

Preface

Acupuncture has been practiced in China for thousands of years as part of the traditional Chinese medicine and has gradually spread across different regions of the world today. More and more patients worldwide are seeking therapeutic benefits from this ancient modality.

An exogenous stimulation, as with acupuncture, can trigger a signal that is transmitted through the body and elicits a biological effect. This forms the very basis of the effects of acupuncture in various disease states that it is employed in. A relevant analogy comes from a common clinical setting of deep brain stimulation (DBS), wherein brain stimulation by exogenous electrical currents has shown riveting therapeutic effects on Parkinson's disease and other neuropsychiatric disorders. This modality is broadly used in present clinical settings although the precise mechanisms underlying the therapy remain elusive. On the other hand, there is evidence showing that spinal cord stimulation instead of brain stimulation also induces similar benefits in the model of Parkinson's disease (refer to *Science* 323: 1578, 2009). Therefore, it is not entirely inconceivable to see a biological/medical effect being elicited by a mechanical and/or an electrical stimulation at various (acu)points over our body.

However, mechanisms of action of acupuncture, as of DBS, are not well understood. Elucidation of these mechanisms can help us improve this modality further and enable us to harness its full potential. Prior to 1997 when a Consensus Development Conference of acupuncture was held by NIH, acupuncture-related research was mainly performed in China and certain Asian countries (refer to our previous book entitled "Acupuncture Therapy for Neurological Diseases: A Neurobiological View"). But the past decade has witnessed a paradigm shift with many studies being published not only in the oriental world but also in the western medical community. To better understand the nature of acupuncture and improve its clinical application, a periodic review of the progress in research is essential to gain an integral perspective on the updated understanding and deficiencies of acupuncture. From this vantage point, I, together with Professors Ding and Wu, have contributed our combined effort to this book.

This book reviews recent advances in research in the field of acupuncture. It presents the modern scientific perspective through the contributions of over 60 scientists and clinicians from the USA, mainland China, Germany, Austria, Japan, Sweden, Portugal, and Hong Kong. The first five chapters discuss the basic mechanisms of acupuncture. Later chapters explore topics including acupuncture treatment and potential mechanisms for epilepsy, Parkinson's diseases, neurodegenerative disorders such as Alzheimer's disease, vascular cognitive impairment, aging, anxiety, polycystic ovary syndrome, pain, nerve root cervical spondylosis, stroke, inflammation, myocardial ischemia, and other cardiovascular diseases. Following the translational and clinical discussions, the next four chapters present prospective acupuncture speculations, theories, and applications. The final chapter discusses the pitfalls and problems of the previous studies with suggestions for revamping the design and analysis for improving the future of research on in-depth understanding of acupuncture, along with better application of acupuncture in modern medicine. This unique book provides a broad reference frame on the principles of acupuncture for neuroscientists and researchers. The laboratory and clinical investigations searching for ideal acupoints and optimal conditions provide an important resource for clinical acupuncturists to improve the efficacy of acupuncture. For a medical student, this book is a modern course in ancient Traditional Chinese Medicine, especially acupuncture.

I would like to apologize in advance to all those acupuncture research colleagues whose relevant work could not be included. This is partially because the subjects and contents presented in this book were chosen based on the authors' research interest and background. On the other hand, it is a pity that some excellent clinicians/scientists were unable to submit their chapters in time owing to a heavily loaded schedule conflicting with the submission deadlines. With their contributions, this book could have been all the more valuable a resource.

Although we are far from gathering the whole picture, this book however provides a useful guide to the scientific and medical community for promoting acupuncture research and directing it toward the ultimate goal. As I always say, and also state in the last chapter of this book, (1) acupuncture is effective in certain diseases but is not universal for all; (2) acupuncture is amazing but not mysterious; and (3) acupuncture mechanism is difficult to learn but can be explored by using modern scientific approaches.

I am particularly grateful to Professors Ding and Wu for their help in editing this book. I am indebted to all the authors for their significant contributions, considerable efforts, and invaluable knowledge that made this book happen. In addition, I highly appreciate the exhaustive efforts of our anonymous reviewers who closely reviewed our proposal over several rounds and gave helpful inputs and comments. Finally, I would like to thank Ms. Ann H Avouris, Ms. Simina Calin, and Ms. Samantha Lewis of Springer whose efforts helped in conjuring up this book to a reality from a mere proposal following a tireless series of e-mail/phone communications. Production of this book would not have been possible without the help of all the above-mentioned people.

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