

CURRICULUM VITAE

Sally S. Twining PhD

**Assistant Dean, Professor
Department of Biochemistry**

OFFICE ADDRESS:

Medical Education Building
8701 Watertown Plank Rd
Milwaukee, WI 53226

EDUCATION:

09/1965 - 08/1969 B.S. in Chemistry and Music, Bowling Green State University, Bowling Green, OH
09/1969 - 06/1971 M.A. in Chemistry, Bowling Green State University, Bowling Green, OH
09/1973 - 12/1976 Ph.D. in Physiological Chemistry, Ohio State University, Columbus, OH

POSTGRADUATE TRAINING AND FELLOWSHIP APPOINTMENTS:

12/1976 - 12/1979 Mayo Fellow in Immunology, Mayo Clinic Foundation, Rochester, MN
05/1979 - 08/1980 VFW Auxiliary Fellow in Biochemistry, Medical College of Wisconsin, Milwaukee, WI

FACULTY APPOINTMENTS:

09/1971 - 06/1973 Instructor in Chemistry, Bowling Green State University, Bowling Green, OH
09/1980 - 06/1983 Instructor in Biochemistry, Medical College of Wisconsin, Milwaukee, WI
07/1983 - 06/1989 Assistant Professor in Biochemistry, Medical College of Wisconsin, Milwaukee, WI
07/1985 - 06/1989 Assistant Professor in Ophthalmology (Secondary), Medical College of Wisconsin, Milwaukee, WI
07/1989 - 2004 Associate Professor in Biochemistry, Medical College of Wisconsin, Milwaukee, WI
07/1989 - 2004 Associate Professor in Ophthalmology (Secondary), Medical College of Wisconsin, Milwaukee, WI
09/1998 - 03/1999 Visiting Scientist in Biochemistry, University of Wisconsin, Madison, WI
09/2004 - Present Professor in Ophthalmology (secondary), Medical College of Wisconsin, Milwaukee, WI
09/2004 - Present Professor in Biochemistry with tenure, Medical College of Wisconsin, Milwaukee, WI

EDUCATIONAL ADMINISTRATIVE APPOINTMENTS:

01/1990 - Present Director of the Glucose Laboratory in Medical Biochemistry, Medical College of Wisconsin, Milwaukee, WI
09/1991 - Present Block Leader, Medical Biochemistry, Medical College of Wisconsin, Milwaukee, WI
01/1993 - 1999 Course Director, Contemporary Biochemistry (Graduate), Medical College of Wisconsin, Milwaukee, WI
01/2008 - 05/2008 Course Director, Introduction to Biostatistics (Graduate), Medical College of Wisconsin, Milwaukee, WI
09/2008 - Present Course Director, Boundaries of Science and Medical Practice (Graduate), Medical College of Wisconsin, Milwaukee, WI
08/2009 - Present Director, PhD in Basic and Translational Sciences (Graduate), Medical College of Wisconsin, Milwaukee, WI
09/2010 - Present Co-Module Director, GI-Nutrition, Pilot Innovation Curriculum, Medical College of Wisconsin, Milwaukee, WI
03/2011 - Present Executive Integration Director, Pilot Innovation Curriculum, Medical College of Wisconsin, Milwaukee, WI

AWARDS AND HONORS:

05/1983 Travel Fellowship, Association for Research in Vision and Ophthalmology
08/1985 Travel Fellowship, American Society of Biological Chemists 13th International Congress of Biochemistry, Amsterdam
08/1991 Travel Fellowship, American Society of Biological Chemists 15th International Congress of Biochemistry, Israel
05/1992 Alumna of the Year, Bowling Green State University, Chemistry Department
06/1996 Innovative Educational Project Award, Department of Family and Community Medicine, Medical College Of Wisconsin
09/2001 Twenty-Year Faculty Award, Medical College of Wisconsin
09/2006 Twenty-five-Year Faculty Award, Medical College of Wisconsin
2007 - 2008 Outstanding Medical Student Teacher, Medical College of Wisconsin
05/2008 Distinguished Service Award, Medical College of Wisconsin
09/2008 Graduate Mentor of the Year, Medical College of Wisconsin
2008 - 2009 Outstanding Medical Student Teacher, Medical College of Wisconsin
2009 - 2010 Outstanding Medical Student Teacher, Medical College of Wisconsin
2010 Fellow, The Association for Research in Vision and Ophthalmology

MEMBERSHIPS IN HONORARY AND PROFESSIONAL SOCIETIES:

1969 - Present American Chemical Society
1973 - Present American Association for the Advancement of Science
1974 - Present Sigma Xi
1982 - Present Association for Research in Vision and Ophthalmology
1984 - Present American Society for Biochemistry and Molecular Biology
2000 - Present American Society for Cell Biology

EDITORSHIPS/EDITORIAL BOARDS/JOURNAL REVIEWS:

Editorial Board

1998 - 2008 Investigative Ophthalmology and Visual Sciences for Proteases in the Eye and Biochemistry of the Cornea

Journal Review

1982 - Present Alcoholism
1982 - Present Molecular Vision
1982 - Present British Journal of Ophthalmology
1982 - Present Experimental Eye Research
1982 - Present Protein Expression and Purification
1982 - Present Alcohol
1982 - Present Biological Bulletin
1982 - Present Journal of Biological Chemistry
1982 - Present Archives of Ophthalmology
1982 - Present FASEB Journal
1982 - Present Biochemical Journal
1982 - Present Current Eye Research
1982 - Present Investigative Ophthalmology and Visual Sciences
1982 - Present Biochemistry
1982 - Present Biochimica Biophysica Acta
1982 - Present Analytical Biochemistry
1982 - Present BioTechniques

NATIONAL ELECTED/APPOINTED LEADERSHIP AND COMMITTEE POSITIONS:

1985 Ad Hoc Member, Physiological Chemistry Study Section, NIH
1988 Reviewer, Veterans Administration Merit Review
1989 Ad Hoc Reviewer, USDA
1991 - 1993 Ad Hoc Member, Visual Sciences C Study Section, NIH
1993 Ad Hoc Reviewer, USDA
1994 - 1998 Member, Visual Sciences A Study Section, NIH
1997 Member, Peer Review Panel on Photorefractive Keratectomy (PRK) Research, American Institute of Biological Sciences

1998 Ad Hoc Member, Scientific Board of Councilors, National Eye Institute, NIH
 2001 Member, Visual Sciences Special Study Section, NIH
 2003 - 2006 Member, Program Committee, Association for Research in Vision and Ophthalmology
 2005 - 2006 Co-Chair, Cornea Program Committee, Association for Research in Vision and Ophthalmology
 2005 Ad Hoc Member, Fogarty Grants, NIH Study Section
 2006 Member, Chemical Counterterrorism, Special NIH Study Section
 2007 Chair, Anterior Eye Disease Special Study Section, NIH
 2007 - Present Chair, External Advisory Board, UMDNJ/Rutgers University CounterACT Research Center of Excellence, AR055073

RESEARCH GRANTS/AWARDS/CONTRACTS/PROJECTS:

Active

Peer Review

Title: Core Grant for Vision Research
 Source: NIH: P30 EY01931
 Role & Effort: Co-Investigator and Animal Surgery
 Module Director; Co-director of
 Biochemistry Module
 PI: Janice Burke, Ph.D.
 Dates: 2007 - 2012
 Direct Funds: \$2,000,000

Title: Proteases in the Cornea
 Source: NIH: RO1-EY12731
 Role & Effort: Principal Investigator
 PI: Sally Twining, PhD
 Dates: 2007 - 2012
 Direct Funds: \$1,250,000

Title: Vision Training Grant
 Source: NIH: T32-EY014537
 Role & Effort: Mentor
 PI: Joseph Besharse, Ph.D.
 Dates: 2008 - 2013
 Direct Funds: \$893,322

Title: Effect of Maspin on Corneal Heme- and
 Lymph-angiogenesis
 Source: NIH: RO1-EY12731
 Role & Effort: Principal Investigator
 PI: Sally Twining, PhD
 Dates: 2011 - 2015
 Direct Funds: \$999,975

Prior

Peer Review

Title: Isolation and Purification of Low
 Molecular Weight Protease Inhibitors
 from Malignant Breast Tissue
 Source: Veterans` of Foreign Wars Auxiliary
 Role & Effort: Post Doctoral Fellow
 PI: Sally Twining, Ph.D. (Sponsor: David
 Glick, Ph.D.)
 Dates: 1979 - 1980
 Direct Funds: \$12,000

Title: Role of Immunological and Nonimmunological Factors in Eliciting Polymorphonuclear Neutrophil Directed Migration in the Cornea
Source: National Society for the Prevention of Blindness
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1983 - 1984
Direct Funds: \$9,310

Title: Core Grant for Vision Research
Source: NIH: P30 EY01931
Role & Effort: Co-Investigator
PI: Henry F. Edelhauser and Janice Burke, Ph.D.
Dates: 1983 - 1987
Direct Funds: \$431,393

Title: Functions of Invading Cells After Vitreal Injury
Source: NIH: ROI EY04800
Role & Effort: Co-Investigator
PI: Janice Burke, Ph.D.
Dates: 1983 - 1985
Direct Funds: \$191,220

Title: The Role of Proteases and Antiproteases in Corneal Degradation
Source: NIH: R23 EY04597
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1983 - 1986
Direct Funds: \$107,500

Title: Vitreal Mitogens and Retinal Glial Cells in Proliferative Vitreal Retinopathy
Source: NIH: ROI EY04799
Role & Effort: Co-Investigator
PI: Janice Burke, Ph.D.
Dates: 1984 - 1987
Direct Funds: \$231,150

Title: Vision Research Training Grant
Source: NIH: ROI EY04799
Role & Effort: Co-Investigator
PI: William J. O'Brien, Ph.D.
Dates: 1985 - 1990
Direct Funds: \$499,416

Title: Role of Proteases in Corneal Degradation
Source: NIH: ROI EY06663
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1986 - 1989

Direct Funds: \$221,726

Title: Visual Material Upgrade
Source: Learning Resources
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1986 - 1988
Direct Funds: \$3,000

Title: Core Grant for Vision Research
Source: NIH: P30 EY01931
Role & Effort: Co-Investigator
PI: Janice Burke, Ph.D.
Dates: 1987 - 1992
Direct Funds: \$604,931

Title: Is the First Line of Defense Against
Infections Impaired Under Vitamin A
Deficiency?
Source: Thrasher Foundation 2800-3
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1987 - 1988
Direct Funds: \$39,361

Title: Cell Biology of Vitreoretinal
Proliferative Disease
Source: NIH: ROI EY04799
Role & Effort: Co-Investigator
PI: Janice Burke, Ph.D.
Dates: 1987 - 1992
Direct Funds: \$496,331

Title: Macular Degeneration: Macular vs
Extramacular Retinal Pigment Epithelial
Cells
Source: NIH: ROI EY06664
Role & Effort: Co-Investigator
PI: Janice Burke, Ph.D.
Dates: 1987 - 1990
Direct Funds: \$190,670

Title: Role of Proteases in Corneal
Degradation
Source: NIH: R01-EY06663
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1989 - 1994
Direct Funds: \$487,543

Title: Effect of Vitamin A Deficiency on
Leukocyte Function
Source: NIH: RO1-EY08388
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1990 - 1996
Direct Funds: \$416,601

Title: Core Grant for Vision Research
Source: NIH: P30 EY01931
Role & Effort: Co-Investigator
PI: Janice Burke, Ph.D.
Dates: 1992 - 1997
Direct Funds: \$850,000

Title: Role of Proteases in Corneal
Degradation
Source: NIH: RO1-EY06663
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1994 - 1998
Direct Funds: \$345,014

Title: Core Grant for Vision Research
Source: NIH: P30 EY01931
Role & Effort: Co-Investigator and Module Director
PI: Janice Burke, Ph.D.
Dates: 1997 - 2002
Direct Funds: \$1,175,000

Title: Control of corneal protein synthesis by
retinol/retinaldehyde by a retinoic acid
independent mechanism
Source: Research Affairs Committee
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1998 - 1999
Direct Funds: \$12,500

Title: Mechanisms of interaction of the tumor
suppressor maspin with the cell surface
of mammary carcinoma cells
Source: Cancer Center
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1999 - 2000
Direct Funds: \$15,000

Title: Proteases and Corneal Ulceration
Source: NIH: RO1-EY12731
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 1999 - 2004
Direct Funds: \$524,559

Title: Core Grant for Vision Research
Source: NIH: P30 EY01931
Role & Effort: Co-Investigator and Animal Surgery
Module Director; Co-director of
Biochemistry Module
PI: Janice Burke, Ph.D.
Dates: 2002 - 2007
Direct Funds: \$2,000,000

Title: Maspin in the Cornea
Source: NIH: RO1-EY14168
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 2002 - 2007
Direct Funds: \$800,000

Title: Determinants of Phenotype in Retinal
Pigment Epithelium
Source: NIH: RO1-EY015284
Role & Effort: Co-Investigator
PI: Janice Burke, Ph.D.
Dates: 2003 - 2007
Direct Funds: \$225,000

Title: Vision Training Grant
Source: NIH: T32-EY014537
Role & Effort: Mentor
PI: Joseph Besharse, Ph.D.
Dates: 2003 - 2008
Direct Funds: \$893,322

Title: Serpin Mechanism of Inhibition of
Invasion and Metastasis in Mammary
Carcinoma
Source: State of Wisconsin Breast Cancer Grant
Role & Effort: Principal Investigator
PI: Sally Twining, PhD
Dates: 2006 - 2007
Direct Funds: \$50,000

Title: Planning and Implementation of the
Community of Scientific Innovators
Source: Advancing a Healthier Wisconsin
Role & Effort: Principal Investigator
PI: Sally Twining, Ph.D.
Dates: 2006 - 2009
Direct Funds: \$135,000

INVITED LECTURES/WORKSHOPS/PRESENTATIONS:

International

Proteases and Proteoglycans in Vitamin A Deficiency, World Congress on the Cornea, III, Boston, 1987

Corneal ulceration: Disruption of the Proteinase-Inhibitor Balance, XII International Congress on Eye
Research, Yokohama, Japan, 09/1996

Corneal Ulceration and the Proteinase-Inhibitor Balance, International Contact Lens Society, Florence, Italy,
08/1997

Proteinases in Corneal Ulceration, International Congress on Eye Research, Paris, France, 08/1999

Structure-function of Maspin, SERPINS Meeting, Cairns, Australia, 06/2005

Corneal Proteinases, ICER Meeting, Buenos Aires, 10/2006

National

Human Corneal Serine Proteinases, National Meeting of the Association for Research in Vision and
Ophthalmology, Ft. Lauderdale, FL, 05/1997

Pseudomonas aeruginosa Proteases, National Meeting of the Association for Research in Vision and
Ophthalmology, Ft. Lauderdale, FL, 05/1998

Effects of maspin on corneal stromal cell gene expression: Increased protein levels of SPARC and PAI-1,

National Meeting of the Association for Research in Vision and Ophthalmology, Ft. Lauderdale, FL, 04/2004
Role of the reactive site loop in the function of maspin, Steinbock Symposium, University of Wisconsin, 05/2004

Local

Vitamin A and Immunity, Fourteenth Symposium on Clinical Nutrition, Medical College of Wisconsin, Milwaukee, WI, 09/1994

PEER REVIEWED WORKSHOPS/PRESENTATIONS:

National

Mechanism of Pepsinogen Activation, Bowling Green State University, Department of Chemistry, Bowling Green, OH, 03/1984
Role of Women in Chemistry, Bowling Green State University, American Chemical Society Student Affiliate, Bowling Green, OH, 03/1984
Proteases and Protease Inhibitors in the Cornea, Boston Eye Research Institute, Boston, MA, 03/1987
Role of Proteinase Inhibitors in the Cornea, National Institutes of Health, Eye Institute, Bethesda, MD, 10/1991
Isolation and Properties of Corneal Proteoglycan-Proteinase Complexes, Bowling Green State University, Department of Chemistry, Bowling Green, OH, 01/1992
Role of Proteinases in Pseudomonas Keratitis, Vistacon, Jacksonville, FL, 03/1993
Corneal α -Proteinase Inhibitor: Specific Control by Retinoids, National Institutes of Health, Eye Institute, Bethesda, MD, 10/1995
Plasminogen in the Cornea, Temple University, Department of Biology, Philadelphia, PA, 04/1998
Chameleon Proteins: Mechanism of Conversion of Plasminogen to Angiostatin, Bowling Green State University, Department of Chemistry, Bowling Green, OH, 02/2001
Molecular Mechanisms By Which The Cornea Prevents Tumor Formation, Roswell Park Cancer Institute, Buffalo, NY, 04/2001
Conversion of Serpins: Making Ovalbumin into a Maspin-like Molecule, Jackson State University, Jackson, MS, 02/2002
Conversion of Serpins: Making Ovalbumin into a Maspin-like Molecule, National Institutes of Health, National Eye Institute, Bethesda, MD, 02/2002

Regional

Proteases in Vitamin A Deficient Corneas, College of St. Catherine, Department of Chemistry, St. Paul, MN, 11/1983
Proteases and Protease Inhibitors in Normal Corneas, Hope College, Department of Chemistry, Holland, MI, 11/1985
Role of Polymorphonuclear Leukocytes in Pseudomonas aeruginosa Infections, Wayne State University, Department of Anatomy and Cell Biology, Detroit, MI, 03/1989
Effects of Polymorphonuclear Leukocytes on the Cornea during Inflammation, Northern Illinois University, Department of Biology, DeKalb, IL, 05/1990
Control of Proteolysis in the Cornea, University of Illinois Medical School, Dept. Ophthalmology, Chicago, IL, 04/1995
Pseudomonas Proteinases: A New Elastase Variant, Wayne State University, Dept. Microbiology, Detroit, MI, 12/1997
Proteinases and Inhibitors in the Cornea, Northern Illinois University, Center for Biochemical and Biophysical Studies, DeKalb, IL, 03/2002
Corneal Wound Healing, Hillsdale College, Department of Chemistry, Hillsdale, MI, 09/2003

Local

Proteases in Corneal Ulceration Due to Vitamin A Deficiency with Histological Correlations, University of Wisconsin Parkside, Department of Life Sciences, Kenosha, WI, 10/1984
The Influence of the Immune System in Pseudomonas Keratitis in Rats, Carroll College, Department of Biology, Waukesha, WI, 10/1986
Opportunities for Research in Medicine, University of Wisconsin Milwaukee, Milwaukee, WI, 11/1987

Effect of Vitamin A Deficiency on Polymorphonuclear Leukocyte Function, Beloit College, Department of Biology, Beloit, WI, 02/1988
Perspectives on Research, Target MD Seminar, University of Wisconsin - Milwaukee, Milwaukee, WI, 12/1988
Research in Medicine, Target MD Seminar, University of Wisconsin - Milwaukee, Milwaukee, WI, 10/1989
Effect of Vitamin A Deficiency on Polymorphonuclear Leukocyte Function, U. Wisconsin-Madison, Department of Nutrition, Madison, WI, 11/1992

COMMITTEE SERVICE:

Medical College of Wisconsin

1984 - 1986 Admission Committee (Elected), Subcommittee for Minority Admissions, Medical College of Wisconsin
1985 - 1987 Member, Target M.D., Committee of the University of Wisconsin Milwaukee, Medical College of Wisconsin
1986 - 1987 Chair, Admission Committee (Elected), Admission Subcommittee on Recruitment, Medical College of Wisconsin
1986 - 1987 Student Affairs Committee (Appointed), Medical College of Wisconsin
1988 - 2004 Library Committee, Medical College of Wisconsin
1989 Dean's Committee for the Internal Review, Physiology Department, Medical College of Wisconsin
1990 - 1993 Marquette Scholars Committee, Medical College of Wisconsin, Faculty Representative, Admission Committee (Elected), Medical College of Wisconsin
1990 - 1993 Animal Care Committee (Elected), Medical College of Wisconsin
1991 - 1993 Dissertation Prize Committee, Medical College of Wisconsin
1991 - 2006 Animal Surgery Core Director, NEI Core Grant for Vision Research Committee, Medical College of Wisconsin
1991 - 1995 Graduate Studies Committee, Medical College of Wisconsin
1991 - 1993 Graduate Recruitment Director, Graduate Committee, Medical College of Wisconsin
1993 - 1996 Academic Standing Committee (Elected), Medical College of Wisconsin
1993 - 1995 Faculty Welfare Committee (Elected), Medical College of Wisconsin
1993 - 1995 Armand J. Quick Award Committee, Medical College of Wisconsin
1993 - 1996 1993-1996 Integrated Academic Information Management Systems Planning Committee, Medical College of Wisconsin
1993 - 1995 Chair, Nominating Committee, Medical College of Wisconsin
1993 - 1995 Graduate Program Director, Graduate Committee, Medical College of Wisconsin
1993 - 1998 Representative, Bloodborne Pathogen, Medical College of Wisconsin
1994 Chair of the Graduate School Review, Liaison Committee for Medical Education Review Committee, Medical College of Wisconsin
1996 - 1997 Search Committee for Chair of Ophthalmology, Medical College of Wisconsin
1996 Search Committee for Associate Dean for Curricular Affairs, Medical College of Wisconsin
1998 - 2001 Chair, Armand J. Quick Award Committee, Medical College of Wisconsin
1999 - 2004 Computer Committee, Medical College Of Wisconsin
1999 - 2002 Admission Committee (Appointed), Medical College of Wisconsin
2000 - 2002 Admission Committee (Appointed), Executive Committee of the Admission Committee, Medical College of Wisconsin
2000 - 2002 Instructional Computing Committee, Medical College of Wisconsin
2000 - 2005 Chair, Student Welfare Committee, Medical College of Wisconsin
2000 - Present Ph.D. Qualifying Exam Committees, Medical College of Wisconsin
2000 - 2002 Admission Committee (Appointed), Committee on Diversity, Medical College of Wisconsin
2001 - 2003 Graduate Committee, Medical College Of Wisconsin
2001 - Present Mentoring Committee, Medical College of Wisconsin
2001 - Present Graduate Studies Committee, Medical College of Wisconsin
2001 Focus Group on the Name, Identity and Image of the Medical College of Wisconsin, Medical College of Wisconsin
2002 - 2003 LCME Accreditation Task Force, Medical College of Wisconsin
2002 - 2005 Curriculum and Evaluation Committee (Elected), Executive Committee, Medical College of Wisconsin

2002 - 2007 Women's Faculty Council (Appointed), Medical College of Wisconsin
2002 - 2003 LCME Accreditation Review Committee on Students, Medical College of Wisconsin
2002 - 2005 Chair, Curriculum and Evaluation Committee (Elected), M1/M2 Subcommittee, Medical College of Wisconsin
2003 Focus Group for the Establishment of Guidelines for the MCW Educational IRB, Medical College of Wisconsin
2003 Search Committee for Associate Dean for Curricular Affairs, Medical College of Wisconsin
2003 - 2006 Graduate Program Director, Graduate Committee, Medical College Of Wisconsin
2003 - 2004 Chair, Women's Faculty Council (Appointed), Program Committee, Medical College of Wisconsin
2003 Focus Group for the Revision of Medical Information Management Course, Medical College of Wisconsin
2004 - 2005 Chair Elect, Women's Faculty Council (Appointed), Medical College of Wisconsin
2004 Focus Group for Establishment of the Global Learning Objectives for M1-M2 years, Medical College of Wisconsin
2004 - 2006 M1 Advisor, Medical School Student Assembly, Medical College of Wisconsin
2005 - 2006 Women's Faculty Council Representative, Faculty Council, Medical College of Wisconsin
2005 - 2006 Chair, Women's Faculty Council (Appointed), Medical College of Wisconsin
2006 - 2010 Executive Committee, Medical College of Wisconsin
2006 - 2010 Armand J. Quick Award Committee, Medical College Of Wisconsin
2006 - 2012 Faculty Council and Governance Committee (Elected), Medical College of Wisconsin
2006 - Present Women in Science Advisory Committee, Medical College of Wisconsin
2006 - 2010 Curriculum Committee, Medical College of Wisconsin
2006 - 2007 Chair Emeritus, Women's Faculty Council (Appointed), Medical College of Wisconsin
2006 - 2007 Vice President, Faculty Council and Governance Committee (Elected), Medical College of Wisconsin
2006 - Present Biochemistry Co-Core Director, NEI Core Grant for Vision Research Committee, Medical College of Wisconsin
2007 Co-Leader for Education and Training, CTSA Key Function Group, Medical College of Wisconsin
2007 Chair, Women's Faculty Council (Appointed), Woman in Science Award Selection Committee, Medical College of Wisconsin
2007 - 2009 Faculty Council Representative, Executive Committee of the Faculty, Medical College of Wisconsin
2007 - 2008 Chair, Ad Hoc Certificate Committee, Medical College of Wisconsin
2007 - 2008 Search Committee for Cancer Faculty, Medical College of Wisconsin
2007 - Present Co-Leader for Education and Training, CTSA Key Function Group, Medical College Of Wisconsin
2007 - 2008 Sr Vice President, Faculty Council and Governance Committee (Elected), Medical College of Wisconsin
2008 - 2009 President, Faculty Council and Governance Committee (Elected), Medical College of Wisconsin
2008 - Present Faculty and Staff Gift Drive Committee (Appointed), Medical College of Wisconsin
2009 - Present Ad Hoc Member Representing the Faculty Governance Committee (Appointed), Curriculum and Evaluation Committee, Medical College of Wisconsin
2009 - 2012 Past President, Faculty Council and Governance Committee (Elected), Medical College of Wisconsin
2009 - 2010 Graduate School Dean Search Committee, Medical College of Wisconsin
2009 - 2011 Dean's Educational Innovation Advisory Committee, Medical College of Wisconsin
2009 - 2010 Search Committee for the President of MCW, Medical College of Wisconsin
2009 - 2011 Researcher Search Committee, Medical College of Wisconsin
2010 LCME Accreditation Task Force, Medical College of Wisconsin
2010 Chair, LCME Accreditation Review Committee on Faculty, Medical College of Wisconsin
2010 - Present MS in Clinical and Translational Science Advisory Committee, Medical College Of Wisconsin
2011 Search Committee for the Senior Vice President for Finance and Administration of MCW, Medical College of Wisconsin

MCW TEACHING ACTIVITIES:

Medical Student Education

- 1983 - Present Medical Biochemistry
- 1983 - 1987 Summer Bridging Program: Lecturer
- 1985 - 1988 Introduction to Clinical Medicine
- 2002 - Present Basic Science of Pediatrics Problem Solving – M4 Selective
- 2003 Grand Rounds-Intrauterine Growth Restriction
- 2011 Pilot Innovation Curriculum

Graduate Student Education

- 1984 - 1987 Seminar in Biochemistry
- 1985 - 1999 Protein Chemistry
- 1988 - 2000 Enzyme Chemistry
- 1990 - Present Physical Properties of Macromolecules-Biophysical Techniques in Biochemistry
- 1990 - 2000 Lipids, Carbohydrates and Membranes
- 1993 - 2005 Contemporary Topics in Biochemistry, Course Director (Every 3 yrs)
- 1999 - Present Biochemistry of the Cell
- 2003 - Present Protein Chemistry
- 2006 - 2008 Advanced Cell Signaling, Lecture on Protease Activated Receptors
- 2007 - Present Enzyme Kinetics
- 2008 Introduction to Biostatistics, Lectures on Applications of Biostatistics
- 2008 - Present Boundaries of Science and Medical Practice
- 2009 - Present Introduction to Clinical and Translational Sciences

Resident and Fellow Education

- 1987 - Present Ophthalmology Resident Lecture Series

Community/Lay Public

- 2003 Mini Med School-Biochemical Basis of Phenylketonuria

MCW STUDENTS, FACULTY, RESIDENTS AND CLINICAL/RESEARCH FELLOWS MENTORED:

Medical Students

- 1988 Jeff Jahnke, Medical College of Wisconsin
- 1989 Jerry Loushin, Medical College of Wisconsin
- 1990 Jerry Loushin, Medical College of Wisconsin
- 1994 Simon Wright, Medical College of Wisconsin
- 1994 Jerry Loushin, Medical College of Wisconsin
- 1995 Vannah Nguyen, Medical College of Wisconsin

Graduate Students

PhD Committees

- 1982 - 1985 Joyce Tucker, Serine Proteases of *Aspergillus fumigatus*, Medical College of Wisconsin
- 1985 - 1988 Tracy Kangas, Effect of Edema on Corneal Proteoglycans, Medical College of Wisconsin
- 1989 - 1995 Kevin Langford, Isolation and Characterization of the High Molecular Weight, Medical College of Wisconsin
- 1991 - 1996 Goran Boskovic, Control of Synthesis of α 1-Proteinase Inhibitor in the Human Cornea, Medical College of Wisconsin
- 1995 - 2000 Monica Olague-Alcala, Characterization of the Structural Alterations Caused by a Disease-Associated Mutation (G627V) in the BP180 Protein (Type XVII Collagen), Medical College of Wisconsin
- 1997 - 2002 Chatri Ngamkitdaichakul, Regulation of Corneal Cells by Maspin, Medical College of Wisconsin
- 2001 - 2005 Guangjie Sun, Understanding the Molecular Basis Underlying Carbohydrate Recognition by the CD-MPR, Medical College of Wisconsin
- 2005 - Present Malathi Narayan, Phosphorylation of Maspin Synthesized by the Corneal Epithelium, Medical College of Wisconsin

2006 - 2010 Mark White, Role of PepD in Tuberculosis, Medical College of Wisconsin
2006 - 2010 Erin Hassemer, Anatomy and Neurosciences, Characterization of the woe mutation in ADAM 17, Medical College of Wisconsin
2007 - Present Kate Merath, Ocular mutation in SHEFB-P, Medical College of Wisconsin
2007 - 2010 Mariam Hartley, Roles of Metals and Metal Ligands in the Active Site of Vibrio proteolyticus aminopeptidase, Medical College of Wisconsin
2007 - 2009 Hong Guan, Palmitoyl Acyl Transferases in Breast Cancer, Medical College of Wisconsin
2007 - 2010 Kay Ishizuka, Spatial regulation of Ras protein and DHHC palmitoyltransferases in Saccharomyces cerevisiae, Medical College of Wisconsin
2008 - 2011 Alicia, Castonguay, Function of Retinoid Binding on CD-MPR, Medical College of Wisconsin
2008 - Present Susan Salti, Role of Granzyme B in T-Helper Cell Function, Medical College of Wisconsin
2008 - Present Emily Andraea, Role of Thrombin in the Cornea, Medical College of Wisconsin
2008 - Present Bethany Volkman, PITX in Lens Development, Medical College of Wisconsin
2009 - Present Luis Paniagua, Role of RAP-1 in Platelets, Medical College of Wisconsin
2009 - Present Elizabeth Ntantie, Phosphorylation of SmgGDS, Medical College of Wisconsin
2010 - Present LiLi Du, Characterization of allosteric enhancers for the A3 adenosine receptor, Medical College of Wisconsin
2011 - Present Maxime Heroux, Proteomics of Proteus Syndrome, Medical College of Wisconsin

MS Committees

1984 - 1987 Renee Madden, Studies on the Interaction of Plasminogen Activator Inhibitor Type One with Thrombin: Possible Regulatory Mechanism of Fibrinolysis, Medical College of Wisconsin
1996 - 1999 Karen Tiffany, Structure of Isovaleryl Acyl Dehydrogenase, Medical College of Wisconsin
1996 - 1998 Mark Nickolas, Gene Structure of Corneal Maspin, Medical College of Wisconsin
2004 - 2005 Kelly Soules, Characterization of Ocular Mutants in Zebrafish, Medical College of Wisconsin
2004 - 2005 Adam Harder, Structure Function of BRAK, Medical College of Wisconsin

PhD Students Advised

1991 - 1996 Goran Boskovic, Control of Synthesis of ?1-Proteinase Inhibitor in the Human Cornea, Medical College of Wisconsin
1997 - 2002 Chatri Ngamikitdaichakul, Regulation of Corneal Cells by Maspin, Medical College of Wisconsin
2005 - 2010 Malathi Narayan, Mechanism of Maspin Function, Medical College of Wisconsin
2008 - Present Emily Andraea, Function of Thrombin in the Cornea, Medical College of Wisconsin

MS Students Advised

1996 - 1998 Mark Nickolas, Gene Structure of Corneal Maspin, Medical College of Wisconsin

Postdoctoral Researchers

1989 - 1990 Susan Kirshner, DVM, Medical College of Wisconsin
1991 - 1996 Xiaoye Zhou, MD, Medical College of Wisconsin
2000 - 2002 Monica Olague-Marchan, PhD, Medical College of Wisconsin

Clinical/Research Fellows

2001 Blythe Janowiak, primary mentor, Medical College of Wisconsin
2003 Kasia Broniowska, Medical College of Wisconsin
2004 Brajesh Kumar, primary mentor, Medical College of Wisconsin
2004 Robert Walchak, Medical College of Wisconsin
2005 Malathi Narayan, Medical College of Wisconsin
2005 Wei Gauk, Medical College of Wisconsin
2006 Kate Merath, primary mentor, Medical College of Wisconsin
2007 Susan Salti, primary mentor, Medical College of Wisconsin
2007 Sreemanti Basu, Medical College of Wisconsin
2007 Kathrine Schmalzer, Medical College of Wisconsin
2007 Jackie Porath, Medical College of Wisconsin
2007 Luis Paniagua, primary mentor, Medical College of Wisconsin
2007 Rebecca Bark, primary mentor, Medical College of Wisconsin

2008 Ben Tourdot, Medical College of Wisconsin
2008 Kim Agle, Medical College of Wisconsin
2008 Emily Andreae, primary mentor, Medical College of Wisconsin
2010 Nathan Schuld, Medical College of Wisconsin

EXTRAMURAL STUDENTS, FACULTY, RESIDENTS, AND CLINICAL/RESEARCH FELLOWS

MENTORED:

High School Students

1991 - 1992 Brent Gilmore, Marquette High School
2000 Anna Marie Vu, Glendale High School
2007 - 2008, Students Modeling a Research Topic (Smart) Team (MSOE), Brown Deer High School
2008 - 2009, Students Modeling a Research Topic (Smart) Team (MSOE), Lincoln High School,
Manitowoc
2008 Antonica Amour, Pulaski High School
2009 - 2010, Students Modeling a Research Topic (Smart) Team (MSOE), Messmer High School,
Milwaukee
2010 Rupinder Grewal, Cudahy High School
2010 - 2011, Students Modeling a Research Topic (Smart) Team (MSOE), St. Joan Antidia

Undergraduate Students

1984 Kevin Foley, Beloit College
1987 Stephen Everse, Beloit College
1991 Lisa Mahnke, Ripon College
1994 Andrew Weber, University of Wisconsin, Stevens Point
1999 Priscilla Moore, University of Wisconsin-Green Bay
2000 Chris Miller, University of Dallas
2001 Hieu Luu, Marquette University
2003 - 2004 Tyna MacGill, Carroll College

Graduate Students

PhD Committees

1985 - 1987 Vincent Braganza, S.J., Department of Biochemistry, Tryptase, A Novel Trypsin Like Rat
Skin Enzyme: Isolation and Purification, Loyola University Medical School
1998 - 1999 Kevin Wee, Department of Biology, Proteinases of Nematode Bacterial Parasites, Temple
University

COMMUNITY SERVICE ACTIVITIES:

1983 - 1985 S.E. Wisconsin Science and Engineering Fair-Judge
1985 - 1988 First Presbyterian Church, Oostburg, WI-Sunday School Teacher
1985 - 1988 New Berlin Public Schools-High Interest Day
1989 - 1991 Our Lords' Methodist Church, New Berlin, WI-Sunday School Teacher
1989 - 1990 Waukesha County Career Exposition
1992 March of Dimes-Neighborhood Solicitor

NATIONAL/INTERNATIONAL MEETING MODERATOR/ORGANIZER:

1993 Organizer, Proteinase Interest Group Meeting, Control of proteolysis in the eye, Association for
Research in Vision and Ophthalmology, Sarasota, FL
1994 Organizer, Proteinase Interest Group Meeting, Functional effects of proteolysis on proteins in the eye,
Association For Research In Vision And Ophthalmology, Sarasota, FL
1994 Moderator, "Metalloproteinases" Poster Session, Association for Research in Vision and
Ophthalmology, Sarasota, FL
1997 Moderator, "Extracellular Matrix", Platform Session, Association for Research in Vision and
Ophthalmology, Ft. Lauderdale, FL
1998 Moderator, Pseudomonas Infections, Platform Session, Association For Research In Vision And

- Ophthalmology, Ft. Lauderdale, FL
 2005 Organizer and Moderator, Corneal Nerves, Minisymposium, Association for Research in Vision and Ophthalmology, Ft. Lauderdale, FL
 11/2006 Moderator, IRBP: A Journey Toward Understanding the Retina, A Tribute to Dr. Barbara Wiggert, NIH
 2006 Co-organizer and Moderator, Proteases: Substrate Cleavage and Beyond, ICER, Buenos Aires, Argentina
 2006 Organizer and Moderator, Scar Wars, Sunday Symposium, Association for Research in Vision and Ophthalmology, Ft. Lauderdale, FL

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5. TWINING SS. Brecher AS. Large scale separation of protease inhibitors from malignant human breast tissue. *Mol. Cell. Biochem.* 18:101-7, 1977
6. TWINING SS. LaPoint D. Brecher A.S. Interaction of mucopolysaccharides with chymotrypsin. *Polymers* 18:483-488, 1977
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12. TWINING SS. Lehmann H. Atassi MZ. The antibody response to myoglobin is independent of the immunized species. Analysis in terms of replacements in the antigenic sites and in environmental residues of the cross-reactions of fifteen myoglobins with sperm-whale myoglobin antisera raised in different species. *Biochem. J.* 191:681-697, 1980
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