

Lecture Four

THE AGING-CANCER CONNECTION: IMPLICATIONS FOR CANCER PREVENTION

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Objectives: To understand the relationship between aging and cancer incidence and cancer aggressiveness, and to examine the cancer resistance observed among the oldest-old

Summary: The aging-cancer intersection is surprisingly underexplored territory — few aging researchers know much about cancer, few cancer researchers know much about aging. This lecture will explore the relationship between: aging and the risk for cancer development; aging and the clinical aggressiveness of resultant cancers. Moreover, the observation that the oldest-old are *resistant* to cancer — a paradox shared by both dogs and humans — creates a unique opportunity to better understand the factors that favor cancer resistance. This lecture will emphasize how realizing progress in the aging-cancer intersection will be a key to developing smarter strategies for achieving a reduction in cancer mortality.

References

1. Cooley DM, et al. Exceptional longevity in pet dogs is accompanied by cancer resistance and delayed onset of major diseases. *J Gerontol Biol Sci* 2003; 58: B1078-1084.
2. Waters DJ, Kariuki N. The Biology of Successful Aging: Watchful Progress at Biogerontology's Known-Unknown Interface. In: *Gerontology: Perspectives and Issues*; Ed. Wilmoth and Ferraro, New York: Springer Publishing Co., 2013.
3. Waters DJ. Aging Research 2011: Exploring the pet dog paradigm. *The ILAR Journal* 2011; 52(1): 97-105.
4. Tyner SD, et al. p53 mutant mice that display early ageing-associated phenotypes. *Nature* 2001; 415: 45-53.
5. Inoshita N, et al. Pathological characteristics of gastric carcinomas in the very old. *Jpn J Cancer Res* 1998; 10: 1087-1092.