

**Cynthia B. Peterson, Ph.D.**  
Dean, LSU College of Science  
Seola Arnaud and Richard Vernon Edwards, Jr. Professor  
Department of Biological Sciences

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124 Hatcher Hall  
Louisiana State University  
Baton Rouge, LA 70803

Telephone: (223)578-8859  
E-mail address: cbpeterson@lsu.edu  
Web Page: <http://science.lsu.edu>

**Personal**

Home Address: 734 Woodgate Boulevard  
Baton Rouge, LA 70808  
Telephone: (225)223-4025

Born: November 9, 1957  
Baton Rouge, LA

**Education**

Ph.D. Biochemistry (1986)  
Louisiana State University Medical Center  
Shreveport, LA

M.S. Biochemistry (1981)  
Louisiana State University Medical Center  
Shreveport, LA

B.S. Biochemistry (1979)  
Louisiana State University  
Baton Rouge, LA  
Graduated *Magna Cum Laude*

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**Other Professional Education**

Certificate (2009)  
Higher Education Research Services  
Bryn Mawr College, PA

**Research Interests**

Research activities are focused in the area of regulation of protease activity. Work focuses primarily on the family of proteins called Serine Protease Inhibitors (Serpins), which target specific proteases in the body. In particular, work is aimed at understanding the structure and function of plasminogen activator inhibitor type 1 (PAI-1), the main inhibitor of proteases in the plasminogen activation cascade. These proteases break down blood clots and regulate inflammatory, wound healing and cell spreading activities in tissues. PAI-1 activity is regulated by its cofactor, vitronectin. Circulating vitronectin associates with tissue matrices, and its presence is important in pathological situations or in cancer metastasis and tissue remodeling. The factors that control the binding interactions between PAI-1 and vitronectin are important unsolved issues. Approaches that encompass a wide spectrum of biophysical and cellular and molecular biological techniques are used to address important questions regarding the specificity of interaction of these proteins.

**Key Words:** Coagulation, Fibrinolysis, Serpins, PAI-1, Vitronectin, Cell Adhesion, Heparin

**Expertise:** Hydrodynamics, Kinetics, Analytical Ultracentrifugation, Fluorescence Spectroscopy, Calorimetry, Electron Spin Resonance, Cell Culture, Expression of Recombinant Proteins

**Teaching Emphases:** Protein Structure and Function, Modern Techniques in Biochemistry and Biotechnology, The Specificity and Energetics of Macromolecular Interactions

**Work Experience**

- August 2014 – present      **Dean**  
College of Science  
Professor with Tenure, Department of Biological Sciences  
Louisiana State University, Baton Rouge, LA
- July 2012 – June, 2014      **Associate Dean of Academic Personnel**  
College of Arts and Sciences  
University of Tennessee, Knoxville, TN
- August 2008 – July 2012      **Head**  
Department of Biochemistry and Cellular and Molecular Biology  
University of Tennessee, Knoxville, TN
- September 2008 –  
August 2012      **Associate Director for Graduate Education**  
National Institute for Mathematical and Biological Synthesis  
University of Tennessee, Knoxville, TN
- August 2005 –  
December 2009      **Director**  
Program in Genome Science and Technology  
University of Tennessee, Knoxville, TN
- August 2002 – June 2014      **Professor with Tenure**  
Department of Biochemistry and Cellular and Molecular Biology  
University of Tennessee, Knoxville, TN
- March 2005 – August 2005      **Associate Director**  
Program in Genome Science and Technology  
University of Tennessee, Knoxville, TN
- June 2001 –  
December 2003      **Associate Director**  
Center of Excellence in Structural Biology  
University of Tennessee, Knoxville, TN
- August 1997 – July 2002      **Associate Professor with Tenure**  
Department of Biochemistry and Cellular and Molecular Biology  
University of Tennessee, Knoxville, TN
- January 1992 – July 1997      **Assistant Professor**  
Department of Biochemistry and Cellular and Molecular Biology  
University of Tennessee, Knoxville, TN
- 1987 –1991      **Postdoctoral Fellow** with Professor H. K. Schachman  
Department of Molecular and Cell Biology and Virus Laboratory  
University of California, Berkeley, CA
- 1986 –1987      **Postdoctoral Fellow** with Professor Michael N. Blackburn  
Department of Biochemistry and Molecular Biology  
Louisiana St. Univ. Medical Center, Shreveport, LA
- 1980 –1986      **Graduate Student** with Professor Michael N. Blackburn  
Department of Biochemistry and Molecular Biology  
Louisiana St. Univ. Medical Center, Shreveport, LA

## **Ongoing Initiatives**

### **Dean, College of Science, LSU, August 2014-present**

- Managing 10 searches in the current academic year for additional faculty in the college, with a total of 8 new positions over two years that have been secured from the LSU administrative to add capacity in the college
- Implementing a broad-based programming and planning process for the College of Science to assess strengths, anticipate future growth, benchmark against peers and plan for future needs. A national consulting firm has been engaged for this process.
- Working with the college Diversity Committee on faculty-focused recruitment and retention strategies and the hiring of a Diversity Director
- Coordinating with college development staff and the LSU Foundation on fundraising for the College
- Providing leadership and cooperating with the LSU President's Office and Research!America to host a February 2016 Louisiana Research Forum that will host NIH Director Francis Collins and NSF Director France Cordova
- Reorganizing the College of Science Executive Committee, a group of alumni and supporters of the College of Science, to focus on fundraising to advance the college as regional leaders in science research, pedagogy and outreach
- Serving on the Oversight Committee for the Laser Interferometer Gravitometric-Wave Observatory (LIGO), a multi-million dollar NSF project with over 800 scientist working to detect gravity waves predicted by Einstein's Theory of Relativity

## **Accomplishments**

### **Dean, College of Science, LSU, August 2014-present**

- Added 8 new faculty across the College in AY2014-15
- Secured the largest single cash gift for the College of Science during year 1 as Dean. This was a \$2M endowment to establish a chaired professorship in plant systematics, provide graduate funding and ensure ongoing operations support for the LSU Herbarium. The gift is eligible for over \$900 in state matching funds.
- Participated on a joint task force to explore ways to better integrate research and educational initiatives between the LSU main campus and Pennington Biomedical Research Foundation

### **Associate Dean of Academic Personnel, UTK, July 2012 – present**

- Contributed as an active member of the Dean's cabinet in strategic planning for College-wide activities, implementing the budgeting process, managing personnel issues, and leveraging resources for faculty retention
- Provided support to identify resources and clarify policy for department heads in the College on faculty hiring, workload modification, review and the promotion and tenure process
- Oversaw the search process for over 30 faculty positions across Arts and Sciences, including searches and re-appointment reviews for five department heads in the 2012-2013 academic year
- Supervised the College process for faculty promotion and tenure
- Secured renewal funds (\$4,956,180) from NIH through May 2018 as the PI to continue the Program for Excellence and Equity in Research (PEER), a training grant to increase diversity among students receiving PhD degrees in STEM disciplines at UTK
- Participated in a task force to identify commercial software to systematize faculty activities reporting across the University
- Served as the College of Arts and Sciences liaison to the Vice Provost for Faculty Affairs
- Worked with College of Arts and Sciences cabinet to re-establish workshops for new faculty on aspects of faculty life, research and business practices
- Provided leadership as the PI for an NSF ADVANCE grant to be submitted in November 2013 with co-PIs including the Vice Provost for Faculty Affairs John Zomchick and Associate Dean for Faculty Affairs (College of Engineering) Veerle Keppens

- Implemented a climate survey for the Colleges of Arts and Sciences and the College of Engineering in fall 2013 with the goal of identifying strengths and challenges for improving mentoring and career advancement for faculty across the entire academic career

#### **Head of Biochemistry and Cellular and Molecular Biology, UTK, August 2008 – July 2012**

- Worked with BCMB faculty to develop a strategic plan for the department with a departmental vision and 5 objectives: 1. To improve the quality of our undergraduate education efforts; 2. To implement efforts to recruit and retain graduate students and faculty; 3. To enhance faculty research productivity; 4. To diversify our funding base; and 5. To have an impact on the local community through science education and outreach activity.
- Recruited three new tenure-line faculty members in a four year period
- Advocated for increases in funding for the graduate program in BCMB between the years of 2009-2011 when the University budget experienced severe reductions
- Staffed the departmental office with a business manager and liaison with the Office of Research
- Supported faculty research efforts with infrastructure and matching dollars that yielded an increase in extramural funds for the department each year. Funding grew from \$3,350,999 in 2007 to \$5,264,199 in 2012.
- Hired a facilities manager to oversee a newly founded Bioanalytical Resources Facility in 2009
- Implemented an REU Program for the summers of 2010 and 2011 with the theme of “Sensing and Signaling” and secured NSF funding in 2012 for three years for its continuation
- Assembled an External Advisory Board for BCMB that has provided financial support and input for program improvement
- Established departmental scholarships for undergraduate majors and graduate fellowships in BCMB through donor gifts and endowments
- Initiated faculty incentive grants in collaboration with departmental donors
- Led the department through its 10-year academic program review in the fall of 2010, with favorable outcomes and recommendations of increased institutional support for the department. A concrete outcome included modernizing the transmission electron microscopy and confocal imaging for the central facility.
- Developed an annual faculty, graduate student, undergraduate student, and staff award process culminating in a reception for the department, students and parents
- Worked with development and the College of Arts and Sciences leadership to establish the first endowed professorship in the BCMB department, with the inaugural award given for a three-year term beginning August 2012

#### **PI and Program Director, Federally Funded Training Grants from NSF (IGERT-the SCALE-IT Program) and NIH (PEER), UTK, July 2008 – Jun3,2014**

- Brought an extra ~\$11.5 million dollars to UTK for graduate education and programs
- Developed a national recruiting network for graduate student trainees
- Increased staffing in the Graduate School with the hiring of an Assistant Dean for Graduate Training and Mentoring to assist with recruitment and mentoring in externally funded programs at UTK
- Collaborated with colleagues in the College of Communications to establish the Science Communication Center, offering training in oral and written communication of science for both professional and lay audiences
- Worked closely with Integrated Learning Innovations, Inc. (Chapel Hill, NC) on data gathering for assessment of STEM graduate programs across the University
- Mentored graduate trainees in planning and hosting the 2011 inaugural spring symposium for UTK STEM graduate students, featuring acclaimed scientists and administrators from across the US
- Hosted workshops for STEM graduate students on various topics including Effective College Teaching, Self-Assessment, and Negotiation/Conflict Resolution
- Implemented an Individual Development Plan program for all graduate trainees
- Developed an 8-day orientation for incoming graduate students that featured workshops on computational/bioinformatics skills, self-efficacy, “Getting What You Came For with the PhD,” and

writing graduate fellowships

- Sponsored new course development in computational biology across campus
- Invested in the UTK computing cluster (Newton) to support collaborative computational efforts
- Worked with the UTK administration to establish ongoing commitments for diversity initiatives related to a renewal submission to NIH for this grant in January of 2012
- Forged partnerships with the Baker Center for Public Policy and the Anderson Center for Entrepreneurism with the goal of translating discovery into solutions with societal impact. This was pursued during the renewal process for the IGERT award in the summer of 2012

**Associate Director for Graduate Education, the National Institute for Mathematical and Biological Synthesis, UTK, September 2008 – present**

- Served on the leadership team to promote outreach to K-12 for mathematics and biology education
- Aided in the recruitment of 6 new faculty members working at the interface of mathematics and biology to the UTK campus
- Cooperated with the External Advisory Board to implement programs and support postdoctoral training at NIMBioS
- Supported graduate courses in research ethics for graduate assistants in NIMBioS
- Co-sponsored tutorials in multi-cell, multi-scale modeling that included graduate trainees from UTK
- Participated in the development of a proposal to provide additional curriculum and workshop support for undergraduate education at the interface of mathematics and biology (NIMBioED Proposal)

**Director of Program in Genome Science and Technology, UT/ORNL, August 2005 – December 2009**

- Secured training grants from NSF and NIH for interdisciplinary graduate programs at UTK
- Developed new tracks within the program for Computational Molecular Biophysics and Bioenergy
- Established strong research collaborations with scientists at ORNL that have yielded many joint publications
- Sponsored 3 GST students in separate years to attend the Lindau meeting of Nobel Laureates

**Honors**

Endowed Professorship, Seola Arnaud and Richard Vernon Edwards, Jr. Professorship in Biological Sciences, Louisiana State University, August, 2014

Awarded the **Angie Warren Perkins Award** for outstanding promise in scholarship, teaching, and/or other contributions to campus intellectual life, awarded by the UTK Commission for Women at the Chancellor's Honors Banquet, April, 2013

Named a **Vision and Change Leadership Fellow** in September 2012 by the Partnership for Undergraduate Life Science Education (**PULSE**), a program that is jointly sponsored by the National Science Foundation, the National Institutes of Health and Howard Hughes Medical Institute

Endowed Professorship, named the **Kenneth and Blaire Mossman Chair of Biomedicine** at UTK in January, 2011

Elected **Fellow, American Association for the Advancement of Science**, 2009

Featured Faculty Member in Fall 2009 edition of ***Tennessee Parent***, published by the UTK Office of Alumni Affairs

Featured in ITC Spotlight in recognition of use of web-interactive resources in teaching, April/May, 2003 (<http://itc.utk.edu/showcase/spotlight/peterson/default.shtml>)

Featured Faculty by Provost Loren Crabtree, recognized on the university website for the month of October, 2002 (<http://provost.utk.edu/featured/sep02.shtml>)

**Finalist** and **Winner**, 1998 YWCA **Tribute to Women**, Science and Technology Category, November, 1998, Knoxville, TN

**Finalist**, 1998 **Cardiovascular Research Prize**, Council on Circulation, American Heart Association, Lake Tahoe, CA, February 23, 1998

**Phi Beta Kappa Certificate of Merit**, Natural Sciences Division, University of

Tennessee, April, 1997

**Established Investigator Award**, American Heart Association, July 1, 1995 to June 30, 2000  
Travel Award, Gordon Conference on Thrombosis, March, 1994, Ventura, CA

**Science Alliance Faculty Research Award**, University of Tennessee Center of Excellence,  
1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001

XIth International Society of Thrombosis and Haemostasis Congress Award, July, 1987,  
Brussels, BELGIUM

**National Research Service Award**, NIH, July, 1987 - October, 1990

**Chancellor's Award**, Commencement, May, 1986

Kontes Scholarship, W. Alton Jones Cell Science Center, 1981

First Place, 1985 Student Research Forum, LSU Medical Center

Who's Who Among American Colleges and Universities, 1979

LSU Alumni Association "**Top 100**" Scholarship, 1975-1979

Phi Kappa Phi

**Phi Beta Kappa**

### Training and Center Grants

Howard Hughes Medical Institute USE-Inclusive Excellence Grants; Title: "STEM Inclusion, Excellence and Leadership Institute," PI: Isiah M. Warner, Co-PIs: **Cynthia B. Peterson**, Rick Koubek, Dereck Rovaris and Kurt Keppler, \$ 1,000,000, *pre-proposal submitted 12/1/15*.

National Science Foundation S-STEM Proposal, Title: "Transition to the Next Stage with HOPES: Holistic Opportunity {r}rogram for Excellence in Science," PI/PD: Isiah M. Warner, Co-PIs: Melissa Crawford, **Cynthia B. Peterson**, Gloria A. Thomas, and Ashleigh Wright. \$3,597,049, *submitted May 2016*.

National Institutes of Health, National Institute of General Medical Sciences (Training and Workforce Development Division), R25 GM086761-05 Initiative for Maximizing Student Diversity (IMSD) award, Title: "PEER: Program of Excellence and Equity in Research." PI/PD: **Cynthia B. Peterson**, Co-Investigators: Gregory Reed, Carolyn B. Hodges, Ernest Brothers, and Jennifer Richards; August, 2013 – July, 2018; \$4,956,180; This is a renewal of our PEER Program, an institutional grant to UT with the goal of increasing diversity among graduate students seeking PhD's in STEM disciplines. *Note: This grant is an institutional grant that stayed at UT after my departure for LSU. The new PI is Gladys Alexandre.*

National Science Foundation, Grant No. 0801540, Integrated Graduate Education and Research Training (IGERT) Award, Title: "Scalable Computing and Leading Edge Innovative Technologies (SCALE-IT) for Biology." PI/PD: **Cynthia B. Peterson**, Co-PI's: Elissa Chesler., Jack Dongarra, Mike Langston and Jeremy Smith, July, 2008-June, 2013; \$3,000,000, (no cost extension to June 2014). This training program focuses on supporting training of graduate students in computational biology and bioinformatics, taking advantage of the close partnership between UT and ORNL and the massive high-performance computing power available at ORNL.

National Institutes of Health MORE Division, 1 R25 GM086761 Initiative for Maximizing Student Diversity (IMSD) award, Title: "PEER: Program of Excellence and Equity in Research." PI/PD: **Cynthia B. Peterson**, Co-Investigators: Bradley W. Fenwick, Carolyn B. Hodges, Louis M. Gross, and Richard Tucker; February, 2009 – February 2013; \$ 3,908,610; This grant is an institutional grant from UT in partnership with ORNL to increase diversity among graduate students seeking PhD's in STEM disciplines.

National Science Foundation, Program Solicitation 07-597 Center for Research at the Interface of Mathematical and Biological Sciences, "The University of Tennessee - Advancing Connections between Biology and Mathematics;" PI: Louis M. Gross, Leadership Team: Sergey Gavrillets, Graham Hickling, Suzanne Lenhart, **Cynthia B. Peterson**, Role on Grant: Associate Director for Graduate education (*1 month effort*); 9/1/08 – 8/31/13; \$15,907,539.

National Science Foundation Grant DBI-1156744, "REU Site: Sensing and Signaling in the Biological Sciences." PI: **Cynthia B. Peterson**; Co-PI: Brad M. Binder; 3/1/2012-2/28/2015; \$323,845. This proposal will establish the BCMB Department at UTK as a site for a summer research experience for undergraduates working in the area of signal transduction. *Note: The PI role transition to Brad Binder after I accepted my position at Associate Dean for Academic Personnel in the College of Arts and Sciences at UT.*

### **External Support for Research** (*PI on all grants/support listed unless otherwise specified*)

National Institutes of Health, SBIR Application from Shifa Biomedical Corporation, Philadelphia, PA, "Novel Self-Limiting Prothrombinase Inhibitors." PI: Michael N. Blackburn (Shifa Biomedical); Subcontract to **Cynthia B. Peterson** (UTK) and Jerome Y. Baudry (UTK); August, 2012-july 2013; Grant Total: \$300,000; Subcontract Total: \$99,287. This proposal will utilize docking on the high-performance computing platform at NICS to identify small molecule compounds that bind specifically to the prothrombinase complex and inhibit Factor Xa binding to Factor Va.

National Institutes of Health, R01 HL076206, "Urokinase, Neutrophil Activation and Acute Lung Injury." PI: Edward Abraham, University of Alabama, Birmingham, Co-I: **Cynthia B. Peterson**; June 2009-May, 2012; \$1,422,010 total (Peterson subcontract for \$15,000/yr). The goal of these studies is to evaluate the role of proteases and regulators of the plasminogen activation system in acute lung injury.

American Heart Association, 10GRNT4430033, "Novel Roles for Metals in Regulating PAI-1," PI: **Cynthia B. Peterson**, \$165,000, July 2010-June 2012. The goal of these studies is to identify binding sites for transition metals on PAI-1 and to determine their effect on the anti-protease mechanism of the serpin.

National Institutes of Health, National Heart, Lung and Blood Institute, 5R01 HL50676, "Macromolecular Interactions of Human Vitronectin," July, 2003 - May, 2008, total award: \$1,040,000

National Institutes of Health Research Grant No. 2R01 HL50676, "Macromolecular Interactions of Human Vitronectin," December, 1998 - November, 2002; \$549,769.

Grant-in-Aid, American Heart Association, Southeast Regional Affiliate, Ref. No. 0151052B, "Use of Analytical Chemistry and Computational Biology to Determine Structure of Vitronectin Domains," July, 2001- June, 2003, \$120,000.

Established Investigator Award, American Heart Association, "The Role of Vitronectin and Its Interactions In Hemostasis," July, 1995-June, 2000; \$265,000.

National Institutes of Health FIRST Award, "Macromolecular Interactions with Human Vitronectin," August, 1993-July, 1997; \$262,750 (direct costs).

American Heart Association, Tennessee Affiliate, New Investigator Award, "Regulation in Hemostasis by Vitronectin," July, 1993-June, 1995; \$80,000. *Terminated August 1, 1993 by the principal investigator due to scientific overlap upon initiation of the NIH grant.*

National Research Service Award, National Institutes of Health, "Reversion of a *pyrB*

Mutant with Improper Folding, "July, 1987-October, 1990.

American Cancer Society Postdoctoral Fellowship, July, 1987-June 1989, awarded, but *not accepted* by the applicant because of overlap with the NIH award.

J. Walter Libby Postdoctoral Fellowship, American Heart Association, Louisiana, Inc., "Modulators of Heparin Anticoagulant Activity," 1986-1987.

Student Grant-in-Aid, American Heart Association, Louisiana, Inc., "Critical Lysines in Antithrombin," 1985-1986.

### **Consultant on Collaborator's Grants**

Small Business Innovation Research Grant, 1R43HL096167, "Novel Modulators of LDL Metabolism," PI: Sherin S. Abdel-Meguid, PhD, Shifa Biomedical, Philadelphia, PA, April, 2009 – March, 2010, \$258,591

National Science Foundation, BCS-0820174, "A Bio-Social Model of Positive ingroup Regard," PI: Lowell Gaertner, PhD, Dept of Psychology, University of Tennessee, September, 2008 – August, 2010, \$199,976.

### **Educational Grants**

National Science Foundation EAGER Proposal; Title: "EAGER: Raising the Awareness of PULSE Through a Targeted Public Awareness Campaign to Engage Life Science Departments in Implementing Vision and Change," PI: William B. Davis, Washington State University, with **Cynthia B. Peterson** participating as key personnel in her role as a PULSE Fellow, \$135,706. 9/1/13 – 8/31/14.

National Science Foundation EAGER Proposal; Title: "EAGER: Raising the Awareness of PULSE Through a Targeted Public Awareness Campaign to Engage Life Science Departments in Implementing Vision and Change," PI: Judy Awong-Taylor, Georgia Gwinnett College, with **Cynthia B. Peterson** participating as key personnel in her role as a PULSE Fellow, \$20,740. (0.01 person months) This grant, which supported a planning meeting in August 2013 for a southeastern regional conference focused on implementing change in biology education.

### **Other External Support**

Center for Structural Molecular Biology, Oak Ridge National Laboratory, Support for Beam Time at the High Flux Isotope Reactor and Spallation Neutron Source for small angle scattering studies, 2007, 2008, 2009, 2010, 2011, 2012 (2 days time allocated for each award). PI: **Cynthia B. Peterson**, Collaborators: Christopher Stanley, Carlee McClintock, and Letitia Olson.

Laboratory Director's Research and Development Fund for Functional Genomics, ORNL/matching funds from the University of Tennessee, "Pilot Study to Develop Phenotypic Screens for Sperm Aneuploidy and Levels of Fibrinolytic Proteins," March, 1999 – February 2001; Co-Principal Investigators: Mary Ann Handel and **Cynthia B. Peterson**. This pilot project was funded to evaluate the utility and suitability of immunoassays to quantify levels of fibrinolytic proteins as a part of a large-scale phenotypic screening effort of the Tennessee Mouse Genetics Consortium. Dr. Peterson's responsibility being the immunoassays for fibrinolytic proteins, and Dr. Handel's role involving screens for chromosome segregation. The funds have been used to hire a technician to carry out the screens and to buy an ELISA plate reader with fluorescence capabilities.



Howard Hughes Medical Institute, "Threshold Program in the Biological Sciences," October, 1994-October 1998. Applicant: Frank W. Harris, Director of Biology. Co-Applicant: Neil Greenberg. Participants: Jeff Becker, Rod Bunn, David, Fox, Jim Lawler, Beth Mullin, Bruce McKee, Denny Mullins, Gerald Vaughan, Bruce DeLaney, John Dunlap, John Gittleman, Lou Gross, Mary Ann Handel, Liz Howell, Ed Howley, Lee Humphreys, Faye Julian, Mike Keene, John Koontz, Sandra Leach, Mark Littmann, Deborah McCleary, Ron McFadden, Greta McMillan, Bob Meunchen, Mike Pelton, **Cynthia Peterson**, Rebecca Prosser, Susan Riechert, Gary Stacey, and Pete Wicks. This grant was given to the institution for development of outreach programs to stimulate and encourage interest in biological research among the undergraduate population. The total sum of the grant over the four years was over a million dollars.

National Institutes of Health Small Equipment Grant, July 1, 1994; with matching funds from the College of Liberal Arts and the Department of Biochemistry the award totaled \$29,419; for purchase of a MicroCal OMEGA Titration Calorimetry Accessory for the MC-2D Scanning Calorimeter housed in the laboratory of Dr. Peterson. Applicant: Frank W. Harris, Director of Biology. Co-Investigators: **Cynthia B. Peterson**, Elizabeth E. Howell, and Engin S. Serspersu.

### Selected Examples of Institutional Support

Pilot/Feasibility Grant, UT Obesity Research Center, "Evaluation of the Metabolic Phenotype for the Vitronectin Knockout Mouse: A Focus on Inflammation," PI: **Cynthia B. Peterson**, Collaborators: Naima Moustaid-Moussa (UTK Animal Science) and John Biggerstaff (UTK Center for Environmental Biotechnology)." \$25,000. December, 2009 – December, 2010.

Professional Development Award, The Graduate School, University of Tennessee, "The Use of New High Resolution Approaches for Comparing Protein Conformation and Dynamics," November, 2008, \$5000.

Scholarly Activity and Research Incentive Fund (SARIF) Equipment and Infrastructure Fund; March, 2006, award for purchase of a BIACore 3000 with matching funds from several investigators, GST, BCMB, the College of Arts and Sciences and the Vice Chancellor for Research; Total cost \$198,000; amount of SARIF award \$30,000

SARIF Small Grant Fund, UTK Office of Research, funds to work on effects of tissue-type plasminogen activator on the mammalian circadian clock; September, 2005, \$25,000. Co-PI's: Rebecca Prosser and **Cynthia B. Peterson**

Professional Development Award, University of Tennessee, "Evaluating the Therapeutic Potential of Vitronectin as a Drug Target." November, 2004, \$5000.

Pilot Project Grant, Center of Excellence in Structural Biology, University of Tennessee, "The Role of Metals in Vitronectin Structure and Function," Co-PIs: **Cynthia B. Peterson** and Engin Serspersu, July, 2003-June, 2004, \$10,000.

### Ongoing Professional Collaborations

- **Dr. Peter Andreasen**, Professor, Molecular Biology Institute, Aarhus University, Aarhus, Denmark. The Andreasen has collaborated on our work with plasminogen activator inhibitor-1, providing samples for evaluation of the energetics and specificity of vitronectin-PAI-1 interactions. Site-directed mutagenesis has been used to map the second binding site for PAI-1 on vitronectin. It has also been useful to introduce unique sulfhydryls into PAI-1 that can, in turn, be labeled with a variety of fluorescent probes. The fluorophores provide a sensitive means to quantify interactions between vitronectin and PAI-1 and evaluate structural changes, which accompany the interaction.

- **Dr. Michael Blackburn**, Senior Scientist, Shifa Biomedical Corporation, Malvern, PA. We have collaborated with Dr. Blackburn, my PhD adviser, on a combined computational/experimental approach to identify new anticoagulant therapies. We have taken a novel approach, using the known crystal structure for the Factor Xa-Factor Va (prothrombinase) complex with the goal of identifying ligands that disrupt the inter-protein interaction. Our approach uses high-performance computing to include dynamics in the predictions and has now identified several promising drug leads. We have received SBIR funding from the National Institutes of Health for this work.
- **Dr. Rebecca Prosser**, Professor, BCMB Department, University of Tennessee, Knoxville, TN. Dr. Prosser is an expert in circadian rhythms, using electrophysiology and mouse models to student the mechanism of regulation of the biological clock. Our collaboration has uncovered a role for proteins and regulators in the plasminogen activation cascade in activating brain-derived neurotrophic factor in the central chiasmatic nucleus, locus for neural regulation of the clock. In addition, studies that demonstrate the role of these proteins in establishing long-term memory have broad impacts that include strategies to regulate post-traumatic stress disorder. We have published together and have submitted grants for joint funding.
- **Dr. Peter Schuck**, Protein Biophysics Resource, Division of Bioengineering and Physical Science, National Institutes of Health. The laboratory at the NIH is collaborating on hydrodynamic studies using the analytical ultracentrifuge with vitronectin. Sedimentation velocity experiments are being used to evaluate the mechanism of assembly of higher-order PAI-1/vitronectin complexes. Dr. Schuck has worked with us on some cutting-edge analysis tools using multi-wavelength global fits to the data to evaluate stoichiometries of the complexes.

### Professional Affiliations

American Association for the Advancement of Science  
American Society for Biochemists and Molecular Biologists  
American Chemical Society  
The Protein Society  
American Heart Association, Council on Arteriosclerosis, Thrombosis and Vascular Biology  
International Society for Fibrinolysis and Proteolysis  
Society for American Chicanos and Native Americans in Science (SACNAS)

### Publications

Bucci, J.,C., Trelle, M. B., McClintock, C.S., Qureshi, T., Jorgensen, T.J.D., and **Peterson, C. B.** (2016) *Biochemistry*, **55**, 4386-3498. "Copper Increases PAI-1 Protein Dynamics in Key Structural Regions that Govern Stability."

Kapoor, K., McGill, N., **Peterson, C. B.**, Meyers, H., Blackburn, M. N., and Baudry, J. (2016) *Journal of Chemical Information and Modeling*, **56(3)**, 535-547, "Discovery of Novel Nonactive Site Inhibitors of the Prothrombinase Enzyme Complex."

Qureshi, T., and **Peterson, C. B.** (2016) *Protein Science*, **25**, 487-498. "Single Fluorescence Probes along the Reactive Center Loop Reveal Site-Specific Changes During the Latency Transition of PAI-1,"

Qureshi, T., Goswami, S., McClintock, C. S., Ramsey, M. R., and **Peterson, C. B.** (2016) *Protein Science*, **25**, 499-510, "Distinct Encounter Complexes of PAI-1 with Plasminogen Activators and Vitronectin Revealed by Changes in the Conformation and Dynamics of the Reactive Center Loop."

Goswami, S., Thompson, L. C, Wickman, L., and **Peterson, C. B.** (2013) *Adv. Biol. Chem.*, **3**, 114-132. "The Cellular Microenvironment Modulates the Role of PAI-1 and Vitronectin in Mediating Cell-Matrix Interactions."

Bae, H.-B., Tadie, J. M., Jiang, S., Park, D. W, Bell, C. P., Thompson, L.C. **Peterson, C. B.**, Thannickal, V. J., Abraham, E., and Zmijewski, J. W (2013), *Journal of immunology* **190(5)**, 2273-81. "Vitronectin inhibits efferocytosis through interactions with apoptotic cells as well as with macrophages."

Jing, X., Wright, E., Bible, A. N., **Peterson, C. B.**, Alexandre, G., Bruce, B. D., and Serspersu, E. H. (2013) *Biochemistry*, **51(45)**, 9147-55. "Thermodynamic Characterization of a Thermostable Antibiotic Resistance Enzyme, the Aminoglycoside Nucleotidyltransferase (4)".

Jayaraman, M., Kodali, R., Sahoo, B., Thakur, A.K., Mayasundari, A., Mishra, R., **Peterson, C. B.**, and Wetzel, R. (2012) *J. Mol. Biol.*, **415(5)**, 881-899. "Slow Amyloid Nucleation via  $\alpha$ -helix-rich Oligomeric Intermediates in Short Polyglutamine-containing Huntingtin Fragments."

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Thompson, L. C., Goswami, S., and **Peterson, C. B.** (2011) *Protein Sci.* **20**, 366-378. "Metals Affect the Structure and Activity of Human Plasminogen Activator Inhibitor-1: II. Binding Affinity and Conformational Effects."

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Gibson, A.D., Baburaj, K., Day, D. E., Verhamme, I., Shore, J. D., and **Peterson, C. B.** (1997) *J. Biol. Chem.*, **272**, 5112-5121. "The Use of Fluorescent Probes to Characterize Conformational Changes in the Interaction Between Vitronectin and Plasminogen Activator Inhibitor-1."

Stebbins, M.A., Schar, C. R., **Peterson, C. B.**, and Sepaniak, M. J. (1997) *J. Chromatography B: (Biomedical Applications)* **697**, 181-188. "Temporal Analysis of DNA Restriction Digests by Capillary Electrophoresis."

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Zhuang, P., Li, H., Williams, J. G., Wagner, N. V., Seiffert, D., and **Peterson, C. B.** (1996) *J. Biol. Chem.* **271**, 14333-14343. "Characterization of the Denaturation and Renaturation of Human Plasma Vitronectin. II. Investigation into the Mechanism of Formation of Multimers."

**Peterson, C. B.**, Zhou, B.-B., Hsieh, D., Creager, A. N. H., and Schachman, H. K. (1994) *Protein Science* **3**, 960-966. "Association of the Catalytic Subunit of Aspartate Transcarbamoylase with a Polypeptide Fragment Corresponding to the Zinc Domain of the Regulatory Chain Leads to Increases in Thermal Stability."

**Peterson, C. B.** (1993) in *Biology of Vitronectins and Their Receptors* (Preissner, K. T., Rosenblatt, S., Kost, C., Wegerhoff, J., and Mosher, D. F., eds) Excerpta Medica, Vol. 1, pp. 67-74. "Scanning Microcalorimetry and Equilibrium Chemical Denaturation Studies of Human Plasma Vitronectin."

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**Peterson, C. B.**, Burman, D. L., and Schachman, H. K. (1992) *Biochemistry* **31**, 8508-8515. "Effects of Replacement of Active Site Residue Gln 231 on Activity and Allosteric Properties of Aspartate Transcarbamoylase."

**Peterson, C. B.**, and Schachman, H. K. (1992) *J Biol. Chem.* **267**, 2443-2450. "Long Range Effects of Amino Acid Substitutions in the Catalytic Chain of Aspartate Transcarbamoylase. Localized Replacements in the Carboxyl-terminal  $\alpha$ -Helix Cause Marked Alterations in Allosteric Properties and Intersubunit Interactions."

**Peterson, C. B.**, and Schachman, H. K. (1991) *Proc. Natl. Acad. Sci. USA* **88**, 458-462. "Role of a Carboxyl-terminal Helix in the Assembly, Interchain Interactions and Stability of Aspartate Transcarbamoylase."

Horner, A. H., Kusche, M., Lindahl, U., and **Peterson, C. B.** (1988) *Biochem. J.* **251**, 141-145. "Determination of the Range in Binding Site Densities of Rat Skin Heparin Chains with High Binding Affinities"

for Antithrombin."

**Peterson, C. B.**, and Blackburn, M. N. (1988) in *Proteins: Structure and Function. Proceedings for the First Symposium of American Protein Chemists.* ed., J. J. L'Italien (Plenum Press, New York), pp. 665-672. "Localization and Interaction of Functional Sites on Antithrombin III. Use of an Anti-hapten Antibody as a Structural Probe."

**Peterson, C. B.**, Noyes, C. M., Pecon, J. M., Church, F. C., and Blackburn, M. N. (1987) *J. Biol. Chem.* **262**, 8061-8065. "Identification of a Lysyl Residue in Antithrombin which is Essential for Binding of Heparin."

**Peterson, C. B.**, Morgan, W. T., and Blackburn, M. N. (1987) *J. Biol. Chem.* **262**, 7567-7574. "Histidine-Rich-Glycoprotein Modulation of the Anticoagulant Activity of Heparin. Evidence for a Mechanism Involving Competition with both Antithrombin and Thrombin for Heparin Binding."

**Peterson, C. B.**, and Blackburn, M. N. (1987) *J. Biol. Chem.* **262**, 7552-7558. "Antithrombin Conformation and the Catalytic Role of Heparin. I. Does Cleavage by Thrombin Induce Structural Changes in the Heparin-binding Region of Antithrombin?"

**Peterson, C. B.**, and Blackburn, M. N. (1987) *J. Biol. Chem.* **262**, 7559-7566. "Antithrombin Conformation and the Catalytic Role of Heparin. II. Is the Heparin-induced Conformational Change in Antithrombin Required for Rapid Inactivation of Thrombin?"

**Peterson, C. B.**, and Blackburn, M. N. (1985) *J. Biol. Chem.* **260**, 610-615. "Isolation and Characterization of an Antithrombin III Variant with Reduced Carbohydrate Content and Enhanced Heparin Binding."

### **Manuscripts Submitted and in Preparation**

### **Abstracts of Selected Recent and/or Unpublished Work**

Bucci, J., Thompson, L. C., McClintock, C., Yang, J., Trelle, M. B., Jørgensen, T. and **Peterson, C. B.** (2013). XIVth International Workshop on Molecular and Cellular Biology of Plasminogen Activation, June 4-8, 2013, Univ. of Notre Dame, South Bend, IN. "Pinpointing the Molecular Basis of Metal Effects on PAI-1."

Olson, L. N., Stanley, C., McClintock, C., and **Peterson, Cynthia B.** (2013) XIVth International Workshop on Molecular and Cellular Biology of Plasminogen Activation, June 4-8, 2013, Univ. of Notre Dame, South Bend, IN. "**Small Angle Neutron Scattering Sheds New Light on PAI-1: VN Interactions.**"

Qureshi, T., Ramsey, M., Isaac, R. S., & **C. B. Peterson** (2012) Gordon Research Conference on Thrombolysis, February 12-17, 2012, Ventura CA. "**Vitronectin and Metal Modulation of Loop Mobility in Human PAI-1.**"

Qureshi, T., Ramsey, M., Isaac, R. S., & **C. B. Peterson** (2011) Southeast Magnetic Resonance Conference, Nov. 4-6, 2011 Atlanta, GA. "**Fine-tuning Serpin Activity: Metal and Cofactor Effects on the Conformation & Dynamics of PAI-1 RCL.**" (Tihami Qureshi, the graduate student presenting this work won a second prize in the poster competition.)

Qureshi, T., and **Peterson, C. B.** (2011) XIIIth International Workshop on Molecular and Cellular Biology of Plasminogen Activation, July 9-13, 2011, Cambridge, UK. "**Detecting conformational changes in the RCL of human PAI-1 using an environmentally-sensitive fluorescent probe.**"

Olson, L. N., and **Peterson, C. B.** (2011) XIIIth International Workshop on Molecular and Cellular Biology of Plasminogen Activation, July 9-13, 2011, Cambridge, UK. "**A New Look at an Old Interaction: Developing a Model for PAI-1:Vitronectin Associations.**"

Bucci, J., Thompson, L., Yang, J., and **Peterson, C. B.** (2011) XIIIth International Workshop on Molecular and Cellular Biology of Plasminogen Activation, July 9-13, 2011, Cambridge, UK. **“Pinpointing the Molecular Basis for Metal Effects on PAI-1.”**

Behrens, M. A., Botkjaer, K. A., Goswami, S., Oliveira, C. L. P., Jensen, J. K., Schar, C. R., Declerck, P. J., **Peterson, C. B.**, Andreasen, P. A., and Pedersen, J. S. (2011) XIIIth International Workshop on Molecular and Cellular Biology of Plasminogen Activation, July 9-13, 2011, Cambridge, UK. **“Activation of the Zymogen to Urokinase-type Plasminogen Activator is Associated with Increased Interdomain Flexibility.”**

**Peterson, C. B.**, Thompson, L. C., Goswami, S. (2010) *J. Thromb. Haemostas.* **8 (suppl 1)**, published for the International Congress on Fibrinolysis and Proteolysis, August 24-28, 2010, Amsterdam, the Netherlands. **“Metals Exhibit an Unusual Effect in Regulating Enzymes in the Plasminogen Activation Cascade.”**

Swanson, P., Binette, T., Scott, P. **Peterson, C.B.**, and Bajzar, L (2009) XXIIth Congress of the International Society on Thrombosis and Haemostasis, July 11-18, Boston, MA. **“Carboxypeptidase N: an Antifibrinolytic Carboxypeptidase?”**

Thompson, L. C., Day, D. E., Ginsberg, D. S., Lawrence, D. A., and **Peterson, C. B.** (2009) SIth International Workshop on Molecular and Cellular Biology of Plasminogen Activation, March 31-April 4, 2009, Cold Spring Harbor, NY. **“Transition Metal Modulation of Plasminogen Activator Inhibitor-1 Stability.”**

Thompson, L.C., and **Peterson, C. B.** (2009) Experimental Biology Meeting, April 18-22, 2009, New Orleans, LA. **“Plasminogen Activator Inhibitor-1 Shows Metal Dependent Stabilization.”**

Goswami, S., and **Peterson, C. B.** (2009) Experimental Biology Meeting, April 18-22, 2009, New Orleans, LA. **“An Extended Binding Interface Spanning Two Sites for Interactions with PAI-1 Alters the Function of Vitronectin in the Extracellular Matrix.”**

Blouse, G. E., **Peterson, C. B.**, Dupont, D. M., Ploug, M., Gårdsvoll, H., Schar, C. R., Perron, M. J., Minor, K. H., Shore, J. D., and Andreasen, P. A. (2007), Xith International Workshop on Molecular and Cell Biology of Plasminogen Activation, June 16-20, Var Gard Saltsjobaden, Sweden. **“PAI-1-vitronectin Interactions Involve an Extended binding Surface and Mutual Conformational Rearrangements.”**

Schar, C. R., Jensen, J. K., Blouse, G. E., Minor, K. H., Andreasen, P.A., and **Peterson, C. B.** (2007), Xith International Workshop on Molecular and Cell Biology of Plasminogen Activation, June 16-20, Var Gard Saltsjobaden, Sweden. **“Interactions between PAI-1 and Vitronectin: Two Proteins, Two Sites, and Two Phases.”**

Peterson, C. B. (2007) FASEB Conference on Proteases in Hemostasis and Vascular Biology, June 2-7, 2007, Indian Wells, CA. **“Interactions Between Vitronectin and PAI-1: How, What, When, Where and Why?”**

#### **Invited Lectures and Seminars (last 5 years)**

Invited Speaker, Gordon Research Conference on Thrombolysis, February 2014, Ventura CA. **“Fine-tuning Serpin Activity: Effects of Ligands on the Conformation & Dynamics of PAI-1.”**

Invited Speaker, University of California at Santa Barbara, Biology and Chemistry Departments, February 8, 2012. **“Disorder and Dynamics: Insight into Regulation of Plasminogen Activation.”**

Invited Speaker, University of North Carolina at Chapel Hill, Hemostasis and Thrombosis Program, September 21, 2011. **“Disorder and Dynamics: Insight into Regulation of PAI-1 Structure and Function.”**

- Invited Speaker, Kenyon College, Chemistry Department, Gambier, OH, March 31, 2011. "From the Black Box to High Resolution Structure: A Journey with Protease Inhibitors."
- Invited Speaker, Department of Biological Sciences, Louisiana State University, Baton Rouge, LA, November 4, 2010. "From the Black Box to High Resolution Structure: A Journey with Protease Inhibitors."
- Invited Speaker, Rhodes College, Memphis, TN, October 11, 2010. "A Pair of Circulatory Proteins: Cofactors or 'Two Cats in a Bag'?"
- Invited Keynote Speaker, Louisiana State University Health Sciences Center, Graduate Student Symposium, Shreveport, LA, September 17, 2010. "From the Black Box to High Resolution Structure: A Journey with Protease Inhibitors."
- Invited Speaker, 20<sup>th</sup> International Congress on Fibrinolysis and Proteolysis, Amsterdam, Netherlands, August 24-28, 2010. "Metals Exert an Unexpected Role in Regulating Enzymes in the Plasminogen Activation Cascade"
- Invited Speaker, Molecular Biophysics Workshop, Knoxville, TN, July 2010. "Metals Modulate Interactions and Activities Among Regulators of Extracellular Proteolysis"
- Invited Speaker, Georgia State University, Department of Chemistry, Atlanta, GA, December 2009. "An unexpected role for metals in modulating the structure and activity of the serine protease inhibitor, PAI-1"
- Invited Speaker, University of Vermont, Department of Biochemistry, Burlington, VT, November, 2009. "Structural Studies on a Pair of Circulatory Proteins: Cofactors or Cohorts in Crime?"
- Keynote Speaker, Inaugural Natural Sciences Fall Symposium, Maryville College, Maryville, TN. November, 2009. "A Pair of Circulatory Proteins: Cofactors or 'Two Cats in a Bag'?"
- UTK College of Arts and Sciences Pre-Game Faculty Showcase Speaker, November, 2009. "Building a Biological Camera."
- Invited Presentation, University of Tennessee Board of Trustees, October, 2009. Gave an abbreviated version of the Faculty Showcase Talk entitled, "Building a Biological Camera" to acquaint the board with research and educational advances within the biological sciences at UTK.
- Invited Speaker, Tennessee State University, Nashville, TN, October, 2009. "Building a Biological Camera to Study Two Circulatory Proteins,"
- Invited Speaker, Molecular Biophysics Workshop, Knoxville, TN, August, 2009. "Vitronectin and PAI-1: Cofactors or Two Cats in a Bag?"
- Invited Speaker, North Carolina A&T University, Greensboro, NC, January 2009. "New Opportunities for Graduate Education at the University of Tennessee."
- Invited Speaker, UTK/ORNL/KBRIN Bioinformatics Summit, Lake Havasu, KY, May, 2008. "UTK-ORNL Opportunities for Graduate Education in Computational Biology and Bioinformatics."
- Invited Lecturer, Alabama State University, January, 2008. "Working at the interface of Computational and Biological Science."
- Invited Speaker, W.M. Keck Center for Transgene Research, University of Notre Dame, November 2007. "One Step at a Time. Interactions Between Vitronectin and PAI-1"



Invited Speaker, Xith International Workshop on Molecular and Cell Biology of Plasminogen Activation, June 16-20, 2007. Var Gard Saltsjobaden, Sweden. "Interactions between PAI-1 and Vitronectin: Two Proteins, Two Sites, and Two Phases."

"Invited Speaker, FASEB Summer Conference on Proteases in Hemostasis and Vascular Biology, June 2-7, 2007, Palm Springs CA.

#### **Other Conference/Workshop Leadership (last 5 years)**

Session Organizer, Gordon Research Conference on Thrombolysis, February 2014, Ventura CA and February 2016, Ventura, CA

International Advisory Committee, XIIIth International Workshop on Molecular & Cellular Biology of Plasminogen Activation, University of Notre Dame University, South Bend, IN, June 4-8, 2013.

International Advisory Committee, XIIIth International Workshop on Molecular & Cellular Biology of Plasminogen Activation, Clare College, Cambridge, UK, July 9-13, 2011.

International Advisory Committee, Sixth International Symposium on the Chemistry and Biology of Serpins, Chapel Hill, NC. October 23 – 26, 2011.

Organized a session called "Life on the Edge in a Sustainable World: Working at the Interface of Biology, Chemistry, Mathematics and Computational Science" featuring four speakers working at the interface of computational and mathematical biology for the 2010 annual meeting of SACNAS (Society for American Chicanos and Native Americans in Science) held in Anaheim, CA, October, 2010. The speakers were: Rommie Amaro (University of California, Irvine), Jerome Baudry (University of Tennessee), Suzanne Lehhart (University of Tennessee, and Mariel Vasquez (San Francisco State University).

Featured Speaker in a session for "Assessment for NIH-sponsored Projects from the MORE Division," held at the 2009 annual meeting of SACNAS (Society for American Chicanos and Native Americans in Science) held in Dallas, TX in October 2009. Co-presenter with Dr. Clif Poodry, head of the MORE Division at NIH and Dr. Gayle Slaughter, Program Director and Associate Dean, Baylor College of Medicine, Houston, TX.

Sponsored annual Curriculum Development Workshops focusing on "Incorporating Bioinformatics and Visualization into the Undergraduate Curriculum" that funded faculty from many institutions across the US to come to UTK to develop tool for their teaching. An emphasis was given to drawing participation from minority-serving institutions. June 22-26, 2009; second workshop in collaboration with NIMBioS was held July 6-9, 2010

Program Committee and Session Chair, Annual Meeting of the Council on Arteriosclerosis, Thrombosis and Vascular Biology, Atlanta, GA., April 16-18, 2008.

International Advisory Committee, XIIth International Workshop on the Molecular and Cellular Biology of Plasminogen Activation, Conference Centre Var Bard Saltsjobaden, Sweden, June 16-20, 2007.

#### **Ad Hoc Reviewer**

- Journal of Biological Chemistry
- Biochemistry
- Proteins: Structure, Function and Genetics
- Archives of Biochemistry and Biophysics
- Biochimica et Biophysica Acta
- Protein Science

- Colloids and Surfaces B: Biointerfaces
- Journal of Polymer Science
- Analytical Biochemistry
- Phytochemistry
- Blood
- Infection and Immunity
- Journal of Proteome Research
- Journal of Cell Science
- Journal of Clinical Investigation
- Cancer Cell International
- International Journal of Cancer

### Grant Reviews

**National Institutes of Health**, Shared Equipment Grants Study Section, June, 1994, July, 1996, August, 1998, July, 2008; Biophysical Chemistry Study Section, Site Visit Review for Program Project Grant, November 15-17, 1998; National Heart, Lung and Blood Institute, Division of Extramural Affairs, Special Review Committee, Program Project Grants, April, 1999, May, 2002, January, 2003, September, 2003, May, 2004, January, 2008; Thrombosis and Hemostasis Study Section, *Ad Hoc* member, October, 2003; NIGMS Innovative Programs to Enhance Research Training (IPERT), July 2015.

**National Science Foundation**, *ad hoc* reviewer, Molecular Biochemistry, October, 1996; April, 1998; Graduate Research Fellowship Program, Biophysics, and Structural Biology Panel, 2002, 2003, 2007; Electrochemistry and Surface Chemistry Panel, *ad hoc* reviewer, March, 2005; Reviewer for Pathfinder Award to Promote Diversity in the Scientific Workforce, June, 2010

**American Heart Association**, Thrombosis Research Section, March 29-30, 2008; March, 2009; March, 2010 (Co-Chair); October, 2010 (Co-Chair); Chair, 2011

**Department of Energy**, EPSCoR Program, Review and Site Visit, University of Vermont, April 14-16, 2003.

**Oak Ridge National Laboratory, Neutron Sciences Users Office**, reviewer of proposals to use neutron facilities for ORNL neutron facilities at the High Flux Isotope Reactor and Spallation Neutron Source, September, 2007 – present; **Laboratory Director's Research and Development Funds**, Oak Ridge National Laboratory, Oak Ridge, TN. Reviews for Functional Genomics, August, 1998, August 1999, August, 2001; Reviews for Complex Biological Systems; June-August, 2000;

**Other *ad hoc* reviews:** Wellcome Trust, UK; Medical Research Council, UK; University of Leuven, Belgium; Austrian Science Fund; Alzheimer's Association; Research Corporation; North Carolina Biotechnology Center; Susan G. Komen Foundation; Louisiana Board of Regents; Oak Ridge Associated Universities

### Other Professional Service

- External Advisory Board, NSF- funded "STRIDE: Science Training & Research to Inform Decisions" program at Stony Brook University, 2017 - present
- External Advisory Board, Graduate School of Biomedical Sciences and Engineering, University of Maine, 2013-present
- Member of Working Group, Subcommittee of the **ASBMB Education Committee**, organized to advise and implement program for NSF-funded RCN-UBE: "Promoting Concept Driven Teaching Strategies in Biochemistry and Molecular Biology through Concept Assessments," 2010 – 2013 (PI of RCN-UBE grant is Dr. Ellis Bell, University of Richmond)
- External Advisory Board, NSF-funded HBCU-UP Program at Alabama State University, "Undergraduate Computational Biology and NanoBiotechnology Education and Research Program." 2011 - present

- Member, Collaborative Champions Board for GRITS (Girls Raised in Tennessee, Science), Middle Tennessee State University, Murfreesboro, TN, 2010 – present.
- Invited Lecture, Farragut Science Academy. “Building a Biological Camera to Study a Pair of Circulatory Proteins.” November, 2009
- Invited presentation to explore partnership opportunities and present educational initiatives at UTK to the Board of SACNAS (Society for American Chicanos and Native Americans in Science), Dallas, TX, October, 2009
- External Reviewer and Consultant for State of Virginia to Evaluate a Proposed PhD Program in Biochemistry at George Mason University, April, 2009.
- External Reviewer for three chapters in the 6<sup>th</sup> Edition of Biochemistry by Berg and Stryer, January, 2005
- Scientific Steering Committee, Tennessee Mouse Genome Consortium, one of two representatives from The University of Tennessee, Knoxville, campus, August, 1998 – 2004
- Outside Reviewer, Biochemistry Program Review, Gustavus Adolphus College, St. Peter, Minnesota, December 2-6, 1998; interim review, November, 2000
- Video Production, “A Time for Butterflies,” in conjunction with the UT Center for Telecommunications and Video, March-April, 1999. Worked with producer, Rosemary Walter, to plan and produce an educational video on butterfly development to be distributed to all first grades in Knox County in conjunction with the Second Annual Butterfly Project of the East Tennessee Discovery Center. This project was sponsored by the Division of Biology and the College of Arts and Sciences.
- Representative from the University of Tennessee for “Science: Invest in the Future,” a signature event of the Science Coalition, a national organization dedicated to the advancement of Science. Visited Tennessee congressional delegation with the goal of increasing federal funding of university research, September 21-22, 1999, Washington, D. C.

### Postdoctoral Trainees

**Ping Zhuang**, July 1, 1994 - April 17, 1998.

**Baburaj Kunnimal**, August 1, 1995 - August, 1997. Present Position: Scientist, Analytical Development Division, Protein Design Labs, Fremont, CA.

**Anand Mayasundari**, September 1, 1999 – July 30, 2006, Funded through a Postdoctoral Fellowship Award from the American Heart Association, Southeast Regional Affiliate Ref. No. 0120344B, “Structural and Functional Studies on the N-terminal Domain of Vitronectin,” from July 1, 2001 – June 30, 2003. Present Position: Chemical Biology and Therapeutics, St. Jude’s Children’s Research Hospital, Memphis, TN.

**Christine R. Schar**, November 1, 2000 – January 2007; Funded through a GST Postdoctoral Fellowship, “Microarray and Proteomics Analysis of Circulating Proteins in Mouse Blood,” from November 1, 2000 – September, 2002. Present Position: Research Scientist, Aarhus University, Aarhus, Denmark.

**Larry Thompson**, August, 2006 – May, 2010. Funded on Peterson NIH Grant. Present Position: Staff Scientist, Pfizer Pharmaceuticals, St. Louis, MO.

**Carlee McClintock**; August, 2010 – 2013. Funded on Peterson AHA Grant. Present Position: Senior Scientist, Pain Consultants of East Tennessee

**Mentor for Graduate Students:**

**Angelia D. Gibson**, Ph.D. student, Biochemistry, June 1, 1994 - May 15, 1998.

Dissertation Title: A New Approach to Vitronectin Research: Using Molecular Biology and Biophysical Chemistry to Elucidate the Contributions of the C-terminal Domain of Vitronectin to Heparin Binding

Awards: Student Award, American Institute of Chemists Foundation, May 1998  
 Science Alliance Award for Outstanding Achievement by a Graduate Student, Division of Biology, University of Tennessee, May 1998  
 Chancellor's Citation for Outstanding Professional Promise, University of Tennessee, April 1998  
 Wright Fellowship Graduate Student Award for Research, Department of Biochemistry and Cellular and Molecular Biology, University of Tennessee, January 1998  
 Travel Award, International Symposium on the Chemistry and Biology of SERPINS, April 1996, Chapel Hill, NC  
 Hilton A. Smith Graduate Fellowship, University of Tennessee, 1993-1994

Position after Graduation: Postdoctoral Fellow, University of Texas Southwest Medical Center, Dallas, TX; and then worked in science writing for Physicians Resource Specialists for 4 years.

Current Position: Associate Professor, Maryville College, Maryville, TN

**Christine R. Schar**, Ph.D. student, Biochemistry, June 1, 1995 – March, 2000.

Dissertation Title: Expression of Vitronectin and Eukaryotic Cells: Evaluation of PAI-1 Binding and Implications for Gene Therapy

Awards: UT Citation of Outstanding Professional Promise, April, 2000  
 Wright Travel Award for Presentation at the 2<sup>nd</sup> International Meeting on the Chemistry and Biology of Serpins, Cambridge, UK, June, 1999  
 Travel Award, The Graduate School, University of Tennessee, for Presentation at the 2<sup>nd</sup> International Meeting on the Chemistry and Biology of Serpins, Cambridge, UK, June, 1999

Position after Graduation: Analytical Ultracentrifugation Facility Manager, University of Illinois, Chicago.

Current Position: Research Scientist, Aarhus University, Aarhus, Denmark

**Kenneth Minor**, Ph.D. student, BCMB, June 1, 1997 – 2004

Awards: Wright Travel Award for Presentation at the 2<sup>nd</sup> International Meeting on the Chemistry and Biology of Serpins, Cambridge, UK, June, 1999  
 Travel Award, The Graduate School, University of Tennessee, for Presentation at the 2<sup>nd</sup> International Meeting on the Chemistry and Biology of Serpins, Cambridge, UK, June, 1999  
 Wright Research Fellowship for outstanding work as a BCMB graduate student, 2002-2003  
 Wright Travel Award for Presentation at the International Workshop on Plasminogen Activation, Capri, Italy, October, 2003  
 Invited Speaker, International Analytical Ultracentrifugation Workshop, Oxford, England, April, 2004

Dissertation title: Vitronectin and Plasminogen Activator inhibitor-1 Form higher Order Complexes that Localize to the Extracellular Matrix and Adopt Adhesive Properties

Position after Graduating: Postdoctoral Fellow in the laboratory of Dr. Nicolas Seeds, University of Colorado Medical Center, Denver, CO

Current Position: Instructor, Dept. of Neurosurgery, Univ. of Colorado Denver & Health Sciences Center

**Secil Ozen**, M.S. student, BCMB, June 1, 1999 – December, 2001

Thesis Title: Structural and Functional Analysis of the Interaction of the Thrombin-Antithrombin Complex with Vitronectin.

Current Position: Research Associate, Zymogenetics, Seattle, WA, January, 2002 – present

**Jodi Watson**, M. S. student, BCMB, June 1, 2001 – November, 2003.

Thesis Title: Localizing Ligand Binding Sites Using Overlapping Recombinant Polypeptide Sequences of Vitronectin

Position after Graduation: Research Associate, Emory Medical School

**Cindy Brown**, M.S. student, BCMB, Jun 1, 2003 – December, 2008

Awards: CESB Fellowship, 2002-2003, 2003-2004, 2004-2005

Neutron Sciences Fellowship, 2003-2004, \$11,000

Neutron Sciences Fellowship, 2004-2005, \$11,000

Thesis Title: Characterization of Vitronectin and Plasminogen Activator Inhibitor Type 1: Insights into Metal Binding, and Production of Reagents to Facilitate Structural Studies

Position after Graduation: Research Associate, Protein Discovery Inc, Knoxville, TN

**Ruwan Parakrama**, MS Student, BCMB, June 1, 2006 - December, 2008.

Thesis Title: Investigations into the Domain Structure of Vitronectin

Current Position: Research Scientist, Regeneron, Tarrytown, New York

**Sumit Goswami**, Ph.D. student, BCMB, June 1, 2004 – 2011

Awards: Graduate Student Teaching Award, BCMB Department, 2009

Wright Research Award, BCMB Department, 2010

Dissertation title: Studies on the Role of Vitronectin and Plasminogen-Activator Inhibitor-1 Complexes Beyond Inhibiting Proteases: Binding to the Extracellular Matrix, Cell Interactions and Pathogenesis

Current Position: Research Scientist, Pfizer Pharmaceuticals, St. Louis, MO

**Tihami Qureshi**, PhD Student, BCMB; January, 2008 – 2013

Awards: Fite Fellowship, BCMB Department, 2010-2011 Academic Year

Second Place, Poster Contest, Southeast Magnetic Resonance Conference, Georgia State University, Atlanta, GA, Nov 2011

Dissertation Title: From Loop to Strand: Characterization of the Conformation & Dynamics of the Human Plasminogen Activator Inhibitor-1 Reactive Center

Current Position: Research Scientist, Pfizer Pharmaceuticals, St. Louis, MO

**Letitia Olson**, PhD Student, BCMB: May, 2010 – July, 2016

Awards: NIH PEER Trainee, 2009-2010, 2010-2011

Travel Award, International Symposium on Serpin Biology, Chapel Hill, NC, 2011

Travel Award, Gordon Research Conference, 2014

Kouns Excellence in Teaching Award, 2014, 2015

Dissertation Title: New insights into an Old Interaction: Developing a Model for PAI-1/Vitronectin Interactions

Current Position: Instructor, Maryville College, Maryville, TN

**Joel Bucci**, PhD Student, BCMB; May, 2010 – May, 2016

Awards: Gordon Conference Travel Award, 2014

Dissertation Title: Pinpointing the Molecular Basis for Metal Ion Effects on Plasminogen Activator Inhibitor-1 (PAI-1)

Current Position: Postdoctoral Researcher,

External Examiner, **Hubert Walinski**, Ph.D. student, Pathology and Laboratory Medicine, University of British Columbia, Canada, June, 2007

Thesis Title: The Effects of Vitronectin at Sites of Myocardial Infarction and Ischemia

**Service on Graduate Student Thesis and Dissertation Committees:** over 60 students from BCMB, Chemistry, GST, Microbiology, Physics and Engineering

**Supervision of Undergraduate Students in Research Projects:** over 50 from LSU, UTK and other universities

### **Teaching Assignments and Professional Development**

Participated as a Faculty Mentor in the **GTA Mentoring Program** at UTK in the 2000-2001 academic year and again in the 2001-2002 academic year. This program is sponsored by the Graduate School and is led by Jan Allen. Faculty mentors lead small group discussion regarding the challenges and opportunities offered by a career in academics.

**Leadership Institute**, University of Tennessee, Gatlinburg, TN, February 17-21, 2003. Joined the leadership team in June 2010.

Featured faculty in "**ITC Spotlight**" for April, 2003 for creative use of information technology in teaching. This web site summarized new initiatives taken in teaching as a result of the 2002 "**Faculty First**" award.

#### **Undergraduate Classes Taught at UTK:**

BCMB 401 "**Biochemistry I**"

BCMB 420 "**Advanced Topics in Biochemistry**"

BCMB 460 "**Cancer Biology**"

BCMB 452 "**Independent Research in Biochemistry**" (have participated with undergraduates pursuing independent research in the laboratory continuously since 1992)

Biology 303, "**Research Colloquium** for the HHMI Threshold Program"

UH-348, **University Honors Seminar**, Spring, 2003. "Life in the Post-Genome Era: Impacts on Modern Science and Medicine"

#### **Participation in Graduate Courses at UTK:**

BCMB 513 "**Advanced Cell Biology**"

BCMB 515 "**Experimental Techniques I**"

BCMB 516 "**Experimental Techniques II**"

BCMB 560, "**Advanced Concepts in Structural Biology/Biochemistry**"

BCMB 560/LS530, "**Analytical Technologies**"

Animal Science 623, "**Advanced Topics in Obesity and the Metabolic Syndrome**" (one lecture)

#### Biochemistry 621 (Spring 1995), "**Advanced Topics in Protein Folding and Association**"

Co-organizer of this course held in Spring, 1995, with Liz Howell. This course was a special topics course for which leaders in the field of protein folding from all over the U.S. were invited to give a research seminar and spend an additional class period with the students enrolled. Speakers for the course were: Pat Jennings, University of California, San Diego; Brian Matthews, University of Oregon; Jonathan King, M.I.T., Charles Brooks, III, Carnegie Mellon University; Janette Carey, Princeton University; Ken Ingham, Red Cross Laboratory, Bethesda, MD; Phil Bryan, CARB; Tom Alber, University of California, Berkeley; Carl Frieden, Washington University; Tony Gatenby, Dupont; and Jiri Safar, NIH. Funds for the course came from the department and from the Biology Division at ORNL.

#### BCMB 615 (Spring 2006). "**Advanced Technologies for Determining Protein Structure and Function**"

Co-organizer of this course held in Spring, 2006, with Liz Howell. This course was a special topics course for which leaders using cutting-edge technologies to study proteins from all over the U.S. were invited to give a research seminar and spend an additional class period with the students enrolled. Speakers for the course were: P. Agarwal (ORNL), K. Anderson (Yale), G. Hammes (Duke), M. Karplus (Harvard), A. Kohen

(Iowa), S. Krueger (NIST), L. Randall (Missouri), P. Schuck (NIH), P. Stewart (Vanderbilt), L. Tamm (Virginia), G. Tollin (Arizona), E. Toone (Duke), J. Yang (Georgia State).

BCMB 615 (Spring 2011). **“The Role of Intrinsic Disorder and Dynamics in Protein Structure and Function.”** Co-organizer of this course held in Spring, 2011 with Liz Howell and Engin Serspersu. This course was a special topics course on the emerging area of intrinsic disorder and role for dynamics in protein structure and function. Leaders from all over the U.S. and some international speakers were invited to give a research seminar and spend an additional class period with the students enrolled. Speakers for the course were: Robert Baldwin (Stanford), Steve Benkovic (Pennsylvania State University), Ashtok Deniz (Scripps), Keith Dunker (University of Illinois Medical Center), Jane Dyson (Scripps), Dorothy Erie (Univ. of North Carolina), Richard Kriwacki (St. Jude’s), Anne Frances Miller (Univ. of Kentucky), Pedro Romero (University of Illinois Medical Center), Vern Schramm (Albert Einstein College of Medicine), Chris Stanley (ORNL), Peter Tompa (Hungary), Vladimir Uversky (Univ. of South Florida).

BCMB 615 (Spring 2012). **“The Molecular Basis of Human Disease.”** Co-organizer of this course held in Spring, 2012 with Jerome Baudry. This course was a special topics course on biochemical, genetics, cell biology and computational approaches to unravel the causes of human disease. Leaders from all over the U.S. and some international speakers were invited to give a research seminar and spend an additional class period with the students enrolled. Speakers for the course were: Valerie Berthelmer (Univ. of Tenn. Health Sci. Center); Peter Wolynes (Rice university); John Fisher (St. Jude’s); Jack Riordan (UNC); Peter Andreasen (Aarhus Univ., Denmark); Susan Wentz (Vanderbilt); Dudley Strickland (Univ. of Maryland); Brynn Voy (UTIA); Thomas Kunkel (NIEHS); Justin Boyd (Chattanooga Research Institute); Ron Wetzel (Univ. of Pittsburgh); Mary Ann Handel (the Jackson Laboratory) and Jeff Smith (the Burnham Institute).

### **Selected Institutional Service (last 5 years)**

Chair, Search Committee for the Head of the Psychology Department, University of Tennessee work began fall, 2011 and concluded with the hiring of Dr. Deborah Welsh in the spring of 2012.

Strategic Planning Task Force on Research, UT President’s Office and University-wide Administration, chair of sub-committee on education, Fall 2011-Spring 2012.

Search Committee, Vice Chancellor for Research, University of Tennessee work began fall, 2010 and ended with the hiring of Dr. Taylor Eighmy in October of 2012.

UT Athletics Board, University of Tennessee, 2010-2013; Chair of the Academic-Integrity/Welfare-Conduct of Student Athletes Committee, Member of the Executive Committee

Member, UTK Provost’s “Life of the Mind Committee”, 2010-2011, 2011-2012 and 2012-2013 Academic Years. This committee is responsible for making recommendations about the summer reading selection for freshmen and for reviewing the program strategies and implementation. Led facilitator training workshop on stem-cell biology in August 2011.

Task force to evaluate teaching M1 and M2 medical students at UTK as a branch of UT Medical Center in Memphis, committee convened by Chancellor Cheek in September of 2010. Recommendations presented in Spring of 2011.

Chair, Search Committee for Associate Dean for Research, Facilities and Graduate Studies, College of Arts and Sciences, University of Tennessee, spring, 2010, work completed with the hiring of Chris Boake.

Staff Member, UT Leadership Foundation Committee, June 2010 - present

Discussion Leader, UTK Strategic Planning, 2010. Worked with the Provost’s office together feedback on VolVision, the working draft of the campus strategic plan by facilitating focus groups

Member, University of Tennessee Athletics Board, August, 2010-July, 2013

Mentor and Co-Leader, REU on "Sensing and Signaling," BCMB Department, Univ. of Tennessee, Summer, 2010; Summer 2011; Summer 2012

Mentor, UT Pre-Collegiate Research Scholars Program, Summer, 2008, Fall, 2008, Spring 2009

Internal reviewer for the Academic Program Review of the Materials Science and Engineering Department, College of Engineering, UTK, April, 2008

Steering Committee, UT Obesity Research Center, Fall, 2007 – Fall, 2012.

Chair, Task Force on Graduate Student Stipends, commissioned by Dean Carolyn Hodges of the Graduate School at the University of Tennessee to evaluate current policies and practices regarding graduate student stipends and fee waivers and to make recommendations about allocating funds in the future. Work began Fall, 2007 and completed spring 2008.

Judge, Junior Science and Humanities Symposium, annual meeting at the University of Tennessee, March 1-3, 2007.

Search Committee, Vice Chancellor for Research at the University of Tennessee, work began Fall, 2006 and completed in spring 2007 with the hiring of Dr. Bradley Fenwick.

Program Committee, Interdisciplinary Graduate Minor in Computational Science, University of Tennessee, Spring, 2007-present. Also worked with 5 other faculty members during the Academic Year 2005-2006 to plan for this minor with Jack Dongarra leading the team.

Search Committee, two faculty members, Department of Chemical and Biomolecular Engineering, UTK. Work from Summer, 2007- Spring 2008.

Invited Speaker, UTK Open House, September 10, 2005. Spoke to an audience of approximately 4000 prospective students and their parents on the opportunities for undergraduate research.

Search Committee, Dean, College of Arts and Sciences, University of Tennessee work begun June 2004 and completed in February of 2005 with the hiring of Dr. Bruce Bursten.

Undergraduate Scholarship Review Committee, College of Arts and Sciences, University of Tennessee March, 2004 – April, 2009.

Search Committee, Associate Vice Provost for Diversity, LSU, work began in the fall of 2014 and concluded with the hiring of Dr. Kenya Messer in spring of 2015.

Search Committee, Dean of the LSU Law Center, work began in the fall of 2015.  
Committee on Gender Equity, Louisiana State University, September 2015 – present.

Member, LSU Institutional Effectiveness Review Board, April 2014 – present.

### **Community Service (current)**

Rotary of Baton Rouge, member since November, 2014

Board Member, Mary Bird Perkins Cancer Center, effective April 2015