

ESTHER E. BISWAS-FISS

Department of Bioscience Technologies
Program in Biotechnology/Applied Molecular Sciences
Jefferson School of Health Professions
Thomas Jefferson University
130 South 9th Street, Suite 1924
Philadelphia, PA 19107
Email: Esther.Biswas@Jefferson.edu
TEL: (215) 503-8184
FAX: (215) 503-2189

EDUCATION

Rutgers/UMDNJ, Piscataway, NJ	Ph.D.	06/99	Molecular Bioscience
University of Maryland, Baltimore, MD	MS	08/89	Biochemistry
University of Washington, Seattle, WA	BS	08/82	Chemistry

CERTIFICATIONS/LISCENCURE

MB(ASCP) (Formerly, NCA Certification as Clinical Laboratory Specialist in Molecular Biology (CLSp(MB))), Initial - August 2000, Recertification - August 2005, February 2008.

ACADEMIC APPOINTMENTS

7-04 to present	Associate Professor (non-prefixed track), Department of Bioscience Technologies, Program in Biotechnology/Applied Molecular Sciences, Jefferson School of Health Professions, Thomas Jefferson University; Philadelphia, PA.
9-06 to present	Adjunct Associate Professor, Department of Molecular Biology, University of Medicine and Dentistry of New Jersey, School of Osteopathic Medicine, Stratford, NJ.
5-99 to 6-04	Assistant Professor (non-prefixed track) and Director of Departmental Research Programs, Department of Bioscience Technologies, Jefferson School of Health Professions, Thomas Jefferson University; Philadelphia, PA.
8-96 to 3-99	Graduate Student, Program in Cell & Developmental Biology, GSBS Rutgers/UMDNJ, Piscataway, NJ
7/95 to 5/99	Research and Teaching Associate, Department of Molecular Biology, UMDNJ, Stratford, NJ
7/84 - 6/94	Research Associate, Department of Pediatrics, University of Maryland School of Medicine, Baltimore, MD.

MAJOR ADMINISTRATIVE RESPONSIBILITIES

9-00 to present	Program Director Biotechnology/Applied Molecular Technologies, Department of Bioscience Technologies, Jefferson School of Health Professions, Thomas Jefferson University; Philadelphia, PA.
-----------------	--

AWARDS

2010 Dean's Faculty Achievement Award – Jefferson School of Health Professions, Philadelphia, PA
2007 Lindback Award for Distinguished Teaching, Thomas Jefferson University, College of Health Professions, Philadelphia, PA.
2004 Fight for Sight Research Contribution Award; Annual Meeting of Researchers in Vision and Ophthalmology, Ft. Lauderdale, FL 2004
1991 Y S Kim Award for Excellence in Research, Dept. of Biochemistry, University of Maryland at Baltimore, Baltimore, MD.

SECLECTED PEER-REVIEWED PUBLICATIONS (in chronological order; 40 total)

1. **Biswas-Fiss, E.E, Kurpad, D.S.,** and Joshi, K. Interaction of Extracellular Domain 2 of the Human Retina-Specific ABC Transporter (ABCA4) With All-Trans Retinal. (2010) *Journal of Biological Chemistry*, 285, 19372-83.
2. **Biswas E.E.,** Barnes, M.H. , Moir, D.T., and Biswas, S.B (2009) An Essential DnaB Helicase of Bacillus Anthracis: Identification, Characterization , and Mechanism of Action. *J. Bacteriol.* 1, 249-60.

3. Biswas SB, Wydra E, **Biswas EE**.(2009) Mechanisms of DNA binding and regulation of Bacillus anthracis DNA primase. *Biochemistry*, **48**, 7373-82.
4. Aiello D, Barnes MH, **Biswas EE**, Biswas SB, Gu S, Williams JD, Bowlin TL, Moir DT. (2009) Discovery, Characterization and Comparison of Inhibitors of Bacillus anthracis and Staphylococcus aureus Replicative DNA Helicases. (2009) *Bioorganic & Medicinal Chemistry*, **17**, 4466-76.
5. **Biswas E.E.**, Barnes, M.H. , Moir, D.T., and Biswas, S.B (2009) An Essential DnaB Helicase of Bacillus Anthracis: Identification, Characterization , and Mechanism of Action. *J. Bacteriol.* **1**, 249-60.
6. **Biswas-Fiss, E.E.** (2006) Interaction of the nucleotide binding domains and regulation of the ATPase activity of the human retina specific ABC transporter, ABCR. *Biochemistry*, **45**, 3813-3823.
7. Biswas, S.B. and **Biswas-Fiss, E.E.** (2006) Quantitative analysis of binding of single-stranded DNA by Escherichia coli DnaB helicase and the DnaB•DnaC complex, *Biochemistry*, **45**, 11505-13.
8. **Biswas-Fiss, E.E.**, **Khopde, S.M.**, and Biswas, S.B. (2005) The Mcm467 complex of Saccharomyces cerevisiae is preferentially activated by autonomously replicating DNA sequences.
9. Mitkova, A.V., **Biswas-Fiss, E.E.** and Biswas, S.B. (2005) Modulation of Plasmid DNA Replication in *Saccharomyces cerevisiae in vitro* by DNA Polymerases and Mcm467 complex. *J Biol Chem.* **280**, 6285-6292.
10. Biswas, S.B., Khopde, S.M., **Biswas-Fiss, E.E.** (2005) Control of ATP-dependent binding of Saccharomyces cerevisiae origin recognition complex to autonomously replicating DNA sequences. *Cell Cycle*, **3**, 494-500.
11. **Biswas-Fiss, E.E.**, **Flowers, S.** and Biswas, S.B. (2004) Quantitative analysis of nucleotide modulation of DNA binding by DnaC protein of E. coli and the mechanism of DNA helicase loading. *Biochemical Journal*, **379**, 553-562.
12. **Biswas-Fiss, E. E.** (2003) Molecular Basis and Functional Consequences of Genetic Mutations in Human ABCR Nucleotide Binding Domain 2, *Biochemistry*, **42**, 10683-10696.
13. Biswas, S. B., Khopde, S. M., Zhu, F.-X., & **Biswas, E. E.** (2003) Protein-Protein Interaction in the Assembly of p170 and p79 Subunits of DNA Polymerase α by Two-Hybrid Analysis. *Nucleic Acids Research*, **31**, 2056-2065.F
14. **Flowers, S.**, **Biswas, E. E.**, and Biswas, S (2003) Mechanism of DNA Binding by *E. coli* DnaB helicase: Analysis of Conformational Transitions by Fluorescence Quenching. *Biochemistry* **42**, 1910-1921.
15. Khopde, S., **Biswas, E. E.**, and Biswas, S. B. (2002) Affinity and Sequence specificity of DNA Binding by *E. coli* DnaG Primase and mechanism of site selection for primer synthesis., *Biochemistry* **41**, 14820-30.
16. **Suarez, T. C.**, Biswas S. B., and **Biswas, E. E.** (2002) Biochemical Defects in Human ABCR Nucleotide Binding Domain 1 Mutants Associated with Macular Degeneration. *Journal of Biological Chemistry*, **277**, 21759-21767.
17. **Biswas, E. E.**, Chen, P-H., and Biswas, S.B. (2002) Modulation of ATPase Activities of *E. coli* DnaB Helicase by Single Stranded DNA Binding Protein. *Nucleic Acids Research*, **30**, 2809-2816.
18. Mitkova, A., **Biswas, E. E.**, and Biswas, S.B. (2002) Cell Cycle Specific Plasmid DNA Replication in the Nuclear Extract of *Saccharomyces cerevisiae*: Modulation by Replication Protein A and Proliferating Cell Nuclear Antigen. *Biochemistry*, **41**, 5255-5265.
19. **Biswas, E.E.** (2001) The Nucleotide Binding Domain 1 of the Human Retinal ABC Transporter Functions as a General Ribonucleotidase. (2001) *Biochemistry*, **40**, 8181-8187.
20. **Biswas, E.E.**, Nagele, R.G. and Biswas, S.B. (2001) A Novel Human Hexameric DNA Helicase: Expression, Purification and Characterization. *Nucleic Acids Res.*, **29**, 1733-1740.
21. **Biswas E.E.** and Biswas, S.B. (2000) The C-terminal Domain of the Human ABCR Protein is a Functional ATPase, *Biochemistry*, **39**, 15879-15886.
22. **Biswas, E. E.** and Biswas, S. B. (1999) Mechanism of DNA Binding by the DnaB Helicase of Escherichia coli: Analysis of the Roles of Domain Gamma in DNA Binding. *Biochemistry*, **38**, 10929-10939.
23. **Biswas, E. E.** and Biswas, S. B. (1999) Mechanism of DnaB helicase of Escherichia coli: Structural Domains Involved in ATP Hydrolysis, DNA Binding, and Oligomerization. *Biochemistry*, **38**, 10919-10928.
24. **Biswas, E. E.**, Fricke, W. M., Chen, P. H., and Biswas, S. B. (1997) The Yeast DNA Helicase A: Cloning, Expression, Purification and Enzymatic Characterization. *Biochemistry*, **43**, 13270-13276. 13277-13284.
25. Biswas, S. B., Chen, P. H. and **Biswas, E. E.** (1997) Purification and Characterization of DNA Polymerase α Associated & RPA-Dependent Yeast DNA Helicase A. *Biochemistry*, **43**, 13270-13276.
26. **Biswas, E.**, Zhu, F. X., and Biswas, S. B. (1997) Stimulation of RTH1 Nuclease of the Yeast, Saccharomyces cerevisiae, by Replication Protein A. *Biochemistry*, **43**, 5955-5962.
27. Zhu, F., **Biswas, E.E.**, and Biswas, S. B. (1997) Purification and Characterization of the DNA Polymerase α Associated Exonuclease: The RTH1 Gene Product. *Biochemistry* **43**, 5947-5954.

28. **Biswas, E. E.**, P.-H. Chen, & Biswas, S. B. (1995) Large Scale Expression, Rapid Purification, and Analysis of Yeast Proliferating Cell Nuclear Antigen (PCNA). *Protein Expression and purification*, 6, 763-770.
 29. **Biswas, E. E.**, P.-H. Chen, & Biswas, S. B. (1995) Biochemical and Genetic Characterization of DNA Helicase B from the Yeast, *Saccharomyces cerevisiae*. *Biochem. Biophys. Res. Comm.*, 206 850-856.
 30. Gray, W., **Biswas, E. E.**, Basirelahi, N., & Biswas, S. B. (1994) High level expression of a Low Affinity Estrogen Binding Site During Pregnancy in Rat Uteri and Its Purification, *Proc. Nat'l. Acad. Sci., USA*, 91, 11502-11506.
 31. Biswas, S. B., P.-H. Chen, & **Biswas, E. E.** (1994) Structure and Function of *E. coli* DnaB Helicase: Role of the N-Terminal Domain In the Helicase Activity. *Biochemistry*, 33, 11307-11314.
 32. **Biswas, E. E.**, Chen, P.-H., & Biswas, S. B. (1993) DNA Helicase Associated with DNA Polymerase α : Isolation by a Modified Immunoaffinity Chromatography. *Biochemistry*, 32, 13393-13398.
 33. **Biswas, E. E.**, Ewing, C. M., & Biswas, S. B. (1993) Characterization of the DNA Dependent ATPase and a DNA Unwinding Activity Associated With the Yeast DNA Polymerase α Complex, *Biochemistry* 32, 3020-3027.
 34. **Biswas, E.E.**, Chen, P.-H., Gray, W., Li, Y.-H., Ray, S. & Biswas, S. B. (1993) Purification and Characterization of a Yeast DNA Polymerase α Complex With Associated Primase, 5N63N Exonuclease, & DNA Dependent ATPase Activities. *Biochemistry* 32, 3013-3019.
 35. **Biswas, E. E.**, Stefanec, M. J., & Biswas, (1990) S. B. Molecular Cloning of a Gene Encoding an ARS Binding Factor from the Yeast, *Saccharomyces cerevisiae*, *Proc. Nat'l. Acad. Sci., USA*, 87, 6689-6692.
 36. Biswas, S. B., & **Biswas, E. E.** (1990) ARS Binding Factor I Binds to Sequences in Both Telomeric and Nontelomeric ARSs. *Mol. Cell. Biol.*, 10,
 37. **Biswas, E. E.**, & Biswas, S. B. (1988) Replication of Single-Stranded DNA Templates by Primase-Polymerase Complexes of the Yeast, *Saccharomyces cerevisiae*, *Nucleic. Acids Res.*, 16, 14A:6411-6426.
 38. **Biswas, E. E.**, Joseph, P., & Biswas, S. B. (1987) The Yeast DNA Primase is Encoded by a 59 KiloDalton Polypeptide: Purification and Immunochemical Characterization, *Biochemistry*, 26, 5377-5382.
 39. Biswas, S. B., & **Biswas, E. E.** (1987) Regulation of *dnaB* Function in DNA Replication in *Escherichia coli* by *dnaC* and λ P Gene Products, *J. Biol. Chem.* 262,7831-7838.
 40. **Biswas, E. E.**, Biswas, S. B., & Bishop, J. E. (1986) The *dnaB* Protein of *E. coli*: Mechanism of Nucleotide Binding, Hydrolysis and Modulation by *dnaC* Protein, *Biochemistry*, 25, 7368-7374.
- (Bold and italics refer to student co-authored publications)**

PEER REVIEWED SCIENTIFIC AND PROFESSIONAL PRESENTATIONS

1. Annual Meeting of Association for Research in Vision and Ophthalmology, May 2, 2010, Ft. Lauderdale FL. "Disease Mutations in the Second Extracellular Loop of the Human Retina Specific ABC Transporter, ABCA4, Impart Structural Defects in This Domain"
2. Annual Meeting of Association for Research in Vision and Ophthalmology, May, 7 2009, Ft. Lauderdale FL. "Two Hybrid Analysis of Protein Interaction with the Extracellular Domains of Human ABCR"
3. Annual Meeting of Association for Research in Vision and Ophthalmology, May 2007, Ft. Lauderdale FL. Unique and Stable Structure of the Extracellular Domains of the Retina Specific ABC Transporter, ABCR
4. Annual Meeting of Association for Research in Vision and Ophthalmology, May 2006, Ft. Lauderdale FL. Interaction of the Nucleotide Binding Domains and Regulation of the ATPase Activity of the Human Retina Specific the Human Retina Specific ABC Transporter, ABCR
5. Annual Meeting of Association for Research in Vision and Ophthalmology, May 2005, Ft. Lauderdale FL. Analysis of Intra-Protein Interactions in the Retina Specific ABC Transporter, ABCR
6. Meeting of Association for Research in Vision and Ophthalmology, May 2004, Ft. Lauderdale FL. Heterologous Expression Of The Human Retina Specific ABC Transporter, ABCR, In The Yeast *Saccharomyces Cerevisiae*.
7. Annual Meeting of Association for Research in Vision and Ophthalmology, May 2002, Ft. Lauderdale FL. "Structure-Function Analysis of Macular Dystrophy Associated Mutations Influencing the Second Nucleotide Binding Domain of the Human Retinal ABC Transporter"

ABSTRACTS

1. **E. E. Biswas-Fiss**, D. S. Kurpad, **K. Joshi** and **B. Sajer**; Disease Mutations in the Second Extracellular Loop of the Human Retina Specific ABC Transporter, ABCA4, Impart Structural Defects in This Domain, *Invest Ophthalmol Vis Sci* 2010;51: E-Abstract 1093.

2. **E. E. Biswas-Fiss, M. B. Bah**, and S. B. Biswas, Two Hybrid Analysis of Protein Interaction with the Extracellular Domains of Human ABCR, *Invest. Ophthalmol. Vis. Sci.* 2009 50: E-Abstract 5426.
3. **E. E. Biswas-Fiss** and S. B. Biswas, Unique and Stable Structure of the Extracellular Domains of the Retina Specific ABC Transporter, ABCR, *Invest. Ophthalmol. Vis. Sci.* 2007 48: E-Abstract 598.
4. **E.E. Biswas–Fiss** and S.B. Biswas, Interaction of the Nucleotide Binding Domains and Regulation of the ATPase Activity of the Human Retina Specific the Human Retina Specific ABC Transporter, ABCR *Invest. Ophthalmol. Vis. Sci.* 2006 47: E-Abstract 2023.
5. **E.E. Biswas–Fiss**, S. Biswas, **K. Frempong**, and **J. LeGates**, Analysis of Intra–Protein Interactions in the Retina Specific ABC Transporter, ABCR, *Invest. Ophthalmol. Vis. Sci.* 2005 46: E-Abstract 1702.
6. E.E. Biswas, Heterologous Expression Of The Human Retina Specific ABC Transporter, ABCR, In The Yeast *Saccharomyces Cerevisiae.*, *Invest. Ophthalmol. Vis. Sci.* 2004 45: E-Abstract 1250.
7. **EE Biswas** and SB Biswas, Structure-Function Analysis of Macular Dystrophy Associated Mutations Influencing the Second Nucleotide Binding Domain of the Human Retinal ABC Transporter, *Invest. Ophthalmol. Vis. Sci.* 2002 43: E-Abstract 1401.
8. **TM Suarez-Cortes, EE Biswas**, and SB Biswas, Biochemical Analysis Of Genetic Mutations Related To Visual Disorders In The NBD1 Domain Of ABC Transporter (ABCR), *Invest. Ophthalmol. Vis. Sci.* 2002 43: E-Abstract 1402.

(Bold and italics refer to student co-authored publications)

NON-PEER REVIEWED PUBLICATIONS (Invited Book Chapters or Reviews)

1. Biswas, S. B., Clark, J., **Kurpad, D. S.**, & **Biswas-Fiss E. E.** (2008) Invited Review: Bacterial Replicative DNA Helicases in “*DNA Helicases*”, December 2008, Editor, Frank Columbus, Nova Science Publishers, Inc., Hauppauge, NY.
2. **Biswas-Fiss, E.E.** (2007) Biochemical Defects in the Nucleotide Binding Domains of the Retina Specific ABC Transporter, ABCR., in “Ocular Transporters, in Ophthalmic Diseases and Drug Delivery”, *Ophthalmology Research*, Invited Review, Tombran-Tink, J. and Barnstable, C., Editors.

INVITED PRESENTATIONS

1. Camden County College, Blackwood, NJ, March 2011, October 2010, February 2009, “Molecular Approaches to Understanding Inherited Visual Diseases.”
2. Burlington County Community College, Mt. Laurel, NJ. November 2010, March, 2010 and November, 2009; “Molecular Approaches to Understanding Inherited Visual Diseases.”
3. New Jersey Biotechnology Education Consortium, DVIN, May 11, 2009, “Development of Hands-On Programs in Biotechnology at Thomas Jefferson University”; Mercer County College Conference Center, Lawrenceville, NJ.
4. Mercer County Community College, Lawrenceville, NJ. February 2009, **Keynote Lecture Series**, “Biotechnology – Science of the New Millennium.”
5. Camden County College, Blackwood, NJ, February 2009, “Biotechnology Approaches to the Development of Novel Antimicrobials.”
6. Medical Diagnostic Laboratories, LLC, Hamilton, NJ, May 2008 “DNA Replication Proteins of *B. Anthracis* as Targets for the Development of Novel Antimicrobials”.
7. BioMann 2006 Biotechnology Workforce Education Conference; NHCC Technical College, Worcester, NH. July 2006, Panel Speaker – “Biotechnology Science of the New Millennium – Development of Skills Based Educational Programs with Consortium Collaborations.”
8. Burlington County Community College, Mt. Laurel, NJ. May 2006 “Biotechnology Forum.” Panel Speaker on Challenges and Demands of Biotechnology Education.
9. Biotechnology Institute – Conference in Biotechnology Education; May 2005, Thomas Jefferson University; Best Practices in Education Speaker – “Development of Skills Based Educational Programs Designed to Meet Workforce Needs.”
10. University of Pennsylvania, Department of Ophthalmology, November 2003, “Biochemical Analysis of Genetic Mutations in ABCR.”
11. Montgomery County Community College, Blue Bell, PA.. October 2003,04,05,06,07 “Molecular Approaches to Understanding Inherited Visual Diseases.”
12. Burlington County Community College, Mt. Laurel, NJ. October 2003,04,05,06,07 “Molecular Approaches to Understanding Inherited Visual Diseases.”

13. Camden County Community College, Blackwood, NJ.. March October 2003,04,05,06,07 “Molecular Approaches to Understanding Inherited Visual Diseases.”
14. University of Scranton, Institute of Molecular Biology, Scranton, PA. December 2002 “Structure and Function of the DnaB Helicase of *E. coli*.”
15. Burlington County Community College, Mt. Laurel, NJ. September, 2002 “Molecular Approaches to Understanding Inherited Visual Diseases.”
16. Burlington County Community College, Mt. Laurel, NJ. February 2002, “Biotechnology – Science of the New Millennium.”
17. Burlington County Community College, Mt. Laurel, NJ. October 2002, “The Human Genome Project and Its Implications on Molecular Approaches to Disease.”

GRANT FUNDING

Pending- Competing Continuation

EY13113

Agency: NIH/NEI Project: “Molecular Analysis of Genetic Mutations in Visual Diseases.”

2R15EY013113-05

Project Period Begin Date: 12/01/2010

Project Period End Date: 12/31/2013

Role: PI

Completed

1. EY13113

Agency: NIH/NEI Project: “Molecular Analysis of Genetic Mutations in Visual Diseases.”
 Scope of Work: Functional analysis of proteins harboring mutations associated with inherited macular degeneration.

1R15EY013113-01

Project Period Begin Date: 07/01/2000

Project Period End Date: 06/30/2003

Role: PI

2R15EY013113-02

Project Period Begin Date: 07/01/2000

Project Period End Date: 03/31/2007

Role: PI

2R15EY013113-04

Project Period Begin Date: 07/01/2000

Project Period End Date: 03/31/2010

Role: PI

5R15EY013113-03

Budget Start Date: 07/01/2004

Budget End Date: 03/31/2007

Role: PI

3R15EY013113-02S1

MARC (Minority Access to Research Careers) Supplement - NIH/NEI/NIGMS

Project Period Begin Date: 07/01/2000

Project Period End Date: 06/30/2005

Role: PI

3R15EY013113-04S1

MARC (Minority Access to Research Careers) Supplement - NIH/NEI/NIGMS

Project Period Begin Date: 07/01/2000

Project Period End Date: 03/31/2010

Role: PI

3R15EY013113-02S2 Administrative Supplement for “Quantitative Physical Measurements at the Nanoscale”
Project Period Begin Date: 07/01/2000
Project Period End Date: 06/30/2005
Role: PI (Supplement to provided funds for acquisition of research grade spectrofluorometer.)

2. Agency: American Health Assistance Foundation
Role: PI
Period: 4-1-03 to 3-31-04
Scope of Work: Analysis of Age Related Macular Degeneration mutations on protein-protein interactions involving the ABCR gene product.

3. Agency: Fight for Sight
Role: PI
Period: 7-1-99 to 6-30-04
Scope of Work: Cloning, expression and characterization of the nucleotide binding domains of the ABCR gene product, analysis of alterations in nucleotidase corresponding with mutations linked to retinal degenerations.

UNFUNDED RESEARCH ACTIVITY

Faculty Mentorship

Mentored departmental faculty, Tatiana Zorina, MD,Ph.D. in development of a pilot research grant proposal.

Graduate Student Mentorship

Mentored the following students for their MS research project in the Department of Bioscience Technologies

Stephen Flowers^{1,2}

Ryan Wyanocheck

Mary Jablonski

William Riches²

Shaan Kunwar

Nick Yun²

Teresa Pagoa²

Margo Puccerelli²

Megan Choicoy²

Alessandra Gambino²

Kwabena Frempong^{2,3*} (Recipient of a MARC-NIH fellowship)

Jacqueline LeGates³

Jinadue Oke^{2*}

Aline Disimone²

Maimouna Bah^{2,3} (Recipient of a MARC-NIH fellowship)

Carina Davis

Kinjaben Joshi^{1,2}

Deepa Kurpad²

Gayathri Sivaraman

Patricia Solobnick

Malissa Ha²

Post-Doctoral Mentorship

Post-doctoral supervisor for Tatiana M. Suarez^{1,2,3}, June 2001-June 2002, Sujata Khopde¹, June 2003-June 2004

Footnote....

1. Student peer reviewed publication outcome.
2. Student presented abstract at Sigma Xi TJU annual research day or other national or international meeting (*indicates student present received an award).
3. Student peer reviewed abstract outcome.

CONTINUING EDUCATION WORKSHOPS CONDUCTED/ORGANIZED

Organized and directed continuing education workshops on basic molecular biology techniques sponsored by the Department of Bioscience Technologies:

- “Molecular Biotechnology Workshop” June 26-30, 2000.
- “PCR Technology Workshop” April 5-7, 2001.
- “NCA Review for Molecular Biologist Certification Exam” July 26, 2000 and July 13, 2001.

PROFESSIONAL MEMBERSHIP

FASEB/ASBMB regular (elected) member, 2001-present)
American Association for the Advancement of Science (1995 - present)
Association for Research in Vision and Ophthalmology (1999 - present)
International Society for Pharmaceutical Engineering (2007- present)
Sigma XI (regular member 2007 – present)

CONSULTATIVE AND ADVISORY POSITIONS HELD

Grant Reviewer

The Wellcome Trust – External Peer Reviewer , Research Project Grant, December 2009.
NIH Peer Mail Reviewer – ARRA Stimulus Grants, June 2009
Served as a reviewer for research grant sponsored by the Association for International Cancer Research, 1998.

External Academic Program Reviewer

External Reviewer for State of New Jersey, Middlesex Community College Biotechnology Program April 2009

Invited Peer Reviewer

Reviewer for the journal *Protein and Peptide Letters*, 2006-present.
Reviewer for the journal *Biochemistry*, 1995-present.
Reviewer for the *Journal of Allied Health*, 1999-present.

Advisory Board Member

Member, Biotechnology Board of Bucks Country Community College (2009-present)
Member, Biotechnology Board of Montgomery Country Community College (2001-present)
Member, Biotechnology Board of Camden County Community College (2001-present)
Member, Biotechnology Board of Burlington County Community College (2001-present)

Thesis Committee Member

Jirayu Kukirtirat, Department of Molecular Biology, University of Medicine and Dentistry of NJ; MS Thesis Committee, Spring 2009 to Spring 2010.

COMMUNITY SERVICE

- “Summer Science at Jefferson” High School Summer Science Program summers 2004- present.
- PREP program mentor – summer undergraduate research program at UMDNJ; summers 1995-99.

UNIVERSITY SERVICE

Member TJU Institutional Animal Care and Use Committee (IACUC) Committee (2008 – present)
Member Jefferson Schools Research Task Force/Committee (2007- present)
Member Jefferson Schools Faculty Advisory Committee (2006-present)
Member JSHP Faculty Affairs Committee (2006-present)
Serving as committee chair – AY 2009-2011
Member JCHP Strategic Planning Committees (2005-06 and 2006-07)
Member Thomas Jefferson Strategic Planning Committee (2004-05)
Member JCHP Longitudinal Study Committee (2001 – present)
Member JCHP Executive Council (2001-2008)
Member JCHP Committee on Education Philosophy and Planning (2003-2006)
Member JCHP Committee on Research (1999- present)
Member of the Middle States Accreditation Task Force/ Research/Facilities/Equipment/IT
Development of Department of Bioscience Technologies undergraduate and graduate programs in biotechnology.

TEACHING – Note many Bioscience Technologies courses are offered dually at the undergraduate and graduate levels. Courses numbered 500 or above are at the graduate level.

Thomas Jefferson University, Dept. of Laboratory Science, Philadelphia, PA, BT302, *Molecular and Immunological Techniques* - Taught the molecular biology half of a upper-division undergraduate course in molecular and immunological techniques. AY 1999-00.

Thomas Jefferson University; Department of Bioscience Technologies;; LS301/501; *Molecular Biology – Reorganized, updated* and serve as sole lecturer for this lecture course on basic molecular cell biology. (Annually, AY 1999-00-present).

Thomas Jefferson University; Department of Bioscience Technologies; LS303/503; *Fundamentals of Clinical and Experimental Techniques (formerly, Introduction to Laboratory Practice, LS302)*; participate in this departmental team-taught course on basic laboratory techniques. (Annually, Fall semesters, AY 1999-00-present).

Thomas Jefferson University; Department of Bioscience Technologies; BT310/510 *Basic Molecular Techniques – Designed* and oversee this course on basic molecular biology techniques. (Annually, Fall semesters AY 2000-01-course responsibility assigned to other departmental faculty 2002 - present).

Thomas Jefferson University; Department of Bioscience Technologies; BT303; *Molecular Preparatory Techniques – Designed and teach* this laboratory/lecture course on preparatory techniques needed to carry-out molecular biology laboratory procedures. (Annually, Fall semesters AY 2000-01-present).

Thomas Jefferson University, Department of Bioscience Technologies; BT 320/520, *Cell and Tissue Culture Techniques – Designed, direct and participate in the team teaching* of this laboratory/lecture course dealing with cell growth and protein expression in cell systems such as: E. coli, yeast, insect (baculovirus), plant and mammalian cell lines. (Annually, Spring semesters, AY 2000-01-AY 2003; course responsibility assigned to other departmental faculty 2003 - present).

Thomas Jefferson University, Department of Bioscience Technologies; BT 405/605, *Microbial Genetics. Designed*, directed as well as participated in the teaching of this lecture/seminar based course on current as well as classical topics in microbial genetics. (Annually, Fall semesters AY 2000 to AY 2002; course responsibility assigned to other departmental faculty 2002 - present).

Thomas Jefferson University, Department of Bioscience Technologies; BT 411/611, *Protein Purification and Characterization Designed and participate in the teaching (half of a 3 credit course)* of laboratory based course in basic techniques and principals of protein purification and current methods of characterization. (Annually, Spring semesters AY 2003-present)

Thomas Jefferson University, Department of Bioscience Technologies; LS 440 *Current Research in Bioscience Technologies Developed, serve as course director and participate in* this team taught course in which students review, critique and report on recent primary literature. (Annually AY 2003-present)

Thomas Jefferson University, Department of Bioscience Technologies; BT410/610, *Molecular Diagnostic Techniques – Designed, direct and teach (sole instructor)* this laboratory/lecture course on molecular diagnostic techniques. (Annually, AY 2001-present).

Thomas Jefferson University, Department of Bioscience Technologies; BT 403/603, *Human Genetics. Designed* this course in basic human genetics. (Annually, Spring semesters AY 2003; course responsibility assigned to other departmental faculty 2003 - present).

Thomas Jefferson University, Department of Bioscience Technologies; BT 401/601, *Systems Biology Coordinate and participate* in this course which teaches a systems approach to current problems in biomedical science; topics include flow cytometry, bioinformatics, proteomics and genomics. Annually Spring semesters, 2002-present.

Thomas Jefferson University; Department of Bioscience Technologies; BT 412, 422, 432 442, BT 812, 813, 814, and 815 **Laboratory Practicum; Coordinate and administer** this course in which biotechnology students rotate out to various laboratories to gain practical laboratory experience. Annually, all semesters.

Thomas Jefferson University; Department of Bioscience Technologies; LS610; **Regulatory and Fiscal Issues in Laboratory Science; Assisted in the development and participate** in this graduate level team-taught course which covers various regulatory and financial issues encountered in research and clinical laboratories. (Annually, Spring semesters AY 2000-01-present).

Thomas Jefferson University; Department of Bioscience Technologies; LS603; **Research Design, Assisted in the development and participate** in this graduate level team-taught course which covers fundamental concepts in basic and clinical research. (Annually, Fall semesters, AY 2000-01-present).

Thomas Jefferson University; Department of Bioscience Technologies; LS801/802 **Master Research Project; Assisted in the development and participate in** this course in which MSLS students complete their Master's research projects. (Annually, all semesters, AY 2000-01-present).

Rutgers, Camden, Taught section on DNA replication in graduate level cell biology course "Advanced Topics in Cell Biology" as partial fulfillment of requirements for graduate course "Teaching Techniques" taken as part of Ph.D. course work. (AY 1998-99)

UMDNJ, Dept. of Molec. Biol., Stratford. Taught the higher eukaryotic molecular genetics sections in a graduate level biochemistry course, "Advanced Topics in Biochemistry". as partial fulfillment of requirements for graduate course "Teaching Techniques" taken as part of Ph.D. course work. (AY 1998-99)