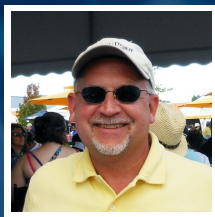


# RNA Modifications: Understanding Structure and Function at the Molecular Level



**Patrick Limbach**  
Professor and Ohio Eminent Scholar, Chemistry

## CURRENT RESEARCH

### Sophisticated tools unlock the epitranscriptome's role in health and disease

RNA and DNA are nucleic acids which are one of the three major macromolecules essential for all known forms of life. The more scientists have studied RNA, the more we have come to learn the complicated way in which RNA implicates various biological roles in coding, decoding, regulation, and even expression of genes. Dr. Pat Limbach, Professor and Ohio Eminent Scholar of Chemistry at the University of Cincinnati, studies RNA and in particular, how and why the cell "decorates" RNA with various chemical groups. These decorations require the cell to expend significant resources and prior research suggests these decorations play important structural and functional roles. The significance of Dr. Limbach's research arises from the fundamental role that RNA has within cellular processes. His ongoing research has applications in understanding the human microbiome, cancer, and stress-induced diseases like Parkinson's and Alzheimer's.

With an approach that uses high-end technology based on mass spectrometry, Dr. Limbach and his team are able to directly measure the presence and levels of RNA decorations, or modifications. In addition to using such techniques, Dr. Limbach is continually developing technology that is uniquely suited to study decorations on RNA structures. Therefore, as one in only a handful of laboratories in the world that bring such technology to bear on questions related to RNA modifications, his work is necessary for the advancement in understanding these questions. Additionally, under the direction of Dr. Limbach, who was initially trained in a small liberal arts college, the team moves away from a strictly reductionist approach and rather, integrates multiple disciplines with a focus on the big..

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## AFFILIATION



University of Cincinnati

## EDUCATION

- B.S., in Chemistry and Chemical Physics, 1988 , Centre College
- Ph.D., in Analytical Chemistry, 1992 , The Ohio State University

## AWARDS

- 2013 Fellow, American Association for the Advancement of Science (AAAS)
- 2009 Cincinnati Chemist of the Year Award, Cincinnati Section American Chemical Society
- 2008 Sigma Xi Young Investigator Research Award, University of Cincinnati
- 2003 Ohio Eminent Scholar in Mass Spectrometry
- 1999 Award of Excellence in Undergraduate Teaching, College of Basic Sciences, LSU

## RESEARCH AREAS

Health & Wellness, Longevity, Immortality Research

## FUNDING REQUEST

Your contributions will support the continued research of Dr. Pat Limbach of the University of Cincinnati, as he studies RNA's fundamental role in living organisms. Donations will fund the necessary \$300K/year required for personnel, \$100K/year on service contracts to keep instrumentation running 24/7, and \$60K/year for chemicals, supplies, and reagents. Additional funds will support publication costs, outside technical services, and student travel for meetings and conferences. Lastly \$500K-\$1M would allow Dr. Limbach and his team to purchase a new mass spectrometer. Join in developing the scientific expertise behind diseases like Parkinson's and Alzheimer's; support Dr. Limbach and his team.