

RNA: The Molecule at the Core of Biology and Medicine



Daniel R. Schoenberg
Professor, Molecular and Cellular Biochemistry Director

CURRENT RESEARCH

The impact of RNA on cancers, heart disease and neuromuscular disorders

Dr. Daniel Schoenberg of The Ohio State University became interested in ribonucleic acid (RNA) as a consequence of studying how estrogen alters the expression of genes in the female reproductive tract. RNA is a multifunctional molecule that is common to all life forms and involved in virtually every step of gene expression. In the course of this work, Dr. Schoenberg identified an enzyme that degrades specific RNA molecules, which his lab named PMR1. His lab found that estrogen activates PMR1, and activated PMR1 stimulates the movement of cultured breast cancer cells. They also found that patients with elevated PMR1 have an increased risk of dying from breast cancer. Because changes in motility are a necessary step for cells to form metastasis, the lab is now studying how PMR1 controls cell movement through the degradation of specific RNAs. His hope is to determine whether drugs that inhibit PMR1 can prevent the formation of metastasis, and in doing so, reduce deaths from breast cancer.

Dr. Schoenberg's interest in RNA and cancer extends to understanding how cancers form in the first place, and his lab is collaborating with Dr. Kay Huebner, a leading cancer biologist in the Ohio State Comprehensive Cancer Center, in a study that seeks to understand how loss of a gene that Dr. Huebner discovered almost 20 years ago leads to cancer. Together, members of the Schoenberg and Huebner labs found evidence for this gene working indirectly to affect cancer by changing levels of small RNA molecules that can interfere with the synthesis of specific proteins.

His passion for RNA science led Dr. Schoenberg to nurture and develop what is now one of the largest RNA research communities in the world. As the director...

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AFFILIATION



Ohio State University

EDUCATION

- B.S., Biochemistry, 1971 . University of Illinois
- Ph.D., Experimental Oncology, 1977 . McArdle Laboratory for Cancer Research, University of Wisconsin
- Postdoctoral Fellow, Cell Biology, 1981 . Baylor College of Medicine

AWARDS

- Fellow, American Association for the Advancement of Science
- Excellence in RNA Biology Award, Ohio State Center for RNA Biology

RESEARCH AREAS

Health & Wellness, Longevity, Immortality Research

FUNDING REQUEST

Your contributions will support Dr. Daniel Schoenberg's research as he uses the principles of RNA biology to elucidate fundamental mechanisms of gene function in health and disease. Donations will support the necessary \$600K per year required to support his annual budget and the \$200K per year required for personnel and research costs for each of the three programs in his lab. In choosing to donate, you will play a role in improving health and understanding disease.