

## PREVIOUS N. J. LEONARD LECTURERS

1986-1987	James P. Collman	Stanford University
1987-1988	Sir Derek H. R. Barton	Texas A&M University
1988-1989	Christopher T. Walsh	Harvard Medical School
1989-1990	Donald J. Cram	University of California, Los Angeles
1990-1991	Richard R. Ernst	Eidgenössische Technische Hochschule, Zürich
1991-1992	Thomas A. Steitz	Yale University
1992-1993	K. Barry Sharpless	Scripps Research Institute
1993-1994	Rudolph A. Marcus	California Institute of Technology
1994-1995	Phillip A. Sharp	Massachusetts Institute of Technology
1995-1996	Martin Rodbell	National Institute for Environmental Health Sciences
1996-1997	John D. Roberts	California Institute of Technology
	Sidney M. Hecht	University of Virginia
	Peter G. Schultz	University of California, Berkeley
	Albert Eschenmoser	Eidgenössische Technische Hochschule, Zürich
1997-1998	F. Sherwood Rowland	University of California, Irvine
1998-1999	Jean-Michel Savéant	Centre National de la Recherche Scientifique
1999-2000	David A. Tirrell	California Institute of Technology
2000-2001	Alastair Ian Scott	Texas A&M University
2001-2002	Amos B. Smith III	University of Pennsylvania
2002-2003	Lawrence J. Marnett	Vanderbilt University
2003-2004	Robert S. Langer	Massachusetts Institute of Technology
2004-2005	Thomas R. Cech	Howard Hughes Medical Institute, University of Colorado at Boulder
2005-2006	Joseph M. DeSimone	University of North Carolina-Chapel Hill
2006-2007	Rolf Thauer	Max Planck Institute for Terrestrial Microbiology
2008-2009	Roger Y. Tsien	University of California, San Diego
2011-2012	Ada E. Yonath	Weizmann Institute of Science
2012-2013	Stephen J. Benkovic	The Pennsylvania State University
2013-2014	Jeffrey Alan Hubbell	Ecole Polytechnique Fédérale de Lausanne (EPFL) ETH Zürich
2014-2015	Stephen Chu	Stanford University

### TO THE LEONARD LECTURE FUND



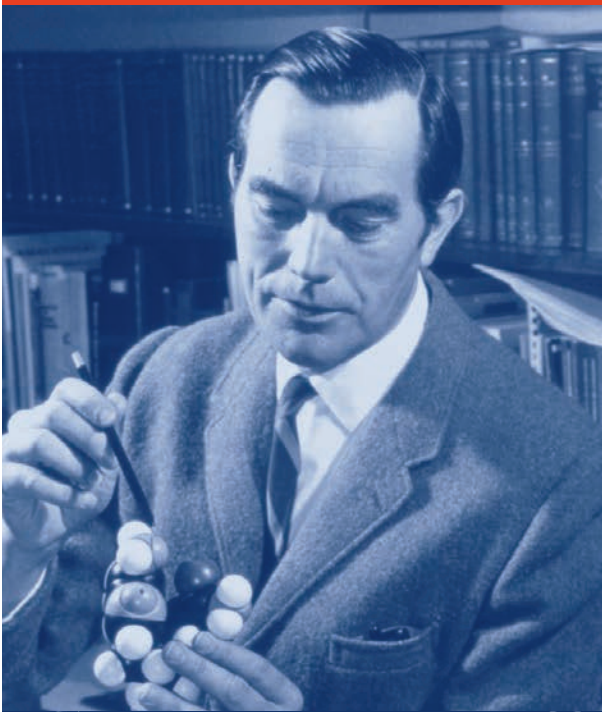
**ONLINE:** <http://scs.illinois.edu/LeonardLecture/NJLfund.php>

**MAIL:** University of IL Foundation, Attn: Nelson J. Leonard Distinguished Lecture Fund, 1305 W Green St., Urbana, IL 61801

**FOR MORE INFORMATION, EMAIL:** [NJLsymposium@illinois.edu](mailto:NJLsymposium@illinois.edu)

# N.J.L. 100

Centennial Symposium



## GUEST SPEAKERS

THOMAS CARELL

LUDWIG - MAXIMILIANS UNIVERSITÄT  
DNA Beyond Watson and Crick

MARVIN CARUTHERS

UNIVERSITY OF COLORADO  
Chemical and Biological Activity  
of New Synthetic DNA Analogues

THOMAS CECH

UNIVERSITY OF COLORADO  
How a Chemist Thinks About RNA

PETER DERVAN

CALTECH  
Advancing Nelson Leonard's  
Molecular Studies on Nucleic  
Acid Structure: Molecular  
Recognition of DNA

PHILLIP SHARP

MIT  
40 Years - RNA Splicing,  
Biotechnology, Non-coding RNAs  
and Physical Chemistry

## NELSON J. LEONARD CENTENNIAL SYMPOSIUM

8:30 AM - 5:00 PM  
SATURDAY, APRIL 15, 2017

ALICE CAMPBELL ALUMNI CENTER  
601 SOUTH LINCOLN AVENUE • URBANA, ILLINOIS

# Nelson J. Leonard Centennial Symposium

April 15, 2017 Alice Campbell Alumni Center

## PROGRAM

- 8:30 a.m. Continental Breakfast**
- 8:45 a.m. Welcome and Introductory Remarks**  
Jonathan Sweedler, Director - School of Chemical Sciences  
Scott Denmark, Symposium Chair
- 9:15 a.m. Professor Thomas Carell - Ludwig-Maximilians Universität**  
"DNA Beyond Watson and Crick"
- 10:15 a.m. Break**
- 10:30 a.m. Professor Phillip Sharp - MIT**  
"40 Years - RNA Splicing, Biotechnology, Non-coding RNAs and Physical Chemistry"
- 11:30 a.m. Luncheon**
- 1:00 p.m. Professor Marvin Caruthers - University of Colorado**  
"Chemical and Biological Activity of New Synthetic DNA Analogues"
- 2:00 p.m. Professor Peter Dervan - Caltech**  
"Advancing Nelson Leonard's Molecular Studies on Nucleic Acid Structure: Molecular Recognition of DNA"
- 3:00 p.m. Break**
- 3:30 p.m. Professor Thomas Cech - University of Colorado**  
"How a Chemist Thinks about RNA"
- 4:30 p.m. Closing Remarks**  
Scott Denmark, Symposium Chair

## PHILLIP SHARP

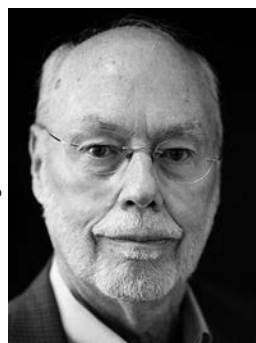


Photo © Peter Badge 2016

Phillip A. Sharp is an Institute Professor (highest academic rank) at the Massachusetts Institute of Technology and member of the Department of Biology and the Koch Institute for Integrative Cancer Research. He joined the Center for Cancer Research (now the Koch Institute) in 1974 and served as its director for six years, from 1985 to 1991, before taking over as head of the Department of Biology, a position he held for the next eight years. He was founding director of the McGovern Institute, a position he held from 2000 to 2004.

His research interests have centered on the molecular biology of gene expression relevant to cancer and the mechanisms of RNA splicing. His landmark work in 1977 provided the first indications of "discontinuous genes" in mammalian cells. The discovery fundamentally changed scientists' understanding of gene structure and earned Dr. Sharp the 1993 Nobel Prize in Physiology or Medicine.

Dr. Sharp has authored over 410 papers. He is an elected member of the National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences, the American Philosophical Society, and the Royal Society, UK. Among his many awards are the Gairdner Foundation International Award, the Lasker Basic Medical Research Award, and the National Medal of Science. His long list of service includes the presidency of the AAAS (2013) and Chair of the Scientific Advisory Committee of the SU2C Project, AACR. A native of Kentucky, Dr. Sharp earned a B.A. degree from Union College, Barbourville, KY, and a Ph.D. in chemistry from the University of Illinois, Champaign-Urbana. Dr. Sharp is a co-founder of Biogen and Alnylam Pharmaceuticals Inc.

## PETER DERVAN



Peter B. Dervan is the Bren Professor of Chemistry at the California Institute of Technology. Dervan pioneered a field of chemistry with studies directed toward understanding the chemical principles for the sequence specific recognition of DNA. Dervan received his B.S. degree from Boston College, and Ph.D. at Yale. He was a postdoctoral fellow at Stanford University and began his association with Caltech as an assistant professor in 1973. Professor Dervan served as chair of Caltech's division of chemistry and chemical engineering from

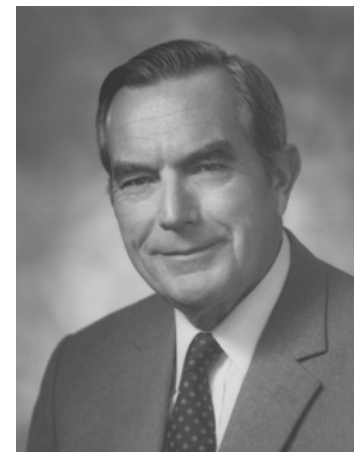
1994 to 1999.

He is a member of the National Academy of Sciences, the National Academy of Medicine, the American Academy of Arts & Sciences, the American Philosophical Society, the French Academy of Sciences and the German National Academy of Sciences. Professor Dervan received the 2006 National Medal of Science from President Bush "for his fundamental research contributions at the interface of chemistry and biology and his influence in education and industrial innovation". Other awards include the Harrison Howe Award (1988), Arthur C. Cope Award (1993), Willard Gibbs Medal (1993), Nichols Medal (1994), Maison de la Chimie Foundation Prize (1996), Remsen Award (1998), Kirkwood Medal (1998), Alfred Bader Award (1999), Max Tishler Prize (1999), Linus Pauling Medal (1999), Richard C. Tolman Medal (1999), Tetrahedron Prize (2000), Harvey Prize (Israel) (2002), Ronald Breslow Award (2005), Wilbur Cross Medal (2005), Frank H. Westheimer Medal (2009) and the Prelog Medal (2105). He has served on several Scientific Advisory Boards for the pharmaceutical and biotechnology industries. He is Chair of the Scientific Advisory Board of the Robert A. Welch Foundation. Dervan is an outstanding teacher, having received several teaching awards given by the undergraduate students at Caltech. Perhaps Dervan's greatest influence will be his academic mentoring. Over 60 of Dervan's former graduate and postdoctoral coworkers hold academic research positions around the world, many of whom are leaders in chemistry, biology and medicine.

## NELSON J. LEONARD

This symposium is sponsored by the Nelson J. Leonard Distinguished Lecturer Fund, set up in 1986 by the late Mrs. Louise Leonard, Eli Lilly and Company, the Monsanto Company, Organic Syntheses, Inc, and Professor Leonard's colleagues and students. In addition, a generous anonymous gift has been received in support of the symposium.

Professor Leonard received his BS from Lehigh in 1937, a BSc from Oxford in 1940, a PhD from Columbia in 1942, and a DSc from Oxford in 1983. He also received three honorary doctoral degrees. At the time of Leonard's retirement in 1986, he had been at Illinois for 44 years, directed 120 graduate students, and published over 400 papers.



Internationally acclaimed for his skill in organic synthesis, his work answered questions of fundamental importance to biochemistry and life processes. He invented fluorescent probes and dimensional probes of enzyme-coenzyme binding sites and DNA double-helical cross sections.

He received many honors including the ACS award for Creative Work in Synthetic Organic Chemistry, the Medal for Creative Research in Synthetic Organic Chemistry of the Synthetic Organic Chemical Manufacturers Association, the Roger Adams Award in Organic Chemistry, the first Creativity Award, University of Oregon, and the first Paul G. Gassman Distinguished Service Award, Division of Organic Chemistry, ACS. He was a member of the National Academy of Sciences, foreign member of the Polish Academy of Sciences, honorary member of the Pharmaceutical Society of Japan, member of American Philosophical Society, and fellow and vice-president of the American Academy of Arts and Sciences.

At the time of his passing in the fall of 2006, Professor Leonard was a Faculty Associate in Chemistry at the California Institute of Technology.

## THOMAS CARELL



Thomas Carell was born in Herford (Germany) in 1966. He is married and father of three children. His academic career in chemistry began at the Universities of Münster and Heidelberg. In 1993 he obtained his doctorate with Prof. H. A. Staab at the Max Planck Institute of Medical Research. After postdoctoral training with Prof. J. Rebek at MIT (Cambridge, USA) in 1993-1995, Thomas Carell moved to the ETH Zürich (Switzerland) into the group of Prof. F. Diederich to start independent research. He obtained his habilitation in 1999. In 2000 he accepted a full professor position for Organic Chemistry at the Philipps-Universität in Marburg (Germany). In 2004 he moved to the Ludwig-Maximilians-Universität (LMU) in Munich (Germany) where he is heading a research group in chemical biology focused to analyze the chemistry of epigenetic programming in DNA and RNA.

Thomas Carell is a member of the German National Academy Leopoldina and of the Berlin-Brandenburgische Academy of Arts and Sciences. He is the recipient of the Cross of Merit from the Federal Republic of Germany.

## MARVIN CARUTHERS



Marvin H. Caruthers is a Distinguished Professor of Biochemistry and Chemistry at the University of Colorado, Boulder. A Guggenheim Fellow, Dr. Caruthers received his B.S. in Chemistry from Iowa State University, his Ph.D. in Biochemistry from Northwestern University, and completed his postdoctoral studies with H. G. Khorana at The University of Wisconsin and MIT.

Professor Caruthers interests include nucleic acids chemistry and biochemistry. Approximately 30 years ago, the methodologies that are used today for chemically synthesizing DNA were developed in his laboratory and incorporated into so-called gene machines for the purpose of synthesizing DNA used by biochemists, biologists, and molecular biologists for many research applications. More recently his laboratory has developed methods for RNA chemical synthesis and for the synthesis of DNA/RNA on chips. His laboratory has also pioneered the synthesis of many new nucleic acid analogs that have found applications in the nucleic acid diagnostic and therapeutic areas.

He is the recipient of several academic and research awards including The Elliott Cresson Medal from the Franklin Institute, The National Academy of Sciences Award for Chemistry in Service to Society, The Prelog Medal in Recognition of Pioneering Work on the Chemical Synthesis of DNA, The Economists Award in Biotechnology for His Contributions in Automating the Synthesis of DNA, and The US National Medal of Science for 2006, the nation's highest distinction honoring scientific achievement. During 2014, he has been the recipient of The National Academy of Science Award in the Chemical Sciences, The American Chemical Society Award for Creative Invention, and The Frantisek Sorm Medal, The Academy of Sciences of the Czech Republic.

Dr. Caruthers is an elected member of the US National Academy of Sciences, the American Academy of Arts & Sciences and a Corresponding Member of the German Academy of Science Göttingen. One of the co-founders of Amgen and Applied Biosystems, Dr. Caruthers remains active in the Biotechnology arena – most recently as a co-founder of miRagen Therapeutics.