Handbook of the Biology of Aging, Seventh Edition (Handbooks of Aging)

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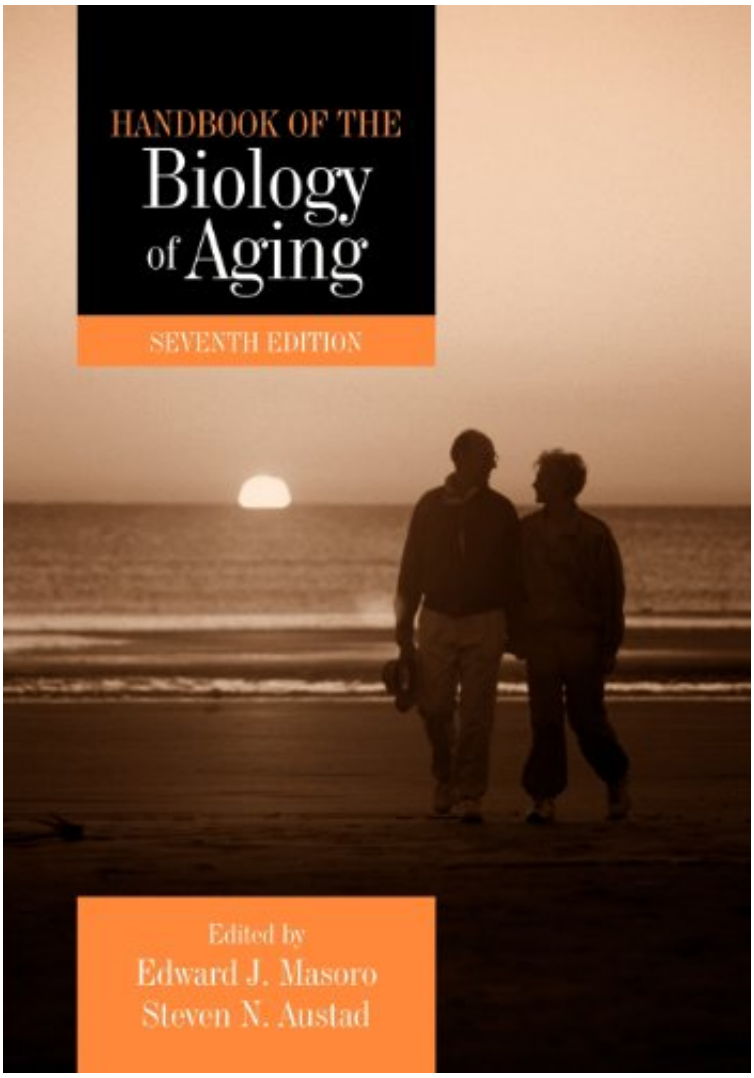

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From Academic Press : Handbook of the Biology of Aging, Seventh Edition (Handbooks of Aging) before purchasing it in order to gage whether or not it would be worth my time, and all praised Handbook of the Biology of Aging, Seventh Edition (Handbooks of Aging):

13 of 14 people found the following review helpful. High-level technical reviews for the advanced student of agingBy D. F. WattThis is a challenging book to get through, unless someone has a background in molecular biology and the biological sciences. It's not really an appropriate source for a high school student, unless they are particularly talented, and would be challenging for many college biology students as well. It's really aimed at the advanced student, graduate

student, or researcher, or geriatrician, or someone else who is quite sophisticated about biology and particularly about molecular biology. However, with that qualification in mind, the articles are uniformly of high quality, and address critical issues in the science of aging - several of these reviews are good enough to be considered benchmark reviews, cogently summarizing the state of the science. There are very good chapters on The network of genes activated by dietary restriction (the gold standard in terms of environmental manipulations to slow aging and reduce the diseases of aging), the role of the somatotropic axis in mammalian aging (growth factors such as IGF and GH), the mechanisms of mitochondrial free radical production and their relationship to the aging process (the most widely quoted molecular theory of aging which actually has pretty mixed evidence for it), aging and programmed cell death in muscle tissues, aging in adipose tissue, the aging of stem cells, leukocytes telomere dynamics (shortened telomeres in white cells predicts mortality at least in men), a reappraisal of the free radical theory of aging, the role of target of rapamycin in aging (probably the hottest cellular pathway in the aging and antiaging business currently), comparative genetics of aging, the role of sirtuins in aging and age-related disease, inflammation in aging processes, protein homeostasis and aging, and aging and brain myelination trajectories, and work on cardiovascular aging in primates, vascular dysfunction in aging, and pulmonary issues and aging, and last but not least, age-related changes in thermoregulation, and sex differences in longevity and aging. I wish there had been a better chapter on calorie restriction mimetics (substances that mimic the physiology of calorie restriction but without the pain of chronic hunger), and although many chapters addressed the relationship between these various topics and particular diseases of aging, there were no chapters specifically addressing the primary diseases of aging namely cancer, Alzheimer's disease, cardiovascular disease, diabetes, etc.This is an important and timely book, on a very important subject. The emerging and expanding science of the biology of aging, as a vigorous area of scientific inquiry, takes place at a time when the demographics of Western societies are tilting towards an increasingly high percentage of elderly citizens. At the beginning of the 20th century, when life expectancy was ~ 47 years in the United States, until today, there has been a roughly 30-year increase in life expectation at birth (Minino et al., 2002). Roughly 25 years of this 30 year gain in life span can be attributed to one primary factor, namely the lessening the impact from early mortality due to infectious diseases in children and young adults, in the context of better hygiene and the creation of effective antibiotics and vaccines (CDC, 1999). This has yielded a situation in which many Western societies are now for the first time in human history facing the prospect of having more people over the age of 60 than under the age of 15. Although currently roughly 13% of the United States is over age 65, within the next 20 years, this percentage is expected to increase by more than half again, to roughly 20%. By the end of the century, fully one third of the world's population will be over 60 (Lutz et al, 2008). These demographic shifts will centrally include a huge increase in the very old in the coming four decades. In 2010, more than an estimated 5.5 million Americans were 85 years or older; by the year 2050, that number is expected to almost quadruple to 19 million. Currently, number of centenarians in this country (Americans 100 years and older) is estimated at roughly 80,000, but by 2050 there will be more than 500,000 Americans age 100 years or older. This is unprecedented in human history. These significant increases in lifespan however have not been accompanied by concomitant increases in `healthspan' or in our ability to substantially prevent (or successfully treat and delimit) the disabling illnesses of later life, the major diseases of aging (centrally including diabetes, cardiovascular disease, stroke, Alzheimer's disease and cancers), which remain largely refractory to amelioration. Some evidence argues that these diseases may be in large part diseases of Western civilization (primarily due to modern lifestyles) and relatively rare in elders from hunter-gatherer societies compared to Western societies, even when the younger mortality of hunter-gatherers is taken into account (Eaton et al., 1988).The impact of these large demographic shifts and the associated increased penetration of diseases of aging on healthcare economics, combined with the increasing costs of high technology-driven healthcare interventions, is quietly anticipated to be fiscally catastrophic, involving or a steady annual escalation of healthcare costs to unsustainable levels (GAO, 2007; Conrad, 2009). The impact on healthcare economics of an aging demographic, combined with an increasing emphasis on high technology, is increasingly penetrant and, frankly, worrisome, particularly in terms of its impact on healthcare economics in this country. In 2010, health care expenditures in the United States are expected to be approximately 18% of GDP, almost twice as much, in terms of percentage of GDP, as any other Western society. Even just within the only next several years, at a current rate of increase of roughly 6-8% a year, by 2018/2019, roughly 20% of the US GDP (one dollar in every five) could be spent on healthcare expenses, an unprecedented fraction of our national wealth and resources. Healthcare expense as a proportion of GDP is projected (without substantive changes in practice trends or chronic illnesses) to rise to 28 percent in 2030 (more than one dollar in every four) and to 34 percent by 2040 (more than one dollar in every three) (CEA, 2009). These are frightening statistics, suggesting that the current rate of escalation in health care expenditures is unsustainable. However, the demographic shifts towards an aging population are only one contributing factor in these accelerating expenditures, and are paired with escalating cost of first-line drugs, high-technology interventions and the high overhead associated with the burgeoning healthcare and health insurance bureaucracy itself (CEA, 2009). Evidence suggests that as much as three quarters of the increasing costs are due to factors other than an aging demographic (CEA, 2009). Despite these enormous and escalating financial outlays in healthcare, overall health may be actually declining in the United States, as measured by several indices (currently the United States ranks around

50th in life expectancy, while other indices, such as infant mortality are also worrisome and rank 46th, behind all of Western Europe and Canada) (CIA Factbook).Reflecting the major disease of aging with special relevance to the brain, costs for Alzheimer's disease in 2010 were roughly $170 billion in the United States alone (not counting an additional roughly $140 billion in unpaid caretaker costs - suggesting a real cost of over $300 billion in 2010 alone) (Alzheimer's Association, 2010). These total costs of Alzheimer's disease (assuming current costs continue and no cure or highly effective treatment is found) are expected to potentially reach $2 trillion per year in the United States alone by 2050, with 65 million expected to suffer from the disease in 20 years worldwide, at a cost of many trillions of dollars (Olshansky et al., 2006).As the baby boomers enter the decades of greatest risk for cancers, heart disease, stroke, arthritis, Alzheimer's disease, macular degeneration, and other diseases of aging, the evidence is that the healthcare system (as it is currently structured) will eventually undergo a slowly progressive but fundamental collapse, in the context of these unsustainable cost escalations. Meaningful strategic options to prevent this fiscal implosion have not yet been developed. These issues are rarely if ever adequately addressed or acknowledged in the current "health care debate". Indeed, one could argue that the current healthcare debate is a little bit like a bunch of people on a high-speed train that is accelerating towards a known break in the track ahead, while everyone is arguing about when and how the track is going to repair itself, instead of insisting that the train slow down, or get on to a better and safer track.In addition to its financial impact on healthcare economics, aging in the Western societies is also anticipated to have a more generalized and severely deleterious impact on Western economies, as an increasing percentage of retired elderly severely strain basic social safety net and entitlement programs such as Medicare and Social Security, deteriorate tax and revenue margins, and stretch virtually every societal resource potentially to a breaking point (McKinsey Global Institute, 2008). In this context, scientific work on the biology of aging, particularly if it might reduce or substantially delay penetration by the diseases of aging into an aging population, and extend `healthspan' (as distinct from lifespan), appears vitally relevant, if not badly needed. Despite these considerations, the funding of research into all aspects of aging and age-related disease garners only 11% of the $31 billion NIH budget (Freudenheim, 2010), and research into calorie restriction, our only well replicated lifestyle intervention to slow aging and reduce diseases of aging, garners less than 100th of 1% of all biomedical research monies (Guarente, 2003).In this context, research into understanding aging, and how we might slow aging and prevent or at least substantially delay some of its nastier but intrinsic manifestations (AKA the diseases of aging) is badly needed. This is a state-of-the-art textbook for people looking for state-of-the-art summaries. For those looking for a general overview on aging or on a particular disease of agingthat is a bit more digestible, this textbook will be a disappointment and may overwhelm the average reader. Highly recommended if you are the right sort of audience.2 of 2 people found the following review helpful. A Good Set of ReviewsBy David WilsonUnlike most handbooks, this one is entirely new with each edition. This one covers and updates many of the recent advances in the biology of aging. It is written for a professional audience, and will give scientists a good sense of some of the advances in a now hot and fast-moving field.

Handbook of the Biology of Aging, Seventh Edition, reviews and synthesizes recent findings and discoveries in the field. This volume is part of The Handbooks of Aging series, which also includes The Handbook of the Psychology of Aging and The Handbook of Aging and the Social Sciences. The book is organized into two parts. Part 1 covers basic aging processes. It covers concepts relevant to clinical research, such as muscle, adipose tissue, and stem cells. It discusses research on how dietary restriction can slow down the aging process and extend life in a wide range of species. Part 2 deals with the medical physiology of aging. It contains several chapters on the aging of the human brain. These chapters deal not only with diseases but also with normal aging changes to cerebral vasculature and myelination as well as the clinical implications of those changes. Additional chapters cover how aging affects central features of human health such as insulin secretion, pulmonary and cardiac function, and the ability to maintain body weight and body temperature. The volume is primarily directed at basic researchers who wish to keep abreast of new research outside their own subdiscipline. It will also be useful to medical, behavioral, and social gerontologists who want to learn about the discoveries of basic scientists and clinicians.Contains basic aging processes as determined by animal research as well as medical physiology of aging as known in humansCovers hot areas of research, like stem cells, integrated with longstanding areas of interest in aging like telomeres, mitochondrial function, etc.Edited by one of the fathers of gerontology (Masoro) and contributors represent top scholars in gerintology

"This is an important and timely book on an extremely critical subject, and although its technical excellence and depth will challenge those without a formal background in molecular biology, the rewards I believe will be deeply commensurate with the effort However, with that qualification in mind, the articles are uniformly of high quality and address critical issues in the science of agingseveral, if not many, of these reviews are good enough to be considered benchmark reviews, cogently summarizing the state of the science For those interested in a benchmark series of reviews on aging, this volume has much to offer. I recommend it highly. For geriatric neuropsychologists, sophistication about the biology of aging should be considered a required area of competence."--Archives of Clinical NeuropsychologyFrom the Back CoverHandbook of the Biology of Aging, 7th edition Edited by Edward J. Masoro

and Steven N. Austad The Handbook of the Biology of Aging, 7e, is 100% revised from the 6th edition. Providing a comprehensive synthesis and review of the latest research findings in the biology of aging, it is intended as a summary for researchers, and is also suitable as a high level textbook for graduate and upper level undergraduate courses. The 7th edition is organized into two main sections, first covering the basic aging processes and then the medical physiology of aging. This puts less emphasis on research germane only to specific species and more emphasis on the mechanisms that affect aging across species, and what this means medically for the aging of humans. This volume allows basic researchers to keep abreast of basic research outside their subdiscipline as well as recent clinical findings, while allowing medical, behavioral, and social gerontologists to understand what basic scientists and clinicians are discovering. Coverage of basic aging processes includes the effects of dietary restriction, somatotropic axis, free radicals, apoptosis, adipose tissue, stem cells, leukocyte telomere dynamics, genetics, sirtuins, inflammation, and protein homeostasis on aging. Coverage of the medical physiology of aging includes several chapters on aging effects on the human brain including changes in brain myelination, cerebral microvasculature, and cerebral vascular dysfunction. Additional chapters include research on aging pulmonary function, insulin secretion, thermoreception and thermoregulation, calorie restriction, frailty mortality, and sex differences in longevity and aging. This more clinically-oriented section advances our understanding of what to expect, how to prevent, and how to treat common medical effects of aging. The Handbook of the Biology of Aging, 7e is part of the Handbooks of Aging series, including Handbook of the Psychology of Aging and Handbook of Aging and the Social Sciences, also in their 7th editions. About the editors: Dr Edward J Masoro is professor emeritus in the department of physiology at University of Texas Health Science Center San Antonio. In addition to being the recipient of numerous award for his work in gerontology, he is a past president of the Gerontological Association of America, has served as chairman of both the Aging Committee and Board of Scientific Counselors of the National Institute on Aging, and is former editor of the Journal of Gerontology: biological Sciences. Dr. Steven N. Austad is professor in the department of cellular and structural biology at the University of Texas Health Science Center San Antonio. In addition to being the recipient of numerous awards for his work in gerontology, he is currently associate editor of the Journal of Gerontology: Biological Sciences, supervising editor of Aging Cell, and section editor of The Neurobiology of Aging.About the AuthorEdward J. Masoro was the recipient of the 1989 Allied-Signal Achievement Award in Aging Research. In 1990, he received the Geriatric Leadership Academic Award from the National Institute on Aging and the Robert W. Kleemeier Award from the Gerontological Society of America. In 1991, he received a medal of honor from the University of Pisa for Achievements in Gerontology. In 1993, Dr. Masoro received the Distinguished Service Award from the Association of Chairmen of Departments of Physiology. He received the 1995 Irving Wright Award of Distinction of the American Federation for Aging Research and the 1995 Glenn Foundation Award. He served as the President of the Gerontological Society of America from 1994-1995, as the Chairman of the Aging Committee of the National Institute on Aging (NIA), and as Chairman of the Board of Scientific Counselors of the NIA. Dr. Masoro received his Ph.D. from the University of California at Berkeley. He has held faculty positions at Queens University (Canada), Tufts University School of Medicine, University of Washington,and Medical College of Pennsylvania. From 1973 through May 1991, he served as Chairman of the Department of Physiology at the University of Texas Health Science Center at San Antonio. He presently continues his duties as Professor in the Department of Physiology and is the Director of the newly created Aging Research and Education Center. On April 1, 1996, he became Professor Emeritus. Dr. Masoro was a Wellcome Visiting Professor in Basic Medical Sciences for the 1992-1993 Academic Year. His research has been in lipid metabolism, cold exposure, membrane biochemistry, and biological gerontology. Since 1975, Dr. Masoros research has focused on the influence of food restriction on aging. He has or is serving in an editorial role for ten journals, and in January 1992, he became the Editor of the Journal of Gerontology: Biological Sciences.