

Michael K. Rosen

Chair, Department of Biophysics
Mar Nell and F. Andrew Bell Distinguished Chair
Investigator, Howard Hughes Medical Institute
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Personal Born January 1, 1965, Philadelphia, Pennsylvania
Married to Yuh Min Chook, two children

Education and Experience

Professor and Inaugural Chair, Department of Biophysics, University of Texas Southwestern Medical Center, 2012-

Investigator, Howard Hughes Medical Institute, 2005-

Professor, Department of Biochemistry, University of Texas Southwestern Medical Center, 2005-

Associate Professor, Department of Biochemistry, University of Texas Southwestern Medical Center, 2002-2005

Associate Member, Cellular Biochemistry and Biophysics Program, Sloan-Kettering Institute, 2001

Associate Professor, Department of Biochemistry and Structural Biology, Weill Medical College of Cornell University, 2001

Assistant Investigator, Howard Hughes Medical Institute, 2000-2001 (position relinquished upon move to UTSW)

Assistant Member, Cellular Biochemistry and Biophysics Program, Sloan-Kettering Institute, 1996-2001

Assistant Professor, Department of Biochemistry and Structural Biology, Weill Medical College of Cornell University, 1996-2001

Damon Runyon-Walter Winchell Post-Doctoral Fellow, Samuel Lunenfeld Research Institute and University of Toronto, 1993-1995
Drs. Anthony J. Pawson and Lewis E. Kay, advisors

Ph.D. in Organic Chemistry, Harvard University, 1993

Dr. Stuart L. Schreiber, advisor

Thesis title: *The Molecular Basis of Receptor-Ligand-Receptor Interactions: Studies of the Immunophilin FKBP12*

C.P.G.S. in the Natural Sciences, University of Cambridge, 1988

Dr. Alan R. Battersby, advisor

Thesis title: *Studies on the Stereochemistry of Formation of the Meso Protons of Sirohydrochlorin, a Biosynthetic Precursor to Vitamin B-12*

Bachelor of Science in Honors Chemistry, With Highest Honors, University of Michigan, 1987

Dr. William H. Pearson, advisor

Thesis title: *The Ring-Opening and Intramolecular [3+2] Cycloaddition of Alkenyl Aziridines*

Bachelor of Science in Chemical Engineering, Summa Cum Laude, University of Michigan, 1987

Honors and Awards

Mar Nell and F. Andrew Bell Distinguished Chair in Biochemistry, UT Southwestern, 2009-
Carolyn R. Bacon Professorship in Medical Science and Education, UT Southwestern, 2006-9
Inaugural Edith and Peter O'Donnell Award from the Texas Academy of Medicine, Engineering
and Science, 2006

Howard Hughes Medical Institute, 2005

Boyer Award, Memorial Sloan-Kettering Cancer Center, 2001

Howard Hughes Medical Institute, 2000

Kimmel Scholar Award, Sidney Kimmel Foundation for Cancer Research, 1998

Presidential Early Career Award for Scientists and Engineers (PECASE), 1997

Beckman Foundation Young Investigator Award, 1997

Damon Runyon-Walter Winchell Foundation post doctoral research fellowship, 1993

American Chemical Society, Division of Organic Chemistry, Graduate Fellowship sponsored by
Merck, Sharp & Dohme, 1991

Harvard University Danforth Center Distinguished Teaching Award, 1989

Winston Churchill Foundation Scholarship, 1987

National Science Foundation Graduate Research Fellowship, 1987

Outstanding Graduating Senior, Department of Chemistry, University of Michigan, 1987

Outstanding Graduating Senior, Department of Chemical Engineering, U. of Michigan, 1987

Named/Plenary Lectures

Plenary Lecture, American Soc. for Biochem. & Mol. Biol. Meeting, San Diego, April 6, 2016

Martin Kamen Lecture, Dept. of Chem. and Biochem., UC San Diego, March 31, 2016

Plenary Lecture, American Society for Cell Biology Meeting, San Diego, Dec. 14, 2015

Richard D. Berlin Lecture, Dept. of Cell Biology, U. Connecticut Health Center, Sept. 17, 2015

Keynote Lecture, Intl. Meeting German Soc. for Cell Biol., Regensburg, Germany, May 2, 2015

Plenary Lecture, EMBO Meeting, Amsterdam, Netherlands, Sept. 21, 2013

Kensal E. van Holde Lectureship, Marine Biological Laboratory, Woods Hole, June 29, 2013

John T. Edsall Lecture, Dept. of Molecular & Cellular Biology, Harvard University, May 9, 2013

Publications

1. Rosen, M. K., Standaert, R. F., Galat, A., Nakatsuka, M., Schreiber, S. L.: Inhibition of FKBP Rotamase Activity by Immunosuppressant FK506: Twisted Amide Surrogate *Science* **1990**, 248, 863.
2. Rosen, M. K., Michnick, S. W., Karplus, M., and Schreiber, S. L.: Proton and Nitrogen Sequential Assignments and Secondary Structure Determination of the Human FK506 and Rapamycin Binding Protein *Biochemistry*, **1991**, 30, 4774.
3. Wandless, T. J., Michnick, S. W., Rosen, M. K., Karplus, M., Schreiber, S. L.: FK506 and Rapamycin binding to FKBP: Common Elements in Immunophilin-Ligand Complexation *J. Am. Chem. Soc.*, **1991**, 113, 2339.
4. Michnick, S. W., Rosen, M. K., Wandless, T. J., Karplus, M., Schreiber, S. L.: Solution Structure of FKBP, a Rotamase Enzyme and Receptor for FK506 and Rapamycin *Science*, **1991**, 252, 836.
5. Rosen, M. K., Albers, M. W., Schreiber, S. L.: Rapamycin Sensitivity in *Saccharomyces cerevisiae* is Mediated by a Peptidyl-Prolyl *cis-trans* Isomerase Related to Human FK506-Binding Protein *ChemTracts: Organic Chemistry*, **1991**, 4, 202; *ChemTracts: Biochemistry and Molecular Biology*, **1991**, 2, 204.
6. Rosen, M. K., Michnick, S. W., Wandless, T. J., Schreiber, S. L.: Study of Receptor-Ligand Interactions through Receptor Labeling and Isotope-Edited NMR *J. Org. Chem.*, **1991**, 56(22), 6262.
7. Schreiber, S. L., Liu, J., Albers, M. W., Karmacharya, R., Koh, E., Martin, P. K., Rosen, M. K., Standaert, R. F., Wandless, T. J.: Immunophilin-Ligand Complexes as Probes of Intracellular Signaling Pathways *Transplantation Proc.*, **1991**, 23, 2851.
8. Schreiber, S. L., Liu, J., Albers, M. W., Rosen, M. K., Standaert, R. F., Wandless, T. J., Somers, P. K.: Molecular Recognition of Immunophilins and Immunophilin-Ligand Complexes *Tetrahedron*, **1992**, 48(13), 2545.
9. Rosen, M. K., Schreiber, S. L.: Natural Products as Probes of Cellular Function: Studies of Immunophilins *Angew. Chemie*, **1992**, 31, 384. German version: Naturstoffe als Sonden zum Studium zellulärer Funktionen-Untersuchungen von Immunophilinen, *Angew. Chemie* **1992**, 104, 413.
10. Rosen, M. K., Belshaw, P. J., Alberg, D. G., Schreiber, S. L.: The Conformation of Cyclosporin A Bound to Cyclophilin is Altered (Once Again) Following Binding to Calcineurin: An Analysis of Receptor-Ligand-Receptor Interactions *Bio. Med. Chem. Lett.*, **1992**, 2(7), 747.
11. Yu, H., Rosen, M. K., Shin, T. B., Seidel-Dugan, C., Brugge, J. S., Schreiber, S. L.: Solution Structure of the SH3 Domain of Src and Identification of its Ligand-Binding Site *Science*, **1992**, 258, 1665.
12. Yang, D., Rosen, M. K., Schreiber, S. L.: The Composite FKBP12-FK506 Surface that Contacts Calcineurin *J. Am. Chem. Soc.* **1993**, 115, 819.
13. Rosen, M. K., Yang, D., Martin, P. K., Schreiber, S. L.: Activation of an Inactive Immunophilin by Mutagenesis *J. Am. Chem. Soc.*, **1993**, 115, 821.
14. Yu, H., Rosen, M. K., Schreiber, S. L.: ¹H and ¹⁵N Assignments and Secondary Structure of the Src SH3 Domain *FEBS Letters*, **1993**, 324(1), 87.

15. Yu, H., Rosen, M. K., Saccomano, N. A., Phillips, D., Volkmann, R. A., Schreiber, S. L.: Sequential Assignment and Structure Determination of Spider Toxin ω -Aga-IVB *Biochemistry*, **1993**, 32(48), 13123-13129.
16. Rosen, M. K., Yamazaki, T., Gish, G. D., Kay, C. M., Pawson, T., Kay, L. E.: Direct Demonstration of an Intramolecular SH2-Phosphotyrosine Interaction in the Crk Protein *Nature*, **1995**, 374, 477-479.
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18. Rosen, M. K., Gardner, K. H., Willis, R. C., Parris, W. E., Pawson, T., Kay, L. E.: Selective Methyl Group Protonation of Deuterated Proteins, *J. Mol. Biol.*, **1996**, 263, 627-636.
19. Gardner, K. H., Konrat, R., Rosen, M. K., Kay, L. E.: A (H)C(CO)NH-TOCSY pulse scheme for sequential assignment of protonated methyl groups in otherwise deuterated ^{15}N , ^{13}C labeled proteins, *J. Biomol. NMR*, **1996**, 8, 351-356.
20. Gardner, K. H., Rosen, M. K., Kay, L. E.: Global Folds of Highly Deuterated, Methyl-Protonated Proteins by Multidimensional NMR, *Biochemistry*, **1997**, 36, 1389-1401.
21. Gosser, Y.Q., Nomanbhoy, T.K., Aghazadeh, B., Manor, D., Combs, C., Cerione, R.A., Rosen, M.K.: C-Terminal Binding Domain of Rho-GDP Dissociation Inhibitor Directs N-Terminal Inhibitory Peptide to GTPases, *Nature*, **1997**, 387, 814-819.
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23. Abdul-Manan, N., Aghazadeh, B., Liu, G. A., Majumdar, A., Ouerfelli, O., Siminovitch, K. A., Rosen, M. K.: Structure of Cdc42 in Complex with the GTPase Binding Domain of the Wiskott-Aldrich Syndrome Protein, *Nature*, **1999**, 399, 379-383.
24. Aghazadeh, B., Rosen, M.K.: Ligand recognition by SH3 and WW domains: the role of N-alkylation in PPII helices, *Chem. and Biol.*, **1999**, 6, R241-R246.
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26. Liu, A., Hu, W., Majumdar, A., Rosen, M. K., Patel, D. J.: Detection of very weak side chain-main chain hydrogen bonding interactions in medium-size $^{13}\text{C}/^{15}\text{N}$ -labeled proteins by sensitivity-enhanced NMR spectroscopy, *J. Biomolec. NMR*, **2000**, 17, 79-82.
27. Liu, A., Hu, W., Majumdar, A., Rosen, M. K., Patel, D. J.: NMR detection of side chain-side chain hydrogen bonding interactions in $^{13}\text{C}/^{15}\text{N}$ -labeled proteins, *J. Biomolec. NMR*, **2000**, 17, 305-310.
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29. Rosen, M. K., Amos, C. D., Wandless, T. J.: Mechanistic Studies of affinity modulation, *J. Am. Chem. Soc.*, **2000**, 122, 11979-11982.
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35. Chook, Y. M., Jung, A., Rosen, M. K., Blobel, G.: Uncoupling Kap β 2 Substrate Dissociation and Ran Binding, *Biochemistry*, **2002**, *41*, 6955-6966.
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- I294T mutation of the Wiskott-Aldrich syndrome gene, *Brit. J. Haematology*, **2009**, *144(1)*, 120-126.
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Service

SKI/Cornell

Biochemistry & Structural Biology Admissions Committee, WMC, 1997-2001.

Summer Research Student Admissions Committee, SKI, 1998-1999.

Biochemistry & Structural Biology Curriculum Committee, WMC, 2000-2001.

UT Southwestern

University ND Building Planning Committee, 2002-5.

University Advanced Imaging Center Committee, 2002-5.

University Committee on Graduate Students, 2002-9.

University Six-Year Research Plan Committee, 2003-.

University High Impact/High Risk Grant Committee, 2004-.

Institute for Innovations in Medical Tech. (University Core Facilities) Advisory Com., 2006-2011.

Development Committee, UT Institute for Biological Organization and Dynamics, 2007.

Endowed Scholars Advisory Committee, 2007-.

Chair, Cell Biology Chair Search Committee, 2010-2011.

Member, Biochemistry Chair Search Committee, 2015-2016.

Member, Campus Master Plan Advisor Committee, 2016.

Member, Advanced Imaging Center Director Search Committee, 2017-

Department of Biochemistry Chemistry Recruiting Committee, 2002.
Department of Biochemistry Space Committee, 2002-5.
Department of Biochemistry McKnight Fellow Selection Committee, 2002-.
Department of Biochemistry, Chair, Biophysics Faculty Search Committee, 2006-7, 2008-9, 2009-10, 2011-2012.
Department of Biophysics, Chair, Faculty Search Committee, 2012-2013, 2013-2014, 2014-5, 2015-6.

DCMB Graduate Program Restructuring Committee, 2003.
DCMB Graduate Program Core Course Restructuring Committee, 2003, 2010.
DBS Steering Committee, 2006-7.
Biological Chemistry Graduate Program; Chair, Qualifying Exam Committee, 2003-7.
Biological Chemistry Graduate Program Steering Committee, 2003-7.
Biological Chemistry Graduate Program; co-Chair Biol. Chem. & Metabolism Track, 2004-6.

External

Section editor (cell signaling and trafficking structures), Faculty of 1000, 2002-.
Ad-hoc member NIH BCB study section, February, 2003.
Searle Scholar advisory board, 2003-2007.
Editorial board, Structure, 2004-.
External member of tenure committee for Roland Riek, Salk Institute, 2006.
Co-chair, 2007 ASBMB National Meeting.
Standing member NIH MSFC study section, Oct. 2007-June 2010.
Member working group of the National Advisory General Medical Sciences Council of the NIH to assess the NIGMS Protein Structure Initiative, 2007.
Ad-hoc member NIH MNPS study section, March, 2010.
Editorial board, Journal of Molecular Biology, 2012-2017.
Member, Scientific Advisory Board, St. Jude Children's Research Institute

Teaching

SKI/Cornell

Co-organize and run (with Tim McGraw) BSB journal club, fall 1996-spring 1999, fall 2000-2001.
Organize and run structural biology section, MD/PhD Frontiers in the Biological Sciences, fall 1997-2001.
Lecturer, Biochemistry/Physical Biochemistry course, fall 1996-2001.
Lecturer Cell Biology course, spring 1999-2001.

UT Southwestern

Protein Thread discussion leader, UTSW Graduate Core Course, 2002-7.
Head, Protein Thread, UTSW Graduate Core Course, 2003-2010.
Lecturer, UTSW Graduate Core Course, 2003-.
Lecturer, NMR course (with Jose Rizo-Rey), UTSW DCMB graduate school, 2003-.
Lecturer, Medical School Biochemistry course, 2006-2014.
Lecturer, second year BC/MB protein biochemistry course, 2007-10.
Lecturer, MSTP course in experimental methods, 2009-12.

