

**DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE**  
**SEMINAR SERIES**  
**FALL 2022**

**WEDNESDAY, NOVEMBER 9, 2022**  
**TIERNAN HALL – LECT. HALL 1**  
**1:00PM-2:20PM**

**GUEST SPEAKER**

John Toscano  
Professor and Chair  
Department of Chemistry  
Johns Hopkins University  
Baltimore, MD

**TOPIC**

Development and Application of New Physiologically Useful  
Hydropersulfide (RSSH) Donors

**ABSTRACT**

Although the physiological signaling associated with the endogenous generation hydrogen sulfide ( $\text{H}_2\text{S}$ ) has been well studied over the past 20 years, the biochemical mechanisms associated with its physiological actions are still not clear. Recently, it has been found that  $\text{H}_2\text{S}$ -related or derived species are highly prevalent in mammalian systems and that these species may be responsible for some, if not the majority, of the biological actions attributed to  $\text{H}_2\text{S}$ . Among the most prevalent and intriguing of these species are hydropersulfides (RSSH), which can be present at significant levels. Indeed, it appears that  $\text{H}_2\text{S}$  and RSSH may be intimately linked in biological systems. Given the inherent reactivity of RSSH, these species cannot be used directly and donor molecules are required for *in situ* generation. This presentation will focus on the development of new RSSH donors and their potential use as cardioprotective agents.

**BIO**



John P. Toscano obtained his B.A from Princeton University and his Ph.D. from Yale University, working with J. Michael McBride on the photochemistry of nitramine compounds. He was then an NIH postdoctoral fellow at The Ohio State University, working with Matthew S. Platz on the photochemistry of carbenes and similar intermediates. He then joined Johns Hopkins University (JHU) as an Assistant Professor of Chemistry in 1995. As a newly-promoted

Professor of Chemistry, he assumed the Chair of the Department of Chemistry at JHU in 2005, became Vice-Dean then Dean of the Krieger Schools of Arts and Sciences at JHU, and since 2021 is now again Chair of the Department of Chemistry.

Dr. Toscano's research spanned multiple fields over his career, including photochemistry, transition metal complexes, reactive intermediates such as nitric oxide, and more recently persulfide and other reactive sulfur species that display important biological roles. He has published more than 100 articles, filed for 17 patents, and has received numerous awards for his research including the Alfred P. Sloan Foundation Research Fellow and Camille Dreyfus Teacher-Scholar Award.

**Seminar Coordinator:**

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