

Preface

Encyclopaedia of Insect Molecular Biology and Biochemistry covers biochemistry and molecular biology of insect pheromone production. This book provides an up-to-date and in-depth coverage of how insects produce pheromones and how they then detect both pheromones and plant volatiles. Well over half the species on the planet are insects- more than 800,000 in all. Their perception of each other and their world is achieved through the production and reception of chemical odors that provide essential information for the location of prospective mates and food supplies. These chemical messages are unique for each species and thus represent a vast landscape in which we may explore the evolution of behavior and communication. First chapter focuses on release and detection of pheromone, biosynthesized by an alcohol acetyl transferase immobilized in a microreactor. An AB Initio study on nature of binding of bombykol in pheromone binding protein is presented in second chapter. A multipurpose pheromone shuttle of elephant albumin has been discussed in third chapter. The aim of fourth chapter is to provide unexpected effects of low doses of a neonicotinoid insecticide on behavioral responses to sex pheromone in a pest insect. Pheromones are a subset of semi chemicals produced by organisms for communication within members of the same species. Ant trail pheromone biosynthesis is triggered by a neuropeptide hormone and described in detail in fifth chapter. Sixth chapter presents specificity determinants of the silkworm moth sex pheromone. Extracellular modulation of the silkworm sex pheromone receptor activity by cyclic nucleotides has been discussed in seventh chapter. Eighth chapter argues on can insects develop resistance to insect pathogenic fungi. The gene transformer of *Anastrepha* fruit flies (diptera, tephritidae) and its evolution in insects has been discussed in ninth chapter and the last chapter focuses on molecular imprinted photonic crystal hydrogels for the rapid and label-free detection of imidacloprid.