

Ronald E. Hatcher
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"The Physics of Cancer"

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ABSTRACT:

Physicists have been recruited to try and assist with the stubbornly constant mortality rates of cancer world-wide over the past 100 years, to challenge the present paradigms. We need to face the fact that about 70% of cancers could be avoided with lifestyle changes, and the strong environmental drivers of cancer. I think we really need to re-think cancer as a complex phenomena which is driven by evolution, may provide fitness for the species and be a product of both the aging of the proteome and the genome. I'll try to present our own physics-based approaches, informed by evolution and ecology, which we hope can help us understand the fundamental dynamics of cancer progression.

BIOGRAPHY:

Robert Austin graduated from Hope College, Holland, Michigan, with a BA in Physics, 1968. He received his Ph.D. from the University of Illinois, Urbana, Il in 1975. He was a post-doc at the Max Planck Institute for Biophysical Chemistry, Goettingen, (West) Germany from 1976-1979. He returned to the US as an Assistant Professor of Physics in 1979, eventually becoming a Professor of Physics at Princeton.

Amongst his honors, in 1988 he became a Fellow, American Physical Society, in 1998 he was made a Fellow, American Association for the Advancement of Science, in 1999 he was made a Member, National Academy of Sciences. He was awarded in 2005 the Lilienfeld Prize of the American Physical Society, in 2008 he was made a Fellow, American Association of Arts and Sciences. In 2014 he was awarded the Max Delbruck Prize in Biological Physics of the American Physical Society.

He was a founding member of the NSF Sponsored Nanobiology Technology Center (NBTC) centered at Cornell University and participates actively in the educational outreach programs of the NBTC. He has been very actively involved in efforts by the American Physical Society (APS) to broaden the outreach of biological physics into the physics community, he has served as Chair of the Division of Biological Physics, and has twice served as General Councilor to the American Physical Society. He was the founding editor of the Virtual Journal of Biological Physics.

He has served as Chair of the US Liaison Committee of the International Union of Pure and Applied Physics. He organized the 1989 International Union of Pure and Applied Physics International Workshop on Biological Physics. Austin has been the chief co-organizer of two NSF Sponsored Workshops on Opportunities in Biology for Physicists.

Austin was the Principle Investigator of the NCI- sponsored Princeton Physical Sciences Oncology Center, with connections to Johns Hopkins University, University of California San Francisco, University of California Santa Cruz and the Salk Institute.