

Cancer incidence and the biology of extreme old age

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Abstract

While there are many mysteries and open problems relating to cancer incidence, perhaps none is as counterintuitive as the observed decrease in risk associated with extreme old age. At least three distinct attempts to explain and model this phenomenon have been presented in the literature. Among these, the so-called beta model of Pompei, Ritter and Wilson has found favor with biostatisticians. However, this model leads to conclusions that seem to contradict basic human biology. In this talk, we will present this model in its historical and epidemiological context, explain the issues with this model, and then derive an equivalent model built with alternative biological assumptions that resolve the apparent contradictions. This is joint work with Celeste Vallejo, Leo Betthausen, and Jed Keeling.