

Han-Woong Lee  
Samsung Biomedical Research Institute  
Sungkyunkwan University School of Medicine  
Suwon, Korea

Telomere maintenance is thought to play a role in signaling cellular senescence; however, a link with organismal aging process has not been established. The telomerase null mouse provides an opportunity to understand the effects associated with critical telomere shortening at the organismal level. We studied a variety of physiological processes in an aging cohort of mTR<sup>-/-</sup> mice. Loss of telomere function did not elicit a full spectrum of classical pathophysiological symptoms of aging. However, age-dependent telomere shortening and accompanying genetic instability were associated with shortened life span as well as a reduced capacity to respond to stresses such as wound healing and hematopoietic ablation. In addition, we found an increased incidence of spontaneous malignancies. These findings demonstrate a critical role for telomere length in the overall fitness, reserve, and well being of the aging organism.