

Curriculum Vitae

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**EDUCATION:**

Ph.D.	<i>Biomedical Engineering</i> Duke University Durham, North Carolina	1977-1982
	<u>Dissertation topic:</u> Biomechanical Analysis of the Forces and Moments at the Knee and Hip during Level Walking.	
B.S.	<i>Biological Engineering</i> Mississippi State University Mississippi State, Mississippi	1973-1977

**EMPLOYMENT HISTORY:**

<i>Associate Provost and Associate Vice President for Academic Affairs</i> Mississippi State University Mississippi State, MS	Jan 2004 - present
<i>Coordinator</i> Biomedical Engineering Graduate Program College of Engineering Mississippi State University	Feb 2001- Dec 2003
<i>Department Head</i> Agricultural and Biological Engineering Mississippi State University	July 1996- Dec 2003

<i>Interim Department Head</i> Agricultural and Biological Engineering Mississippi State University	July 1995- June 1996
<i>Professor of Biological Engineering</i> Mississippi State University	1993-present
<i>Associate Professor of Biological Engineering</i> Mississippi State University	1988-1993
<i>Adjunct Appointment in Veterinary Medicine</i> College of Veterinary Medicine Mississippi State University	1988-present
<i>Clinical Assistant Professor of Orthopaedic Surgery (Research)</i> University of Mississippi Medical Center Jackson, MS	1989-present
<i>Assistant Professor of Orthopaedic Surgery</i> University of North Carolina School of Medicine Chapel Hill, North Carolina	1983-1988
<i>Member of the Graduate Faculty</i> Biomedical Engineering Curriculum University of North Carolina Chapel Hill, North Carolina	1984-1988
<i>Visiting Assistant Professor of Mechanical Engineering</i> North Carolina State University Raleigh, North Carolina	1982-1983
<i>National Institutes of Health Research Trainee</i> Department of Biomedical Engineering Duke University Durham, North Carolina	1979-1982

#### **AWARDS AND HONORS:**

1976	Tau Beta Pi, Engineering Honor Society
1976	Phi Kappa Phi, Scholastic Honor Society
1976	ODK, Leadership Honor Society
1976	Engineering Hall of Fame, Miss. State Univ.
1977	Mississippi State University Hall of Fame
1980-1981	Duke University Graduate School Research Grant
1989-1990	Hearin-Hess Distinguished Professor of Engineering, Mississippi State University.
1992	Outstanding Young Men of America
1992-1993	Hearin-Hess Distinguished Professor of Engineering, MSU
1993-1994	Hearin-Hess Distinguished Professor of Engineering, MSU
1994-1995	Hearin-Hess Distinguished Professor of Engineering, MSU

## **PROFESSIONAL SOCIETIES:**

American Society of Agricultural Engineers, Member  
American Society of Biomechanics, Member  
American Society of Mechanical Engineers, Member  
Biomedical Engineering Society, Member  
Institute of Biological Engineering, Charter Member  
Orthopaedic Research Society, Member  
Sigma Xi, Member

## **PROFESSIONAL SERVICE:**

Member, Board of Editors: Physical Therapy in Health Care, 1984 to 1992.

Member, Membership Committee, Biomedical Engineering Society, 1989 to 1991.

Member, Board of Directors, Southern Biomedical Engineering Conference, 1989-2002.

Member, NASA Site Visit Team for Evaluation of Possible ESCORT in Gravitational Biology, Rice Univ., Aug. 16-18, 1990 (Coordinated by American Institute of Biological Sciences)

Consultant, Mississippi Department of Human Services' START (Success Through Assistive/Rehabilitative Technology) Program, 1990-1991.

Vice Chairman for Career Development, Mississippi Section of the American Society of Agricultural Engineers, 1991 to 1993.

Member, NSF Review Panel for the Biomedical Engineering and Research Aiding Persons with Disabilities Program (reviewed proposals in the area of biomechanics and rehabilitation), Washington D.C., May 12, 1994.

Reviewer, NSF Program: Biomedical Engineering and Research Aiding Persons with Disabilities. Review several grants per year. 1994 to 1998.

Member, ASAE Committee P-210 Academic Program Administrators, 1995 to 2003.

Secretary and Chair-Elect, ASAE Committee P-210 Academic Program Administrators, 2003 to 2004.

President-Elect, Institute of Biological Engineering, 2004. Will serve as national president in 2005.

## **PUBLICATIONS:**

### Refereed

1. Gilbert JA, Maxwell GM, George RT, McElhaney JH: Auditory feedback of knee angle for amputees. *Prosthetics and Orthotics Int'l* 1982; 6:103-104.
2. Wilson JF, Gilbert JA: Dynamic body forces on axillary crutch-walkers. *Amer J Phys Med* 1982; 61(2):85-92.
3. Gilbert JA, Maxwell GM, McElhaney JH, Clippinger FW: A system to measure the forces and moments at the knee and hip during level walking. *J Orthop Res* 1984; 2(3):281-288.
4. Gilbert JA, Phillips HO: The effects of steam sterilization on plaster casting material. *Clin Orthop* 1984; 190:241-244.
5. Gilbert JA, Eylers J, Banes AJ: A new instrument to assess joint stiffness in vitro. *J Biom Mat Res* 1985; 19:601-605.
6. Banes AJ, Gilbert JA, Taylor D, Monbureau O: A new vacuum-operated stress providing instrument that applies static or variable duration cyclic tension or compression to cells "in vitro" *J Cell Sci* 1985; 75:35-42.
7. Dahners LE, Jacobs RR, McKenzie EB, Gilbert JA: Biomechanical studies of an anterior pelvic external fixation frame intended for control and vertical shear fractures. *South Med J* 1986; 79(7):815-817.
8. Almekinders LC, Gilbert JA: Healing of experimental muscle strain and the effects of nonsteroidal anti-inflammatory medication. *Amer J Sports Med* 1986; 14(4):303-308.
9. Murphy DF, Greene WB, Gilbert JA, Dameron TB: Displaced olecranon fractures in adults: biomedical analysis of fixation methods. *Clin Orthop* 1987; 224:210-214.
10. Carter MD, Gilbert JA, Dahners LE: An evaluation of the bending stiffness of various tibial fixation methods. *Clin Orthop* 1987; 224:289-293.
11. Bynum DK, Gilbert JA: Avulsion of the flexor digitorum profundus: anatomic and biomechanical considerations. *J Hand Surg*, 1988; 13A:222-227.
12. Buckley MJ, Banes AJ, Levin LG, Sumpio BE, Sata M, Jordan R, Gilbert J, Link GW, Tran Son Tay R: Osteoblasts increase their rate of division and align in response to cyclic, mechanical tension "in vitro." *Bone and Mineral*, 1988; 4:225-236.
13. Gilbert, JA: Stress protection osteopenia due to rigid plating. *Clin Biomech* 1988; 3:179-186.
14. Dahners LE, Gilbert JA, Lester GE, Taft TN, Payne LZ: The effect of a nonsteroidal anti-inflammatory drug on the healing of ligaments. *Am J Sports Med*, 1988; 16:641-646.

15. Gilbert JA, Dahners LE, Atkinson MA: The effect of external fixation stiffness on early fracture healing. *J Orthop Res*, 1989; 7:389-397.
16. Gilbert JA, Banes AJ, Link GW, Jones GL: Surface strain on living cells in a mechanically active, in vitro environment. In: Dietrich, DE ed. ANSYS 1989 Conference Proceedings, Houston, PA, Swanson Analysis Systems 1989; 13.2-13.7
17. Hopp SG, Dahners LE, Gilbert JA: A study of the mechanical strength of long bone defects treated with various autograft substitutes: An experimental investigation in the rabbit. *J Orthop Res*, 1989; 7:579-584.
18. Jasmine MS, Dahners LE, Gilbert JA: Reduction of stress shielding beneath a bone plate by use of a polymeric underplate: an experimental study in dogs. *Clin Orthop*, 246:293-299, 1989.
19. Gilbert JA, Skrzynski MC, Lester GE: Technical note: cross-sectional moment of inertia of the distal radius from absorptiometric data. *J Biomech*, 1989; 22:751-754.
20. Cox LG, Dahners LE, Gilbert JA: Experimental spiral fractures: an "in vitro" biomechanical comparison of lag-screw fixation to plate fixation. *Clin Orthop*, 1989; 189-194.
21. Lachiewicz PF, Suh PB, Gilbert JA: In vitro initial fixation of cemented and porous coated acetabular total hip components: a biomechanical comparative study. *J Arthroplasty*, 1989; 4:201-205.
22. Wainer RA, Wright PH, Gilbert JA, Taylor DF: Comparison of biomechanical characteristics of Ender rods, compression screw, and Zickel nail in the fixation of stable subtrochanteric femur fractures. *J Orthop Trauma*, 1990; 4:58-63.
23. Gilbert JA, Banes AJ, Link GW, Jones GL: Video analysis of membrane strain - an application in cell stretching. *Experimental Techniques*, 1990; 14(5):43-45.
24. Banes AJ, Link GW, Gilbert JA, Tran Son Tay R, Monbureau O: Culturing cells in a mechanically active environment. *Am Biotechnol Lab*, 1990; 8(7):12-22.
25. Springer ER, Lachiewicz PF, Gilbert JA: Internal fixation of femoral neck fractures: a comparative biomechanical study of knowles pins and 6.5 mm cancellous screws. *Clin Orthop*, 1991; 267:85-92.
26. Gillis JP, Zardiackas LD, Gilbert JA, St. John KR: Comparison of the effect of power and hand tapping on the holding power of 4.5 and 5.5 mm cortical screws in fresh frozen equine bone. *Veterinary Surg*, 1992; 21(5):362-366.
27. Gilbert JA, Banes AJ, Weinhold PS, Link GW, Jones GL: Strain profiles for circular cell culture plates containing flexible surfaces employed to mechanically deform cells in vitro. *J Biomech*. 1994; 27(9):1169-1177.
28. Weinhold PS, Gilbert JA, Woodard JC: The significance of transient changes in trabecular bone remodeling activation. *Bone*, 1994; 15(5):577-584.

29. Wilson FC, Phillips HO, Gilbert JA: Plantar flexion injuries of the ankle: an experimental study. *Clin Orthop*, 1994; 306:97-102.
30. Johnson RB, Gilbert JA, Cooper RC, Dai X, Newton BI, Tracy RR, West WF, DeMoss TL, Myers PJ, Streckfus CF: Alveolar bone loss one year following ovariectomy in sheep. *Journal of Periodontology*. 1997; 68(9):864-871.
31. Williams PF III, Iwasaki Y, Ishihara K, Powell GL, Gilbert JA, Nakabayashi N, LeBerge M: Evaluation of the frictional properties of an elastomer with enhanced lipid-absorbing ability. *Proc Instn Mech Engrs*. 1997; 221: 359-368.
32. Gilbert JA, Cooper RC, Puryear HA, Glantz J, Jack SW, Cox NM, Crawford DA, Butler RA, Buddington KK. A swine model for the evaluation of efficacy of anti-microbial catheter coatings. *J Biomater Sci Polymer Edn*, 1998, 9(9):931-942.
33. Weinhold PS, Roe SC, Gilbert JA., Abrams CF. Assessment of the directional elastic moduli of ewe vertebral cancellous bone by vibrational testing. *Annals Biomed. Engr.*, 1999; 27(1): 103-110.
34. Tayyar S, Weinhold PS, Butler RA, Woodard JC, Zardiackas LD, StJohn KR, Bledsoe JM, and Gilbert JA: Computer simulation of trabecular remodeling using a simplified structural model." *Bone*. 1999; 25(6): 733-739.
35. Bumgardner JD, Boring JG , Cooper RC, Gao C, Givaruangsawat S, Gilbert JA, Misch CM, Steflik DE. Preliminary evaluation of a new dental implant design in canine models. *Implant Dentistry*. 2000; 9:252-260.
36. Johnson RB, Gilbert JA, Cooper RC, Parsell DE, Stewart BA, Dai X, Nick TG, Streckfus CF, Butler RA, and Boring JG: Effect of estrogen deficiency on skeletal and alveolar bone density in sheep. *Journal of Periodontology*. 2002; 73(4): 383-391.
37. Winter LC, Gilbert JA, Elder SH, Bumgardner JD: A device for imposing cyclic strain to cells growing on implant alloys. *Annals of Biomedical Engineering*. 2002; 30: 1242-1250.
38. Nettles DL, Elder SH, and Gilbert JA. Potential use of chitosan as a cell scaffold material for cartilage tissue engineering. *Tissue Engineering*. 2002; 8(6):1009-1016.
39. Bumgardner JD, Wiser R, Gerard PD, Bergin P, Chesnutt B, Marini M, Ramsey V, Elder SH, Gilbert JA. Chitosan: potential use as a bioactive coating for orthopaedic and craniofacial/dental implants. *J Biomater Sci Polymer Edn*. 2003; 14(5):423-438.
40. Newton BI, Cooper RC, Gilbert JA, Johnson RB, Zardiackas LD. The ovariectomized sheep as a model for human bone loss. *Journal of Comparative Pathology*. 2004; 130(4): 323-326.

#### Non-refereed

1. Gilbert JA: Biomechanical analysis of the forces and moments at the knee and hip during level walking. Ph.D. dissertation, Department of Biomedical Engineering, Duke University, Aug. 4, 1982.

2. Gilbert JA, Dahners LE, Carter MD, Atkinson MA: Stiffness of a tibia fixation: A comparison of plaster casts, external fixators, dynamic compression plates, and flexible intramedullary nails. In: Saha, Subrata, ed. Biomedical Engineering V, Recent Developments: Proceedings of the Fifth Southern Biomedical Engineering Conference. New York, Pergamon Press 1986; 351-353.
3. Gilbert JA, Dahners LE, Atkinson MA, Payne LZ: Flexural rigidity of sidebars in Hoffmann external fixators. In: Saha, Subrata ed. Biomedical Engineering V, Recent Developments: Proceedings of the Fifth Southern Biomedical Engineering Conference. New York, Pergamon Press 1986; 354-357.
4. Zardiackas LD, Dillon LD, Gilbert JA, St. John KR: Comparison of axial fatigue of intramedullary nails. Final Report to the Synthes Corp., Paoli, PN. July 31, 1992; 34 pages.
5. Gilbert JA, Cooper RC, Zardiackas LD, StJohn KR, Newton BI, Johnson RB, Ward EF, Cox NM, Boyd LH, Woodard JC, Weinhold PS: The OVX sheep model for osteoporosis. In Vossoughi J (ed). Biomedical Engineering Recent Developments: Proceedings of the 13th Southern Biomedical Engineering Conference. Washington, D.C.: University of the District of Columbia. 1994; 156-157.

#### **PUBLISHED ABSTRACTS:**

1. Maxwell GM, McElhane JH, Clippinger FW, Gilbert JA: Measurement of knee and hip joint forces during level walking. *Trans Orthop Res Soc* 1981; 6:357.
2. Szymoniak PM, Grubb SA, Gilbert JA, Taylor DF: An experimental model of instrumentation of thoracolumbar spine fractures. *Trans Orthop Res Soc* 1985; 10:230.
3. Wainer RA, Wright PH, Gilbert JA, Taylor DF, Guilford WB: A comparison of the biomechanical characteristics of the compression screw, Ender rods, and Zickel nail in the treatment of stable subtrochanteric femur fractures. *Trans Orthop Res Soc* 1985; 10:221.
4. Almekinders LC, Gilbert JA: Biomechanical properties of muscle after experimental muscle strains and the role of nonsteroidal anti-inflammatory medication. *Trans Orthop Res Soc* 1986; 11:224.
5. Cox LG, Dahners LE, Gilbert JA: Internal fixation of spiral fractures: An "in vitro" biomechanical study. *Trans Orthop Res Soc* 1986; 11:315.
6. Gilbert JA, Dahners LE, Carter MD, Atkinson MA: Stiffness of tibia fixation: A comparison of plaster casts, external fixators, DC Plates and flexible intramedullary nails. *Biomaterials, Medical Devices, and Artificial Organs* 1986; 14:112.

7. Gilbert JA, Dahnert LE, Atkinson MA, Payne LZ: Flexural rigidity of sidebars in Hoffmann external fixators. *Biomaterials, Medical Devices, and Artificial Organs* 1986; 14:113.
8. Wilson FC, Phillips HO IV, Gilbert JA: Isolated plantar flexion injuries of the ankle: An experimental study. *Orthop Trans* 1986; 10(3):446.
9. Gilbert JA, Maxwell GM, McElhanev JH, Clippinger FW: A system to measure the forces and moments of the knee and hip during level walking. In: Krakauer LN, et al. eds. 1986 Year Book of Sports Medicine, Chicago: Year Book Medical Publishers Inc. 1986; pp 211-212.
10. Suh PB, Lachiewicz PF, Gilbert JA: "In vitro" initial fixation of cemented and porous coated acetabular total hip components: A biomechanical comparative study. *Trans Orthop Res Soc* 1987; 12:409.
11. Almekinders LC, Gilbert JA: The results of surgical repair versus closed treatment of experimentally transected muscle. *Trans Orthop Res Soc* 1987; 12:479.
12. Springer ER, Lachiewicz PF, Gilbert JA: Internal fixation of femoral neck fractures: Knowles pins versus 6.5 mm cancellous screws. *Orthop Trans* 1987; 11(3):540.
13. Gilbert JA, Dahnert LE, Atkinson MA: External fixation and early fracture healing: an "in vivo" canine study. *Trans Orthop Res Soc* 1988; 13:402.
14. Lester GE, Gilbert JA, Talmage RV: Effect of exercise on distal radial bone mineral content and cross-sectional moment of inertia of normal women. *J Bone Min Res* 1988; 3:S84.
15. Gilbert JA, Lester GE, Skrzynski MC: Estimation of cross-sectional moment of inertia from distal radius absorptiometric data. *J Bone Min Res* 1988; 3:S127.
16. Bynum DK, Gilbert JA. Avulsion of the flexor digitorum profundus: anatomic and biomechanical considerations. In: Dobyns JH (ed) 1989 Year Book of Hand Surgery. Chicago: Year Book Medical Publishers Inc. 1989; pp 4-6.
17. Torke MD, Dahnert LE, Gilbert JA, Lester GE: The effect of motion on collagen synthesis, DNA synthesis, and fiber orientation during ligament healing. *Orthop Trans* 1989; 13:347-348.
18. Gilbert JA, Carter MD, Dahnert LE: A small bone torsion device for use with a hydraulic testing machine. *Bio-materials, Artificial Cells and Artificial Organs* 1989; 17:521.
19. Weinhold PS, Gilbert JA, and Woodard JC: "Transient analysis of cancellous bone remodeling activation after estrogen withdrawal by computer simulation." *J Bone Min Res* 1992; 7:S184.
20. Weinhold PS, Abrams CF, Roe SC, Gilbert JA: "Vibrational response analysis of ewe vertebral cancellous bone." *Annals of Biomed Engr* 1993, 21(Suppl 1), p 58, abstr # 317.

21. West WF, Gilbert JA, Cooper RC, Newton BI, Myers PJ, StJohn KR, Zardiackas LD, Johnson RB: "Alveolar bone loss following ovariectomy in sheep." J Dent Res. 1994; 73:256.
22. DeMoss TL, Tucci MA, Gilbert JA, Cooper RC, Newton BI, Myers PJ, West WF, Johnson RB: "Alveolar bone loss one year following ovariectomy in sheep." J Dent Res 1995, 74:205.
23. Winter LC, Rutherford DW, To FS, Elder SH, Gilbert JA, Bumgardner JD, "A new device for imposing uniform, cyclic strain to cells growing on implant alloys," Transactions of 6<sup>th</sup> World Biomaterials Conference, Kamuela, Hawaii, May 2000.