

treatment can be distinguished: those that act upon late-life AP etiologies (e.g. rapamycin); and those that prevent causes of pathology for which AP-generated senescence is a prerequisite (e.g. sunscreen, to prevent pre-cancerous lesion formation).

A further difference in this proposed new understanding of anti-aging is that it is based on the understanding that there is no one etiology of senescence. This means that no treatments inhibit the totality of aging, only parts of it. Consistent with this, anti-aging treatments with efficacy in animal models can improve late-life health and extend lifespan but not prevent aging altogether. This type of outcome is sometimes described as *decelerated aging*, but this is likely to be an imprecise description; more exactly, interventions of this sort impact the etiology of a cluster of senescent pathologies that limit lifespan—not the aging process overall.

According to the new definition of anti-aging, any preventative approach to senescent pathologies is an anti-aging treatment, whether the etiologies involved generate a broad or a narrow range of pathologies (defining broad *vs.* narrow geroprotectants). This means that not only are (potential) broad-sense interventions such as dietary restriction and mTor inhibition anti-aging interventions, but so also are narrow-sense interventions, such as the use of sunscreen to prevent sun damage to skin and the use of toothbrushes to prevent dental decay. By this view, dentists and, particularly, dental hygienists are narrow-sense anti-aging practitioners.

2.1.4 Aims of this Study: How is the Aging *vs.* Disease Division Represented in Medical Textbooks?

Do healthcare professionals regard aging as a disease, as a normal process, or as something entirely different? How much emphasis does medical education put on the process of aging? To explore these issues, we have taken two approaches. Firstly, we examine several previous studies that examine attitudes of health care professionals towards aging. Secondly, we explore what medical students are taught about aging. One may suppose that the rejection of the aging *vs.* disease dichotomy by many biogerontologists is informed by their study of the biology of aging, including reading the views of other biogerontologists. Similarly, the belief in the aging *vs.* disease dichotomy common among doctors is presumably attributable, at least in part, to what they learn in medical school. Important determinants of the frameworks of ideas within scientific and professional fields are the reference textbooks that are used for undergraduate teaching.²⁰ We have conducted a preliminary investigation of what medical students are taught about the relationship between aging and disease, analyzing 14 widely used textbooks of general medicine. We wished to discover to what extent textbooks argue that aging is distinct from disease and, if so, to examine the arguments and evidence presented for such a claim. For reference and comparison, Table 2.1 presents a selection of quotes arguing against the aging *vs.* disease dichotomy, many from biogerontologists.