

# Suppressing the Mind

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Anthony Hudetz · Robert Pearce  
Editors

# Suppressing the Mind

Anesthetic Modulation of Memory  
and Consciousness

 Humana Press

*Editors*

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# Foreword

Anesthetics produce a reversible state of unconsciousness accompanied by anterograde amnesia. This remarkable phenomenon brings great relief to surgical patients and wonder to clinicians and scientists. To date, we do not fully understand the mechanisms by which anesthetics ablate conscious sensation and memory. We are, however, making progress.

This book presents original results as well as overviews of the current state of knowledge of the problem. It is authored by investigators who know the field well; their research at a number of levels has contributed substantially to our current understanding of anesthetic modulation of memory and consciousness. Most of the contributors were presenters at two workshops organized by Dr. Pearce and Dr. Hudetz at the 40th Annual Winter Conference on Brain Research, held at Snowmass Village, Colorado, from January 27 through February 2, 2007. One workshop focused on anesthetic modulation of consciousness and another on anesthetic modulation of memory. Seven of the chapters are based on material presented at these symposia – appropriately updated with new relevant findings. This information is supplemented by chapters on anesthesia and sleep, computational analysis of the state of anesthesia, and the clinical phenomenon of “anesthesia awareness,” a topic that has recently received much public attention. With these three additional contributions, the book thus includes 10 chapters.

Several excellent books on consciousness and memory have been published in recent years, but none of these has presented a systematic compilation of studies on anesthetic modulation of memory and consciousness – at least in a unified view of the subject matter. Likewise, several texts have been written about fundamental anesthetic mechanisms, focusing on pharmacological, cellular, and molecular changes. However, no volume has bridged molecular, cellular, integrative, and systems-level effects, as we believe will be necessary to address the core issues of anesthetic mechanisms. This book is intended to fill this need. We hope that by building these bridges between bench and clinical research, new ideas and testable hypotheses will emerge, so that future work will ultimately lead to an integrative theory of anesthetic-induced unconsciousness and amnesia.

There is a long history of interest in unraveling the mechanisms of anesthesia. With the recent introduction of several new investigative methodologies, and as new hypotheses have emerged, there has been a surge in interest from the traditional,

pharmacological, and clinical neurosciences, as well as newer fields, such as cognitive and computational neurosciences. Considering the incredible significance of understanding the neurobiological basis of consciousness and memory, we expect that this interest will continue to grow. This book should appeal to anesthesiologists, neurologists, psychologists, scientists, and anyone interested in anesthesia, consciousness, or memory. We hope that it serves as a reference for the scientific community and provides a useful perspective for future treatments of the subject. As a summary of the current state of knowledge, it should serve as a useful text for graduate students and researchers who wish to engage in anesthesia research. Although a significant part of the information included here is technical, it is written in a style that we hope makes it accessible to a wider audience than simply scientists who are currently engaged in research in the field.

The editors would like to express their sincere thanks to all contributors for their outstanding work. They appreciate the reviewers' suggestions for the inclusion of additional specific topics. Special thanks are due to Patrick J. Marton and Matthew Giampoala at Springer US for the invitation to prepare this book, and for the editorial assistance of Marnie Filstein.

Milwaukee and Madison, WI

Anthony Hudetz, DBM, PhD and  
Robert Pearce, MD, PhD

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