

Curriculum Vitae
Ming-Daw Tsai, Ph.D.
Institute of Biological Chemistry
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Education

1968-1972, B.S. in Chemistry, National Taiwan University, Taipei
(1972-1974 in compulsory military service)
1974-1978, Ph.D. in Biochemistry & Medicinal Chemistry, Purdue Univ. (Heinz Floss)

Positions Held

2008 Aug - present Distinguished Research Fellow and Director, Institute of Biological Chemistry, Academia Sinica
2007 Aug - present Professor, Institute of Biochemical Sciences, National Taiwan Univ.
2007 July - present Emeritus Professor of Chemistry, OSU
2007 Feb - present Director, CBMB Program, Taiwan International Graduate Program
2006 Oct - 2008 Aug Acting Director, Institute of Biological Chemistry, Academia Sinica
2005 Jan - 2008 Aug Director of Functional Genomics, GRC
2004 Jan - present Director, National Core Facilities Office, NRPGM
2003 Nov - 2008 Aug Distinguished Research Fellow, Genomics Research Center Academia Sinica, Taiwan
2003 Oct - 2007 June Kimberly Professor of Chemistry, Ohio State University
1993 Oct - 2007 June Director, Office of Research Campus Chemical Instrument Ctr, OSU
1992 Jan - 2007 June Professor, Department of Biochemistry, OSU
1990 Oct - 2007 June Professor, Department of Chemistry, OSU
1995 Sept - 2003 July Director, Chemistry/Biology Interface Training Program, OSU
1986 Oct - 1990 Sept Associate Professor of Chemistry, Ohio State University
1989 Aug - 1990 June Visiting Professor, Dept. of Biochemistry, University of Wisconsin, Madison (with John Markley)
1986 Mar - 1986 Sept. Visiting Professor, University of Lund, Sweden (with Sture Forsen)
1981 July - 1986 Sept Assistant Professor of Chemistry, Ohio State University
1980 July - 1981 July Assistant Prof of Chemistry, Rutgers Univ. (Newark)
1980 July - 1980 Dec Research Associate, University of Illinois (with Eric Oldfield)
1979 July - 1980 Dec Visiting Assistant Professor, Medicinal Chemistry, Purdue Univ.
1978 Jan - 1979 June Postdoctoral Associate, Purdue University (with H. G. Floss)

Research Interest

Structure-Function Relationship of Enzymes
Protein-(phosphor)protein interactions in signal-transduction
Mechanism of polymerases involved in DNA repair
Biological NMR
Chemical biology,
Functional Genomics
Drug Discovery

Honors/Awards

1. Glenn L. Jenkins Award for Excellence in Research, Purdue Univ., 1977.
2. Alfred P. Sloan Fellow, 1983-1985
3. Faculty Research Award, Ohio State Chapter of Sigma Xi, 1985.
4. Camille and Henry Dreyfus Teacher-Scholar, 1985-1990.
5. Distinguished Scholar Award, Ohio State University, 1992.
6. Elected Fellow, American Association for the Advancement of Science (AAAS), 1992.
7. Committee on Institutional Cooperation (CIC) Academic Leadership Program Fellow, 2002-2003.
8. Kimberly Professor of Chemistry, Ohio State University, 2003-2007.
9. Guest Professor, Tsinghua University, PRC, 2003-2006.
10. Distinguished Alumnus Award, Purdue University School of Pharmacy, 2008

Special Professional Services

1. Symposium Organizer, "Quadrupolar NMR in Biophysical Chemistry", ACS 18th Central Regional Meeting, Bowling Green, June 4, 1986.
2. Co-Chairperson, 8th Midwest Enzyme Chemistry Conference, October, 1988.
3. NIH Physical Biochemistry Study Section Member, 1988-92.
4. Co-chair, Gordon Conference on Enzymes, July 1993.
5. Board Member, Chinese American Chemical Society, 1993-96.
6. Co-founder, Ohio NMR Consortium, 1995.
7. Nominating Committee, American Chemical Society Division of Biological Chemistry, 1997.
8. NIH Training Grant Study Section, 1997-01.
9. Symposium Organizer, "NMR of Biological Macromolecules". 31st Central Regional Meeting of the American Chemical Society, June 21-23, 1999.
10. Advisory Board, Institute of Chemistry, Academia Sinica, Taiwan, 1991-present.
11. President, Chinese American Chemical Society, 2003.
12. Organizer, Frontiers of Bioorganic and Natural Product Chemistry Symposium, Seattle, August 26-29, 2004.
13. Board of Consulting Editors, Bioorganic & Medicinal Chemistry, 1998-2006.
14. Board of Consulting Editors, Bioorganic & Medicinal Chemistry Letters, 1998-2006.
15. Theme Editor, Current Opinions in Chemical Biology, Volume 7, April 2003.
16. Cancer PPG Special Study Section, National Cancer Institute, NIH, October 2-3, 2007.
17. Program Chair, International Society for Magnetic Resonance Conference (ISMAR), Kenting, Taiwan, Oct 14-19, 2007.
18. President, Taiwan Magnetic Resonance Society, 2007 - present
19. Editorial Advisory Board for Biochemistry, January 2009 – December 2011

Graduate Student Mentoring

I have trained 52 Ph. D. graduates and 12 master graduates, and 12 postdoctors. A number of former students and former postdoctors have taken faculty positions in academic institutions in the U. S. and Taiwan, as listed below:

1. Yund-Jung (John) Shyy, Ph. D. 1987 (Chemistry), Professor, Department of Bioengineering, University of California at Riverside. john.shyy@ucr.edu
2. Charles R. Sanders, Ph. D. 1988 (Chemistry), Professor, Dept. of Biochemistry and Biophysics, Vanderbilt University School of Medicine. "Sanders, Chuck" chuck.sanders@vanderbilt.edu
3. Tsung-Chung (Alan) Tsai, postdoctor 1982-85, Professor (retired), Tunghai Univ, Taiwan.

4. William M. Loffredo, Ph. D. 1988 (Chemistry), Professor, Dept. of Chemistry, East Strassburg University, Pennsylvania. wloffredo@po-box.esu.edu
5. Gialih (Hoffman) Lin, Ph. D. 1989 (Chemistry), Professor of Chemistry, Chung-Hsing U., Taiwan.
6. Joseph P. Noel, Ph. D. in 1990 (Chemistry), Professor, SALK Institute and Dept. of Chemistry, University of California at San Diego. Joseph Noel <noel@salk.edu>
7. Honggao Yan, Ph. D. 1991 (OSBP), Professor, Dept. of Biochemistry, Michigan State University. "Honggao Yan" <yanh@msu.edu>
8. Karol Bruzik, former postdoctor, Professor, Dept. of Medicinal Chemistry, University of Illinois at Chicago. "Karol S. Bruzik" <kbruzik@uic.edu>
9. Cynthia M. Dupureur (Chemistry), Ph. D. 1992, Associate Professor, Dept. of Chemistry and Biochemistry, University of Missouri, St Louis. Cindy Dupureur <cdup@umsl.edu>
10. Robert Hondal, Ph. D. 1997 (Chemistry), Assistant Professor, Department of Biochemistry, University of Vermont. Robert Hondal <Robert.Hondal@uvm.edu>
11. Karen Ericson, Ph. D. 1998 (Chemistry), Assistant Professor at Indiana University-Purdue University Fort Wayne. Karen Ericson <ericsonk@ipfw.edu>
12. Thomas Selby, Ph. D. 1999 (Chemistry), Assistant Professor, Central Florida State University. "Thomas Selby" <tselby@mail.ucf.edu>
13. Junan Li, Ph. D. 2000 (Biochemistry), Postdoctor 2002-2005, Assistant Professor, College of Public Health, OSU, 2007. Junan Li li.225@osu.edu

Professional Membership

American Chemical Society (USA)
 American Society of Biochemistry and Molecular Biology (USA)
 American Association for the Advancement of Science (Elected Fellow in 1992) (USA)
 Taiwan Biophysical Society
 Taiwan Magnetic Resonance Society

Training Grants (as Principal Investigator/Program Director)

1. "Chemistry/Biology Interface Training Grant", NIH, T32 GM 08512, 7/1/96-6/30/01, annual direct cost ca. \$300,000; renewed for 7/1/01-6/30/06. (Dr. Dehua Pei took over the directorship and the PI starting 7/1/03).

Equipment Grants (as Principal Investigator only; co-PI of many other proposals.)

1. "Purchase of a 600 MHz NMR Spectrometer", \$200,000, NIH, RR 08299, 8/15/93-8/14/94.
2. "Purchase of a 600 MHz NMR Spectrometer", \$200,000, NSF, BIR-9221639, 6/1/93-5/31/95.
3. "500 MHz Console Upgrade", \$258,000, NSF, 5/96.
4. "800 MHz NMR", \$1,870,000, Ohio Board of Regents, 4/96.
5. "Ohio NMR Consortium", \$2,000,000, Ohio Board of Regents (the funding is distributed among several universities in Ohio; Tsai serve as PI of the Consortium proposal), June 2002.

Past Research Grants (as Principal Investigator)

1. "Stereochemistry of Enzyme Reactions Involving a Propochiral Phosphorus Center". (NSF) 8/1/79 - 7/31/82, Total cost: \$108,000.
2. "¹⁷O and ³¹P NMR of Biophosphates". (NIH) GM 29041, 8/1/82 - 11/30/85, Direct cost: \$182,545.

3. Research Award, A. P. Sloan Foundation, 9/15/83 - 9/14/85, Total cost: \$25,000.
4. Dreyfus Teacher-Scholar Award, 12/1/85 - 11/30/90, Direct Cost: \$47,000, Total cost: \$50,000.
5. "Productive Versus Nonproductive Binding of Kinases". (NSF) DMB-8603553, 9/86 - 8/89, Total Cost: \$232,133.
6. "Mechanism of Adenylate Kinase". (NSF) DMB 89-04727, 3/90-2/93, Total Cost: \$285,000.
7. "The Role of Aspartate in the Catalytic Diad". NIH, F32 GM15973, 12/93 - 11/96, direct cost \$72,900. (Postdoctoral Fellowship to Brian Werneburg).
8. "Stereochemistry of Enzyme Reactions at Phosphorus", NIH, GM30327, 7/79 - 11/93, final year direct cost \$112,585.
9. "Mechanism of Inositide-Related Enzymes", NIH, GM30327, 12/93 - 11/97, final year direct cost \$137,578. This was continuation of GM30327 with a change of title.
10. "Mechanism of p19ARF - Bridging Two Major Tumor Suppression Pathways", PI, a grant from American Cancer Society through Comprehensive Cancer Center, \$35,000 from 7/1/98 to 6/30/99.
11. "Mechanism of Adenylate Kinase". NIH, GM43268, 8/92 - 7/96, final year (year 04) direct cost \$155,357.
12. "Mechanism of Phospholipase A₂". NIH, GM41788, 4/89 - 3/01, final year (year 12) direct cost \$153,514.
13. "Structure Function of FHA Domain in Signaling and Cancer". NIH, CA87031, 3/1/01-2/28/05 (four years), final year direct cost \$157,000.
14. "Conformational Changes in Phospholipase C", NIH, GM57568, 12/98-12/08. This is continuation of GM30327. K. Bruzik became the PI of this grant. My share is ca. \$50K/year direct cost.
15. "Mechanism of DNA Polymerases". NIH GM43268, 12/97 - 6/06, final year (year 12) direct cost \$222,300.
16. "Functional Genomics Approach to the Virulence of Klebsiella pneumonia". AS, 94F008-1, PI, 1/05-12/07, current year cost \$NT3,000,000.
17. "Functional and Genomic Studies of Capsular synthesis Region of Tissue Invasive Klebsiella pneumoniae". NSC, 95-3112-B-001 -021-, PI, 08/06-07/07, current year total cost \$NT2,500,000.

Active Research Grants

1. "Structure-Function Relationship of Tumor Suppressors". NIH, CA69472, PI, 6/00-2/10, current year direct cost \$200,000, current year total cost \$292,000.
2. "Protein-Phosphoprotein Interaction in Cancer-related Signaling". NHRI, EX95-9508NI, PI, 1/06-12/08, current year total cost \$NT2,355,000.
3. "Mechanism of Catalysis by the RNA Polymerase of Avian Flu Virus". NSC, 95-2745-B-001 -004-, PI, 08/06-07/09, total cost \$NT7,500,000.
4. "Enzymes in the biosynthesis of the capsular polysaccharide of Klebsiella pneumoniae". NSC, 98-3112-B-001 -003-, PI, 05/07-04/10, current year cost \$NT5,950,000, total cost \$NT18,331,000.

Publications

1. "Terpenes and Sterols of *Cunninghamia Konishii*," Y. S. Cheng and M.-D. Tsai, *Phytochemistry*, *11*, 2108-2109 (1972).
2. "Air Oxidation of α -Terpineol," M.-D. Tsai and Y. S. Cheng, *J. Chinese Chem. Soc.*, *22*, 149-155 (1974).
3. "Dye-sensitized Photooxidation of α -Terpineol," Y. S. Cheng, M.-D. Tsai, J. M. Fang and S. S. Hsu, *Chemistry* (The Chinese Chem. Soc., Taiwan, China), 8-11 (1975).
4. "Conformational Analysis of Pyridoxal Amino Acid Schiff's Bases," H. J. R. Weintraub, M.-D. Tsai, S. R. Byrn, C.-j. Chang and H. G. Floss, *Int. J. Quantum Chem.*, QBS 3, 99-105 (1976).
5. "Conformational Analysis of Pyridoxal Schiff's Bases," M.-D. Tsai, S. R. Byrn, C.-j. Chang, H. G. Floss and H. J. R. Weintraub, *Biochemistry* *17*, 3177-3182 (1978).
6. "Conformation-Reactivity Relationship for Pyridoxal Schiff's Bases," M.-D. Tsai, H. J. R. Weintraub, S. R. Byrn, C.-j. Chang and H. G. Floss, *Biochemistry*, *17*, 3183-3188 (1978).
7. "Stereochemistry and Mechanism of Reactions Catalyzed by Tryptophan Synthetase and its β_2 Subunit, M.-D. Tsai, E. Schleicher, R. Potts, G. E. Skye and H. G. Floss, *J. Biol. Chem.*, *253*, 5344-5349 (1978).
8. "Stereochemistry and Mechanism of Reactions Catalyzed by Tryptophanase from *Escherichia coli*, J. C. Vederas, E. Schleicher, M.-D. Tsai and H. G. Floss, *J. Biol. Chem.*, *253*, 5350-5354 (1978).
9. "Stereochemistry of the β -Cyanoalanine Synthetase and S-Alkylcysteine Lyase Reactions," M.-D. Tsai, J. Weaver, H. G. Floss, E. E. Conn, R. K. Creveling and M. Mazelis, *Arch. Biochem. Biophys.*, *190*, 553-559 (1978).
10. "Stereochemistry of Enzymatic Transmethylation," H. G. Floss, L. Mascaro, M.-D. Tsai and R. W. Woodard, in *Transmethylation* (E. Usin, R. T. Borchardt and C. R. Creveling, Eds.), Elsevier North-Holland, New York (1979), pp. 135-141.
11. "Chiral Methyl Groups," H. G. Floss and M.-D. Tsai, *Adv. Enzymol.* *50*, 243-302 (1979).
12. "Stereochemistry and Mechanism of Reactions Catalyzed by Indolyl 3-alkane- α -Hydroxylase," M.-D. Tsai, H. G. Floss, H. J. Rosenfeld and J. Roberts, *J. Biol. Chem.*, *254*, 6437-6443 (1979).
13. "Stereochemical Course of the Transmethylation Catalyzed by Catechol O-Methyltransferase," R. W. Woodard, M.-D. Tsai, H. G. Floss, P. A. Cook and J. K. Coward, *J. Biol. Chem.*, *255*, 9124-9127 (1980).
14. "First Observation of Amino Acid Side Chain Dynamics in Membrane Proteins Using High Field Deuterium NMR Spectroscopy," R. A. Kinsey, A. Kintanar, M.-D. Tsai, R. L. Smith, N. Janes and E. Oldfield, *J. Biol. Chem.*, *256*, 4146-4149 (1981).
15. "Protein Crystals, Membrane Proteins and Membrane Lipids." E. Oldfield, N. James, R. Kinsey, A. Kintanar, R. W. K. Lee, T. M. Rotngeb, S. Schramm, R. Skarjune, R. Smith and M.-D. Tsai, *Biochem. Soc. Trans.*, *45*, 155-181 (1981).

16. "Use of ^{31}P Nuclear Magnetic Resonance to Distinguish Bridge and Non-bridge Oxygens of ^{17}O -enriched Nucleoside Triphosphates. Stereochemistry of Acetate Activation by Acetyl CoA Synthetase," M.-D. Tsai, *Biochemistry* 18, 1468-1472 (1979).
17. "Applicability of the $^{31}\text{P}(^{17}\text{O})$ NMR Method in the Study of Enzyme Mechanism Involving Phosphorus," M.-D. Tsai, S. L. Huang, J. F. Kozlowski and C. C. Chang, *Biochemistry* 19, 3531-3536 (1980).
18. "Chirality at a Pro-pro-prochiral Phosphorus Center, Stereochemical Course of the 5'-Nucleotidase-Catalyzed Reaction," M.-D. Tsai and T. T. Chang, *J. Am. Chem. Soc.*, 102, 5416-5418 (1980).
19. "Stereochemistry of the Hydrolysis of Adenosine 5'-Thiophosphate Catalyzed by Venom 5'-Nucleotidase," M.-D. Tsai, *Biochemistry* 19, 5310-5316 (1980).
20. "Does Mg^{2+} Interact with the α -Phosphate of ATP? An Investigation by ^{17}O NMR," S.-L. Huang and M.-D. Tsai, *Biochemistry* 21, 951-959 (1982).
21. "Use of $^{31}\text{P}(^{18}\text{O})$, $^{31}\text{P}(^{17}\text{O})$, and ^{17}O NMR Methods to Study Enzyme Mechanism Involving Phosphorus," M.-D. Tsai, *Methods Enzymol.* 87, 235-279 (1982).
22. "Phospholipids Chiral at Phosphorus. 1. Stereochemistry of Transphosphatidylation Catalyzed by Phospholipase D," K. Bruzik and M.-D. Tsai, *J. Am. Chem. Soc.* 104, 863-865 (1982).
23. "Phospholipids Chiral at Phosphorus. 2. Preparation, Property and Application of Chiral Thiophospholipids" K. Bruzik, S. M. Gupte and M.-D. Tsai, *J. Am. Chem. Soc.* 104, 4682-4684 (1982).
24. "Phospholipids Chiral at Phosphorus. 3. Preparation and Spectral Properties of Chiral Thiophospholipids," K. Bruzik, R.-T. Jiang and M.-D. Tsai, *Biochemistry* 22, 2478-2486 (1983).
25. "Phospholipids Chiral at Phosphorus. 4. Could Membranes be Chiral at Phosphorus?" M.-D. Tsai, R.-T. Jiang and K. Bruzik, *J. Am. Chem. Soc.* 105, 2478-2480 (1983)
26. "Phospholipids Chiral at Phosphorus. Synthesis, Absolute Configurations and Applications." K. Bruzik, R.-T. Jiang and M.-D. Tsai, *Phosphorus and Sulfur* 18, 369-372 (1983).
27. "Effects of ^{17}O and ^{18}O on ^{31}P NMR: Further Investigation and Applications," R. D. Sammons, P. A. Frey, K. Bruzik and M.-D. Tsai, *J. Am. Chem. Soc.* 105, 5455-5461 (1983). – This paper was featured in an one-page news article in *Science* 224, 377 (1984).
28. "NMR Methods Involving Oxygen Isotopes in Biophosphates," M.-D. Tsai and K. Bruzik, in *Biological Magnetic Resonance*, Vol. 5, L. J. Berliner and J. Reuben, Eds., Plenum Press, New York, pp. 129-181 (1983).
29. "Phospholipids Chiral at Phosphorus. 5. Synthesis and Configurational Analysis of Chiral [$^{17}\text{O},^{18}\text{O}$]-Phosphatidylethanolamine." K. Bruzik and M.-D. Tsai, *J. Am. Chem. Soc.* 106, 747-754 (1984).
30. "Phospholipids Chiral at Phosphorus. 6. Synthesis of Chiral Phosphatidylcholine and Stereochemistry of Phospholipase D." K. Bruzik and M.-D. Tsai, *Biochemistry* 23, 1656-1661 (1984).

31. "Phospholipids Chiral at Phosphorus. 7. Absolute Configuration of Chiral Thiophospholipids and Stereochemistry of Phospholipase D." R.-T. Jiang, Y.-J. Shyy, and M.-D. Tsai, *Biochemistry* 23, 1661-1667 (1984).
32. "Phospholipids Chiral at Phosphorus. 8. Properties of Small Unilamellar Vesicles of Chiral Thiophosphatidylcholine." T.-C. Tsai, R.-T. Jiang and M.-D. Tsai, *Biochemistry* 23, 5564-5570 (1984).
33. "Stereochemistry of Biological Reactions at Pro-prochiral Centers." H. G. Floss, M.-D. Tsai, and R. W. Woodard, *Topics in Stereochemistry*, E. L. Eliel, N. L. Allinger and S. H. Wilen, Eds., John Wiley & Sons, pp. 253-321 (1984).
34. "Use of Chiral thiophosphates and the Stereochemistry of Enzymatic Phosphoryl Transfer." M.-D. Tsai, in *³¹P NMR: Principles and Applications*, D. Gorenstein. Ed.. Academic Press, pp. 175-197 (1984).
35. "Phospholipids Chiral at Phosphorus. 9. Use of Chiral Thiophosphatidylcholine to Study the Metal-Binding Properties of Bee Venom Phospholipase A₂," T.-C. Tsai, J. Hart, R.-T. Jiang, K. Bruzik and M.-D. Tsai, *Biochemistry* 24, 3180-3188 (1985).
36. "Metal-Nucleotide Interactions. 3. ¹⁷O, ³¹P and ¹H NMR Studies on the Interactions of Sc(III) and La(III) with ATP," Y.-J. Shyy, T.-C. Tsai and M.-D. Tsai, *J. Am. Chem. Soc.* 107, 3478-3484 (1985).
37. "Mechanism of Adenylate Kinase. 1. Use of ¹⁷O NMR to Study the Binding Properties of Substrates," D. A. Wisner, C. Steginsky, Y.-J. Shyy and M.-D. Tsai, *J. Am. Chem. Soc.* 107, 2814-2815 (1985).
38. "Phospholipids Chiral at Phosphorus. 10. Use of Chiral Thiophospholipids to Study the Mechanism of Phospholipase A₂," M.-D. Tsai, K. Bruzik, J. Hart, R.-T. Jiang, T. Rosario-Jansen, T.-C. Tsai and D. A. Wisner, in *Mechanisms of Enzymatic Reactions: Stereochemistry*, P. A. Frey, ed., Elsevier, 115-126 (1986).
39. "Phospholipids Chiral at Phosphorus. 11. FT-IR Study on the Gel-Liquid Crystalline Transition of Chiral Thiophosphatidylcholine," S.-B. Chang, J. O. Alben, D. A. Wisner and M.-D. Tsai, *Biochemistry* 25, 3435-3440 (1986).
40. "Phospholipids Chiral at Phosphorus. 12. Configurational Effect on the Thermotropic Properties of Chiral Dipalmitoylthiophosphatidylcholine," D. A. Wisner, T. Rosario-Jansen and M.-D. Tsai, *J. Am. Chem. Soc.*, 108, 8064-8068 (1986).
41. "Phospholipids Chiral at Phosphorus. 13. Stereochemical Comparison of Phospholipase A₂, Lecithin-Cholesterol Acyl Transferase, and Platelet-Activating Factor," T. Rosario-Jansen, H. J. Pownall, J. P. Noel and M.-D. Tsai, *Phosphorus and Sulfur* 30, 601-604 (1987).
42. Phospholipids Chiral at Phosphorus. 14. Stereochemical Effects on the Thermotropic Properties of Thiophosphatidylcholines and Thiosphingomyelins," M.-D. Tsai, K. S. Bruzik, D. Wisner and S.-H. Liu, in *Biophosphates and Their Analogues, Synthesis, Structure, Metabolism and Activity*", K.S. Bruzik and W.J. Stec, Eds., Elsevier, pp. 561-570 (1987).
43. "Is the Binding of Mg²⁺ to Calmodulin Significant? An Investigation by ²⁵Mg NMR," M.-D. Tsai, T. Drakenberg, E. Thulin and S. Forsen, *Biochemistry*, 26, 3635-3643 (1987).

44. "Magnesium Binding to Calcium-Binding Proteins: A Regulatory Function?" T. Drakenberg, S. Forsen, E. Thulin, and M.-D. Tsai, in *Calcium-Binding Proteins in Health and Disease*, Norman, A. W., Vanaman, T. C., and Means, A. R., Eds., Academic Press, pp. 430-432 (1987).
45. "Phospholipids Chiral at Phosphorus. 15. Steric Course of Phosphatidylserine Synthases from *E. coli* and Yeast," C. R. H. Raetz, G. M. Carman, W. Dowhan, R.-T. Jiang, W. Waszkuc, W. Loffredo and M.-D. Tsai, *Biochemistry*, 26 4022-4027 (1987).
46. "A Calorimetric Study of the Thermotropic Behavior of Pure Sphingomyelin Diastereomers," K. S. Bruzik and M.-D. Tsai, *Biochemistry* 26, 5364-5368 (1987).
47. "Mechanism of Adenylate Kinase. 2. Does ATP bind to the AMP Site?" Y. J. Shyy, G. Tian, and M.-D. Tsai, *Biochemistry*, 26, 6411-6415 (1987).
48. "Mechanism of Adenylate Kinase. 3. Use of Deuterium NMR to Show Lack of Correlation Between Local Substrate Dynamics and Local Binding Energy." C. R. Sanders II and M.-D. Tsai, *J. Am. Chem. Soc.* 110, 3323-3324 (1988).
49. "Steric Course of the Reaction Catalyzed by Phosphatidylserine Decarboxylase from *E. coli*". Z. No, C. R. Sanders II, W. Dowhan, and M.-D. Tsai, *Bioorg. Chem.*, 16, 184-188 (1988).
50. "Phospholipids Chiral at Phosphorus. 16. Synthesis and Stereospecificity of Phosphorothioate Analogues of Platelet Activating Factor." T. Rosario-Jansen, R.-T. Jiang, D. J. Hanahan, and M.-D. Tsai, *Biochemistry*, 27, 4619-4624 (1988).
51. "Phospholipids Chiral at Phosphorus. 17. Characterization of the Subgel Phase of Thiophosphatidylcholines by Use of X-Ray Diffraction, P-31 NMR, and FT-IR". H. E. Sarvis, W. Loffredo, R. A. Dluhy, L. Hernqvist, D. A. Wisner, and M.-D. Tsai, *Biochemistry*, 27, 4625-4631 (1988).
52. "Mechanism of Adenylate Kinase. 4. Histidine-36 Is Not Directly Involved in Catalysis, But Protects Cysteine-25 and Stabilizes the Tertiary Structure." G. Tian, C. R. Sanders II, F. Kishi, A. Nakazawa, and M.-D. Tsai, *Biochemistry*, 27, 5544-5552 (1988).
53. "Use of Short-Chain *Cyclopentano*-phosphatidylcholines to Probe the Mode of Activation of Phospholipase A₂ from Bovine Pancreas and Bee Venom". G. L. Lin, J. Noel, W. Loffredo, H. Sable, and M.-D. Tsai, *J. Biol. Chem.*, 263, 13208-13214 (1988).
54. "Phospholipase A₂ Engineering: Design, Synthesis, and Expression of a Gene for Bovine Pancreatic Phospholipase A₂". J. P. Noel and M.-D. Tsai, *J. Cellular Biochem.* 40 (UCLA Symposium Series), 309-320 (1989).
55. "Phospholipids Chiral at Phosphorus. 18. Stereochemistry of Phosphatidylinositide-specific Phospholipase C". G. Lin and M.-D. Tsai, *J. Am. Chem. Soc.*, 111, 3099-3101 (1989).
56. "Ligand-Protein Interactions Via NMR of Quadrupolar Nuclei". C. R. Sanders II and M.-D. Tsai, *Methods. Enzymol.* 177, 317-333 (1989).
57. "Mechanism of Adenylate Kinase. 5. Is There a Relationship Between Local Substrate Dynamics, Local Binding Energy, and the Catalytic Mechanism?" C. R. Sanders II, G. Tian and M.-D. Tsai, *Biochemistry* 28, 9028-9043 (1989).

58. "Phospholipids Chiral at Phosphorus. 19. Synthesis and Configurational Assignment of Phosphorothioate Analogues of Phosphatidylserine". W. M. Loffredo and M.-D. Tsai, *Bioorg. Chem.* 18, 78-84 (1990).
59. "Phospholipids Chiral at Phosphorus. 20. Stereochemical Mechanism of the Reactions Catalyzed by Phosphatidylinositide-Specific Phospholipase C From *Bacillus Cereus* and Guinea Pig Uterus". G. H. Lin, C. F. Bennett, and M.-D. Tsai, *Biochemistry* 29, 2747-2757 (1990).
60. "Mechanism of Adenylate Kinase. 6. Are the Essential Lysines Essential?" G. Tian, H. Yan, R.-T. Jiang, F. Kishi, A. Nakazawa, and M.-D. Tsai, *Biochemistry* 29, 4296-4304 (1990).
61. "Phospholipids Chiral at Phosphorus. 22. Synthesis of Chiral Dioleoylthiophosphatidylcholine and Stereospecificity of Lecithin-Cholesterol Acyltransferase". T. Rosario-Jansen, H. Pownall, R.-T. Jiang, and M.-D. Tsai, *Bioorg. Chem.* 18, 179-184 (1990).
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 207. “Dissection of Protein-Protein Interaction and CDK4 Inhibition in the Oncogenic versus Tumor Suppressing Functions of Gankyrin and P16.” Anjali Mahajan, Yi Guo, Christopher M. Weghorst, Chunhua Yuan, Ming-Daw Tsai, Junan Li, *J. Mol. Biol.* 373, 990-1005 (2007).
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 212. "Structure and Function of 2:1 DNA Polymerase•DNA Complexes". Kuo-Hsiang Tang and Ming-Daw Tsai, *J. Cellular Physiology* 216, 315-320 (2008). (Review article)
 213. "Mismatched dNTP Incorporation by DNA Polymerase β Does Not Proceed via Globally Different Conformational Pathways". Kuo-Hsiang Tang, Marc Niebuhr, Chang-Shung Tung, Hsiu-chien Chan, Chia-Cheng Chou, and Ming-Daw Tsai, *Nucleic Acids Res.* 36, 2948-2957 (2008).
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 218. "Catalytic Mechanism of DNA Polymerases". Michelle P. Roettger, Marina Bakhtina, Sandeep Kumar, and Ming-Daw Tsai, *Comprehensive Natural Products Chemistry II*, Elsevier Oxford, in press (2009). (Book chapter)
 219. "Contribution of the Reverse Rate of the Conformational Step to Polymerase β Fidelity". Marina Bakhtina, Michelle P. Roettger, and Ming-Daw Tsai, submitted.
 220. "Unambiguous Determination of Isobaric Histone Modifications by LC-MS and High-Mass Accuracy". Lanhao Yang, Shengjiang Tu, Chen Ren, Chung-Lin Liao, Ming-Daw Tsai, Michael A. Freitas, submitted.
 221. "Host Immunity Against the Capsular Polysaccharide Antigen of *Klebsiella Pneumoniae* NTUH-K2044 and Its Isogenic *magA*- Mutants". Ming-Fang Wu, Chih-Ya Yang, Tzu-Lung Lin, Shih-Hsiung Wu, Feng-Ling Yang, Bor-Shen Hu, Ming-Daw Tsai, Teh-Ying Chou, Chi-Hung Lin, Jin-Town Wang, Shie-Liang Hsieh, submitted.
 222. "AMP-Activated Protein Kinase Functionally Phosphorylates Endothelial Nitric Oxide Synthase Ser-633". Zhen Chen, I-Chen Peng, Wei Sun, Mei-I Su, Pang-Hung Hsu, Yi Fu, Yi Zhu, Kathryn DeFea, Songqin Pan, Ming-Daw Tsai, and John Y.-J. Shyy, submitted.

223. "Homeostatic regulation of transcription factor concentrations during differentiation of murine erythroleukemia cells (MEL)". Tung-Liang Lee, Yu-Chiau Shyu, Pang-Hung Hsu, Shau-Ching Wen, Wei-Yuan Hsiao, Chiung-Wen Chang, Ming-Daw Tsai, and Che-Kun James Shen, submitted.
224. "Unique Structural and Mechanistic Bases for the G:G Specificity of DNA Polymerase X". Mei-I Su, Wen-Jin Wu, Sandeep Kumar, and Ming-Daw Tsai, under revision.

Invited Lectures

1. "³¹P(¹⁷O) NMR Studies of Metal-Nucleotide Interactions". Gordon Conference on Enzymes, Coenzymes, and Metabolic Pathways, July 7-11, 1980.
2. "Biochemical Application of NMR Methods Involving Oxygen Isotopes". Purdue University Biochemistry Program, January 18, 1982.
3. "Biochemical Application of ¹⁷O NMR and ³¹P(¹⁷O) NMR". Federation Meeting, Minisymposium on Spectroscopic Applications of ¹⁷O in Biological Chemistry, April 20, 1982.
4. "Phospholipids Chiral at Phosphorus, Stereochemistry of Reactions Catalyzed by Phospholipases". University of Chicago, Biophysics and Theoretical Biology, March 11, 1983.
5. "NMR, Chirality, Enzymes, and Membranes". Gordon Conference on Enzymes, Coenzymes, and Metabolic Pathways," July 4, 1983.
6. "Phospholipids Chiral at Phosphorus. Use of Chiral Thiophosphatidylcholine to Study the Metal-Binding Properties of Bee Venom Phospholipase A₂". Fourth Midwest Enzyme Conference, Chicago, IL, October 27, 1984.
7. "Synthesis and Biochemical Properties of Phospholipids Chiral at Phosphorus". Brown University, Dept. of Chemistry, March 1, 1985.
8. "¹⁷O NMR Study on the Interaction of Adenine Nucleotides with Metal Ions and with Myokinase". ACS 189th National Meeting, Symposium on Biological NMR, Miami Beach, May 1, 1985.
9. "Phospholipids Chiral at Phosphorus. Use of Chiral Thiophospholipids to Study the Mechanism of Phospholipase A₂". Steenbock Symposium on Stereochemistry of Enzymatic Reactions, University of Wisconsin, Madison, July 1-3, 1985.
10. "Use of ¹⁷O NMR and ³¹P NMR to Study Metal-Nucleotide-Enzyme Interactions". University of Maryland, Dept. of Chemistry, November 5, 1985
11. "Phospholipids Chiral at Phosphorus". Gordon Conference on "Enzymes, Coenzymes, and Metabolic Pathways", June 29 - July 4, 1986
12. "Phospholipids Chiral at Phosphorus. Stereochemistry of Enzymatic Reactions" Tenth International Conference on Phosphorus Chemistry, Bonn, W. Germany, August 31 - September 6, 1986.
13. "Phospholipids Chiral at Phosphorus". Second International Symposium on Phosphorus Chemistry Directed Toward Biology, Poland, September 7-12, 1986.
14. "Phosphorothioates: Preparation and Utilization of Phosphate Analogs". University of Texas, Health Science Center at San Antonio, Department of Biochemistry, Feb. 26, 1987.
15. "Biochemical and Biophysical Properties of Phospholipids Chiral at Phosphorus". University of Texas, Health Science Center at San Antonio, Department of Biochemistry, February 27, 1987.
16. "Phospholipids Chiral at Phosphorus". University of Kentucky, Department of Chemistry, March 13, 1987.
17. "Phospholipids Chiral at Phosphorus". University of Illinois, College of Medicine at Chicago, Department of Biological Chemistry, May 7, 1987.
18. "Phospholipids Chiral at Phosphorus". ACS 21st Middle Atlantic Regional Meeting, Pomona, NJ, May 20, 1987.

19. "Phospholipids Chiral at Phosphorus". University of Akron, Department of Chemistry, September 15, 1987.
20. "Gene Synthesis and Protein Engineering". OSU Industrial/Academic Chemistry Program, October 10, 1987.
21. "Is There Interfacial Activation in the Catalysis of Phospholipase A₂?" Seventh Midwest Enzyme Conference, University of Chicago, October 17, 1987.
22. "Phospholipids Chiral at Phosphorus". Second SCBA International Symposium and Workshop, Symposium on Bioorganic and National Product Chemistry, Berkeley, June 27-30, 1988.
23. "Stereochemistry of Phospholipases". Smith and Kline and French Laboratories, November 17, 1988.
24. "Use of Site-Directed Mutagenesis to Study the Structure-Function Relationship of Adenylate Kinase". Ohio State Biochemistry Program, February 21, 1989.
25. "Bioorganic Chemistry: From Small Molecules to Macromolecules". University of Washington, Seattle, Department of Chemistry, March 10, 1989.
26. "Stereochemistry and Mechanism of Phospholipases". Boston University, Department of Chemistry, March 20, 1989.
27. "Enzyme Mechanisms: From Substrate Engineering to Protein Engineering". Dept. of Biochemistry and Molecular Biology, Univ. of Chicago, May 10, 1989.
28. "Mechanism of Adenylate Kinase". Dept. of Biophysics, Max-Planck Institute for Medical Research, Heidelberg, West Germany, June 14, 1989.
29. "Mechanism of Adenylate Kinase". Institute of Organic and Biochemistry, University of Freiburg, Freiburg, West Germany, June 15, 1989.
30. "Bioorganic Chemistry: From Conventional to Contemporary". Institute of Chemistry, Academia Sinica, Taipei, Taiwan, Sept 4, 1989.
31. "Bioorganic Chemistry: From Conventional to Contemporary". Institute of Enzyme Research, University of Wisconsin at Madison, Sept. 14, 1989.
32. "Mechanism of Adenylate Kinase". Department of Biochemistry and Biophysics, Texas A&M University, November 1, 1989.
33. "Structural and Functional Studies on the Mechanism of Adenylate Kinase". Department of Chemistry, New Mexico State University, March 8, 1990.
34. "Gene Synthesis, Expression, and Protein Engineering of Phospholipase A₂ from Bovine Pancreas". Department of Biochemistry and Molecular Biology, New Mexico State University, March 9, 1990.
35. "Perfecting an Enzyme: A phospholipase A₂ with Significantly Improved Catalytic Activity". American Chemical Society National Meeting, Boston, Apr. 22-27, 1990.
36. "Enzyme Mechanisms: From Substrate Engineering to Protein Engineering". Third SCBA International Symposium and Workshop, Hong Kong, June 26-30, 1990.
37. "Protein Engineering of Phospholipase A₂ From Bovine Pancreas". Institute of Biological Chemistry, Academia Sinica, Taipei, Taiwan, July 2, 1990.
38. "A Chemist's Approach to Biomedical Research". Veterans General Hospital, Taipei, Taiwan, July 3, 1990.
39. "New Approaches in Bioorganic Chemistry". Department of Chemistry, National Taiwan University, Taipei, July 9, 1990.
40. "Structure-Function Studies of Large Organic Molecules-Enzymes". International Symposium for Chinese Organic Chemists, Shanghai, July 12-14, 1990.
41. "Mechanism of Adenylate Kinase: Have Previous NMR and X-Ray Results Passed the Test by Site-Directed Mutagenesis?" Monsanto Company, St. Louis, August 7, 1990.
42. "Modern Bioorganic Chemistry: Structure-Function Studies of Enzymes". Department of Chemistry, St. Olaf College, Northfield, Minnesota, Setp. 14, 1990.
43. "Mechanism of Adenylate Kinase: Site-Directed Mutagenesis Versus X-Ray and NMR", Kent State University, Kent, Ohio, October 4, 1990.
44. "Mechanism of Adenylate Kinase: Have Previous NMR and X-Ray Results Passed the Test by Site-Directed Mutagenesis?" Department of Chemistry, University of Delaware, November 5, 1990.

45. "Mechanism of Adenylate Kinase: Site-Directed Mutagenesis Versus X-Ray and NMR". Department of Chemistry, Washington State University, Pullman, WA, Feb. 19, 1991.
46. "Protein Engineering of Phospholipase A₂". Department of Chemistry, California Institute of Technology, Pasadena, CA, Feb. 27, 1991. (Joint Organic Chem./Chem. Biology)
47. "Protein Engineering of Phospholipase A₂". School of Pharmacy, University of Cincinnati, Cincinnati, Ohio, April 4, 1991.
48. "Protein Engineering of Bovine Pancreatic Phospholipase A₂". Royal Netherlands Academy of Arts and Sciences, Colloquium on Molecular Biology and Inhibition of Cellular and Extracellular Phospholipases A₂, Amsterdam, April 23-27, 1991.
49. "Mechanism of Adenylate Kinase: Manipulating Phosphorus Stereochemistry by Site-Directed Mutagenesis". Regional Meeting of the American Chemical Society, Indianapolis, May 29-31, 1991.
50. "Phospholipase A₂ Engineering". National Meeting of the American Chemical Society, New York City, Aug. 25-30, 1991.
51. "Structure-Function Relationship of Adenylate Kinase", Fox Chase Institute for Cancer Research, Philadelphia, September 19, 1991.
52. "Manipulating the Phosphorus Stereospecificity of an Enzyme", Dept. of Chemistry, University of Chicago, Nov. 15, 1991.
53. "Iterative Structure-Function Studies of Enzymes: A Case in Adenylate Kinase", Institute of Biological Chemistry, Academia Sinica, Taipei, Dec. 27, 1991.
54. "Modern Bioorganic Chemistry: Structure-Function Relationship of Enzymes", Institute of Chemistry, Academia Sinica, Taipei, Dec. 30, 1991.
55. "Structure-Function Relationship of Adenylate Kinase", Dept. of Biology, Syracuse University, March 6, 1992. (host: Richard Levy)
56. "Structure-Function Relationship of Adenylate Kinase", University of Florida College of Medicine, March 26, 1992. (host: David Silverman)
57. "Biochemical Applications on NMR", Dept. of Chemistry, Denison University, Granville, Ohio, April 23, 1992. (host: Richard Doyle)
58. "Structure-Function Relationship of Adenylate Kinase", Wright State University, Dayton Ohio, April 24, 1992. (host: Lawrence Prochaska)
59. "Stereochemical Mechanism of Phospholipase C", FASEB Summer Conference on Phospholipases, Saxtons River, Vermont, July 12-17, 1992. (Organizer: Ed Dennis)
60. "Structure-Function Relationship of Adenylate Kinase", Biotechnology Research Institute, National Research Council of Canada, Montreal, Sept. 2, 1992. (Host: Feng Ni)
61. "Structure-Function Relationship of Adenylate Kinase", Max-Planck Institute, Gottingen, Germany, Sept. 14, 1992. (Host: Fritz Eckstein)
62. "Structure-Function Relationship of Adenylate Kinase", EMBO Workshop, Germany, Sept. 16-19, 1992. (Organizer: Fred Wittinghofer)
63. "Structure-Function Relationship of Phospholipase A₂", Dept. of Chemistry, Indiana University, Oct. 23, 1992. (Host: David Daleke)
64. "Structure-Function Relationship Enzymes: a Case Study with Phospholipase A₂", Park Davis, Ann Arbor, May 4, 1993. (Host: Don Hupe)
65. "Structure-Function Relationship of Adenylate Kinase", Ann Arbor Enzymes Club, May 5, 1993. (Host: James Coward)
66. "Modern Bioorganic Chemistry: Structure-Function Relationship of Enzymes", Department of Chemistry, Tsing-Hua University, Taiwan, July 12, 1993.
67. "Improving the Structure-Function Relationship of Enzymes", Institute of Chemistry, Academia Sinica, Taipei, July 13, 1993.
68. "Structure-Function Relationship of Phospholipase A₂", Dept. of Chemistry, Wayne State University, Sept. 24, 1993. (Host: Shahriar Mobashery)
69. "Mechanism of Adenylate Kinase. ¹H, ¹³C, and ¹⁵N NMR Assignments, Secondary Structures, and Substrate Binding Sites", Thirteenth Midwest Enzyme Chemistry Conference, Chicago, October 9, 1993.

70. "NMR Analysis of the Structure of the Adenylate Kinase-MgAP5A Complex", International Symposium on Adenylate Kinase, Yamaguchi University, Japan, March 26-28, 1994.
71. "Adenylate Kinase: From Molecular Biology to NMR Structure", Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan, March 28, 1994. (Host: Bai-Ling Lin)
72. "Structure-Function Relationship of Adenylate Kinase", Chicago Medical School, Chicago, May 5, 1994. (Host: Bob Kemp)
73. "Assignment and Secondary Structures of a 22 kDa System at pH 7.1: Adenylate Kinase Complex with MgAP5A", Varian NMR Users Conference, Akron, August 18, 1994. (Host: Peter Rinaldi)
74. "Structure-Function Relationship of Adenylate Kinase", Floss Symposium, Seattle, Washington, August 27, 1994.
75. "Structure-Function Relationship of Adenylate Kinase", School of Pharmaceutical Sciences, Univ. of California at San Francisco, San Francisco, Sept. 15, 1994. (Host: George Kenyon)
76. "Structure-Function Relationship of Phospholipase A₂", Department of Medicinal Chemistry, University of Illinois at Chicago, October 3, 1994. (Host: Karol S. Bruzik)
77. "Adenylate Kinase: From Molecular Biology to Total Assignment by NMR", Department of Chemistry, University of Illinois at Chicago, October 4, 1994. (Host: Wan-Hua Cho)
78. "Structure-Function Relationship of Adenylate Kinase", Dept. of Biophysics and Physiology, Case Western Reserve University, October 17, 1994. (Host: C. R. Sanders)
79. "Syntheses and Biochemical Applications of Phosphoinositides", The 4th Tohwa University International Symposium on Chemistry on the Biologically and Physiologically Active Natural Products, Fukuoka, Japan, November 19-22, 1994.
80. "Modern Bioorganic Chemistry: Structure-Function Relationship of Enzymes." Department of Chemistry, Case Western Reserve University, Cleveland, March 9, 1995. (Host: Michael Zagorski)
81. "Structure-Function Relationship of Adenylate Kinase." Department of Chemistry, Miami University, Oxford, Ohio, March 30, 1995. (Host: John F. Sebastian)
82. "Syntheses and Biochemical Applications of Phosphoinositides", Institute of Chemistry, Academia Sinica, Taipei, May 6, 1995.
83. "Structural Analysis of a 22 kDa System at pH 7.1 by NMR: Adenylate Kinase Complex with MgAP5A", Midwest Regional ACS Meeting, Akron, May 31, 1995
84. "Structural Determination of Adenylate Kinase, A 22 kD Protein", Fourteenth American Peptide Symposium, Columbus, June 18-23, 1995.
85. "From Protein Engineering to Drug Design". International SCBA Symposium on Rational Drug Design, Vancouver, June 25-30, 1995.
86. "Adenylate Kinase: A Model or an Exception?", Gordon Conference on Enzymes, Coenzymes, and Metabolic Pathways, New Hampshire, July 16-21, 1995.
87. "Structure-Function Relationship of Phospholipase A₂", FASEB Summer Conference on Phospholipases, Vermont, July 22-27, 1995.
88. "Protein Structural Analysis by NMR", Department of Physics, Indiana University-Purdue University at Indianapolis, December 7, 1995.
89. "Design and Construction of a New Restriction Endonuclease Specific to the HIV Genome", International Symposium on Perspectives on Protein Engineering, Le Corum Montpellier, France, March 2-6, 1996.
90. "Structure-Function Relationship of Adenylate Kinase", Department of Chemistry, SUNY Stony Brook, March 25, 1996. (Host: Nicole Sampson)
91. "Modern Bioorganic Chemistry", The Fourth International Symposium for Chinese Organic Chemists, Hong Kong, April 5-8, 1996.
92. "Structure-Function Relationship of DNA Polymerase β " EMBO Meeting on Nucleotidyl and Phosphoryl Transfer in the Protein and RNA World, Xanten, Germany, Sept. 29 - Oct. 3, 1996.
93. "Structure-Function Relationship of Tumor Suppressor P16." Cancer Center, Ohio State University, November 6, 1996. (Host: Lee Johnson)

94. "Protein Engineering". Department of Chemical Engineering, Ohio State University, December 5, 1996. (Host: Shang-Tien Yang)
95. "Structural Analysis of Tumor Suppressor P16 by NMR". American Chemical Society Regional Meeting, Midland, Michigan, May 27, 1997.
96. "Adenylate Kinase: Site-directed Mutagenesis Versus NMR and X-ray". Protein Engineering Group, University of Toronto, May 29, 1997. (Host: Robert Reedjik)
97. "Probing Enzyme Mechanisms with Bridging and Nonbridging Sulfur Analogs of Nucleotides and Phospholipids". Department of Chemistry, University of Toronto, May 30, 1997. (Host: Andrew Woolley)
98. "Structure-Function Relationship of Bacterial PI-Phospholipase C." National Meeting of the American Chemical Society, Las Vegas, Sept. 7-11, 1997.
99. "Mechanism of PI-Specific Phospholipase C". Dept of Chemistry, Scripps Research Institute, September 12, 1997. (Host: Chi-Huey Wong)
100. "Structure-Function Relationship of PI-specific Phospholipase C". Dept of Biochemistry, Michigan State University, November 3, 1997. (Host: Honggao Yan).
101. "Mechanism of PI-Specific Phospholipase C". Dept of Pharmacology, Albert Einstein School of Medicine, New York, December 8, 1997. (Host: Zong-Yin Zhang)
102. "Structure-Function Relationship of Adenylate Kinase". University of Texas at Austin, January 23, 1998. (Host: Jon Robertus)
103. "Solution Structure of Tumor Suppressor p16 by NMR". Otterbein University, Westerville, Ohio, April 15, 1998. (Host: Chihae Yang)
104. "Structure and Function of Tumor Suppressor p16". Dept. of Chemistry, Florida State University, April 28, 1998. (Host: Alan Marshall)
105. "Structure and Mechanism of Tumor Suppressor p16^{INK4A}". Department of Biochemistry, Case Western Reserve University, May 6, 1998.
106. "Use of Thiophosphate Analogs to Probe the Mechanism of PI-Phospholipase C". 14th International Conference on Phosphorus Chemistry, Cincinnati, July 12-17, 1998.
107. "Structure-Function Analysis of the INK4 Family of Tumor Suppressors". Department of Biochemistry, University of Toledo, October 15, 1998. (Host: James Slama)
108. "A Novel, Dual-Function Catalytic Triad Arg-Asp-His for P-O Bond Cleavage Catalyzed by PI-PLC". ASBMB Fall Symposia, Lake Tahoe, CA, Oct 23-26, 1998.
109. "Structure-Function Analysis of the INK4 Family of Tumor Suppressors", NMR Technologies: Development and Applications Conference, Baltimore, October 29-30, 1998.
110. "A Novel, Dual-Function Catalytic Triad Arg-Asp-His for P-O Bond Cleavage Catalyzed by PI-PLC". Dept of Chemistry, National Taiwan University, Nov. 10, 1998.
111. "Structure-Function Analysis of the INK4 Family of Tumor Suppressors". Dept of Chemistry, Tsinghua University, Nov. 11, 1998.
112. "A Novel, Dual-Function Catalytic Triad Arg-Asp-His for P-O Bond Cleavage Catalyzed by PI-PLC". Institute of Chemistry, Academia Sinica, Nov. 13, 1998.
113. "Structure-Function Analysis of the INK4 Family of Tumor Suppressors". Department of Chemistry, Kent State University, November 19, 1998. (Host: Scott Prosser)
114. "Identification of a Novel Catalytic Triad Arg-Asp-His from PI-specific Phospholipase C". Canadian Society of Chemistry National Meeting, May 29-31, 1999.
115. "Solution Structure of the FHA2 Domain of RAD53". 31st Central Regional Meeting of the American Chemical Society, Columbus, Ohio, June 21-23, 1999.
116. "Solution Structures and Functional Analyses of Tumor Suppressors p16 and p18". SCBA International Symposium, Hong Kong, August 14-19, 1999.
117. "Structure and Function of a New Phosphoprotein Binding Domain FHA2 from Yeast Rad53." Midwest Enzyme Chemistry Conference, Chicago, October 2, 1999.

118. "New Structural Motifs for Protein-Protein Interactions in Cancer-related Pathways." University of Akron, November 23, 1999. (Host: Matthew Espe)
119. "Structure, Function, and Specificity of FHA, a New Phosphoprotein Binding Domain". Keynote Speaker, Volcano Conference, Seattle, Feb. 25-27, 2000.
120. "Mechanism of PI-Specific Phospholipase C". FASEB Summer Conference on Phospholipases, Snowmass Village, Colorado, July 8-13, 2000.
121. "Structure, Function, and Specificity of FHA, a New Phosphoprotein Binding Domain". Bruker Users Conference, Columbus, Ohio, October 5-6, 2000.
122. "Structure and Specificity of FHA, a New Phosphoprotein Binding Domain in Signal Transductions". OSBP Symposium Keynote Speaker, October 7, 2000.
123. "Structure, Function, and Specificity of FHA, a New Phosphoprotein Binding Domain with Dual Specificity." Cambridge Healthtech Institute Conference on Protein Structure. McLean, Virginia, October 26-27, 2000.
124. "Structure and Specificity of FHA, a New Phosphoprotein Binding Domain in Signal Transduction." Institute of Biophysics, Academia Sinica, Beijing, Oct. 31, 2000.
125. "Structure and Specificity of FHA, a New Phosphoprotein Binding Domain in Signal Transduction." Department of Chemistry, Beijing University, Nov. 3, 2000.
126. "Structure and Function of the INK4 Family of Tumor Suppressors." Institute of Biophysics, Academia Sinica, Beijing, Nov. 3, 2000.
127. Structure and Mechanism of Phospholipase A2 from Bovine Pancreas. Institute of Biophysics, Academia Sinica, Beijing, Nov. 7, 2000.
128. Structure and Specificity of FHA, a New Phosphoprotein Binding Domain in Signal Transduction. Department of Chemistry, Tsinghua University, Nov. 9, 2000.
129. Structure-Function Relationship of Phosphatidylinositol-specific Phospholipase C. Institute of Biophysics, Academia Sinica, Beijing, Nov. 10, 2000.
130. "Structure, Function, and Specificity of FHA, a New Phosphoprotein Binding Domain". Eleventh International Conference on Second Messengers and Phosphoproteins, Melbourne, Australia, April 22-26, 2001.
131. "Structure, Function, and Specificity of FHA, a New Phosphoprotein Binding Domain". Bioorganic Chemistry Gordon Conference, June 17-22, 2001.
132. "A DNA Polymerase with Specificity for Four Correct and One Mismatch Base Pairs". Wayne State University Dept of Chemistry, Nov. 2, 2001. (Mark Spaller, host)
133. "Structure, Function, and Specificity of FHA, a New Phosphoprotein Binding Domain". Department of Pharmacology, Ohio State University, Nov. 13, 2001. (Dale Hoyt, host)
134. "Chemistry at the Interface of Biology". Department of Chemistry, Central State University, Dayton, Ohio, Feb. 14, 2002. (Willie Houston, Host)
135. Symposium on "Modern Aspects of Structure Function Correlation of Biomolecules", National Meeting of the American Chemical Society, Orlando, Florida, April 7-11, 2002.
136. "A Simplified Model for the Fidelity of DNA Polymerases". Gordon Research Conference on Mutagenesis, Main, July 28-Aug. 2, 2002.
137. "Structure and Mechanism of DNA Polymerases". UTMB Galveston, TX, September 9, 2002. (James Lee, host)
138. "Chemical Basis of DNA Polymerase Fidelity – the Way We Survive". Evans Lecture Event, October 4, 2002.
139. "A Simplified Mechanism for the Fidelity of DNA Polymerases". Vanderbilt University, October 11, 2002.
140. "Structure and Mechanism of High-Fidelity and Low-Fidelity DNA Polymerases". Institute of Molecular Biology, Academia Sinica, October 21, 2002.

141. "A New View to the Fidelity Mechanism of High-Fidelity and Low-Fidelity DNA Polymerases". Michigan State University, Nov. 8, 2002. (Honggao Yan, host)
142. "Structure and Mechanism of High-Fidelity and Low-Fidelity DNA Polymerases". Texas A&M University, March 26, 2003. (Paul Fitzpatrick, host)
143. "Structure and Mechanism of High-Fidelity and Low-Fidelity DNA Polymerases". Thomas Jefferson University, Philadelphia, May 6, 2003. (Ya-ming Hou, host)
144. "Opportunities for Chemists in the Post-genomic Era". CACS-Tristate Chapter Symposium. Schering-Plough Research Institute, June 7, 2003.
145. "DNA Polymerases: from Chemistry to Biology", Dept of Chemistry, Tsinghua University, Beijing, Nov. 7, 2003
146. "DNA Polymerases: from Chemistry to Biology", Dept of Chemistry, Beijing University, Beijing, Nov. 10, 2003
147. "DNA Polymerases: from Chemistry to Biology", Dept of Chemistry, Tsinghua University, Hsinchu, Nov. 18, 2003
148. "Structure and Mechanism of High-Fidelity and Low-Fidelity DNA Polymerases". Dept of Chemistry, Georgia State University, December 12, 2003. (Jenny Yang, host)
149. "Structure and Mechanism of High-Fidelity and Low-Fidelity DNA Polymerases". Dept of Biochemistry, Duke University, Jan 23, 2004. (Johannes Rudolph, host)
150. "Structural Basis of the Ligand Specificity of FHA Domains", Biophysics Program, Institute of Physics, Academia Sinica, Taipei, March 29, 2004. (Tsong Tian Yow, host)
151. "FHA Domains: from Chemistry to Biology", College of Life Sciences, Chiao-Tung University, Hsinchu, March 30, 2004. (Yuh-Shyong Yang, host)
152. "Enzymatic Evidence for a Low-Fidelity Base Excision Repair Pathway Encoded by African Swine Fever Virus", Research Division, Veterans Hospital, Taipei, April 2, 2004. (Ming-Shi Hsiao, host)
153. "Structural Basis of the Ligand Specificity of the FHA Domain of Human Tumor Suppressor Chk2", Symposium on "Drug Discovery by Chemical Genomics Approach", 19th Joint Biological Societies Conference (JBSC), Taipei, April 10-11, 2004. (Also served as session chair.)
154. "NMR structures of proteins related to DNA damage and cancer". Structural Biology Group, NIH, May 10, 2004. (Host: Angela Gronenbon)
155. "Structure and Mechanism of a High-Fidelity and a Low-Fidelity DNA Polymerases", The 9th Symposium on Recent Advances in Biophysics, Taipei, May 26-28, 2004. (Keynote)
156. "NMR structures of proteins related to DNA damage and cancer". Symposium on structures, dynamics, and interactions of biological molecules, National Central University, June 4, 2004.
157. "NMR studies of proteins related to DNA damage and cancer". University of Carnegie Mellon, July 29, 2004 (Chien Ho, host).
158. "Stereochemistry Goes a Long Way in Phosphatidylinositol-specific Phospholipase C", Frontiers of Bioorganic and Natural Product Chemistry Symposium, Seattle, August 26-29, 2004. (Also serve as chair of the organizing committee.)
159. "Structure and Function of FHA Domains in Signal Transduction". Tsinghua University, September 15, 2004.
160. "Learning the Transition State Structure of Phosphatidylinositol-specific Phospholipase C from Bioorganic Approaches", Eighth ISOC International Symposium, Hong Kong, December 19-22, 2004.
161. "NMR studies of proteins related to DNA damage and cancer". Institute of Bioinformatics and Structural Biology, National Tsing Hua University, December 30, 2004. (Ping-Chiang Lyu, host)

162. "FHA Domains in Signal Transduction: from Chemistry to Biology", Department of Chemistry, Case Western Reserve University, Cleveland, Ohio, January 20, 2005. (Robert Salomon, host)
163. "Protein-Phosphoprotein Interactions – A New Frontier in Structural Biology." National Defense University, Taipei, Taiwan, March 10, 2005.
164. "Chemical Approach to Biology: A Case for Caution". Symposium on Chemistry at the Interface of Biology, Salk Fork Resort, May 14, 2005.
165. "Structure, Function and Specificity of FHA Domains". Institute of Pasteur, May 23, 2005.
166. "Protein-Phosphoprotein Interactions – A New Frontier in Structural Biology." Biophysical Society Meeting, Hsinchu, May 27, 2005. (Plenary lecture)
167. "When NMR Beats X-ray Crystallography in the Determination of Protein Structures." Taiwan Magnetic Resonance Society, Taipei, May 28, 2005. (Inauguration lecture)
168. "Protein-Phosphoprotein Interactions – A New Frontier in Structural Biology." National Taiwan University (Chemistry), Taipei, Taiwan, June 10, 2005.
169. "Protein-Phosphoprotein Interactions – A New Frontier in Structural Biology." NHRI, Taiwan, Sept 02, 2005.
170. "When NMR Beats X-ray in Solving Protein Structures". First Asia-Pacific NMR Symposium, Japan, Nov. 10-11, 2005.
171. "FHA Domains in Signal Transduction: a Case for Caution in Chemical Biology". Dept of Chemistry, SUNY at Buffalo, Nov. 30, 2005. (John Richard, host)
172. "Structural Biology of Cancer-relevant Proteins". NHRI Cancer Program, Taipei, June 9, 2006.
173. "Mechanism of action of high and low fidelity DNA polymerases". Gordon Research Conference on Enzymes, Coenzymes, and Metabolic Pathways, New Hampshire, July 16-21, 2006. (John Richard and Sue Miller, co-chairs)
174. "Identification of Histone Demethylases from *Saccharomyces cerevisiae*". Biophysics Program, Ohio State University, October 4, 2006. (Ralph Bundschuh, host)
175. "Structural Biology of Cancer Proteins." Institutional Seminar of National Taiwan Univ. College of Medicine and University Hospital, December 27, 2006. (Host: 張美惠)
176. "Specificity of Phosphothreonine Recognition by FHA Domains". International Conference of Phosphorus Chemistry, Xiamen, China, April 15-21, 2007.
177. "Structure, Function and Specificity of Phosphothreonine-specific FHA Domains". Dept of Chemistry, UC Davis, May 15, 2007. (Host: Xi Chen)
178. "FHA Domain Mediated Signaling Related to DNA Damage and Cancer". Cellular and Molecular Medicine Program, Academia Sinica, June 1, 2007.
179. "Specificity of Phosphothreonine Recognition by FHA Domains". XXIII International Conference on Yeast Genetics and Molecular Biology, Melbourne, Australia, July 2-6, 2007.
180. "FHA Domain - A Novel Phosphate Counting Switch for Sequential Activation of a Checkpoint Kinase Cascade", Eli Lilly, Indianapolis, October 4, 2007. (Host: Chuan Shih)
181. "A phospho-counting switch for sequential activation of a checkpoint kinase cascade". 2nd International Symposium on Bio-Inspired Engineering (ISBIE), October 8-10, 2007 at the Le Meridien Hotel, Dead Sea, Israel. (www.isbie.org)
182. "A phospho-counting switch for sequential activation of a checkpoint kinase cascade". The 2nd Asian-Pacific NMR Symposium, Oct. 12-14, 2007, Hsin-chu, Taiwan (Plenary Lecturer)
183. "Nuclear Protein NP as a Target for Inhibition of Viral Replication". International Symposium on Flu Virus, Oct 22, 2007, NHRI/NTUH, Taiwan.

184. "A phospho-counting switch for sequential activation of a checkpoint kinase cascade". International Symposium on Proteins: from Chemistry to Biology, October 24-26, 2007, Institute of Biological Chemistry, Academia Sinica, Taiwan.
185. "FHA Domain in Signal Transductions: from Chemistry to Biology". National Tsinghua University Dept of Chemistry, November 21, 2007.
186. "Oligomerization of the Nucleocapsid Protein as a Target for the Flu Virus". UC Davis – Academia Sinica Bilateral Conference, December 6-7, 2007, Taipei.
187. "FHA Domain in Signal Transductions: from Chemistry to Biology". Kaoshiung Medical Univdrsty. March 19, 2008.
188. "From the End to the Beginning". Great Lakes Regional ACS Meeting, Columbus, Ohio, June 14, 2008.
189. "A Phospho-counting Switch for Sequential Activation of a Checkpoint Kinase Cascade". Toulouse University, France, July 7, 2008. (Host: Bernard Salles)
190. "Nucleocapsid Protein NP as a Target for Inhibition of Flu Virus Replication". World Summit of Antivirals 2008, Kunming, China, July 20-22, 2008.
191. "FHA Domain in Signal Transduction: Chemistry, Structure, and Biology". Institute of Chemistry, Academia Sinica, Taipei, Sept 25, 2008. (Host: Sunney Chan)
192. "A Phospho-counting Switch for Sequential Activation of a Checkpoint Kinase Cascade in *S. cerevisiae*". Institute of Plant and Microbial Biology, Academia Sinica, Taipei, Oct 1, 2008. (Host: Sunny Lo)
193. "FHA Domain in Signal Transduction: Chemistry, Structure, and Biology". National Cheng Kung University, Tainan, October 2, 2008.
194. "Structures of FHA domain complexes with phosphoprotein and phosphopeptides with single and multiple pThr sites". CSMRS-2, Hang-Chou, China, Oct 23-27, 2008.
195. "Structure, Function and Specificity of Phosphothreonine-specific FHA Domains". Dept of Biochemistry, UC Riverside, Nov. 4, 2008. (Host: John Shyy)
196. "Structure, Function and Specificity of FHA Domains in DNA Damage Response Signaling." Department of Medicinal Chemistry, Purdue University, November 7, 2008.
197. "Structure and mechanism of a mutagenic DNA polymerase from African Swine Fever Virus". 4th International Symposium on Biocatalysis and Biotechnology, Academia Sinica, Taipei, Nov 19-21, 2008.
198. "Structure, Function and Specificity of Phosphothreonine-specific FHA Domains". National Yangming University, November 24, 2008. (Host: 魏耀揮)
199. "Cancer Research from the Angle of Structural Biology". "姆山生物醫學講座", Taipei Medical University, Nov. 27, 2008.
200. "Counting Phosphates by FHA Domains". Taiwan – Japan Proteomics Symposium 2008. Academia Sinica, December 3, 2008.
201. "FHA, a signaling domain with diverse specificities". The 6th Asian Biophysical Association (ABA) Symposium, Hong Kong University of Science and Technology, Hong Kong, 11-14 January 2009.
202. "Molecular Interactions of Biophosphates – from Catalysis to Signaling". 24th Joint Annual Conference of Biomedical Sciences, Taipei, Taiwan, March 21-22, 2009. (Special Lecture)

