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**I. EDUCATION**

**Doctor of Philosophy in Biomedical Engineering (2000).**

Rensselaer Polytechnic Institute, Troy, NY.

Dissertation: *An in vitro model of bladder smooth muscle cell function in response to select mechanical stimuli.*

GPA 4.0/4.0.

Advisors: Rena Bizios, Ph.D., Rensselaer Polytechnic Institute.

Martin Kaefer, M.D., Indiana University School of Medicine.

**Master of Science in Biomedical Engineering (1996).**

Rensselaer Polytechnic Institute, Troy, NY.

GPA 4.0/4.0.

**Bachelor of Science in Biomedical Engineering (1995).**

Brown University, Providence, RI.

GPA in major 3.55/4.0.

**II. PROFESSIONAL EXPERIENCE**

Summer 1994      **Research Assistant.** Rhode Island Hospital Emergency Department, Providence, RI.

1994-1995      **Independent Study.** Brown University, Providence, RI.  
Title: *A study of the boundary lubricating properties of bovine synovial fluid, Healon, and lubricin.*  
Advisor: Gregory Jay, M.D./Ph.D.

- Summer 1996, 1998 **Summer Enrichment Program – Course Design and Instructor.** Office of Minority Student Affairs, Rensselaer Polytechnic Institute, Troy, NY.  
Courses: *Molecular Biology; Physics/Technology*
- 1996, 1997, 1998 **Graduate Teaching Assistant.** Rensselaer Polytechnic Institute, Troy, NY.  
Courses: *Introduction to Engineering Analysis – Studio Format; Thermodynamics*
- Fall 1999,  
Spring 2000 **Instructor.** Rensselaer Polytechnic Institute, Troy, NY.  
*Introduction to Engineering Analysis – Laptop/Studio Format.*
- 2000-2005 **Assistant Professor.** Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN.
- Jan 2006-Present **Assistant Professor of Engineering (Research).** Division of Engineering, Brown University, Providence, RI.
- Dec 2006-Present **Director of STEM Outreach.** Brown University, Providence, RI.

### III. AWARDS AND HONORS

#### *Awards*

- 1995-1996 **Graduate School Fellowship.** Rensselaer Polytechnic Institute, Troy, NY.
- 1996-1997 **General Electric “Faculty for the Future” Graduate Fellowship.** Rensselaer Polytechnic Institute, Troy, NY.
- 1997 **Founders Award of Excellence.** Awarded to less than 1% of the graduate student body. Rensselaer Polytechnic Institute, Troy, NY.
- Inducted 1998 **Sigma Xi, The Scientific Research Society.** Rensselaer Polytechnic Institute, Troy, NY.
- 1998 **Paul B. Daitch Travel Award.** Rensselaer Polytechnic Institute, Troy, NY.
- 1998 **Graduate Student Travel Award.** Biomedical Engineering Society Annual Meeting, Cleveland, OH.
- 1998-1999 **General Electric “Faculty for the Future - Topper” Graduate Fellowship.** Rensselaer Polytechnic Institute, Troy, NY.

- 1999                    **General Electric “Faculty for the Future – Junior Faculty Coupon”**. Rensselaer Polytechnic Institute, Troy, NY.
- 1999                    **Paul B. Daitch Travel Award**. Rensselaer Polytechnic Institute, Troy, NY.
- 1999                    **Graduate Student Travel Award**. BMES/EMBS Joint Meeting, Atlanta, GA.
- 2000                    **Karen and Lester Gerhardt Prize**. Awarded in recognition of outstanding academic achievement and promise for a successful career. Rensselaer Polytechnic Institute, Troy, NY.
- 2001                    **The New Clinical Investigator Award**. Awarded in recognition of an outstanding contribution to the field of biomedical research, The Society for Physical Regulation in Biology and Medicine.
- 2001                    **Purdue Research Foundation International Travel Award**. Awarded for participation in the 5<sup>th</sup> International Conference on Cellular Engineering, Aachen, Germany. Purdue University, West Lafayette, IN.
- Inducted 2001        **Kappa Delta Pi, The Education National Honors Society**. Purdue University, West Lafayette, IN.
- 2001                    **Outstanding Faculty Award**, Weldon School of Biomedical Engineering. Purdue University, West Lafayette, IN.
- 2003                    **Purdue Research Foundation International Travel Award**. Awarded for participation in the THERMEC ‘2003 Meeting, Madrid, Spain. Purdue University, West Lafayette, IN.
- 2003                    **Outstanding Faculty Award**, Weldon School of Biomedical Engineering. Purdue University, West Lafayette, IN.

***Invited Book Chapters***

1. McCann, J A, Webster, T J, and Haberstroh, K M, “Vascular Cell Responses to Fluid Shear Stress.” In the Handbook of BIOMEMS and BIOMEDICAL NANOTECHNOLOGY Volume IV: Biomolecular Sensing, Processing and Analysis. Edited by Rashid Bashir and Steve Wereley, Springer, NY, pps. 371-394, 2006.
2. Choudhary, S, Webster, T J, and Haberstroh, K M, “Vascular Stent Nanoparticle Wear Debris.” In Safety of Nanoparticles. Edited by Thomas Webster, Springer, NY, (In Press, 2007).

3. Webster, T J, Thapa, A, Pattison, M, and Haberstroh, K M, "Nanostructured polymers for treating bladder cancer." In *Cancer Nanotechnology*. Edited by H. Nalwa and T. J. Webster, American Scientific (In Press, 2007).

### ***Invited Papers***

1. Price, R L, Haberstroh, K M, and Webster, T J, "Enhanced Functions of Osteoblasts on Nanostructured Surfaces of Carbon and Alumina." *Medical and Biological Engineering and Computing (Incorporating Cellular Engineering)* **41**: 372-375, 2003.
2. Haberstroh, K M, Thapa, A, Miller, D C, and Webster, T W, "Polymers with nano-structured surface features for soft tissue replacement applications." *Materials Science Forum* **426-432**: 3115-3120, 2003.
3. Webster, T J, Ellison, K, Price, R L, and Haberstroh, K M, "Increased Osteoblast Function on Nanostructured Materials Due to Novel Surface Roughness Properties." *Materials Science Forum* **426-432**: 3127-3132, 2003.
4. Miller, D C, Vance, R, Webster, T J, and Haberstroh, K M, "Technological Advances in Nano-scale Biomaterials: The Future of Synthetic Vascular Graft Design." *Expert Review of Medical Devices* **1(2)**: 259-68, 2004.
5. Miller, D C, Vance, R, Webster, T J, and Haberstroh, K M, "Comparison of Fibroblast and Vascular Cell Adhesion to Nano-structured Poly(lactic-co-glycolic acid) Films." *Journal of Applied Bionics and Biomechanics* **2(1)**: 1-8, 2005.
6. Pattison, M, Webster, T J, and Haberstroh, K M, "Select Bladder Smooth Muscle Cell Functions Increased on 3D, Nano-Structured Poly(ether urethane) Scaffolds." *Journal of Biomaterials Science Polymer Edition* **17(11)**: 1317-1332, 2006.
7. Haberstroh, K M, Pattison, M A, Kaefer, M, and Webster, T J, "Evaluating the In Vitro and In Vivo Efficacy of Nano-Dimensional Polymeric Scaffolds for Bladder Tissue Replacement Applications." *Materials Science Forum* (In Press, 2007).
8. Pattison, M, Webster, T J, Leslie, J, Kaefer, M, and Haberstroh, K M, "Evaluating the In Vitro and In Vivo Efficacy of Nano-structured Polymers for Bladder Tissue Replacement Applications." Special Issue of *Macromolecular Bioscience* on macromolecular biomaterials interfacing with cells (Under Review, 2007).

### ***Invited Presentations***

1. Haberstroh, K M, "Mechanical Considerations for the Design of Tissue-Engineered Bladder Constructs." Presented at The Society for Physical Regulation in Biology and Medicine 20th Annual Meeting, Charleston, SC (2001).

2. Haberstroh, K M, "Cellular Responses of Soft Tissues and Organs to External Mechanical Stimuli." Presented to the Department of Cellular and Integrative Physiology, Indiana University Purdue University at Indianapolis, Indianapolis, IN (2003).
3. Webster, T J, Ellison, K S, Price, R L, and Haberstroh, K M, "Increased Osteoblast Function on Nanostructured Materials Due to Novel Surface Roughness Properties." Invited for Presentation at the THERMEC 2003 International Conference on Processing and Manufacturing of Advanced Materials, Madrid, Spain (2003).
4. Haberstroh, K M, Thapa, A, Miller, D C, and Webster, T W, "Polymers with Nanostructured Surface Features for Soft Tissue Replacement Applications." Invited for Presentation at the THERMEC 2003 International Conference on Processing and Manufacturing of Advanced Materials, Madrid, Spain (2003).
5. Martin, J S, Brown, L S, Davidson, J E, and Haberstroh, K M, "Microfilaments are Involved in Renal Cell Responses to Sustained Hydrostatic Pressure." Invited for Presentation at the Biomedical Engineering Society 2003 Annual Meeting, Nashville, TN (2003).
6. Haberstroh, K M, "Mechanical Considerations for the Design of Tissue-Engineered Constructs", Presentation at the Biomedical Engineering Department at University of Texas, San Antonio (2004).
7. Haberstroh, K M, "Vascular Cell Responses to Physiologically Relevant Mechanical and Biochemical Stimuli", Presentation at Eli Lilly, Inc (2004).
8. Haberstroh, K M, Pattison, M A, Thapa, A, Kaefer, M, and Webster, T J, "The Use of Nano-Dimensional PLGA and PU Scaffolds in Bladder Tissue Replacement Applications." Invited for Presentation at the Biomedical Engineering Society Annual Fall Meeting, Baltimore, MD (2005).
9. Haberstroh, K M, Pattison, M A, Thapa, A, Kaefer, M, and Webster, T J, "Evaluating the In Vitro and In Vivo Efficacy of Nano-Dimensional Polymeric Scaffolds for Bladder Tissue Replacement Applications." Invited for Presentation at the THERMEC 2006 International Conference on Processing and Manufacturing of Advanced Materials, Vancouver, Canada (2006).
10. Leslie, J, Pattison, M A, Kaefer, M, Webster, T J, and Haberstroh, K M, "*In Vivo* Biocompatibility Properties of Nano-structured PLGA and PU Scaffolds for Bladder Tissue Engineering Applications." Invited for Presentation at the Biomedical Engineering Society Annual Fall Meeting, Chicago IL (2006).
11. Goldstein, K, Haberstroh, K M, and Targan, D, "Linking Science at Brown with the K-12 Education Community." Invited for Presentation at the RITER Meeting, Education Department, Brown University, Providence, RI (2006).

12. Haberstroh, K M, Blume, J, Wakeford, L, Webster, T J, "Linking Engineering at Brown University with the K-12 Community." Invited for Presentation at the EA Johns Hopkins University RIDE Meeting, Education Alliance and Brown University, Providence, RI (2006).

#### IV. RESEARCH

##### *Journal Papers Published*

1. Jay, G D, Haberstroh, K M, and Cha, C J, "Comparison of the Boundary-Lubricating Ability of Bovine Synovial Fluid, Lubricin, and Healon." *Journal of Biomedical Materials Research* **40**: 414-418, 1998.
2. Haberstroh, K M, Kaefer, M, Retik, A B, Freeman, M R, and Bizios, R, "The Effects of Sustained Hydrostatic Pressure on Select Bladder Smooth Muscle Cell Functions." *Journal of Urology* **162(6)**: 2114-2118, 1999.
3. Haberstroh, K M, Kaefer, M, and Bizios, R, "Inhibition of Pressure Induced Bladder Smooth Muscle Cell Hyperplasia Using CRM197." *Journal of Urology* **164(4)**: 1329-1333, 2000.
4. Haberstroh, K M, Kaefer, M, DePaola, N, Frommer, S A, and Bizios, R, "A Novel *In Vitro* System for the Simultaneous Exposure of Bladder Smooth Muscle Cells to Mechanical Strain and Sustained Hydrostatic Pressure." *Journal of Biomechanical Engineering* **124(2)**: 208-13, 2002.
5. Kay S, Thapa A, Haberstroh K M, and Webster T J, "Nanostructured Polymer:Nanophase Ceramic Composites Enhance Osteoblast and Chondrocyte Adhesion." *Tissue Engineering* **8(5)**: 753-61, 2002.
6. Backhaus, B O, Kaefer, M, Haberstroh, K M, Rink, R C, Nagatomi, J, and Bizios, R, "Alterations in the Molecular Determinants of Bladder Compliance at Hydrostatic Pressures Below 40 cm H<sub>2</sub>O." *Journal of Urology* **168(6)**: 2600-4, 2002.
7. Webster, T J and Haberstroh, K M, "An Interactive, Video-teleconferenced Graduate Course in Biomedical Engineering." *Journal of Engineering Education* **91(2)**: 159-166, 2002.
8. Elias, K L, Price, R L, and Webster, T J, "Enhanced Functions of Osteoblasts on Carbon Nanofiber Compacts." *Biomaterials* **23**: 3279-3287, 2002.
9. Miller, D C, Thapa, A, Haberstroh, K M, and Webster, T J, "Enhanced Functions of Vascular and Bladder Cells on Poly-lactic-co-glycolic Acid Polymers With Nanostructured Surfaces." *IEEE Transactions on NanoBiosciences* **1(2)**: 61-6, 2002.

10. Price, RL, Waid, MC, Haberstroh, KM, and Webster, TJ, "Selective Bone Cell Adhesion on Formulations Containing Carbon Nanofibers." *Biomaterials* **24(11)**: 1877-1887, 2003.
11. Thapa, A, Miller, D C, Webster, T J, and Haberstroh, K M, "Nano-structured Polymers Enhance Bladder Smooth Muscle Cell Function." *Biomaterials* **24(17)**: 2915-2926, 2003.
12. Thapa, A, Webster, T J, and Haberstroh, K M, "Polymers with nano-dimensional surface features enhance bladder smooth muscle cell adhesion." *Journal of Biomedical Materials Research* **67A(4)**: 1374-83, 2003.
13. Miller, D C, Thapa, A, Haberstroh, K M, and Webster, T J, "Endothelial and Vascular Smooth Muscle Cell Function on Poly(lactic-co-glycolic acid) with Nano-Structured Surface Features." *Biomaterials* **25(1)**: 53-61, 2004.
14. Vance, R, Miller, D M, Thapa, A, Haberstroh, K M, and Webster, T J, "Decreased Fibroblast Cell Density on Chemically-Degraded Poly(lactic-co-glycolic acid), Polyurethane, and Polycaprolactone." *Biomaterials* **25(11)**: 2095-2103, 2004.
15. Price, R L, Haberstroh, K M, and Webster, T J, "Improved Osteoblast Viability in the Presence of Smaller Nanometer Dimensioned Carbon Fibers." *Nanotechnology* **15 (8)**: 892-900, 2004.
16. Price, R L, Ellison, K S, Haberstroh, K M, and Webster, T J, "Nanometer surface roughness increases select osteoblast adhesion on carbon nanofiber compacts." *Journal of Biomedical Materials Research* **70(1)**: 129-38, 2004.
17. Pattison, M, Webster, T J, Wurster, S, and Haberstroh, K M, "Three-Dimensional, Nano-Structured PLGA Scaffolds for Bladder Tissue Replacement Applications." *Biomaterials* **26(15)**: 2491-500, 2005.
18. McCann, J A, Peterson, S D, Plesniak, M W, Webster, T J, and Haberstroh, K M, "Variations in Flow Characteristics Yield Altered Gene Expression Across a Parallel Plate Flow Chamber." *Annals of Biomedical Engineering* **33(3)**: 328-336, 2005.
19. Martin, J S, and Haberstroh, K M, "Microfilaments are Involved in Renal Cell Responses to Sustained Hydrostatic Pressure." *Journal of Urology* **173 (4)**: 1410-7, 2005.
20. Miller, D C, Haberstroh, K H, and Webster, T J, "Mechanism(s) of increased vascular cell adhesion on nanostructured poly(lactic-co-glycolic acid) films." *Journal of Biomedical Materials Research Part A* **73(4)**: 476-84, 2005.
21. Miller, D C, Haberstroh, K M, and Webster, T J, "PLGA nanometer surface features manipulate fibronectin interactions for improved vascular cell adhesion." *Journal of Biomedical Materials Research Part A* (Epub ahead of print), 2006.

22. McCann, J A, Webster, T J, and Haberstroh, K M, "Vascular Cells Respond to Endothelial Cell Flow- and Pressure-Released Soluble Proteins." *Chemical Engineering Communications* **194**: 309-321, 2007.

### ***Journal Papers Submitted or in Preparation***

1. Russ, A L, Haberstroh, K M, and Rundell, A E, "Experimental Strategies to Improve *In Vitro* Models of Renal Ischemia." (Submitted Dec 2006).
2. McCann-Brown, J A, Peterson, S D, Plesnaik, M W, Webster, T J, Haberstroh, K M, "Location-Dependent Flow and Cellular Responses Downstream of a Clinically-Relevant Stenosis." (In Preparation, 2007).

### ***Conference Proceedings***

1. Price, R L, Kennel, E B, Haberstroh, K M, Webster, T J, "Carbon Nanofibers that Selectively Enhance Osteoblast Adhesion." *NASA Nanospace 2001 - Exploring Interdisciplinary Frontiers Conference Proceedings*, pg 220, 2001.
2. Price, R L, Haberstroh, K M, and Webster, T J, "Increased Osteoblast and Decreased Smooth Muscle Cell Adhesion on Biologically-Inspired Carbon Nanofibers." *Materials Research Society Symposium Proceedings* **676**: Y9.7.1-Y9.7.5, 2001.
3. Thapa, A, Webster, T J, and Haberstroh, K M, "An Investigation of Nano-Structured Polymers for Use as Bladder Tissue Replacement Constructs." *Materials Research Society Symposium Proceedings* **711**: GG3.4.1-GG3.4.6, 2002.
4. Price, R L, Elias, K L, Haberstroh, K M, and Webster, T J, "Small Diameter, High Surface Energy Carbon Nanofiber Formulations that Selectively Increase Osteoblast Function." *Materials Research Society Symposium Proceedings* **711**: HH3.11.1-HH3.11.4, 2002.
5. Miller, D C, Haberstroh, K M, and Webster, T J, "An *In Vitro* Study of Nano-fiber Polymers for Guided Vascular Regeneration." *Materials Research Society Symposium Proceedings* **711**: GG3.2.1-GG3.2.4, 2002.
6. Webster, T J, Miller, D C, Thapa, A, and Haberstroh, K M, "*In Vitro* Vascular Cell Adhesion and Proliferation on Alkaline Degraded Poly-lactic/glycolic Acid Polymers." *Materials Research Society Symposium Proceedings* **724**: N4.2.1-N.4.2.6, 2002.
7. Miller, D C, Thapa, A, Haberstroh, K M, and Webster, T J, "Increased Vascular Cell Function on Nano-Rough Poly(lactic-co-glycolic acid) Films." *AIChE Meeting Conference Proceedings*, 2003.



8. Price, R L, Haberstroh, K M, and Webster, T J, "Nanophase Diameter Carbon Fibers Specifically Enhance Osteoblast Adhesion." *AICHE Meeting Conference Proceedings*, 2003.
9. Miller, D C, Thapa, A, Haberstroh, K M, and Webster, T J, "In Vitro Vascular Cell Adhesion and Proliferation on Alkaline Degraded Poly-lactic/glycolic Acid Polymers." *Materials Research Society Symposium Proceedings* N4.2.
10. Haberstroh, K M, and Webster, T J, "A Biomedical Engineering Research Experiences for Undergraduates Program at Purdue University." *Proceedings of the 2002 American Society for Engineering Education Annual Conference and Exposition*. Paper #1420, 2002.
11. Ellison, K S, Price, R L, Haberstroh, K M, and Webster, T J, "Carbon Nanofiber Surface Roughness Increases Osteoblast Adhesion." *Materials Research Society Symposium Proceedings* O1.6-O1.11, 2003.
12. Webster, T J, Pattison, M A, and Haberstroh, K M, "Nanophase Three-Dimensional Polymers for Bladder Reconstruction." *Materials Research Society Symposium Proceedings* F6.7-F6.10, 2003.
13. Ejiofor, J U, Savaiano, J, Haberstroh, K M, and Webster, T J, "Nanophase PLGA/Nanostructured Titania Enhanced Biofunctions of Cartilage-Forming Cells." *ASM Materials and Processing for Medical Device Conference Proceedings*, 2003.
14. Miller, D C, Haberstroh, K M, and Webster, T J, "Enhanced Vascular Cell Adhesion to Nano-structured Poly-lactic-co-glycolic Acid is Mediated by Specific Protein Adsorption." *Materials Research Society Symposium Proceedings* (In Press, 2004).
15. McCann, J A, Webster, T J, and Haberstroh, K M, "Flow- and Pressure-Induced Changes in Vascular Cell Functions." *AICHE Meeting Conference Proceedings*, 2004.

***Abstracts/Presentations: Research***

1. Haberstroh, K M, Kaefer, M, Retik, A B, Freeman, M R, and Bizios, R, "Bladder Smooth Muscle Cell Responses to Sustained Hydrostatic Pressure." *Annals of Biomedical Engineering* **25** (Suppl.): S-48, 1997. Presented at the Biomedical Engineering Society 1997 Annual Meeting, San Diego, CA. (1997)
2. Haberstroh, K M, Kaefer, M, and Bizios, R, "The Role of Growth Factors in the Response of Bladder Smooth Muscle Cells to Sustained Hydrostatic Pressure." *Abstracts of the Third World Congress of Biomechanics*: p. 500, 1998. Presented at the Third World Congress of Biomechanics, Sapporo, Japan. (1998)
3. Haberstroh, K M, Kaefer, M, Retik, A B, Freeman, M R, and Bizios, R, "Heparin-Binding Epidermal Growth Factor (HB-EGF) is Released by Bladder Smooth Muscle Cells in

Response to Hydrostatic Pressure.” *Annals of Biomedical Engineering* **26** (Suppl.): S-34, 1998. Presented at the Biomedical Engineering Society 1998 Annual Meeting, Cleveland, OH. (1998)

4. Kaefer, M, Andler, R, Haberstroh, K M, Vemulapalli, S, Retik, A B, Freeman, M R, and Bizios, R, “Physiologic Levels of Hydrostatic Pressure Result in Upregulation of Heparin Binding EGF Like Growth Factor (HB-EGF) in Cultured Neonatal Bladder Smooth Muscle Cells.” *Pediatrics* **102**: 863, 1998. Presented at the American Academy of Pediatrics 1998 Annual Meeting, San Francisco, CA. (1998)
5. Kaefer, M, Andler, R, Haberstroh, K M, Vemulapalli, S, Retik, A B, Freeman, M R, and Bizios, R, “What Pressure is Bad for the Bladder?” *Journal of Urology* **161**: 43, 1999. Presented at the American Urological Association 94<sup>th</sup> Annual Meeting, Dallas, TX. (1999)
6. Haberstroh, K M, Kaefer, M, and Bizios, R, “An *In Vitro* Model of Bladder Smooth Muscle Cell Function in Response to Sustained Hydrostatic Pressure.” *Proceedings of the 1999 Bioengineering Conference* **42** (BED): 251, 1999. Presented at the 1999 Summer Bioengineering Conference, Big Sky, MT. (1999)
7. Kaefer, M, Haberstroh, K M, Retik, A B, Freeman, M R, and Bizios, R, “The Effect of Hydrostatic Pressure on Bladder Smooth Muscle Cell Growth.” Presented at the American Urological Association 73<sup>rd</sup> Annual Meeting (North Central Section), Chicago, IL. (1999)
8. Haberstroh, K M, Kaefer, M, and Bizios, R, “Heparin Binding-Epidermal Growth Factor (HB-EGF) is Released by Bladder Smooth Muscle Cells in Response to Hydrostatic Pressure.” Presented at the Inaugural Symposia, 18<sup>th</sup> Presidential Inauguration, Rensselaer Polytechnic Institute, Troy, NY. (1999)
9. Haberstroh, K M, Kaefer, M, and Bizios, R, “mRNA Expression of Extracellular Matrix Proteins Following Exposure of Bladder Smooth Muscle Cells to Sustained Hydrostatic Pressure.” *Final Program and Abstract Book of the First Joint Meeting of BMES & EMBS* Abstract 1.1.3-1, 1999. Presented at the Engineers in Medicine and Biology/Biomedical Engineering Society 1999 Joint Meeting, Atlanta, GA. (1999)
10. Kaefer, M, Andler, R, Haberstroh, K M, Vemulapalli, S, Retik, AB, Freeman, M R, and Bizios R, “What Pressure is Bad for the Bladder?” Presented at the European Society for Pediatric Urology, Istanbul, Turkey. (1999)
11. Yerkes, E, Kaefer, M, Backhaus, B O, Hile, K, Davis, M, Rink, R C, Cain, M P, Casale, A, Haberstroh, K, “Determining the Hydrostatic Threshold for Pressure Damage to the Detrusor: Bladder Deterioration at Pressures of 20 cm H<sub>2</sub>O.” Presented at the American Urological Association Annual Meeting (North Central Section), Phoenix, Arizona. (2000)
12. Haberstroh, K M, Kaefer, M, DePaola, N, and Bizios, R, “Exposure of Bladder Smooth Muscle Cells to Mechanical Strain and Sustained Hydrostatic Pressure Promotes Upregulation of HB-EGF and Collagen Type III.” *Annals of Biomedical Engineering* **28**

(Suppl.): S-50, 2000. Presented at the Biomedical Engineering Society 2000 Annual Meeting, Seattle, WA. (2000)

13. Haberstroh, K M, Kaefer, M, and Bizios, R, "N-Acetyl-Beta-D-glucosaminidase (NAG) Expression by LLC-PK1 and IMCD Kidney Cells Following Exposure to Pathological Conditions *In Vitro*." *Annals of Biomedical Engineering* **28** (Suppl.): S-50, 2000. Presented at the Biomedical Engineering Society 2000 Annual Meeting, Seattle, WA. (2000)
14. Kaefer, M, Yerkes, E, Backhaus, B O, Hile, K, Davis, M, Rink, R C, Cain, M P, Casale, A, Haberstroh, K, "Determining the Hydrostatic Threshold for Pressure Damage to the Detrusor: Bladder Deterioration at Pressures of 20 cm H<sub>2</sub>O." Presented at the BAPS Meeting, Sorrento, Italy. (2000)
15. Backhaus, B, Kaefer, M, Yerkes, E, Haberstroh, K M, Hile, K, Rink, R C, Casale, A, Cain, M, and Bizios, R, "Alterations in the Molecular Determinants of Bladder Compliance at Hydrostatic Pressures Below 40 cm H<sub>2</sub>O." Presented at the American Academy of Pediatrics 2000 Annual Meeting, Chicago, IL. (2000).
16. Haberstroh, K M, "Mechanical Considerations for the Design of Tissue-Engineered Bladder Constructs." Presented at The Society for Physical Regulation in Biology and Medicine 20th Annual Meeting, Charleston, SC. (2001)
17. Price, R L, Kennel, E B, Haberstroh, K M, and Webster, T J, "Carbon Nanofibers that Selectively Enhance Osteoblast Adhesion." Presented at the NASA NanoSpace 2001 Conference, Galveston, TX. (2001)
18. Meldrum, K K, Hile, K, Kaefer, M, and Haberstroh, K M, "The Role of TNF- $\alpha$  in Renal Tubular Cell Damage Following Exposure to Pathological Conditions *In Vitro*." Presented at the 2001 Summer Bioengineering Conference, Snowbird, Utah. (2001)
19. Meldrum, K K, Hile, K, Kaefer, M, and Haberstroh, K M, "*In Vitro* Responses of Renal Tubular Cells to Sustained Hydrostatic Pressure and/or Hypoxic Conditions." Presented at the 5<sup>th</sup> International Conference on Cellular Engineering, Aachen, Germany. (2001)
20. Price, R L, Kennel, E B, Haberstroh, K M, and Webster, T J, "Carbon Nanofibers/Nanotubes as the Next Generation of Bone Prosthetic Material." Presented at the 2001 Sigma Xi Poster Competition, Purdue University, IN. (2001)
21. Kaefer, M, Yerkes, E, Backhaus, B, Hile, K, Casale, A, Cain, M P, Rink, R C, and Haberstroh, K M, "Determining the Hydrostatic Threshold for Pressure Damage to the Detrusor: Bladder Deterioration at Pressures of 20 cm H<sub>2</sub>O." Presented at the European Society of Pediatric Surgeons, Pecs, Hungary. (2001)
22. Price, R L, Haberstroh, K M, and Webster, T J, "Carbon Nanofibers as Future Biomimetic Components of Orthopedic/Dental Implant Designs." Presented at the AIChE Fall Meeting, Reno, NV. (2001)

23. Miller, D C, Haberstroh, K M, and Webster, T J, "Nano-Structured Polymers for Guided Vascular Regeneration." *Annals of Biomedical Engineering* **29** (Suppl.): S-159, 2001. Presented at the Biomedical Engineering Society 2001 Annual Meeting, Raleigh-Durham, NC. (2001)
24. Thapa, A, Webster, T J, and Haberstroh, K M, "The Use of Three-Dimensional Nano-Structured Polymers as Bladder Substitutes." *Annals of Biomedical Engineering* **29** (Suppl.): S-156, 2001. Presented at the Biomedical Engineering Society 2001 Annual Meeting, Raleigh-Durham, NC. (2001)
25. Price, R L, Elias, K L, Haberstroh, K M, and Webster, T J, "Carbon Nanofibers as Osteoblast-Specific Implant Materials." *Annals of Biomedical Engineering* **29** (Suppl.): S-158, 2001. Presented at the Biomedical Engineering Society 2001 Annual Meeting, Raleigh-Durham, NC. (2001)
26. Miller, D C, Haberstroh, K M, and Webster, T J, "An *In Vitro* Study of Nano-Fibered Polymers for Guided Vascular Regeneration." Presented at the Fall 2001 Materials Research Society Conference, Boston, MA. (2001)
27. Thapa, A, Webster, T J, and Haberstroh, K M, "An Investigation of Nano-Structured Co-Polymers for Use as Three-Dimensional Bladder Tissue Constructs." Presented at the Fall 2001 Materials Research Society Conference, Boston, MA. (2001)
28. Price, R L, Haberstroh, K M, and Webster, T J, "Small Diameter, High Surface Energy Carbon Nanofiber Formulations that Selectively Increase Osteoblast Adhesion." Presented at the Fall 2001 Materials Research Society Conference, Boston, MA. (2001)
29. Kaefer, M, Yerkes, E, Backhaus, B, Hile, K, Casale, A, Cain, M, Rink, R C, Haberstroh, K M, "Determining the Hydrostatic Threshold for Pressure Damage to the Detrusor: Bladder Deterioration at Pressures of 20 cm H<sub>2</sub>O." Presented at the European Society for Pediatric Urology, Aarhus, Denmark. (2001)
30. Backhaus, B O, Kaefer, M, Haberstroh, K M, Hile, K, Rink, R C, Casale, A J, Cain, M P, and Bizios, R, "Alterations in the Molecular Determinant of Bladder Compliance at Hydrostatic Pressures below 40 cm H<sub>2</sub>O." Presented at the American Urological Association, Anaheim, California. (2001)
31. Miller, D C, Thapa, A, Haberstroh, K M, and Webster, T J, "An *In Vitro* Study of Nano-Fiber Polymers for Guided Vascular Regeneration." Presented at the 2002 Sigma Xi Poster Competition, Purdue University, IN. (2002)
32. Thapa, A, Webster, T J, and Haberstroh, K M, "An Investigation of Nano-Structured Co-Polymers for Use as Three-Dimensional Bladder Tissue Constructs." Presented at the 2002 Sigma Xi Poster Competition, Purdue University, IN. (2002)

33. Goodrich, B G, Martin, J S, and Haberstroh, K M, "Sustained Hydrostatic Pressure Effects on Kidney Cells." Third Place at the American Society of Mechanical Engineers Region VI 2002 Student Conference, Evansville, IN. (2002)
34. Thapa, A, Webster, T J, and Haberstroh, K M, "Nano-dimensional Polymers Enhance Adhesion and Proliferation of OBSMC." Presented at the Society for Biomaterials Spring Conference, Tampa, FL. (2002)
35. Miller, D C, Thapa, A, Haberstroh, K M, and Webster, T J, "Vascular Cell Responses to Nano-Structured Polymers." Presented at the Society for Biomaterials Spring Conference, Tampa, FL. (2002)
36. Price, R L, Haberstroh, K M, and Webster, T J, "Mechanisms of Enhanced Osteoblast Adhesion on Carbon Nanofiber Substrates." Presented at the Society for Biomaterials Spring Conference, Tampa, FL. (2002)
37. Kay S, Thapa, A, Haberstroh, K M, and Webster, T J, "Osteoblast and Chondrocyte Adhesion on Nanostructured Polymer:Nanophase Ceramic Composites." Presented at the Society for Biomaterials, Undergraduate student research competition award, Tampa, FL. (2002)
38. Thapa, A, Miller, D C, Haberstroh, K M, and Webster, T J, "Enhanced Cellular Functions on Nanostructured Polymers." Presented at the Materials Research Society Spring Meeting, San Francisco, CA. (2002)
39. Martin, J S, Yokota, H, and Haberstroh, K M, "Functional changes in Kidney Cells in Response to Sustained Hydrostatic Pressure." Presented at the Fourth World Congress of Biomechanics, Calgary, Canada. (2002)
40. McCann, J A, Webster, T J, Frankel, S H, Plesniak, M W, Xu, L X, Wereley, S T, and Haberstroh, K M, "Soluble Proteins Released by Endothelial Cells in Response to Fluid Flow Affect Smooth Muscle Cells." Presented at the Fourth World Congress of Biomechanics, Calgary, Canada. (2002)
41. Peterson, S D, Plesniak, M W, Wereley, S T, Frankel, S H, Haberstroh, K M, Webster, T J, and Xu, L X, "High Resolution Micro-Particle Image Velocimetry Measurements of Flow Relevant to Stenotic Vessels." Presented at the Fourth World Congress of Biomechanics, Calgary, Canada. (2002)
42. Varghese, S S, Frankel, S H, Haberstroh, K M, Plesniak, M W, Webster, T J, Wereley, S T, and Xu, L X, "Numerical Modeling of Pulsatile Turbulent Flow in Stenotic Vessels." Presented at the Fourth World Congress of Biomechanics, Calgary, Canada. (2002)
43. Chen, B, Xu, L X, Frankel, S H, Haberstroh, K M, Plesniak, M W, Webster, T J, and Wereley, S T, "Dynamic Calcium Response in Vascular Endothelial Cells Subjected to

Various Flows.” Presented at the Fourth World Congress of Biomechanics, Calgary, Canada. (2002)

44. Martin, J S, Yokota, H, and Haberstroh, K M, “Kidney Cell Mechanotransduction in Response to Sustained Hydrostatic Pressure.” Presented at the Second Joint Meeting of the IEEE Engineering in Medicine and Biology Society and the Biomedical Engineering Society, Houston, TX. (2002)
45. McCann, J A, Webster, T J, and Haberstroh, K M, “Aortic Smooth Muscle Cells Respond to Soluble Proteins Released by Aortic Endothelial Cells After Fluid Flow Exposure.” Presented at the Second Joint Meeting of the IEEE Engineering in Medicine and Biology Society and the Biomedical Engineering Society, Houston, TX. (2002)
46. Price, R L, Haberstroh, K M, and Webster, T J, “Increased Adhesion on Carbon Nanofiber/PLGA Composite Materials.” Presented at the Second Joint Meeting of the IEEE Engineering in Medicine and Biology Society and the Biomedical Engineering Society, Houston, TX. (2002)
47. Miller, D C, Thapa, A, Haberstroh, K M, and Webster, T J, “Enhanced Functions of Cells on Polymers with Nanostructured Surfaces.” Presented at the Second Joint Meeting of the IEEE Engineering in Medicine and Biology Society and the Biomedical Engineering Society, Houston, TX. (2002)
48. Price, R L, Gutwein, L G, Haberstroh, K M, and Webster, T J, “Nanometer Carbon and Alumina Fiber Structure Enhances Osteoblast Adhesion.” Presented at the American Institute of Chemical Engineers Fall Meeting, Indianapolis, IN. (2002)
49. McCann, J A, Peterson, S D, Webster, T J, Plesniak, M W, and Haberstroh, K M, “Differential Gene Expression Due to Inadvertent Variations in Fluid Flow Across a Parallel Plate Flow Chamber.” Presented at the American Institute of Chemical Engineers Fall Meeting, Indianapolis, IN. (2002)
50. Martin, J S, Yokota, H, and Haberstroh, K M, “Understanding the Signaling Mechanism Involved in Kidney Cell Responses to Hydrostatic Pressure.” Presented at the American Institute of Chemical Engineers Fall Meeting, Indianapolis, IN. (2002)
51. Thapa, A, Webster, T J, and Haberstroh, K M, “Chemically Unmodified Nano-structured Polymers Enhance Bladder Smooth Muscle Cell Proliferation.” Presented at the American Institute of Chemical Engineers Fall Meeting, Indianapolis, IN. (2002)
52. Miller, D C, Thapa, A, Haberstroh, K M, and Webster T J, “Increased Vascular Cell Function on Nano-rough Poly(lactic-co-glycolic acid) Films.” Presented at the American Institute of Chemical Engineers Fall Meeting, Indianapolis, IN. (2002)
53. Russ, A L, Martin, J S, Haberstroh, K M, and Rundell, A E, “Preliminary Quantitative Analysis of Renal Cell Mechanosignaltransduction in Response to a Physiologically

Relevant Pressure Stimuli.” Presented at the Second International Conference on Computational Cell Biology, Lennox, MA. (2003)

54. Miller, D C, Kay, S, Haberstroh, K M, and Webster, T J, “Enhanced cell functions on nanostructured polymers,” Presented at the Tenth International Conference on Composites Engineering, New Orleans, LA. (2003)
55. McCann, J A, Peterson, S D, Webster, T J, Plesniak, M W, and Haberstroh, K M, “Slight Geometrical Variations Across a Parallel Plate Flow Chamber Yields Non-Uniform Gene Expression.” First Place at the 2003 Sigma Xi Poster Competition, Purdue University, IN. (2003)
56. Martin, J S, Yokota, H, and Haberstroh, K M, “Altered Function in Renal Cells in Response to Elevated Hydrostatic Pressures.” Honorable Mention at the 2003 Sigma Xi Poster Competition, Purdue University, IN. (2003)
57. Price, R L, Waid, M C, Haberstroh, K M, and Webster, T J, "Carbon Nanofiber/Polymer Composite Materials as Bone Implants." Presented at the 2003 Sigma Xi Poster Competition, Purdue University, IN. (2003)
58. Miller, D C, Haberstroh, K M, and Webster, T J, “Design, Synthesis, and Evaluation of Polymeric Biomaterials with Nanostructured Surface Features for Vascular Applications.” Presented at the 2003 Sigma Xi Poster Competition, Purdue University, IN. (2003)
59. Price, R L, Haberstroh, K M, Webster, T J, “Osteoblast Viability Decreases With and Increase in Carbon Nanofiber Concentration for Toxicity Studies.” Presented at the Society for Biomaterials Spring Conference, Reno, NV. (2003)
60. Price, R L, Ellison, K, Haberstroh, K M, Webster, T J, “Nanometer Surface Roughness Increases Select Osteoblast Adhesion on Carbon Nanofiber Compacts.” Presented at the Society for Biomaterials Spring Conference, Reno, NV. (2003)
61. McCann, J A, Peterson, S D, Webster, T J, Plesniak, M W, and Haberstroh, K M, “Inadvertent Variations in Fluid Flow Across a Parallel Plate Flow Chamber Results in Non-Uniform Gene Expression.” Presented at the ASME Summer Bioengineering Meeting, Key Biscayne, FL. (2003)
62. McCann, J A, Webster, T J, and Haberstroh, K M, “Vascular Endothelial Cells Release Soluble Mediators in Response to Fluid Flow that Affect Smooth Muscle Cell Growth and mRNA Expression.” Presented at the ASME Summer Bioengineering Meeting, Key Biscayne, FL. (2003)
63. Martin, J S, Yokota, H, and Haberstroh, K M, “Altered Proto-Oncogene Expression in Response to Elevated Sustained Hydrostatic Pressure in Renal Cells.” Presented at the ASME Summer Bioengineering Meeting, Key Biscayne, FL. (2003)

64. Haberstroh, K M, Thapa, A, Miller, D C, and Webster, T J, "Bio-inspired, Nano-Structured Polymers for Use in Soft Tissue Replacement Applications." Presented at the ASME Summer Bioengineering Meeting, Key Biscayne, FL. (2003)
65. Ejiofor, J U, Savaiano, J K, Haberstroh, K M, and Webster, T J, "Nanophase PLGA/Nanostructured Titania Enhances Biofunctions of Cartilage-Forming Cells." Presented at the ASM Materials and Processes for Medical Devices Conference, Anaheim, CA. (2003)
66. Pattison, M, Webster, T J, and Haberstroh, K M, "An Investigation of 3D, Nano-Structured Polymers As Bladder Tissue Constructs." Presented at the Materials Research Society Fall Meeting, Boston, MA. (2003)
67. Miller, D C, Haberstroh, K M, Webster, T J, "Mechanism of enhanced vascular cell function on nano-structured poly(lactic-co-glycolic acid)." Presented at the Biomedical Engineering Society Annual Conference, Nashville, TN. (2003)
68. Russ, A L, Martin, J S, Haberstroh, K M, and Rundell, A E, "Novel Pressure Chamber Designed to Quantify Real-time Renal Cell Response to a Physiological Pressure Stimulus." Presented at the Biomedical Engineering Society Annual Conference, Nashville, TN. (2003)
69. Wurster, S, Pattison, M, Haberstroh, K M, and Webster, T J, "Nano-structured Three-dimensional PLGA Increases Bladder Smooth Muscle Cell Function." Presented at the Biomedical Engineering Society Annual Meeting, Nashville, TN. (2003)
70. Davidson, J E, Brown, L S, Martin, J S, and Haberstroh, K M, "Cytoskeletal Responses of Kidney Cells Exposed to Elevated Sustained Hydrostatic Pressure using Various Substrates." Presented at the Biomedical Engineering Society Annual Meeting, Nashville, TN. (2003)
71. Pattison, M, Webster, T J, and Haberstroh, K M, "Nano-Structured Three-Dimensional Polymers for Bladder Reconstruction." Presented at the Biomedical Engineering Society Annual Meeting, Nashville, TN. (2003)
72. Price, R L, Haberstroh, K M, and Webster, T J, "The Effects of Nanometer Fiber Dimensions on Osteoblast and Fibroblast Adhesion." Presented at the Biomedical Engineering Society Annual Fall Meeting, Nashville, TN. (2003)
73. McCann, J A, Webster, T J, and Haberstroh, K M, "Vascular Endothelial and Smooth Muscle Cell Interactions Affect Vessel Homeostasis." Presented at the Biomedical Engineering Society Annual Fall Meeting, Nashville, TN. (2003)
74. McCann, J A, Webster, T J, and Haberstroh, K M, "Coordinated Vascular Endothelial and Smooth Muscle Cell Interactions In Response to Fluid Shear Stress Affect Vessel Homeostasis." Presented at the Gill Heart Research Day, Lexington, KY. (2003)



75. Miller, D C, Haberstroh, K M, Webster, T J, "Design of Polymeric Vascular Biomaterials with Nano-structured Surface Features." Presented at the Gill Heart Research Day, Lexington, KY. (2003)
76. Harm, C L, and Haberstroh, K M, "Functional Changes of Vascular Endothelial and Smooth Muscle Cells under Pathologically Elevated Cyclic Pressures." Presented at the Gill Heart Research Day, Lexington, KY. (2003)
77. Miller, D C, Haberstroh, K M, Webster, T J, "Mechanisms Controlling Increased Vascular Cell Adhesion to Nano-Structured Polymer Films." Presented at the 7<sup>th</sup> World Biomaterials Congress, Sydney, Australia. (2004)
78. Price, R L, Haberstroh, K M, and Webster, T J, "Mechanisms of Enhanced Osteoblast Adhesion on Nanofiber Materials." Presented at the 7<sup>th</sup> World Biomaterials Congress, Sydney, Australia. (2004)
79. McCann, J A, Webster, T J, and Haberstroh, K M, "Vessel Homeostasis is Controlled by Coordinated Vascular Endothelial and Smooth Muscle Cell Interactions in Response to Fluid Shear Stress." Presented at the Sigma Xi Graduate Student Poster Competition, Purdue University, IN. (2004)
80. Price, R L, Haberstroh, K M, and Webster, T J, "The Effects of Nanometer Fiber Dimensions on Cell Adhesion and Viability" Presented at the Sigma Xi Graduate Student Poster Competition, Purdue University, IN. (2004)
81. Harm, C L, and Haberstroh K M, "Pathologically Elevated Cyclic Pressures Alter Functional Properties of Vascular Endothelial and Smooth Muscle Cells." Presented at the Sigma Xi Graduate Student Poster Competition, Purdue University, IN. (2004)
82. Miller, D C, Haberstroh, K M, Webster, T J, "Fibronectin and Vitronectin are Critical for Vascular Cell Recognition of Nano-Structured Poly(lactic-co-glycolic Acid) Films." Presented at the Sigma Xi Graduate Student Poster Competition, Purdue University, IN. (2004)
83. Miller, D C, Haberstroh, K M, Webster, T J, "Increased Protein Interactions with Nano-Structured PLGA Increases Vascular Cell Function." Presented at the 30<sup>th</sup> Annual Northeast Bioengineering Conference, Springfield, MA. (2004)
84. Martin, J S, Yokota, H, and Haberstroh, K M, "Various Substrates Cause Altered Renal Cell Responses Following Exposure to Pathological Hydrostatic Pressures." Presented at the Sigma Xi Graduate Student Poster Competition, Purdue University, IN. (2004)
85. McCann, J A, Webster, T J, and Haberstroh, K M, "Vascular Cell Responses to Physiologically-Relevant Mechanical and Biochemical Stimuli." Presented at the 5th Annual Conference on Arteriosclerosis, Thrombosis, and Vascular Biology, San Francisco, CA. (2004)

86. Harm, C L, McCann, J A, and Haberstroh, K M, "Vascular Endothelial and Smooth Muscle Cells Respond to Pathologically Elevated Pressures." Presented at the 5th Annual Conference on Arteriosclerosis, Thrombosis, and Vascular Biology, San Francisco, CA. (2004)
87. Martin, J S, Brown, L S, Yokota, H, and Haberstroh, K M, "Renal Cells Respond Differently on Various Substrates in Response to Hydrostatic Pressure." Presented at the 30<sup>th</sup> Annual Northeast Bioengineering Conference, Springfield, MA. (2004)
88. Russ, A L, Martin, J S, Rundell, A E, and Haberstroh, K M, "A Novel Chamber Designed to Quantify Real-Time Renal Cell Response to Hypoxia and/or Pressure." Presented at the 30<sup>th</sup> Annual Northeast Bioengineering Conference, Springfield, MA. (2004)
89. Pattison, M, Webster, T J, and Haberstroh, K M, "Increased Function of Bladder Smooth Muscle Cells on Nano-Structured, Three-Dimensional Polymer Constructs." Silver Award Winner. Presented at the MRS Spring Meeting, San Francisco, CA. (2004)
90. McCann, J A, Webster, T J, and Haberstroh, K M, "Flow- and Pressure-Induced Changes in Vascular Cell Functions." Presented at the American Institute of Chemical Engineers Fall Meeting, Austin, TX. (2004)
91. Martin, J S, Yokota, H, and Haberstroh, K M, "The Use of Hydrostatic Pressure to Control Renal Cell Function." Presented at the Biomedical Engineering Society Annual Fall Meeting, Philadelphia, PA. (2004)
92. Russ, A L, Rundell A E, and Haberstroh, K M, "Investigating Renal Cell Response to Conditions Associated with Acute Renal Failure." Presented at the Biomedical Engineering Society Annual Fall Meeting, Philadelphia, PA. (2004)
93. McCann, J A, Webster, T J, and Haberstroh, K M, "Functional Changes in Vascular Cells Induced by Biochemical and Hemodynamic Factors." Presented at the Biomedical Engineering Society Annual Fall Meeting, Philadelphia, PA. (2004)
94. McCann, J A, Peterson, S D, Plesniak, M W, Webster, T J, and Haberstroh, K M, "Vascular Endothelial Cells Respond to Their Mechanical and Biochemical Environment." Presented at the Sigma Xi Graduate Student Poster Competition, Purdue University, IN. (2005)
95. Choudhary, S, Haberstroh, K M, and Webster, T J, "Increased Adhesion of Vascular Cells to Nanophase Titanium." Presented at the Sigma Xi Graduate Student Poster Competition, Purdue University, IN. (2005)
96. Smith, L, Haberstroh, K M, and Webster, T J, "Fabrication of Porous Nanoscale Polymeric Scaffolds for Enthesis Tissue Engineering." Presented at the Sigma Xi Graduate Student Poster Competition, Purdue University, IN. (2005)

97. Russ, A L, Rundell A E, and Haberstroh, K M, "Investigating Renal Cell Response to Conditions Associated with Acute Renal Failure." Presented at the Sigma Xi Graduate Student Poster Competition, Purdue University, IN. (2005)
98. McCann, J A, Peterson, S D, Plesniak, M W, Webster, T J, and Haberstroh, K M, "Mechanical and Biochemical Stimuli Alter Endothelial Cell Gene Expression." Presented at the 31st Annual Northeast Bioengineering Conference, Hoboken, NJ. (2005)
99. Choudhary, S, Haberstroh K M, and Webster, T J, "Increased Adhesion of Vascular Cells to Nanophase Titanium." Accepted for Presentation at the ASME Summer Bioengineering Meeting, Vail, CO. (2005)
100. Smith, L J, Haberstroh, K M, Virkler, J A, and Webster, T J, "Fibroblast Proliferation on Novel Nano-structured Porous PLGA Scaffolds for Tissue Engineering Applications." Presented at the Society for Biomaterials Spring Conference, Memphis, TN. (2005)
101. Haberstroh, K M, Pattison, M A, and Webster, T J, "In Vitro and In Vivo Efficacy of Nano-Dimensional Bladder Tissue Replacement Constructs." Presented at the Society for Biomaterials Spring Conference, Memphis, TN. (2005)
102. Choudhary, S, Haberstroh K M, and Webster, T J, "Increased Adhesion of Vascular Endothelial Cells to Nanophase Titanium." Presented at the Society for Biomaterials Spring Conference, Memphis, TN. (2005)
103. McCann, J A, Webster, T J, and Haberstroh, K M, "The Influence of Physiological and Pathological Mechanical Forces on Vascular Cells." Presented at the Biomedical Engineering Society Annual Fall Meeting, Baltimore, MD. (2005)
104. Miller, D C, Haberstroh, K M, and Webster., T J, "Optimization of Fibronectin Adsorption to Nano-Structured Polymer Films for Vascular Applications." Presented at the Biomedical Engineering Society Annual Fall Meeting, Baltimore, MD. (2005)
105. Smith, L, Haberstroh, K M, and Webster, T J, "Hydroxyapatite Embedded Nano-Structured PLGA for Tissue Engineering Applications." Presented at the Biomedical Engineering Society Annual Fall Meeting, Baltimore, MD. (2005)
106. Russ, A L, Rundell, A E, and Haberstroh, K M, "An In Vitro Model of Renal Cell Ischemia." Presented at the Biomedical Engineering Society Annual Fall Meeting, Baltimore, MD. (2005)
107. Choudhary, S, Haberstroh K M, and Webster, T J, "Increased Adhesion of Vascular Cells to Nanophase Titanium for Stent Applications." Presented at the Biomedical Engineering Society Annual Fall Meeting, Baltimore, MD. (2005)

108. Mariani, A, McCann, J A, and Haberstroh K M, "Vascular Endothelial Cell Production of NO AND PGI<sub>2</sub> in Response to Flow and Pressure." Presented at the Biomedical Engineering Society Annual Fall Meeting, Baltimore, MD. (2005)
109. Russ, A L, Haberstroh, K M, and Rundell, A E, "Integrating multiple stimuli alters outcome in an in vitro model of renal ischemia." Presented at the Biomedical Engineering Society Annual Fall Meeting, Chicago, IL. (2006)
110. McGill, J, Russ, A L, Haberstroh, K M, and Rundell, A E, "Simulated Ischemia Alters Proximal Tubule Cell Morphology." Presented at the Biomedical Engineering Society Annual Fall Meeting, Chicago, IL. (2006)
111. Russ, A E, Haberstroh, K M, and Rundell, A E, "Combining Hypoxia and Hypercapnia to Model Renal Ischemia." Presented at the Hypoxia and Development, Physiology and Disease, Keystone Symposia, Breckenridge, CO. (2006)
112. Haberstroh, K M, and Webster, T J, "Nano-dimensional bladder tissue engineering constructs: an in vivo study." Presented at the Society for Biomaterials Annual Meeting, Pittsburgh, PA, (2006)
113. Russ, A L, Haberstroh, K M, and Rundell, A E, "Simulating Renal Ischemia with Low O<sub>2</sub>, Elevated CO<sub>2</sub>, and Glucose Depletion Alters Cellular Behavior." Abstract submitted for the International Hypoxia Symposia, Alberta, Canada. (2007)

***Abstracts/Presentations: Education***

1. Brunski, J B, and Haberstroh, K M, "The Bike Module." Presented at the Mathematics Throughout the Curriculum IV Conference, Indiana University, Bloomington, IN. (1999)
2. Doerschuk, P C, Webster, T J, Haberstroh, K M, and Wodicka, G R, "A Highly Independent Biomedical Engineering Undergraduate Curriculum: Considerations, Challenges, and Opportunities." Presented at the Whitaker Foundation Biomedical Engineering Education Summit, Leesburg, VA. (2000)
3. Webster, T J and Haberstroh, K M, "An Interactive, Video-Teleconferenced, Graduate Course in Biomaterials." Presented at the Society for Biomaterials Meeting, Saint Paul, MN. (2001)
4. Webster, T J and Haberstroh, K M, Doerschuk, P C, and Wodicka, G R, "Considerations, Challenges, and Opportunities in Developing an Independent Biomedical Engineering Undergraduate Curriculum." Presented at the Society for Biomaterials Meeting, Saint Paul, MN. (2001)

5. Haberstroh, K M, "Increasing the Enrollment and Retention of Women and Minorities in Science and Engineering." Presented at the Kappa Delta Pi 43<sup>rd</sup> Biennial Convocation, Orlando, FL. (2001)
6. Haberstroh, K M, and Webster, T J, "Research Experiences for Undergraduates in Biomedical Engineering at Purdue University." Presented at the Society for Biomaterials Spring Conference, Tampa, FL. (2002)
7. Haberstroh, K M, and Webster, T J, "A Biomedical Engineering Research Experiences for Undergraduates Program at Purdue University." Presented at the ASEE Summer Conference, Montreal, Canada. (2002)
8. Webster, T J, Haberstroh, K M, and Dunlop, S R, "Development of Asynchronous Learning Modules in Biomedical Engineering." Presented at the 2003 IHETS/IPSE All Partners Conference, Ball State University Alumni Center, IN. (2003)
9. Haberstroh, K M, and Webster, T J, "A Research Experiences for Undergraduates Program in Biomedical Engineering at Purdue University." Presented at the Society for Biomaterials Spring Conference, Reno, NV. (2003)
10. Haberstroh, K M, and Webster, T J, "Asynchronous Interactive Learning Modules in Biomedical Engineering." Presented at the Society for Biomaterials Spring Conference, Reno, NV. (2003)
11. Haberstroh, K M, Webster, T J, and Scharff, C, "Involving Females in the Exciting and Growing Field of Science." Presented at the Kappa Delta Pi 44<sup>th</sup> Biennial Convocation, St. Louis, MO. (2003)
12. Haberstroh, K M, and Webster, T J, "A Cumulative Report on the Biomedical Engineering Research Experiences for Undergraduates Program at Purdue University." Presented at the 30<sup>th</sup> Annual Northeast Bioengineering Conference, Springfield, MA. (2004)
13. Haberstroh, K M, and Webster, T J, "Increasing Interest in BME Through a Research Experiences for Undergraduates Program." Presented at the Biomedical Engineering Society Annual Fall Meeting, Philadelphia, PA. (2004)
14. Haberstroh, K M, and Webster, T J, "A Summer Research Experience for Undergraduates in Biomedical Engineering at Purdue University." Presented at the 31<sup>st</sup> Annual Northeast Bioengineering Conference, Hoboken, NJ. (2005)
15. Haberstroh, K M, and Webster, T J, "Undergraduate Translational Research in Engineering at Brown University." Presented at the Biomedical Engineering Society Annual Fall Meeting, Chicago, IL. (2006)

16. Haberstroh, K M, Kane, A B, Webster, T J, and Hurt, R H, "Educational Initiatives Related to Nanomedicine at Brown University." Presented at the Showcase of Nanomedicine, Brown University, Providence, RI. (2006)
17. Haberstroh, K M, "Women Excelling in Science and Engineering." Presented at Empowering your Future Day, Brown University, Providence, RI. (2006)

### ***Patents Filed***

1. Novel nano-structured polymer composites for soft tissue replacement. OTC reference number P-01019, Purdue University, West Lafayette, IN.

### ***Funding***

#### **I. Past Support**

1.
  - a. Source of Support: General Electric/Rensselaer Polytechnic Institute
  - b. Award Title: "Faculty for the Future – Junior Faculty Coupon."
  - c. Award Start Date: 5/24/00
  - d. Total Award Amount: \$15,000
2.
  - a. Source of Support: Showalter Trust Fund
  - b. Proposal Title: "Towards Prevention and Control of Atherosclerosis: Endothelial and Smooth Muscle Cell Response to Pulsatile Flow in Stenotic Blood Vessels."
  - c. Role in the Project: Co-Principal Investigator
  - d. Other Co-Principal Investigators: Thomas J. Webster, Dept. of Biomedical Engineering, Purdue University; Lisa Xu, Dept. of Mechanical and Biomedical Engineering, Purdue University; Steven Frankel, Dept. of Mechanical Engineering, Purdue University; Steven Wereley, Dept. of Mechanical Engineering, Purdue University; Michael Plesniak, Dept. of Mechanical Engineering, Purdue University.
  - e. Percentage of Appointment on the Project: NA
  - f. Total Money Awarded: \$ 83,000
3.
  - a. Source of Support: Indiana Higher Education Telecommunication System
  - b. Proposal Title: "Development of Web Based Asynchronous Learning Modules in Biomedical Engineering."
  - c. Role in the Project: Co-Principal Investigator
  - d. Principal Investigators: Thomas J. Webster, Dept. of Biomedical Engineering
  - e. Percentage of Appointment on the Project: 25% (summer)
  - f. Total Money Awarded: \$ 29,000
- 4.

- a. Source of Support: Indiana Higher Education Telecommunication System; Proposal Number: 1220030396; Proposal Title: "Development of Asynchronous Web Based Learning Modules in Bioinstrumentation and Nanotechnology."
  - b. Role in the Project: co-Principal Investigator
  - c. Other Co-PIs. Thomas J. Webster and Ann E. Rundell
  - d. Percentage of Appointment on the Project: ½ summer month
  - e. Dates of the Entire Project Period: 7/2003 – 8/2004
  - f. Total Money Awarded: \$30,000
- 5.
- a. Source of Support: National Science Foundation; Proposal Number: EEC0097696; Proposal Title: "Increasing Female/Minority Enrollment and Awareness in Biomedical Engineering Through Research Experiences for Undergraduates at Purdue University."
  - b. Role in the Project: Principal Investigator.
  - c. Co-PI: Thomas J. Webster
  - d. Percentage of Appointment on the Project: 1.8% (academic year); 1 summer month
  - e. Dates of the Entire Project Period: 6/2001 – 5/2004
  - f. Total Money Awarded: \$ 318,632
- 6.
- a. Source of Support: National Science Foundation; Proposal Number: 0353901; Proposal Title: "Increasing Female/Minority Enrollment and Awareness in Biomedical Engineering Through Research Experiences for Undergraduates at Purdue University."
  - b. Role in the Project: Co-Principal Investigator.
  - c. PI: Thomas J. Webster
  - d. Percentage of Appointment on the Project: 5% (academic year); 1 summer month
  - e. Dates of the Entire Project Period: 6/2004-5/2007
  - f. Total Money Awarded: \$ 430,331
- 7.
- a. Source of Support: Purdue Research Foundation; Proposal Number: B905S; Proposal Title: "Understanding the Interactions Between Vascular Endothelial and Smooth Muscle Cells in Response to Turbulent Flow Conditions."
  - b. Role in the Project: Principal Investigator.
  - c. Co-PI: Not Applicable.
  - d. Percentage of Appointment on the Project: NA (graduate student support only)
  - e. Dates of the Entire Project Period: 8/2003 – 7/2005
  - f. Total Money Awarded: \$26,526
- 8.
- a. Source of Support: Showalter Foundation; Proposal Number: 0FL70; Proposal Title: "The Use of Nano-Dimensional Bladder Tissue Replacement Constructs for the Treatment of Superficial Bladder Cancers."

- b. Role in the Project: Principal Investigator.
- c. Co-PI: Thomas J. Webster
- d. Percentage of Appointment on the Project: ½ summer month
- e. Dates of the Entire Project Period: 7/2003 – 7/2005
- f. Total Money Awarded: \$75,000

## **II. Current Support**

- 1.
  - a. Source of Support: Kidney Urology Foundation of America Research Fellowship; Proposal Title: “Nano-structured Polymeric Scaffolds for use in Bladder Tissue Replacement Therapies.”
  - b. Role in the Project: Principal Investigator.
  - c. Co-PI/Sponsor: Martin Kaefer (Indiana University School of Medicine)
  - d. Percentage of Appointment on the Project: ¾ summer month
  - e. Dates of the Entire Project Period: 7/2006 – 6/2007
  - f. Total Money Awarded: \$20,000
  
- 2.
  - a. Source of Support: The Coulter Foundation; Proposal Title: “In Vivo Efficacy of Nano-structured Bladder Tissue Replacement Constructs.”
  - b. Role in the Project: Principal Investigator.
  - c. Co-PI: Martin Kaefer (Indiana University School of Medicine)
  - d. Percentage of Appointment on the Project: 18% academic year and 1 summer month
  - e. Dates of the Entire Project Period: 1/2006 – 12/2007
  - f. Total Money Awarded: \$240,000

## **III. Pending Support**

- 1.
  - a. Source of Support: National Science Foundation GK-12; Proposal Title: “New, GK-12 Physical Processes in the Environment.”
  - b. Role in the Project: Co-Principal Investigator.
  - c. PI: Timothy Herbert (Geology)
  - d. Percentage of Appointment on the Project: 6 academic year months
  
- 2.
  - a. Source of Support: Howard Hughes Medical Institute; Proposal Title: Pre-College Science Education Initiative
  - b. Role in the Project: Co-Principal Investigator.
  - c. PI: Diane Hoffman-Kim (Biomedical Engineering)
  - d. Percentage of Appointment on the Project: 3 academic year months
  
- 3.
  - a. Source of Support: National Science Foundation REU; Proposal Title: “REU Site: Interdisciplinary Materials Research at Brown University.”



- b. Role in the Project: Co-Principal Investigator.
  - c. PI: Brian Sheldon
  - d. Percentage of Appointment on the Project:  $\frac{3}{4}$  summer month
- 4.
- a. Source of Support: Department of Education; Proposal Title: Brown University, GAANN Interdisciplinary Proposal
  - b. Role in the Project: Co-Principal Investigator.
  - c. PI: Gregory Crawford
  - d. Percentage of Appointment on the Project: NA

## V. TEACHING

### *Courses Developed and Taught*

1. **Physics/Technology**; Summer Enrichment Program. Office of Minority Student Affairs, Rensselaer Polytechnic Institute, Troy, NY. *Number of Students: 15*
2. **Molecular Biology**; Summer Enrichment Program. Office of Minority Student Affairs, Rensselaer Polytechnic Institute, Troy, NY. *Number of Students: 6*
3. **Introduction to Engineering Analysis – Laptop/Studio Format**; Aided in the development, and also the instruction, of the pilot studio/laptop program. Core Engineering, Rensselaer Polytechnic Institute, Troy, NY. *Number of Students: 54*
4. **Cellular Biomechanics; Principles of Biomedical Engineering I (BME 601) Module II**; Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN. *Number of Students: 19 (in 2000), 22 (in 2001), 21 (in 2002), and 22 (in 2003).*
  - a. **Course Evaluation:** 3.3 (in 2000), 4.1 (in 2001), 3.8 (in 2002), and 3.9 (in 2003) on scale of 1 to 5 (very poor to excellent)
  - b. **Instructor Evaluation:** 4.4 (in 2000), 4.4 (in 2001), 4.0 (in 2002), and 4.5 (in 2003) on scale of 1 to 5 (very poor to excellent)
5. **Biomechanics (BME 5950)**; Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN. *Number of Students: 12 (in 2001), 21 (in 2002), 14 (in 2003), and 14 (in 2004).*
  - a. **Course Evaluation:** 4.9 (in 2001), 4.7 (in 2002), 4.2 (in 2003), and 4.0 (in 2004) on scale of 1 to 5 (very poor to excellent)
  - a. **Instructor Evaluation:** 4.9 (in 2001), 4.7 (in 2002), 4.3 (in 2003), and 4.2 (in 2004) on scale of 1 to 5 (very poor to excellent)

6. **Biomedical Engineering Graduate Seminar (BME 595S);** Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN. *Number of Students:* 19 (in 2004).
7. **Biomechanics of Soft and Hard Tissues (BME 204);** Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN. *Number of Students:* 38 (in 2005).
8. **BME Laboratory II (BME 206);** Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN. *Number of Students:* 38 (in 2005).
9. **EN2: Transforming Society- Technology and Choices for the Future;** Division of Engineering, Brown University, Providence, RI. *Number of Students:* 42 (in 2006) and 94 (currently enrolled for spring 2007).
10. **EN3: Introduction to Engineering Advanced Section;** Division of Engineering, Brown University, Providence, RI. *Number of Students:* 46 (in 2006).

### *Special and Innovative Educational Activities*

1. **Programs for Increasing Women and Minority Interest in Biomedical Engineering.** Organized ‘hands-on’ engineering demonstrations for elementary school aged females. Brown University, Providence, RI. (1991-1995)
2. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Instructed 10-week long courses (*Physics/Technology* and *Molecular Biology*) aimed at increasing minority interest in science and technology. Summer Enrichment Program, Office of Minority Student Affairs, Rensselaer Polytechnic Institute, Troy, NY. (1996-1998)
3. **Curriculum Design.** Designed a 10-week long laboratory base curriculum for students in grades 7–9 in the area of *Molecular Biology*. Summer Enrichment Program, Office of Minority Student Affairs, Rensselaer Polytechnic Institute, Troy, NY. (1998)
4. **Programs for Increasing Women and Minority Interest in Biomedical Engineering.** Conducted lab tours and demonstrations for junior high- and high school-aged females. Rensselaer Polytechnic Institute, Troy, NY. (1995-2000)
5. **Novel Methods of Engineering Education.** Aided in the development and instruction of the pilot studio/laptop program (for *Introduction to Engineering Analysis – Laptop/Studio Format*). This course utilized the computer as a tool in group problem solving, peer learning/teaching, and the solution of “real-life” engineering statics problems. Rensselaer Polytechnic Institute, Troy, NY. (1996-2000)
6. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Participation in the ‘Exploring Interests in Technology and Engineering (EXITE)’ Program. Women in Engineering Program, Purdue University. (2000)

7. **Whitaker Education Summit.** Chosen to represent Purdue University as a participant in the Biomedical Engineering Education Summit sponsored by the Whitaker Foundation. (2000)
8. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Participation in events (such as career day luncheons) for the Women in Engineering Program, Purdue University. (2000-Present)
9. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Participation in the LEAP Program, sponsored through the Women in Engineering Program. Purdue University. (2001)
10. **Programs for Increasing Interest in Biomedical Engineering.** Accompanied undergraduate Purdue Engineering students who attended the Biomedical Engineering Society Annual Meeting. Each of these students received a travel award (which I helped to establish) to attend the meeting through the Purdue BME Club. Purdue University. (2001, 2002, and 2003)
11. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Conducted a summer REU program through funding from the National Science Foundation geared at increasing the interest and retention of females and underrepresented minorities in biomedical engineering. In our third year, we have successfully recruited 8/10 females and/or minorities to this program, Purdue University. (2001-Present)
12. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Participation in the Mentor/Mentee dinner, which highlighted the field of Biomedical Engineering and was sponsored through the Women in Engineering Program. Purdue University. (2002-Present)
13. **Novel Methods of Engineering Education.** Received two grants from the Indiana Higher Education Committee to establish a series of web pages and interactive modules aimed at increasing student learning and interest in our teleconferenced introductory level course, Principles of Biomedical Engineering I and II. Purdue University. (2002-Present)
14. **Programs for Increasing Interest in Science and Engineering.** Coordinated a Biomedical Engineering Outreach program with help from students in the Purdue BME club. Through trips to area schools, this BME outreach aims to inform and interest elementary to high school aged students in the community to the exciting field of biomedical engineering. Purdue University. (2002)
15. **Whitaker Leadership Summit.** Participated in the Biomedical Engineering Leadership Summit sponsored by the Whitaker Foundation. (2003)

16. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Participation in the 'EDGE' and 'LEAP' Programs. Women in Engineering Program, Purdue University. (2004)
17. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Coordinated several outreach programs with help from students in NSBE and SWE. These events aimed to inform and interest elementary to high school aged students in the community to the exciting field of engineering while also providing them with Brown student mentors. Brown University. (2006-Present)
18. **Programs for Increasing Student Interest in Engineering.** Organized and presented 'hands-on' engineering demonstrations for middle school aged students. Jewish Community Day School, Providence, RI. (2006)
19. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Participation in events (including career and research fairs, meet the faculty, etc) for the Women in Science and Engineering and New Scientist Programs, Brown University. (2006-Present)
20. **Programs for Increasing Women and Minority Interest in Science and Engineering.** Aided in the coordination of a summer REU program (with participating students from the Leadership Alliance) through funding from the National Science Foundation geared at increasing the interest and retention of students in engineering. Brown University. (2006-Present)
21. **Programs for Increasing Student Interest in Translational Engineering.** Conducted a summer undergraduate translational research (UTR) program through gift donations from participating companies. In this program, students conducted cutting edge and translational research projects under supervision of both an engineering faculty member at Brown and a company representative. Other special events included an ethics series, company tours, panel discussions, etc. Brown University. (2006-Present)

***M.S. and Ph.D. Thesis Students Currently Being Supervised***

**Major or Co-major Professor:** Alissa Russ (PhD, Dept. of Biomedical Engineering, Purdue University), Douglas Hsu (MS, Division of Engineering, Brown University).

***M.S. and Ph.D. Students – Completed to Date***

**Major or Co-major Professor:** Saba Choudary (Dept. of Biomedical Engineering, Purdue University), Christy Harm (MS, Dept. of Biomedical Engineering, Purdue University), Julie Martin (MS, Dept. of Biomedical Engineering, Purdue University), Jennifer McCann (MS and PhD, Dept. of Biomedical Engineering, Purdue University), Derick Miller (MS and PhD, Dept. of Biomedical Engineering, Purdue University), Megan Pattison (MS, Dept. of Biomedical Engineering, Purdue University), Rachel Price

(PhD, Dept. of Biomedical Engineering, Purdue University), Anil Thapa (MS, Dept. of Biomedical Engineering, Purdue University).

**Thesis Committee Member:** Alicia Altizer (PhD, Department of Basic Medical Sciences, Purdue University), Sampath Aendem (MS, Dept. of Mechanical Engineering, Purdue University), Baoguo Chen (MS, Dept. of Biomedical Engineering, Purdue University), Beth Galle (MS, Dept of Mechanical Engineering, Purdue University), Matthew Gortner (MS, Dept. of Biomedical Engineering, Purdue University), Yunlong Liu (PhD, Dept. of Biomedical Engineering, Purdue University), Elizabeth Massa (MS, Dept. of Biomedical Engineering, Purdue University), Grace Park (PhD, Dept. of Biomedical Engineering, Purdue University), Sean Peterson (PhD, Dept. of Mechanical Engineering, Purdue University), Sonu Varghese (PhD, Dept. of Mechanical Engineering, Purdue University), Yanan Zheng (PhD, Dept. of Biomedical Engineering, Purdue University).

### ***Supervision of Undergraduate Research Projects***

Ricky Brathwaite (Dept. of Biological Engineering, University of Maryland, College Park), Lauren Brown (School of Engineering, Purdue University), Jennifer E. Davidson (Youngstown State University), Sarah A. Frommer (Dept. of Biomedical Engineering, Rensselaer Polytechnic Institute), Bradley Goodrich (Dept. of Mechanical Engineering, Purdue University), Katie Jansen (Dept. of Biomedical Engineering, Saint Louis University), Steven Mezsick (Dept. of Agricultural and Biological Engineering, Purdue University), Pedro Resto (Dept. of Mechanical Engineering, University of Puerto Rico Mayaguez), Ivan Samuels (Engineering, Harvey Mudd College), Cyn Yi Seah (Dept. of Chemical Engineering, Purdue University), Lester Smith (Dept of Mechanical Engineering, Louisiana Tech University), Susan Wurster (Oral Roberts University), Rylie Vance (Dept. of Agricultural and Biological Engineering, Purdue University).

## **VI. SERVICE**

### ***Conference General or Program Chair Positions***

1. Session Co-Chair, *Cellular Engineering*, Biomedical Engineering Society 2000 Annual Meeting, Seattle, WA.
2. Session Organizer and Co-Chair, *Cellular Mechanics: Cytoskeleton I and II*, Biomedical Engineering Society 2003 Annual Meeting, Nashville, TN.
3. Session Co-Chair, Society for Biomaterials 2003 Annual Meeting, Reno, NV.
4. Program Committee, 30<sup>th</sup> Annual Northeast Bioengineering Conference, Springfield, MA, 2004.

5. Program Committee, 31<sup>st</sup> Annual Northeast Bioengineering Conference, Hoboken, NJ, 2005.
6. Program Committee, THERMEC' 2006, International Conference on Processing and Manufacturing of Advanced Materials, Vancouver, Canada, 2006.
7. *American Society for Engineering Education*, Abstract Reviewer.
8. *Society for Biomaterials*, Abstract Reviewer.

#### ***Review Panels / Study Sections***

1. National Science Foundation, Research Experiences for Undergraduates Panel, 2001.
2. Public Schools Foundation of Tippecanoe County, Seeds for Excellence Grant Panel, 2001-Present.
3. Kappa Delta Pi, Achieving Chapter Excellence Award Judge, 2001-Present.
4. Site Visit Team, NSF Engineering Research Center for Computer Integrated Surgical Systems Technology (CISST) at John Hopkins University, Baltimore, MD, 2005.
5. National Science Foundation, Bioengineering and Bioinformatics Summer Institutes Review Panel, 2006.

#### ***Editorships/Referee***

1. *The Journal of Biomechanical Engineering*, Journal Referee, 2000 – Present.
2. *Biomaterials*, Journal Referee, 2000 – Present.
3. *Urology*, Journal Referee, 2001-Present.
4. *American Society for Engineering Education*, Journal Referee, 2002-Present.
5. *Journal of Biomaterials Science: Polymer Edition*, Journal Referee, 2002-Present.
6. *Journal of Biomedical Materials Research Parts A and B: Applied Biomaterials*, Journal Referee, 2003-Present.
7. *Annals of Biomedical Engineering*, Journal Referee, 2005-Present.
8. *ACTA Biomaterialia*, Journal Referee, 2005-Present.
9. *Journal of Biomedical Materials Research Part B: Applied Biomaterials*. Member of the editorial board effective May 1, 2005.

### ***Participation in Programs for Increasing Women and Minority Interest in Biomedical Engineering***

1. Conducted lab tours and demonstrations for visiting high school-aged females and minorities for the Women in Engineering and Minority in Engineering Programs, Purdue University.
2. Participation in events (such as career day luncheons) for the Women in Engineering Program, Purdue University.
3. Participation in the LEAP, EDGE and EXCITE Programs. Women in Engineering Program, Purdue University.
4. Presented a seminar (on Biomedical Engineering) and attended an informal luncheon/information session with freshman women engineers in *ENG194: Women in Engineering Seminar*, Purdue University.
5. Participation in the Mentor/Mentee dinners, which highlight the field of Biomedical Engineering and are sponsored by the Women in Engineering Program, Purdue University.
6. Participation in the Girl Scout Day, sponsored by the Society for Women in Engineering, Purdue University.
7. Conducted a summer REU program at Purdue University through funding from the National Science Foundation geared at increasing the interest and retention of females and underrepresented minorities in biomedical engineering.
8. Coordinated many of and participated in all of the Society for Women Engineers (SWE) events in the fall of 2006. This active group supports and encourages female students in engineering.
9. Coordinated and participated in all of the National Society of Black Engineers (NSBE) events in the fall of 2006 as co-advisor for the student group. This active group supports and encourages students of color in engineering.
10. Coordinated and participated in a half-day long event (*Gumdrops and Toothpicks: Candy Bridge Design and Competition*) with students in RISE (Rhode Islanders Sponsoring Education), aimed at providing children of incarcerated parents with the opportunity to discover the basics of structural design while working alongside Brown student mentors.
11. Aided in the coordination of *Empowering Your Future Day*, an event aimed at providing females (grades 8-10) in the Providence area with exposure to science and engineering. This event also provided parents with pertinent information regarding student admission and success in college.

12. Currently aiding in the coordination of Engineering Week at Brown University (*Engineers Changing the World*), which will include a photo competition, an outreach event, and will highlight noteworthy guest speakers.
13. Coordinated a special seminar series highlighting engineering graduate school and summer research opportunities for all undergraduates in the Division of Engineering at Brown University.
14. Coordinated a special event titled, "Meet the Engineering Faculty," where engineering students had the chance to interact with faculty informally and outside of the classroom.
15. Coordinated "Coffee, Tea, and Cookie Breaks" with engineering faculty, where engineering students had the chance to interact with faculty informally and outside of the classroom.
16. Participated in a new event within engineering aimed at providing support for and recognition of engineering student athletes.

### ***Committee Activities***

1. **Graduate Committee.** Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, 2000-2003.
2. **Ph.D. Qualifying Examination Committee.** Chair, Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN. Duties include: preparing the qualifying examination documentation (*Instructions, Rules and Procedures, Topics and References*); reviewing, editing, and compiling questions for the qualifying examination; proctoring and grading the qualifying examination, 2001-2003.
3. **IGERT Executive Committee.** Weldon School of Biomedical Engineering, Purdue University, West Lafayette, IN, 2002-2005.
4. **Biomedical Engineering Undergraduate Curriculum Committee Member.** Purdue University, West Lafayette, IN, 2003-2004.
5. **Tissue Engineered Systems Initiative Committee Member.** Purdue University, West Lafayette, IN, 2003-Present.
6. **Career Guidance Committee.** Schools of Engineering, Purdue University, West Lafayette, IN, 2003-Present.
7. **Teaching Release Following Childbirth, Committee Member.** Schools of Engineering, Purdue University, West Lafayette, IN, 2003-Present.



8. **Society for Women Engineers Merit Awards Committee Member.** Women in Engineering Program, Purdue University, West Lafayette, IN, 2003-Present.
9. **Biomedical Engineering Graduate Admissions Committee Member.** Purdue University, West Lafayette, IN, 2003-Present.
10. **RITER Committee.** Department of Education, Brown University, 2006-Present.
11. **Program in Liberal Medical Education (PLME) Committee.** Brown University, 2006-Present.

*Membership and Service in Professional Societies*

- |              |  |
|--------------|--|
| 1991-1995    | <b>Society of Women Engineers.</b> Brown University, Providence, RI.   |
| 1995-2000    | <b>IEEE/Engineers in Medicine and Biology Society.</b> Student Chapter Member, Rensselaer Polytechnic Institute, Troy, NY.       |
| 1995-1996    | <i>President, Rensselaer Student Chapter</i>   |
| 1995-2000    | <b>Biomedical Engineering Society.</b> Student Chapter Member, Rensselaer Polytechnic Institute, Troy, NY.                       |
| 1998-Present | <b>Biomedical Engineering Society.</b> National Chapter Member.  |
| 2001-Present | <b>American Society for Engineering Education.</b> National Chapter Member.  |
| 2001-Present | <b>Society for Biomaterials.</b> National Chapter Member.  |
| 2001-Present | <b>Kappa Delta Pi,</b> National Chapter Member.  |
| 2003-Present | <b>American Heart Association and the Council on Arteriosclerosis, Thrombosis and Vascular Biology,</b> National Chapter Member. |

*Faculty Advisor for Student Groups*

1. Co-advisor for the Biomedical Engineering Club, Purdue University, West Lafayette, IN, 2000-2004.
2. Co-advisor for the National Society of Black Engineers, Brown University, Providence, RI, 2006-Present.
3. Served as the university director for the Brown iGEM (Genetically Engineered Machines) team, who participated in their first jamboree at MIT in November.

*Community Service and Other Activities*

- 1991-1994            **Women's Varsity Swim Team Member.**  
Brown University, Providence, RI.
- 1993-1994            **Student Peer Counselor.** *Brown University Swim Team,*  
Brown University, Providence, RI.
- 1994-1995            **Community Service.** Brown University, Providence, RI.
- 1995                    **Brown Annual Fund-Class Gift Fund Campaign.**  
Brown University, Providence, RI.
- Summer 1995        **Assistant Swim Coach.** *Diversified Aquatics,* Newton, MA.
- 2000                    **Community Service.** Rensselaer Polytechnic Institute, Troy, NY.
- 2001-2005            **Faculty Fellows,** Owen Hall, Purdue University, West Lafayette, IN.

Altered lubricin structure and change of lubricin concentrations which disrupts cartilage boundary lubrication is found in SF of OA patients 29 . As such, lubricin degradation may play a role in OA associated inflammation. A limited number of proteases have been identified to degrade lubricin, among the more studied are lysosomal cysteine proteases cathepsin B, S, L and neutrophil elastase 26,30,31 .  
Identification of the 25 kDa glycosylated lubricin fragment from synovial fluid (SF) of OA patients. (a) Detection of an endogenous lubricin degradation fragment at 25 kDa in SF from OA patients. SF samples (2  $\mu$ l) were analysed with SDS-PAGE, followed by western blot using mAb 9G3. Purified human umbilical hyaluronate and a commercial preparation of rooster comb hyaluronate (Healon) intended for intra-articular viscosupplementation did not demonstrate the same degree of boundary-lubricating ability as bovine synovial fluid or its purified lubricating mucin, lubricin ( $p < 0.01$ ). Boundary lubrication was measured in vitro in an arthrotripsometer oscillating natural latex against polished glass under a load of 0.35 MPa with an entraining velocity of 0.37 mm/s. The two hyaluronate solutions possessed the same hyaluronate concentration as synovial fluid, but Healon was 4.5 ti  
To study the relationship between the boundary-lubricating ability of synovial fluid (SF) and articular cartilage damage in a rabbit knee injury model, to correlate collagen markers of such damage with SF boundary-lubricating ability and elastase activity, and to examine the lubricating ability of SF, together with collagen markers of articular cartilage damage, under the inflammatory conditions of knee joint synovitis (KJS). and rheumatoid arthritis (RA). SF was aspirated weekly from the affected knee joints of 10 adult rabbits following transection of the anterior and posterior cruciate liga...  
Comparison of the boundary-lubricating ability of bovine synovial fluid, lubricin, and Healon.  
Article. Jun 1998.