

Current Topics in Behavioral Neurosciences

Volume 24

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Editors

The Neuropharmacology of Nicotine Dependence

 Springer

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Preface

When one of us (DJKB) first started studying the psychopharmacology of nicotine some 40 years ago the numbers of researchers interested in the topic was small and could probably be accommodated around a large dinner table. Our understanding of the potential hazards of smoking was at a fairly early stage as was our understanding of the neural mechanisms that mediated the behavioral responses to nicotine. At that time smoking was considered to be a habit, not an addiction, and was still widely accepted. Readers who are not old enough to remember those times may be familiar with the television series, *Mad Men*. That series gives you an impression of how acceptable smoking was. Even into the 1980s, the fact that neurones within the brain expressed nicotinic receptors was still debated among some researchers. We have come a long way since that time, and now it is not unusual to have 1,000 delegates or more at conferences on nicotine and tobacco, and sessions dedicated to nicotine are not uncommon at many neuroscience conferences. Moreover, public health policy is now driven by a sound evidence base relating both to the toxicity of primary and second-hand (also known as environmental) tobacco smoke and the plethora of neuroscience studies that have established nicotine as one of the most widely studied recreational drugs. The primary purpose of the chapters in this book and its companion volume is to explore the extent to which the wide range of approaches adopted to investigate the behavioral responses to nicotine and the molecular and neural mechanisms that mediate these effects have opened our eyes to the properties of this unique and fascinating drug.

It goes without saying that one of the principal factors that drives the study of nicotine psychopharmacology is its established role in the addiction to tobacco. It is appropriate, therefore, that this second volume is dedicated specifically on this issue. The chapters in this volume not only describe the ways in which research at a basic level, largely using animal models, have revealed the complex mechanisms that seem to underpin the role of nicotine in tobacco smoking, but also the ways in which the results of these studies translate to our understanding of the dependence on tobacco experienced by most habitual smokers. A number of the chapters show how modern imaging technologies have allowed us to relate directly findings in animal models to the effects of nicotine and tobacco smoke in the human brain.

We have sought to take a logical approach to the issue by first addressing the neurobiological and psychological mechanisms that contribute to the rewarding, perhaps better called the reinforcing, properties of nicotine. We then turn to the mechanisms that underpin the effects of nicotine withdrawal and relapse, chapters that will have a particular resonance with smokers. The final chapter returns to the issue of the role of underlying psychiatric illnesses in tobacco dependence. It focuses on the ways in which animal studies have contributed to our understanding of the reasons that this group seems to be especially vulnerable to tobacco dependence and resistant to treatment.

We hope that the volumes *The Neurobiology and Genetics of Nicotine and Tobacco* and *The Neuropharmacology of Nicotine Dependence* will provide readers with a contemporary overview of the current research on nicotine psychopharmacology and its role in tobacco dependence from leaders in this field of research and that they will prove valuable to those who are developing their own research programs in this important topic.

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