JOANNE STUBBE

Massachusetts Institute of Technology, Novartis Professor of Chemistry and Biology
Cambridge, Massachusetts 02139

Title of Lecture: "Radicals and Drugs"

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Education:

1971 Ph.D., Organic Chemistry, University of California Berkeley
1968 B. A., Chemistry, University of Pennsylvania

Research and Professional Experience

10/71-6/72	University of California, Los Angeles, Postdoctoral Research, Department of Chemistry
7/72-1/77	Williams College, Williamstown, MA, Assistant Professor, Department of Chemistry
9/75-5/77	Brandeis University, NIH postdoctoral fellow, Leave of absence from Williams College
5/77-10/80	Yale University School of Medicine, Department of Pharmacology, Assistant Professor
10/80-6/83	University of Wisconsin-Madison, Biochemistry Department, Assistant Professor
6/83-6/85	University of Wisconsin-Madison, Biochemistry Department, Associate Professor
7/85-9/87	University of Wisconsin-Madison, Biochemistry Department, Professor Romnes Fellow
9/87-9/92	Massachusetts Institute of Technology, Ellen Swallow Richards Professor of Chemistry
9/90-	Massachusetts Institute of Technology, Professor of Biology
9/92-9/96	Massachusetts Institute of Technology, John C. Sheehan Professor of Chemistry
2/96-present	Massachusetts Institute of Technology, Novartis Professor of Chemistry and Biology

Awards

Professor JoAnne Stubbe has received numerous awards including the American Academy of Arts and Sciences, 1991; National Academy of Sciences, 1992; Cope Scholar Award, 1993; Richards Medal, 1996; Cotton Medal, 1997; Alfred Bader Award in Bioorganic and Bioinorganic Chemistry, 1997; National Academy of Sciences Award in Chemical Sciences, 2008; Nakanishi Award from the ACS, 2009; National Medal of Science, 2008; Prelog Medal, ETH Zurich, 2009; Franklin Institute Award in Chemistry, Philadelphia, 2010; Murray Goodman Memorial Prize, Biophysical Society/ACS, 2010; Welch Award in Chemistry with Christopher Walsh HMS, 2010; Yale First Distinguished Woman Science Award, 2013; Honorary Doctor of Science Harvard University, 2013.

Research Interests

The Stubbe lab has helped explain the mechanisms of some of nature's most complex and important enzymes. They use a wide range of tools and often work with outstanding collaborators to develop new techniques to reveal the otherwise inaccessible chemical complexity of these systems. Perhaps their most noted work defines how nature harnesses the reactivity of free radicals to carry out difficult chemistry with exquisite specificity. Bioinformatics now suggests that some 50,000 enzymes use radical chemistry involved in a staggering diversity of reactions from methane production to nucleotide reduction. They continue to unravel the free radical chemistry of ribonucleotide reductases, essential in the transformation of RNA building blocks to DNA building blocks. Professor Stubbe's research also has explored in detail other major areas: the mechanism of bleomycin, a natural product antitumor antibiotic, used clinically; the mechanisms of iron and manganese metallation of proteins and regulation and prevention of mismetallation of metallo-cofactors in model organisms; and the biosynthetic pathways and mechanisms by which bacteria make polyoxoesters, biodegradable polymers with properties of thermoplastics.