

SPEAKER PROFILE



Ned Heindel

Lehigh University

Ned Heindel
Howard S. Bunn Professor of Chemistry
Room: 794

Lehigh University
Seeley Mudd Building
6 East Packer Avenue
Bethlehem, PA 18015
610-758-3464
ndh0@lehigh.edu

Biographical Sketch

Professional activities: President, American Chemical Society (Washington, DC), 1994; director, American Chemical Society (Washington, DC), 1985-1996; director; Council for Chemical Research, 1995-1999; Board Member, IUPAC-USA, 1995-2001; Board Member, Chemical Sciences Roundtable-National Academy of Sciences, 2001-present; director; Centcom Advertising, Ltd. (Westport, CT), 1987-1995; trustee, Northampton County Historical Society; 1989-present; trustee, Keystone Junior College (1975-89) trustee, Chemical Heritage Foundation (Board then Heritage Council), 1986-present; member, Journal Pharmaceutical Science board (to 12/90); member, Bioconjugate Chemistry board (to 12/03); chairman, Chemical & Engineering News board (1988, 1992-93; member 1994-95); consultant, Unimed Pharmaceuticals, Somerville, NJ, 1989-1995; consultant, Digestive Care, 1992-present; consultant, Bio-ProX, 1995-1997; consultant, DCV Pharmaceuticals, 1998-2000; consultant Serenix Pharmaceuticals, 1999-present; consultant, National Museum of American History, Smithsonian Institution, Washington DC; 1990-present; consultant, Air Products and Chemicals, Allentown, PA, 1991-present; consultant, Apollon Corp., Malvern, PA, 1992-1995. Education/Degrees: Lebanon Valley College, B.S. cum laude, 1959 (Chemistry/Math); University of Delaware, Ph.D., 1963 (Organic Chemistry); Princeton University, fellow, 1964 (medicinal Chemistry); Lebanon Valley College, honorary D.Sc. 1985; Albright College, honorary D.Sc., 1993. Experience: instructor, University of Delaware, 1962-63; visiting fellow, Princeton University, 1963-64; assistant professor, Ohio University, 1965; assistant professor, Marshall University, 1964-66; assistant, associate full professor of chemistry, Lehigh University, 1976-present; professor of nuclear medicine, Hahnemann University, 1971-present; director, Center for Health Sciences, Lehigh University, 1980-87. Honors: Robinson Award (1969), Brody Award (1978), H. S. Bunn Distinguished Chair in Chemistry (1985-Present), Who's Who in America (1886-present), Brady Cancer Achievement Award (1989), Henry Hill Award in Medicinal Chemistry (1997), Mosher Award for Contributions to Chemistry (1996), Ben Franklin Partnership Award for Corporate Consulting (2002).

Topics

Title: An Approach to Anti-Alzheimer's Therapeutics: Inhibitors of Acetylcholinesterase

Description: As America's population ages, one of the fastest growing causes of death is Alzheimer's dementia. Among several physical and chemical events occurring in the central nervous systems of disease sufferers is the depletion of stored and available acetylcholine, a critical neurotransmitter. Therapeutic interventions that have sought to increase acetylcholine's biosynthesis have been unsuccessful, while several candidate drugs that retard its metabolism do seem to offer modest clinical improvement. Both reversible and irreversible inhibitors of acetylcholinesterase, with unsymmetrical choline carbonates as the basic framework, have been designed, synthesized, and tested. New synthetic approaches have been developed to such inhibitors, which release chemotoxic agents like quinone methide and haloketones at the enzyme's active site. Promising inhibitors with IC50 values in the micromolar range are in hand.

Title: Antidotes for Terrorist Toxins

Description: A number of terrorist and local military operations worldwide have recently used mustard, chlorine, cyanide, and nerve gas against civilian populations. A consortium of academic, governmental, and industrial laboratories have combined to develop fast-acting interventional pharmaceuticals to save exposed victims. Chemists and biologists are using those same principles of medicinal chemistry and drug discovery traditionally applied when a disease state is the target against the often-fatal physiological conditions induced by chemical weapons. This presenter is part of a national effort to neutralize the effects of sulfur mustard. The chemistry and biology of this painful vesicant and some promising therapeutics for arresting its effects will be covered in the lecture. Suitable for: general audiences

Title: Chem-Pharma's New Birth Place or Where will tomorrow's Chemical Inventions Come From?

Description: A neutralizing solution that detoxifies asbestos, a computerized wheel chair that walks up steps, an inter-penetrating polymer webbing which serves as artificial skin for burn victims, a saliva-based assay that detects intoxication, and a non-fluorocarbon delaminating solvent for stripping photoresists: what do these inventions have in common? All are new, novel products developed by small venture capital companies located in academic incubator sites. Here is where the creativity of the entrepreneur, the enthusiasm of science students, a facilities subsidy of the government, and the technical mastery of America's professorate are harnessed toward inventions. As major companies in the chemical industry increasingly shed research, new models for discovery and innovation are arising. The venture capital firms housed in subsidized incubators located near academic campuses have become the equivalent of old corporate discovery teams which were once common in the Fortune 500 companies. Large companies, too, are spinning off ideas they find themselves unable to explore, either by reverse tech transfer to universities or as the technical nuclei for tiny entrepreneurial start-ups. This lecture describes the collaborative research by the author and his students with seven start-up firms in a lively incubator environment over the last 20 years. Categories: General Public, Management, Public Relations

Title: Chemistry and the Centennial of the FDA: How an ACS President Launched the Food and Drugs Act

Description: 2006 marks one of the most important centennials in American chemistry, the passage of the Pure Food and Drugs Act on 30 June 1906. That milestone could not have been achieved without two decades of hard work by Harvey Washington Wiley, Chief Chemist of the USDA. Wiley discovered new analytical methods for trace contaminants. He used the print media and the bully pulpit of two terms of the ACS presidency to spotlight adulterants in foods and pharmaceuticals. This process prepared the Public and Congress to ultimately pass the Food and Drugs Act. In addition to his contribution to America's most important piece of regulatory public health legislation, Wiley's dynamic leadership of the ACS created the local sections concept, laid the groundwork for IUPAC, strengthened JACS, and doubled the Society's membership. The chemistry of quack medicines, poisoned foods, and toxic tonics and Wiley's successful crusade to pass the first consumer protection law, are covered in this presentation.

Title: Folk Medicine in the 19th Century

Description: In the absence of enforced licensing laws and in the presence of a malevolent and painful medical orthodoxy that focused its therapy on bloodletting and leeching, the 18th and 19th centuries saw the growth of a vigorous alternative medical system. In the Eastern United States, this unorthodox medicine was especially well entrenched, and pow-wow "doctors", hydropaths, Thomsonians, electropaths, and homeopaths maintained sizable practices. Substantial reliance on herbal preparations of folk culture origin, on charms and semi-occult chants, and on defined acts and manipulations characterized many of these medical systems. Vestiges of these unorthodox practices still survive, but even more important several of the therapies and natural product preparations that they devised have found their way into the medicine of today.

Title: Saying No to NO: Inhibitors of Nitric Oxide Synthase

Description: Implicated in vascular tone, inflammatory processes, the spread of pathogenic infections, angina, erectile dysfunction, arthritis, and several other disease states, the regulation of in situ nitric oxide has become a major bio-pharmaceutical challenge. Three common isoforms have been elucidated for nitric oxide synthase (NOS) and each has slightly variable substrate specificity although the endogenous substrate is clearly L-arginine. We have been developing a unique class of cinnamyl imines of N-amino-1,2,4-triazoles which show specificity for the inducible form of the enzyme. The synthetic approaches, biological evaluations, structure-activity relationships, and molecular target(s) of action are the subject of this presentation.

Title: Tinctures, Tonics, and Patent Medicines: A History of Commercialized Quackery

Description: While folk medicines and natural product derivatives have, in many cases, proven a fruitful source of modern, medically accepted therapeutics, they have also proven an abundant source for quackery. From Dr. Bateman's Pectoral Drops, recommended for "rheumatism, afflictions of the stone, gravel agues, the hysterics", to Munyon's Miracle Kidney Cure, which was claimed to "cure Bright's disease, all urinary problems, and pain in the back and groins from kidney diseases", the 19th century witnessed nearly unbelievable excesses in pharmaceutical advertising. Beginning in colonial America and extending to the passage of the Pure Food and Drug Act, a plethora of quack pharmaceutical manufacturers produced and aggressively marketed home

remedies of dubious origin and questionable chemical purity. Whether the ingredients were opium and ethanol or simple milk sugar, no regulations governed their manufacture or sale. Dr. Heindel will trace the birth of America's patent medicine industry in the late 18th century and its heyday of unregulated commercial success in the 19th century. The role of chemistry in the production, analysis, and eventual legal regulation of patent medicines will also be treated.