

Suggested Nominee for the Dickson Prize

Richard D. Kolodner

Chair, Charles A. Dana Division of Human Cancer Genetics

Dana Farber Cancer Institute

Harvard Medical School

Background: Dr. Richard Kolodner was born on April 3, 1951, received a B.S. and Ph.D. from the University of California at Irvine under the direction of Dr. K.K. Tewari and went directly in 1975 to the Harvard Medical School, where he has held academic positions including most recently the Chair of the Division of Cellular and Molecular Biology (1991-1994) and his current position as Chair of the Charles A. Dana Division of Human Cancer Genetics, Dana Farber Cancer Institute.

Scientific Research: Dr. Kolodner's main research interests are the study of (1) mechanisms of genetic recombination and repair and (2) the genetics of cancer susceptibility. A major thrust of his research has been the understanding of how specific genes in bacteria and yeasts detect and repair defects arising during DNA replication. Dr. Kolodner's research helped to establish that a single gene in bacteria and yeasts produces a protein MSH 2 that monitors the strings of replicating genetic material in a cell, recognizes when one chemical building block of DNA does not perfectly match its counterpart, and directs the cell to correct mismatches. Dr. Kolodner observed that, when this gene is defective, errors accumulate and give rise to long, repeated strings of DNA. In May, 1993, a team of scientists at Johns Hopkins, led by Dr. Bert Vogelstein, reported finding stretches of repeated strings of DNA in common forms of malignant human colon tumors. Kolodner, working with Dr. Richard Fishel of the University of Vermont, set out to identify a human gene in the vicinity identified in earlier research of Dr. Vogelstein that might produce the protein MSH 2 and function analogously to the gene found in bacteria and yeasts. They achieved this goal in November, 1993 and reported their results in December of that year in the journal *Cell*. Vogelstein's group also succeeded in finding the human gene, just after Kolodner's team, and both the groups are credited with the discovery. Their successes were reported widely and prominently in the popular press.

Significance of Dr. Kolodner's research:

1. The findings establish that many common forms of human cancer arise through defects in a specific gene responsible for monitoring and repairing errors occurring in replicating DNA. These findings are likely to lead to screening procedures in humans for the defective gene.

2. The success of Dr. Kolodner's research reaffirms the central importance of basic scientific research dedicated principally to advancing our understanding of Nature.

(12/30/1995)

CURRICULUM VITAE

Name: Richard David Kolodner

Address: 241 Perkins Street, Jamaica Plain, MA 02130

Date of Birth: April 3, 1951

Place of Birth: Morristown, New Jersey

Education:

1971 B.S. University of California, Irvine
1975 Ph.D. University of California, Irvine
(Advisor: Dr. K.K. Tewari)

Academic Appointments:

1975-1978 Research Fellow in Biological Chemistry, Harvard Medical School (Advisor: Dr. C.C. Richardson)

1978-1983 Assistant Professor of Biological Chemistry, Harvard Medical School and Dana-Farber Cancer Institute

1978-1982 Tutor in Biochemistry, Harvard University
1981-1988 Head, Laboratory of Molecular Genetics, Dana-Farber Cancer Institute

1983-1987 Associate Professor of Biological Chemistry, Harvard Medical School and Dana-Farber Cancer Institute

1987-1988 Associate Professor of Biological Chemistry and Molecular Pharmacology, Harvard Medical School and Dana-Farber Cancer Institute

1988- Member, Division of Cellular and Molecular Biology, Dana-Farber Cancer Institute

1988- Professor of Biological Chemistry and Molecular Pharmacology, Harvard Medical School and Dana-Farber Cancer Institute

1990- Acting Head, Laboratory of X-Ray Crystallography, Dana-Farber Cancer Institute

1991-1994 Chair, Division of Cellular and Molecular Biology, Dana-Farber Cancer Institute

1995- Chair, Charles A. Dana Division of Human Cancer Genetics, Dana-Farber Cancer Institute