

Curriculum Vitae

DOROTHY CLAIRE GLOECKNER
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PROFILE

Biomedical research engineer with extensive experimentation and analysis of soft tissue and tissue-engineered scaffolds. Exceptionally organized, self-motivated and detail-oriented. Supervisory and project management experience in both research and client-driven consulting environments. Keen ability to identify and implement innovative means to improve procedures. Readily accepts increasing levels of responsibility coupled with a drive to succeed. Published in peer-reviewed journals. Excellent technical and computer proficiencies. Willing to relocate and travel. U.S. citizen.

SELECTED PROFESSIONAL ACHIEVEMENTS

EXPONENT, INC.

- Analysis of the biomechanics of traumatic injury, including extensive review of medical records and application of human tolerances to real-life accidents
- Project management, including all aspects of litigation projects: costing, analysis, report, trial prep
- Extensive oral/written communication to external & internal clients, including experts & attorneys
- Responsible for planning, administering, and conducting analyses for dozens of active projects

RJ LEE GROUP, INC.

- Played instrumental role in implementation of new database system that provided easier summation of data and increased access for all personnel to key research information
- Designed, instituted and maintained new labeling system to track samples that enabled scientists to accurately organize resultant data

UNIVERSITY OF PITTSBURGH

- Focus on tissue biomechanics and tissue engineering applications
- Extensive hands-on development and maintenance of mechanical testing devices
- Characterization of mechanics and structure of urinary bladder wall (Ph.D.)
- Structural and biaxial analysis of small intestinal submucosa (M.S.)
- Flexural properties of fatigued porcine bioprosthetic heart valve (M.S.)

EDUCATION

Doctor of Philosophy in Bioengineering, University of Pittsburgh, Pittsburgh, PA April 2003
Tissue Biomechanics of the Urinary Bladder Wall
Advisor: Michael S. Sacks, Ph.D.

Master of Science in Biomedical Engineering, University of Miami, Coral Gables, FL May 1998
Mechanical and Structural Analyses of an Acellular Collagenous Biomaterial: Intestinal Submucosa
Advisor: Michael S. Sacks, Ph.D.

Bachelor of Science in Biomedical Engineering, University of Miami, Coral Gables, FL December 1996

PROFESSIONAL EXPERIENCE

EXPONENT, INC., Philadelphia, PA

June 2004- Present

SENIOR ENGINEER

- Support and leadership for litigation activities
- Management in all aspects of biomechanical projects related to human injury analyses, including budgeting, resource requisition, personnel assignments, and directing analyses
- Communication of results via written reports and oral presentations
- Direct communication with clients regarding technical analyses and marketing of firm capabilities
- Interacting with testifying experts, clients, attorneys, junior staff, technicians
- Plan and direct analyses by staff in other firm departments
- Managed dozens of active projects simultaneously
- Technical matters including injury in medical device consulting, automobile accidents, slip and falls, and blunt trauma
- Conduct and support research efforts in human injury tolerance and kinematics (Publications 1, 2, 3)

RJ LEE GROUP, INC., Monroeville, PA

March 2003-June 2004

SENIOR SCIENTIST

- Coordinate research and administration efforts between office, lab and field personnel during pre-litigation data-collecting activities in extensive litigation project
- Update project leaders on progress of analyses, reports, and requests from field
- Integrate/supervise summarization of data results and data analysis for presentation
- Comply with time-sensitive requests for unique analyses and support materials
- Perform continuous independent analysis and brainstorming to support client's case

RESEARCH EXPERIENCE

UNIVERSITY OF PITTSBURGH, Pittsburgh, PA

1998-2003

DOCTORAL GRADUATE RESEARCH ASSISTANT**Characterization of mechanics and structure of urinary bladder wall (Publications 4-6)**

- Executed mechanical and structural analysis of rat bladder wall before and after spinal cord injury
- Developed quantitative 3-D histology tool utilizing MatLAB image processing and analysis
- Examined material characterization change using response function analysis

UNIVERSITY OF MIAMI, Coral Gables, FL

1996-1998

MASTERS GRADUATE RESEARCH ASSISTANT**Structural and biaxial analysis of small intestinal submucosa (Publications 7, 8)**

- Studied native and chemically treated porcine small intestinal submucosa (SIS)
- Examined fiber kinematics of native SIS with a custom-designed structure-strength device
- Developed and utilized phenomenological and structure-based constitutive modeling
- Used mechanical modeling to determine appropriate configurations for specific tissue repair

Flexural properties of fatigued porcine bioprosthetic heart valve (Publications 9, 10)

- Analyzed cusps of bioprostheses at time points between zero and 200 million cycles (~6 yrs)
- Completed design and development of flexural device for use with small tissue samples
- Designed flexural experiments on porcine heart valve cusps to demonstrate stiffening
- Devised prototype device for transmural strain measurement

SKILLS

Experimental and Data Analysis

- Experience with **pre-clinical models** including tissue and animal studies
- **Mechanical analysis** (quasi-static and viscoelastic): biaxial (including active contraction), uniaxial, and flexural of aorta, heart valve, pericardium, bladder, skin, small intestinal submucosa
- **Structural analysis**: Light scattering, polarized light microscopy, image processing, SEM experience
- **Modeling**: Constitutive phenomenological and structure-based models
- **Surgery**: Experience with sterile protocols, participated in animal surgeries

Device Development

- **Instrumentation**: Designed hardware setup and wrote C++ programs to run the extensometer portion of the Instron, Inc. Planar Biaxial Device
- Experience installing and **configuring computer hardware**, including those for use in experimentation: data acquisition boards, video capture boards, counter-timer boards
- **System administrator** of laboratory's 13 computers (Windows NT, 2000, 3.11, and DOS) including networking, software, and hardware installation and troubleshooting

Computer Software Programs

- **PC**, Windows platforms, Microsoft Office, SYSTAT, SigmaPlot, SigmaStat, SigmaScan, AutoCAD, MatLAB, MathCAD, SAS, Statistica, html coding
- **Experience** working with Unix-based systems, Mac OS, some applications
- **Programming** in C++, C, and Pascal: data manipulation and calculations and external device communication for data acquisition, image acquisition, and motor control

PEER-REVIEWED PUBLICATIONS

1. **DC Gloeckner**, R Bove, J Croteau, CF Corrigan, TLA Moore. "Timing of Head-To-Vehicle Perimeter Contacts in Rollovers," Paper 2007-01-0370 presented at the 2007 SAE World Congress, April 2007.
2. **DC Gloeckner**, TLA Moore, D Steffey, H Le-Resnick, C Bare, CF Corrigan. "Implications of Vehicle Roll Direction on Occupant Ejection and Injury Risk" Presented at the Association for the Advancement of Automotive Medicine 50th Annual Scientific Conference, 2006 in Chicago, Illinois.
3. V Vijayakumar, I Scher, **DC Gloeckner**, J Pierce, R Bove, D Young, and R Cargill. "Head Kinematics and Upper Neck Loading During Simulated Low-Speed Rear-End Collisions: A Comparison with Vigorous Activities of Daily Living," Paper 2006-01-0247 presented at the 2006 SAE World Congress, April 2006.
4. J Nagatomi, **DC Gloeckner**, MB Chancellor, WC de Groat, MS Sacks. "Changes in the biaxial viscoelastic response of the urinary bladder following spinal cord injury." *Annals of Biomedical Engineering*, Vol. 32, No. 10, pp. 1409–1419, 2004.
5. S Lu, MS Sacks, S Chung, **DC Gloeckner**, R Pruchnic, J Huard, WC de Groat, MB Chancellor. "Biaxial mechanical properties of muscle-derived stem cell seeded small intestinal submucosa for bladder wall reconstitution." *Biomaterials*, Vol. 26, No. 4, pp. 443–449, 2005.
6. **DC Gloeckner**, MS Sacks, MO Fraser, GS Somogyi, WC deGroat, MB Chancellor. "Passive biaxial mechanical properties of the rat urinary bladder wall after spinal cord injury." *Journal of Urology*

2002 167(5) p2247-2252.

7. **DC Gloeckner**, MS Sacks, KL Billiar, N Bachrach. "Mechanical evaluation and design of a multilayered collagenous repair biomaterial." *Journal of Biomedical Materials Research* 2000; 52(2):365-373.
8. MS Sacks, **DC Gloeckner**, "Quantification of the fiber architecture and biaxial mechanical behavior in porcine intestinal submucosa." *Journal of Biomedical Materials Research* 1999; 46: p1-10.
9. N Vyavahare, M Ogle, FJ Schoen, R Zand, **DC Gloeckner**, MS Sacks, RJ Levy. "Mechanisms of bioprosthetic heart valve failure: Fatigue causes collagen denaturation and glycosaminoglycan loss." *Journal of Biomedical Materials Research* 1999; 46: p44-50.
10. **DC Gloeckner**, KL Billiar, MS Sacks. "Effects of mechanical fatigue on the bending behavior of the porcine bioprosthetic heart valve." *ASAIO Journal* 1999; 45: p59-63.

Conference Presentations

16+ presentations and posters at major national and international conferences such as Biomedical Engineering Society (BMES), American Society of Mechanical Engineers (ASME), American Urological Association (AUA), American Society of Artificial Internal Organs (ASAIO), World Congress of Biomechanics, and others. Most of these were presented by myself, in either poster or oral podium format. Complete list available upon request.

ACHIEVEMENTS

- Professional Memberships: Society of Automotive Engineering, Association for the Advancement of Automotive Medicine
- 2nd Place in the Ph.D.-level Student Paper Competition at 2002 International Mechanical Engineering Congress and Exposition (IMECE), June 2002
- Fung Biomechanics Graduate Student Award, Bioengineering, University of Pittsburgh, May 2002
- NIH Training Grant: Genes and Proteins, 1998–2002
- President of Engineering Graduate Student Organization, University of Pittsburgh
- Secretary of University of Miami chapter of Society of Women Engineers