

Preface

Almost four decades of increasingly faster and more intensive research on Alzheimer's disease (AD) have brought major advances in our understanding of its pathogenesis, improved tools for diagnosis, and strategies for its treatment. This research has shown us that exploring the factors leading to cognitive impairment is mired with elusive goals and unexpected leads toward the mechanisms responsible for this pathology. This complex, yet fruitful process has allowed us to contribute to building a solid foundation of knowledge in the neurosciences, to tackle the biological basis of AD, and related neurological disorders.

This book contains 20 seminal chapters by authors with different views that in a multidisciplinary approach focus on the main issues of neuroanatomical, neuropathological, neuropsychological, neurological, and molecular biological aspects of AD. The idea for this collection arose during the preparation of the proceedings for the International Summit Meeting "Current Hypotheses on Alzheimer's Disease" and was warmly received by the prestigious editorial house Springer Verlag. The book you now have the opportunity to read is the result of substantial efforts by many people, including the editors and their collaborators. The main goal has been to summarize in several chapters the contributions presented in an international gathering held November 22–25, 2007 at the Conference Town in Reñaca, Viña del Mar, Chile, attended by some of the leading scientists in the field. Presentations focused on milestones in research that have illuminated Alzheimer's investigations during the past decades and will continue at the forefront.

This prolific event was organized by the International Center for Biomedicine (ICC), a leading center of excellence established in Chile that has contributed to research for decades, fostering neuroscience research, advanced education, and international collaboration. For many years, the ICC has been at the forefront of AD research, organizing numerous symposia, international laboratory courses, and publications on key discoveries in the biomedical sciences.

AD is the most prevalent cause of dementia throughout the world, and the fourth cause of death in developed economies after cancer, cardiovascular disease, and stroke. AD afflicts over 5 million people in the United States, about 12% of those older than 65 years old, and at least half of those older than 85 years of age. Furthermore, considering that AD accounts for the largest number of cases of dementia, and that other conditions, including dementia with Lewy bodies,

fronto-temporal dementia (FTD-17), and vascular dementia, also increase in occurrence with age, the steadily increasing prevalence of these pathologies in numerous aging societies all over the world constitutes one of the major medical and scientific challenges on a global scale. Unfortunately, we still do not have reliable and definitive biomarkers for AD, and a certain diagnosis is still possible only postmortem. Many hypotheses have been proposed on the biological basis for this disease, and even more are the subjects of discussion on the World Wide Web, a veritable “factory” of AD hypotheses. Addressing this situation, the purpose of the meeting in Chile was to bring together a representative group of those who have developed the most promising and challenging hypotheses to date, to attempt to integrate these ideas into a common theory of AD.

Dialogue is beyond baptists, tauists, or agnostics. AD is developing as a pleotropic disease closely linked to the aging processes and involving cytoskeletal proteins, kinases, radicals, metals, genetics, inflammation, viruses, nucleation, and amyloid α , with all playing a critical and complex role. Reductionism has not reduced AD any more than for other age-related degenerative diseases. Changing perspectives mark the beginning of a second century of AD.

The experience of preparing this book has been very rewarding, and we are grateful to all the contributors who submitted their chapters and were collaborative in the exhaustive reviewing process at the editorial level. We thank especially Bethany Kumar for her invaluable support in coordinating efforts among editors and authors, and Nancy Rawls for assisting with the editing process. We also thank numerous attendants, students, postdoctoral fellows, and health professionals who participated in the event and who contributed helpful viewpoints, criticisms, and incisive questions that enriched the contributions to this book.

We hope that this book will mark the beginning of a tradition of developing exciting meetings on the theoretical foundations guiding research into very challenging dilemmas in biomedicine, and thus contribute to solving major public health problems that afflict mankind.

Santiago and San Antonio, 2008

Ricardo B. Maccioni
George Perry

Current Hypotheses and Research Milestones in
Alzheimer's Disease

Maccioni, R.B.; Perry, G. (Eds.)

2009, X, 254 p. 135 illus., 35 illus. in color., Hardcover

ISBN: 978-0-387-87994-9