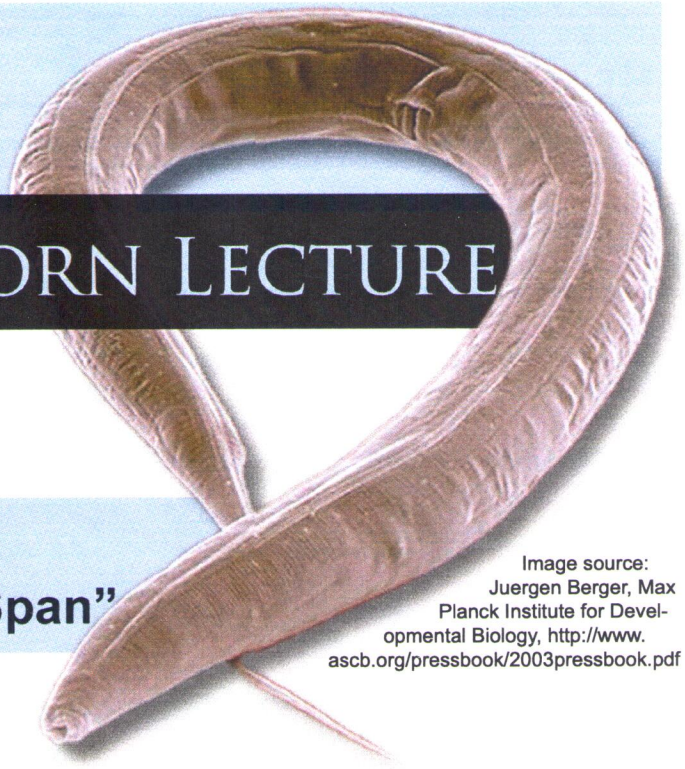
Indiana University
Department of Biology

2004-2005 Sonneborn Lecture



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CYNTHIA KENYON

University of California, San Francisco

"From Worms to Mammals: The Hormonal Control of Life Span"

Tuesday, April 26, 2005
4:00 pm, Myers 130

A reception outside of Myers Hall 130 will follow the lecture.

Cynthia Kenyon is an American Cancer Society Professor at the University of California, San Francisco, and the Director of the UCSF Hillblom Center for the Biology of Aging. Dr. Kenyon received her B.S. (Chemistry and Biochemistry) from the University of Georgia, and her Ph.D. from the Massachusetts Institute of Technology. She did her postdoctoral training at the Medical Research Council Laboratory of Molecular Biology in Cambridge, England, and has been on the faculty of the University of California, San Francisco, since 1986.

Dr. Kenyon is an internationally acclaimed pioneer in the field of aging research. Her laboratory discovered that the lifespan of the nematode Caenorhabditis elegans is regulated by DAF-2, a homolog of the human insulin and IGF-1 receptors, and their work led to the discovery that mammalian aging is also regulated hormonally. They found that the activity of the insulin/IGF-1 pathway requires the function of a second protein, DAF-16, which is a transcription factor.

By combining microarray analysis for gene discovery and RNAi inhibition of gene function, Dr. Kenyon and coworkers found that a variety of genes controlled by DAF-2 and DAF-16 make small individual contributions to lifespan. Recent work from Dr. Kenyon's laboratory has shown that the insulin/IGF-1 signaling system controls the lifespan of C. elegans in response to multiple inputs, and that germline stem cells control a steroid hormone pathway that also regulates lifespan. By perturbing both insulin/IGF-1 and reproductive signalling in the same animal, they have been able to extend the mean lifespan of animals six fold.

Dr. Kenyon's discoveries have led to a fundamental shift in the way we view the aging process, from one that is inevitable and intractable to one that is plastic and subject to regulation. Their findings have important disease implications, since these long-lived mutants have been found to be resistant to several age-related diseases. Insulin/IGF-1 pathway mutations delay the time of onset of protein aggregation in a C. elegans model of Huntington's disease and long-lived mice with reduced IGF-1 levels are resistant to carcinogens. Thus, their work has raised the possibility of a new therapeutic strategy based on the ability to postpone the onset of age-related disease by slowing the aging process itself.

Dr. Kenyon's research accomplishments have been honored by her election to the National Academy of Sciences in (2003), the National Institute of Medicine (2003), the American Academy of Arts and Sciences (1997), and by numerous other awards and prizes. She is also an active public advocate on behalf of science, and has given numerous lectures to the public and interviews to the media, including recent participation in a congressional panel on the future of science.