by everyone, ranging from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Pheromone Communication In Social Insects Ants Wasps Bees And Termites, encompassing both the fundamentals and more intricate discussions.

1. This book is structured into several chapters, namely:
 - Chapter 1: Introduction to Pheromone Communication In Social Insects Ants Wasps Bees And Termites
 - Chapter 2: Essential Elements of Pheromone Communication In Social Insects Ants Wasps Bees And Termites
 - Chapter 3: Pheromone Communication In Social Insects Ants Wasps Bees And Termites in Everyday Life
 - Chapter 4: Pheromone Communication In Social Insects Ants Wasps Bees And Termites in Specific Contexts
 - Chapter 5: Conclusion
 2. In chapter 1, this book will provide an overview of Pheromone Communication In Social Insects Ants Wasps Bees And Termites. The first chapter will explore what Pheromone Communication In Social Insects Ants Wasps Bees And Termites is, why Pheromone Communication In Social Insects Ants Wasps Bees And Termites is vital, and how to effectively learn about Pheromone Communication In Social Insects Ants Wasps Bees And Termites.
 3. In chapter 2, this book will delve into the foundational concepts of Pheromone Communication In Social Insects Ants Wasps Bees And Termites. The second chapter will elucidate the essential principles that must be understood to grasp Pheromone Communication In Social Insects Ants Wasps Bees And Termites in its entirety.
 4. In chapter 3, the author will examine the practical applications of Pheromone Communication In Social Insects Ants Wasps Bees And Termites in daily life. This chapter will showcase real-world examples of how Pheromone Communication In Social Insects Ants Wasps Bees And Termites can be effectively utilized in everyday scenarios.
 5. In chapter 4, this book will scrutinize the relevance of Pheromone Communication In Social Insects Ants Wasps Bees And Termites in specific contexts. The fourth chapter will explore how Pheromone Communication In Social Insects Ants Wasps Bees And Termites is applied in specialized fields, such as education, business, and technology.
 6. In chapter 5, the author will draw a conclusion about Pheromone Communication In Social Insects Ants Wasps Bees And Termites. This chapter will summarize the key points that have been discussed throughout the book.
- The book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of Pheromone Communication In Social Insects Ants Wasps Bees And Termites.

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Pheromone Communication In Social Insects Ants Wasps Bees And Termites Introduction

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