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Born 10/2/63

Education

Columbia University, Graduate School of Arts and Sciences		
Ph.D.	Mechanical Engineering	1991
M.Phil.	Mechanical Engineering	1990
Columbia University, School of Engineering and Applied Science		
M.S.	Mechanical Engineering	1987
B.S.	Mechanical Engineering	1986

Experience

2013-	Andrew Walz Professor of Mechanical Engineering Columbia University, New York
2011-2014	Chair, Department of Mechanical Engineering Columbia University, New York
2002-	Professor of Mechanical Engineering and Biomedical Engineering Columbia University, New York
1999-2002	Vice-Chair, Department of Biomedical Engineering Columbia University, New York
1999-2002	Associate Director, Orthopaedic Research Laboratory Columbia University, New York
1998-2002	Associate Professor of Biomedical Engineering Columbia University, New York
1996-	Director, Musculoskeletal Biomechanics Laboratory Columbia University, New York
1996-2002	Associate Professor of Mechanical Engineering Columbia University, New York
1991-1995	Assistant Professor of Mechanical Engineering Columbia University, New York
1991-1999	Associate in Orthopaedic Research Columbia University, New York

Honors, Awards and Leadership in Profession

Vice-Chair of the U.S. National Committee on Biomechanics, 2014-
Andrew Walz Professorship in Mechanical Engineering, 2013, Columbia University
OARSI Basic Science Award, 2013, Osteoarthritis Research Society International

Columbia Engineering Alumni Association Distinguished Faculty Teaching Award, 2012
First place award in PhD Student Paper Competition for advisee Sevan R. Oungoulian, ASME Bioengineering Division, 2012 Summer Bioengineering Conference
Secretary of the U.S. National Committee on Biomechanics, 2011-2013
Fellow of the Biomedical Engineering Society, 2010
Executive Committee Member, Biomedical Engineering Society, 2008-2010
Fellow of the American Society of Mechanical Engineers, 2006
Chair of Bioengineering Division of the American Society of Mechanical Engineers, 2006-2007
Elected Member of Board of Directors, Biomedical Engineering Society, 2005-2008
First place award in PhD Student Paper Competition for advisee Nadeen O. Chahine, ASME Bioengineering Division, 2004 International Mechanical Engineering Congress and Exhibition.
Best Paper Award: Morrison III, B., Cater, H.L., Wang, C.C-B., Thomas, F.C., Hung, C.T., Ateshian, G.A., and Sundstrom, L.E. (2003) A tissue level tolerance criterion for living brain developed with an in vitro model of traumatic mechanical loading. *Stapp Car Crash Journal*, 47:1-13.
Fellow of the American Institute for Medical and Biological Engineering, 2003
Great Teacher Award, Society of Columbia Graduates, 2002
First place award in PhD Student Paper Competition for advisee Ramaswamy Krishnan, ASME Bioengineering Division, 2002 International Mechanical Engineering Congress and Exhibition.
Executive Committee Member, ASME Bioengineering Division, 2001-2008.
USNCB Delegate to the Fifth Japan-USA-Singapore-China meeting, Sendai, Japan, August 9-13, 1998.
YC Fung Young Investigator Award, ASME, 1997.
First place award in PhD Student Paper Competition for advisee S. Daniel Kwak, ASME Bioengineering Division, 1996 International Mechanical Engineering Congress and Exhibition.
First Independent Research Support and Transition Award (FIRST), National Institutes of Health, 1995-2000.
USNCB Delegate to the Fourth China-Japan-USA-Singapore meeting, Taiyuan, China, May 21-27, 1995.
Frank E. Stinchfield Fellowship in Orthopaedic Bioengineering, Department of Orthopaedic Surgery, Columbia University, 1987-1991.
Fellowship Award, Department of Mechanical Engineering, Columbia University, 1986-1987.
William A. Hadley Award in Mechanical Engineering, Columbia University, 1986.
Tau Beta Pi, Engineering Honor Society.
President, Pi Tau Sigma, Mechanical Engineering Honor Society, Columbia University Chapter, 1985-1986.
Sigma Xi, Honor Society.

Editorial Activities

Editorial Board Member, *Computer Methods in Biomechanics and Biomedical Engineering*, Taylor & Francis, 2014-
Editorial Board Member, *Journal of Osteoarthritis and Cartilage*, Elsevier, 2008-
Guest Editor, *Biomechanics and Modeling in Mechanobiology*, Special Issues on Cartilage I & II, Vol. 5(2-3), 2006; Vol. 6(1-2), 2007
Associate Editor, *Journal of Osteoarthritis and Cartilage*, 2006-2008
Survey Editor, *Journal of Biomechanics*, 2004-2009
Editorial Board Member, *Journal of Biomechanics and Modeling in Mechanobiology*, Springer, 2001-
Associate Editor, *ASME Journal of Biomechanical Engineering*, 2000-2006
Editorial Consultant, *Journal of Biomechanics*, 1999-2004, 2009-

Professional Societies

American Society of Mechanical Engineers
Orthopaedic Research Society
American Association for the Advancement of Science
Biomedical Engineering Society
Osteoarthritis Research Society International
U.S. National Committee on Biomechanics

Professional Activities

Session co-chair, *Methodology for Joint Mechanics*, Second World Congress of Biomechanics, Amsterdam, The Netherlands, July 1994.
Reviewer and Judge, Student Paper Competition, Bioengineering Division of the American Society of Mechanical Engineers, Winter Annual Meeting (IMECE), Chicago, November 1994.
Session co-chair, *The Elbow: Advances in Biomechanics and Surgical Techniques*, Cologne, Germany, March 2-5, 1995.
Session chair, *Computational Bioengineering: Solid Modeling and Mesh Generation*, ASME/AIChE/ASCE Summer Bioengineering Conference, June 29, 1995.
Session chair, *Tissue Mechanics: Cartilage Mechanics*, ASME/AIChE/ASCE Summer Bioengineering Conference, June 29, 1995.
Session co-chair, *Cartilage Mechanics*, BMES Conference, Boston, October 6, 1995.
Reviewer/Judge, Student Paper Competition, Bioengineering Division of the American Society of Mechanical Engineers, Winter Annual Meeting (IMECE), San Francisco, November 1995.
Session chair, *Upper Extremity Biomechanics*, ASME Winter Annual Meeting (IMECE), San Francisco, November 13, 1995.
Session co-chair, *Cartilage*, 1996 ASME Mechanics & Materials Conference, Baltimore, June 12-14, 1996.

- Symposium Organizer and Session Chair, Computer-Aided Surgery and Planning, ASME International Mechanical Engineering Congress and Exposition (IMECE), Atlanta, November 17-22, 1996.
- Symposium Co-Organizer and Session Chair, Contact and Interface Mechanics, Solid Mechanics Committee, ASME International Mechanical Engineering Congress and Exposition (IMECE), Atlanta, November 17-22, 1996.
- Reviewer, Student Paper Competition, Bioengineering Division of the American Society of Mechanical Engineers, Winter Annual Meeting (IMECE), Atlanta, November 17-22, 1996.
- ASME 1997 Bioengineering Conference co-organizer, Solid Mechanics Committee, Sunriver, Oregon, June 11-15, 1997.
- Chairman, ASME Bioengineering Division Membership Development Committee, June 1997-May 2000.
- Symposium Co-Organizer and Session Co-Chair, Contact and Interface Mechanics, ASME 1997 Bioengineering Conference, Sunriver, Oregon, June 11-15, 1997.
- Session Organizer and Co-Chair, Computer Assisted Modeling and Imaging, ASME 1997 International Mechanical Engineering Congress and Exposition, Dallas, Texas, November 16-21, 1997.
- Attendee, National Institutes of Health Bioengineering Consortium (BECON) meeting, Bethesda, Maryland, February 27-28, 1998.
- Bioengineering Division Delegate to ASME Technology Executives Conference, Houston, Texas, March 6-8, 1999.
- Session Organizer and Chair, Fiber-Reinforced Models for Soft Tissues, ASME 1998 International Mechanical Engineering Congress and Exposition, Anaheim, California, November 15-20, 1998.
- Information Chair and co-organizer, 1999 Summer Bioengineering Conference, ASME, Big Sky, Montana, June 16-20, 1999.
- Judge, Student Paper Competition; Session Organizer and Co-Chair, Soft Tissue Mechanics I, II, III, Bioengineering Division of the American Society of Mechanical Engineers, Winter Annual Meeting (IMECE), Nashville, Tennessee, November 14-19, 1999.
- Ad Hoc Reviewer and Session Moderator, Cartilage Mechanics I, 46th Annual Meeting of the Orthopaedic Research Society, Orlando, Florida, March 13, 2000.
- Y.C. Fung Young Investigator Award Committee Member, ASME Bioengineering Division, 2000-2006.
- Student Paper Competition Committee Member (BS-level 2000, MS-level 2001, PhD-level 2002, Committee Chair 2003), ASME Bioengineering Division, 2000-2003.
- Judge, MS and PhD Student Paper Competitions; Bioengineering Division of the American Society of Mechanical Engineers, Winter Annual Meeting (IMECE), Orlando, Florida, November 8-10, 2001.
- Information Chair and co-organizer, 2001 Summer Bioengineering Conference, ASME, Snowbird, Utah, June 26-July 1, 2001.
- Chair, Finance Committee of the Bioengineering Division of ASME (June 1, 2001-2004).
- Session Chair, Soft Tissue Mechanics II, BMES 2001 Annual Fall Meeting, Durham, North Carolina, October 7, 2001.

Treasurer, ASME Bioengineering Division (2002-2005).
Track co-Chair, Orthopaedics and Rehabilitation, BMES 2003 Annual Fall Meeting, Nashville, Tennessee.
Finance Chair and co-organizer, 2003 Summer Bioengineering Conference, ASME, Key Biscayne, Florida, June 25-29, 2003.
Track Chair, Orthopaedics and Rehabilitation, BMES 2004 Annual Fall Meeting, Philadelphia, Pennsylvania.
Cartilage Mechanics Symposium Organizer, 2004 European Society of Biomechanics Conference, 's-Hertogenbosch, The Netherlands, July 4-7, 2004.
Orthopaedic Track Organizer, 2004 Biomedical Engineering Society Conference, Philadelphia, Pennsylvania, October 13-16, 2004.
Secretary, ASME Bioengineering Division, 2005-2006.
Member of BMES Board of Directors, 2005-2008.
Chair, ASME Bioengineering Division, 2006-2007.
Member of BMES Executive Committee and Chair of Finance Committee, 2008-2010
Chair, New Directions Committee, ASME Bioengineering Division, 2009-2012
Topic Chair, Cartilage-Meniscus-Synovium, 2009 and 2010 Annual Meetings of the Orthopaedic Research Society
Moderator, Cartilage Surface Structure & Lubrication, 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, February 22-25, 2009.
Secretary, U.S. National Committee on Biomechanics, 2011-2013
Conference co-Chair, 11th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Salt Lake City, Utah, April 3-6, 2013.
Session co-Chair, Soft Tissue Mechanics, 11th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Salt Lake City, Utah, April 3, 2013.
Workshop Chair and Speaker, FEBio Workshop #2 - Multiphasic Materials, 11th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Salt Lake City, Utah, April 6, 2013.
Session co-Chair, Growth, Remodeling and Adaptation of Biological Tissues, 11th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering, Salt Lake City, Utah, April 6, 2013.
Vice-Chair, U.S. National Committee on Biomechanics, 2014-
Organizer of Workshop on Open Source Computational Mechanics Tools for Orthopaedics, 2014 Annual Meeting of the Orthopaedic Research Society, New Orleans, Louisiana, March 15, 2014.
Member of the ASME Savio L-Y. Woo Translational Biomechanics Medal Committee (2015-).

Invited Lectures

1. Anatomy and congruence of the thumb carpometacarpal joint. Invited lecture, Upper Extremity Workshop, Orthopaedic Research Society, Washington DC, February 1992.

2. Stereophotogrammetric determination of diarthrodial joint articular surfaces. Seminar Lecture, Department of Mechanical Engineering, University of Maryland, Baltimore County, March 1992.
3. Quantitative anatomy and contact areas in diarthrodial joints. Grand Rounds Lecture, Department of Orthopaedic Surgery, The State University of New York at Stony Brook, March 1994.
4. Quantitative anatomy of articular surfaces of diarthrodial joints. Invited speaker, Department of Anatomy, Ludwig-Maximilians Universitat, Munich, Germany, July 1994.
5. A theoretical model for boundary friction in articular cartilage. Invited keynote speaker, Orthopaedic Engineering Session, Biomedical Engineering Society, Tempe, October 1994.
6. Rolling and sliding contact of cylindrical biphasic articular surfaces using integral transform methods. Invited speaker, High Performance Supercomputing in Bioengineering Workshop, Pittsburgh Supercomputer Center, Pittsburgh, October 1994.
7. Experimental and theoretical contact mechanics in diarthrodial joints. Instructional course, The Elbow: Advances in Biomechanics and Surgical Techniques, Cologne, Germany, March 2-5 1995.
8. Computer-Aided Design at Columbia University. Invited speaker, Jiao-Tong University, Shanghai, China, June 6, 1995.
9. Quantitative anatomy and contact in diarthrodial joints. Grand Rounds Lecture, Department of Surgery, Division of Orthopaedics, University of Michigan, Ann Arbor, MI, June 15, 1995.
10. Experimental and theoretical analyses of knee mechanics. Seminar lecture, Orthopaedic Research Laboratories, University of Michigan, Ann Arbor, MI, June 15, 1995.
11. Contact and lubrication of diarthrodial joints: The role of interstitial fluid pressurization. Seminar lecture, Department of Mechanical Engineering, University of Maryland, Baltimore County, MD, October 27, 1995.
12. Contact mechanics of natural joints. Invited speaker, Contact Mechanics Workshop, 1997 Orthopaedic Research Society Conference, San Francisco, February 10, 1997.
13. Recent advances in cartilage lubrication. Seminar lecture, Center for Biomedical Engineering, The City College of New York, NY, April 28, 1997.
14. Modeling of cartilage friction by the theory of mixtures. Invited speaker, Department of Mechanical Engineering, The University of Leeds, United Kingdom, September 11, 1997.
15. Biotribology of natural joints. Invited speaker, Biotribology Workshop, 1998 Orthopaedic Research Society Conference, New Orleans, March 17, 1998.
16. A mixture approach to the study of cartilage tribology. Invited speaker, 1998 US National Committee on Applied Mechanics Conference, Gainesville, Florida, June 22, 1998.
17. Contact mechanics and lubrication of diarthrodial joints. Invited lecturer, Hospital for Special Surgery, New York, New York, July 9, 1998.
18. Understanding cartilage biotribology using the theory of mixtures. Invited speaker, 1998 ASME/STLE International Tribology Conference, Toronto, Ontario, Canada, October 25, 1998.
19. In vivo biomechanical analysis of osteoarthritic patellofemoral joints using 3d multi-body models from patient MRI. Biomechanics Symposium Honoring Dr. YC Fung's 80th

- Birthday, ASME 1999 Summer Bioengineering Conference, Big Sky, Montana, June 19, 1999.
20. Boundary friction of articular cartilage using a binary solid-fluid mixture model with a bimodular matrix. Invited Keynote Speaker, International Conference on Multifield Problems, Stuttgart, Germany, October 6, 1999.
 21. Biomechanics and cartilage healing. Invited Speaker, Knee Course, 1999 GNYRC-ACSM Annual Conference, American College of Sports Medicine, New York City, New York, November 20, 1999.
 22. Surface curvatures of the tarsometatarsal joint. Grand Rounds Lecture, New York College of Podiatric Medicine, New York, NY, March 28, 2000.
 23. Functional Properties of Natural and Tissue Engineered Articular Cartilage. Functional Tissue Engineering Workshop, Tampa, Florida, September 15, 2000.
 24. Functional Properties of Natural Articular Cartilage. Seminar presentation, University of Illinois at Urbana-Champaign, Department of Mechanical and Industrial Engineering, April 17, 2001.
 25. Considerations for Tissue Engineering of Anatomically Shaped Cartilage Constructs. Seminar presentation, University of California at San Francisco, San Francisco, CA, August 24, 2001.
 26. Patellofemoral Joint Biomechanics And Tissue Engineering. Patellofemoral Arthroplasty Summit Conference, Chantilly, Virginia, November 2nd, 2002.
 27. Cartilage Mechanics and Tissue Engineering. Biocomplexity Workshop III, University of Notre Dame, South Bend, Indiana, November 9th, 2002.
 28. The Role Of Dynamic Loading In Cartilage Functional Tissue Engineering. Tissue Engineering Biotechnology Conference, Cold Spring Harbor, New York, November 23rd, 2002.
 29. Cartilage Mechanics and Tissue Engineering. Department of Biomedical Engineering, State University of New York at Stony Brook, New York, March 19th, 2003.
 30. Cartilage Mechanics and Tissue Engineering. Department of Biomedical Engineering, Rensselaer Polytechnic Institute, Rensselaer, New York, April 2nd, 2003.
 31. Cartilage Mechanics and Tissue Engineering. Department of Mechanical Engineering, Drexel University, Philadelphia, Pennsylvania, April 25th, 2003.
 32. Mapping of Articular Cartilage Topography and Thickness in Normal and Osteoarthritic Joints, Hôpital Notre-Dame, Montréal, Québec, June 6th, 2003.
 33. Mechanics and Transport in Cartilage Tissue Engineering, 30th Anniversary of the Leeds Annual Day Conference, Leeds, United Kingdom, January 7th, 2005.
 34. Cartilage Mechanics and Tissue Engineering, University of Utah, Department of Bioengineering, Salt Lake City, Utah, January 13, 2006
 35. Cartilage Lubrication and Tissue Engineering, Georgia Institute of Technology, Atlanta, Georgia, February 9, 2006.
 36. Interstitial Fluid Pressurization and the Role of Chondroitin Sulfate in the Frictional Response of Articular Cartilage, Cartilage Lubrication Workshop, 52nd Annual Meeting of the Orthopaedic Research Society, Chicago, Illinois, March 19, 2006.
 37. Application of Mixture Theory to Cartilage Mechanics and Tissue Engineering, City College of the City University of New York, Department of Biomedical Engineering, New York, New York, September 27, 2006.

38. Patellofemoral Joint Biomechanics and Tissue Engineering, Duke University, Orthopaedic Grand Rounds, Durham, North Carolina, October 4, 2006.
39. Application of Mixture Theory to Cartilage Mechanics and Tissue Engineering, Duke University, Department of Biomedical Engineering, Durham, North Carolina, October 4, 2006.
40. Application of Mixture Theory to Cartilage Mechanics and Tissue Engineering, University of Minnesota, Department of Biomedical Engineering, Minneapolis, Minnesota, November 1, 2006.
41. Application of Mixture Theory to Cartilage Mechanics and Tissue Engineering, University of Michigan, Department of Mechanical Engineering, Ann Arbor, Michigan, February 2, 2007.
42. Application of Mixture Theory to Cartilage Mechanics and Tissue Engineering, Rutgers University, Department of Biomedical Engineering, New Brunswick, New Jersey, March 26, 2007.
43. Computational Modeling of Biological Tissues Using Mixture Theory: Positing New Hypotheses and Testing Them Experimentally, Keynote presentation at Eighth Annual Biomedical Computation at Stanford Symposium (BCATS), Stanford University, Stanford, California, October 27, 2007.
44. Modeling Cell Mechanics with Continuum Theories, Mechanics and Computation Seminar Series, Stanford University, Stanford, California, February 7, 2008.
45. Lectures on Mixture Theory for Biological Tissues. Summer School on Modeling and Computation in Biomechanics, Graz University of Technology, Austria, September 15-19, 2008. Coordinated by Gerhard A Holzapfel and Ray W Ogden.
46. Modeling Biological Tissue Growth by Cell Division and Multigenerational Interstitial Growth of Extracellular Matrix, IAMCS/KAUST Symposium on Modeling Biological Materials, Texas A&M University, College Station, Texas, January 28, 2010.
47. Functional Tissue Engineering of Cartilage: Theory and Experiments, Clinical and Translational Science Award (CTSA) Seminar Series, Columbia University Medical Center, New York, April 5, 2010.
48. Cartilage Biomechanics and Transport: Theory and Experiments, McKay Orthopaedic Research Laboratories Seminar Series, University of Pennsylvania, Philadelphia, Pennsylvania, April 13, 2010.
49. Cartilage Mechanics and Lubrication, Orthopaedic Grand Rounds, Department of Orthopaedic Surgery, Columbia University, New York, New York, May 13, 2010.
50. Cartilage Mechanics and Lubrication, Hand Surgery service, St. Luke's-Roosevelt Hospital, New York, New York, February 8, 2011.
51. Enhancing Transport in Immature Cartilage and Engineered Tissue Constructs, Bioengineering Seminar Series, Institute for Bioengineering and Bioscience, Georgia Institute of Technology, Atlanta, Georgia, March 8, 2011
52. Cartilage Mechanics and Lubrication, Orthopedics Grand Rounds, Department of Orthopedic Surgery, Mayo Clinic, Rochester, Minnesota, March 14, 2011.
53. Tissue Engineering of Cartilage: Theory and Experiments, Musculoskeletal Research Conference, Mayo Clinic, Rochester, Minnesota, March 14, 2011.
54. Cartilage Mechanics and Lubrication, J.L. Nowinski Lecture, University of Delaware, Department of Mechanical Engineering, September 23, 2011.

55. Solute Transport and Growth Factor Activation in Cartilage and Synovial Fluid, Mt. Sinai Hospital, Department of Orthopaedic Surgery, New York, October 26, 2012.
56. Cartilage Mechanics and Lubrication, Seminar Presentation, Department of Mechanical Engineering, Vanderbilt University, Nashville, Tennessee, September 10, 2012.
57. Mixture Framework for Modeling Mechanics, Transport, and Growth in Biological Tissues and Cells, Plenary Lecture, 22nd International Workshop on Computational Mechanics of Materials, Baltimore, Maryland, September 26, 2012.
58. Mixture Framework for Modeling Mechanics, Transport, and Growth in Biological Tissues and Cells, Seminar Presentation, Department of Aerospace and Mechanical Engineering, Notre Dame University, South Bend, Indiana, November 27, 2012.
59. Cartilage Mechanics and Lubrication, Basic Science Research Award Presentation, 2013 Osteoarthritis Research Society International World Congress, Philadelphia, Pennsylvania, April 18, 2013.
60. Modeling Tissue Engineering in FEBio, Workshop: Open Source Computational Mechanics Tools for Orthopaedics, 2014 Annual Meeting of the Orthopaedic Research Society, New Orleans, Louisiana, March 15, 2014.
61. Optimization of Culture Conditions for Large Cartilage Tissue Constructs Using Computational Modeling of Nutrient Consumption, Matrix Deposition and Growth, Keynote Lecture, 2014 World Congress of Biomechanics, Boston, Massachusetts, July 9, 2014.
62. Finite Element Modeling of Mechanics, Transport, and Chemical Reactions in Biological Tissues and Cells, Keynote Lecture, 2014 World Congress of Biomechanics, Boston, Massachusetts, July 10, 2014.
63. Experimentally Validated Computational Simulations for Identifying and Optimizing Nutrient Supply for Engineering Large Cartilage Tissue Constructs, Invited Speaker, 2015 CMBE Conference, St. Thomas, US Virgin Islands, January 8, 2015.
64. Theoretical And Computational Approaches For Modeling Engineered Cartilage Growth And Optimizing Culture Conditions, Seminar Presentation, Coulter Department of Biomedical Engineering and The Petit Institute for Bioengineering and Bioscience, Georgia Institute of Technology, Atlanta, Georgia, April 7, 2015.
65. Tissue Mechanics, Invited Keynote Speaker, International Society of Biomechanics, Glasgow, United Kingdom, July 15, 2015.
66. Cartilage Mechanics and Lubrication, Invited Speaker, Soft Matter Symposium, University of Florida, Gainesville, Florida, October 21, 2015.
67. Growth Mechanics, Damage Mechanics and Viscoelasticity Using Reactive Mixtures, Zweifach Memorial Lecture, City College of the City University of New York, New York, New York, November 11, 2015.

Conference Presentations

1. Stereophotogrammetric determinations of patellar cartilage thickness and surface geometry. ASME Winter Annual Meeting, Chicago, Illinois, December 1988.
2. An in situ method to determine diarthrodial joint contact areas using stereophotogrammetry. ASME Winter Annual Meeting, San Francisco, California, December 1989.
3. A quantitative method to study the biomechanics of the carpometacarpal joint of the thumb. ASME Winter Annual Meeting, Dallas, Texas, November 1990.

4. A model for fluid-film lubrication of diarthrodial joints: The moving load problem. 3rd U.S.-China-Japan Conference on Biomechanics, Atlanta, Georgia, August 1991.
5. A biphasic model for contact in diarthrodial joints. ASME Winter Annual Meeting, Anaheim, November 1992.
6. A stereophotogrammetric method for determining in situ contact areas in diarthrodial joints: A comparison study. ASME Winter Annual Meeting, Anaheim, November 1992.
7. Biphasic finite deformation properties of bovine articular cartilage. Second World Congress of Biomechanics, Amsterdam, The Netherlands, July 1994.
8. Theoretical analysis of the moving contact of biphasic cartilage layers. ASME International Mechanical Engineering Congress and Exposition, Chicago, November 1994.
9. A theoretical model for boundary friction in articular cartilage. Fourth China-Japan-USA-Singapore meeting, Taiyuan, China, May 23, 1995.
10. A new experimental technique for measuring the time-dependent and congruence-dependent creep and contact radius in a diarthrodial joint contact model. ASME/AICHe/ASCE Bioengineering Conference 1995, Beaver Creek, Colorado, June 29, 1995.
11. Continuity requirements across a contact interface in the formulation of a boundary friction model for biphasic articular cartilage. ASME/AICHe/ASCE Bioengineering Conference 1995, Beaver Creek, Colorado, June 29, 1995.
12. Generating trimmed B-spline models of articular cartilage layers from unordered 3D surface data points. ASME/AICHe/ASCE Bioengineering Conference 1995, Beaver Creek, Colorado, June 30, 1995.
13. Contact creep response between a rigid impermeable cylinder and a biphasic cartilage layer using integral transforms. ASME/AICHe/ASCE Bioengineering Conference 1995, Beaver Creek, Colorado, July 1, 1995.
14. The velocity and compressive strain dependence of the cartilage equilibrium friction coefficient. ASME International Mechanical Engineering Congress and Exposition, November 13, 1995.
15. Determination of in situ contact areas in diarthrodial joints by MRI. ASME International Mechanical Engineering Congress and Exposition, November 14, 1995.
16. The normal stress effect in articular cartilage under steady frictional shear. 1996 ASME Mechanics & Materials Conference, Baltimore, June 12, 1996.
17. Rolling resistance of articular cartilage due to interstitial fluid flow. 1996 ASME International Mechanical Engineering Congress and Exposition, Atlanta, November 22, 1996.
18. The role of proteoglycans in the frictional properties and normal stress effect of articular cartilage. 1996 ASME International Mechanical Engineering Congress and Exposition, Atlanta, November 22, 1996.
19. Interstitial fluid pressurization regulates the frictional response of cartilage. 1997 Orthopaedic Research Society Conference, San Francisco, February 10, 1997.
20. Tibiofemoral and patellofemoral kinematics and contact: Effects of hamstrings and iliotibial band force. 1997 ASME Summer Bioengineering Conference, Sunriver, June 12, 1997.
21. Knee joint topography and contact areas: Validation of measurements from MRI. 1997 ASME Summer Bioengineering Conference, Sunriver, June 12, 1997.

22. The role of interstitial fluid pressurization and surface porosities on the boundary friction of articular cartilage. 1997 ASME Summer Bioengineering Conference, Sunriver, June 12, 1997.
23. The role of interstitial fluid pressurization and equilibrium friction coefficient on the boundary friction of articular cartilage. First World Congress of Tribology, London, United Kingdom, September 10, 1997.
24. A mathematical model of the thumb carpometacarpal joint. ASME 1997 International Mechanical Engineering Congress and Exposition, Dallas, Texas, November 18, 1997.
25. Boundary conditions at the sliding interface of contacting biphasic cartilage media with viscous interstitial fluid phase. Third World Congress of Biomechanics, Sapporo, Japan, August 4, 1998.
26. Planning of diarthrodial joint surgery using quantitative magnetic resonance imaging data. Third World Congress of Biomechanics, Sapporo, Japan, August 5, 1998.
27. Computer-aided planning of patellofemoral joint OA surgery: Developing physical models from patient MRI. First International Conference on Medical Image Computing and Computer-Assisted Intervention, Boston, Massachusetts, October 11, 1998.
28. Ionic polarization in charged hydrated soft tissues. 1998 ASME International Mechanical Engineering Congress and Exposition, Anaheim, California, November 20, 1998.
29. Conewise linear elasticity mixture model for the analysis of tension-compression nonlinearity in articular cartilage. 45th Annual Meeting of the Orthopaedic Research Society, Anaheim, California, February 2nd, 1999.
30. Does osmotic pressure influence the frictional response of articular cartilage? ASME 1999 Summer Bioengineering Conference, Big Sky, Montana, June 17, 1999.
31. A biphasic conewise linear elasticity model for modeling tension-compression nonlinearity in articular cartilage. ASME 1999 Summer Bioengineering Conference, Big Sky, Montana, June 17, 1999.
32. Tensile and compressive stiffness of human glenohumeral cartilage under finite deformation. ASME 1999 Summer Bioengineering Conference, Big Sky, Montana, June 19, 1999.
33. Contact areas and kinematics of thumb carpometacarpal joint in functional pinch and grasp. ASME 1999 Summer Bioengineering Conference, Big Sky, Montana, June 19, 1999.
34. The influence of cartilage thickness in the multibody modeling of patellofemoral joint kinematics and contact stresses. ASME 1999 International Mechanical Engineering Congress and Exposition, Nashville, Tennessee, November 15, 1999.
35. Finite element contact analysis of a cartilage layer exhibiting tension-compression nonlinearity. ASME 1999 International Mechanical Engineering Congress and Exposition, Nashville, Tennessee, November 16, 1999.
36. Permeability of human glenohumeral joint cartilage. ASME 1999 International Mechanical Engineering Congress and Exposition, Nashville, Tennessee, November 16, 1999.
37. Comparison of equilibrium axial strain distribution in articular cartilage explants and cell-seeded alginate disks under unconfined compression. 46th Annual Meeting of the Orthopaedic Research Society, Orlando, Florida, March 13, 2000.

38. Surface topography and cartilage thickness templates for the femur and patella based on an average of healthy articular surfaces. ASME 2000 International Mechanical Engineering Congress and Exposition, Orlando, Florida, November 9, 2000.
39. Hydrostatic pressurization and depletion of trapped lubricant pool during creep and sliding of a rippled indenter against a biphasic articular cartilage layer. ASME 2000 International Mechanical Engineering Congress and Exposition, Orlando, Florida, November 10, 2000.
40. Experimental verification of the role of intrinsic matrix viscoelasticity and tension-compression nonlinearity in the biphasic response of cartilage in unconfined compression. 2001 Summer Bioengineering Conference, Snowbird, Utah, June 30, 2001.
41. Joint-specific articular surface molds for the production of anatomically shaped tissue-engineered cartilage constructs. BMES 2001 Annual Fall Meeting, Durham, North Carolina, October 6, 2001.
42. The strain-softening of bovine articular cartilage under infinitesimal deformation in unconfined compression. BMES 2001 Annual Fall Meeting, Durham, North Carolina, October 7, 2001.
43. Determination of poisson's ratios of bovine articular cartilage in tension and compression using osmotic and mechanical loading. ASME 2002 International Mechanical Engineering Congress and Exposition, New Orleans, Louisiana, November 21, 2002.
44. Flow-independent viscoelastic response of bovine articular cartilage under dynamic tensile loading. ASME 2004 International Mechanical Engineering Congress and Exposition, Anaheim, California, November 18, 2004.
45. Finite element analysis of strain fields in chondrocytes and the extracellular matrix of cartilage under physiological loading, European Cell and Materials, ECM VII Cartilage and Joint Repair, Davos, Switzerland, June 27, 2006.
46. Mixture theory analysis of interstitial growth of proteoglycans as a mechanism regulating residual stresses in biological tissues, in session Biomechanics of Growth and Remodeling I, presented at the 44th Annual Technical Meeting of the Society of Engineering Science, Texas A&M University, College Station, TX, October 23, 2007.
47. Functional tissue engineering of anatomically shaped cartilage constructs, in session Tissue Engineering in 3D: Rebuilding the Musculoskeletal Tissues, invited presentation, American Association of Anatomists, presented at 2008 Experimental Biology meeting, San Diego, CA, April 7, 2008.
48. Functional tissue engineering of anatomically-shaped cartilage tissue constructs. Invited speaker, 2008 Osteoarthritis Research Society International World Congress, Rome, Italy, September 19, 2008.
49. Modeling cartilage with a continuous fiber angular distribution predicts many observed phenomena. 2008 Annual Meeting of the Biomedical Engineering Society, St. Louis, MO, October 2, 2008.
50. Multigenerational interstitial growth of biological tissues. 2010 ASME Summer Bioengineering Conference, Naples, FL, June 16, 2010.
51. Finite element algorithm for frictionless contact of porous permeable media under finite deformation and sliding. 2010 ASME Summer Bioengineering Conference, Naples, FL, June 17, 2010.
52. FEBio: Finite elements for biomechanics (workshop). 2010 ASME Summer Bioengineering Conference, Naples, FL, June 19, 2010.

53. Negative growth by surface and volume dissolution. 16th U.S. National Congress of Theoretical and Applied Mechanics. PennState, State College, PA, July 2, 2010.
54. Finite element implementation of neutral solute transport in porous biological tissues under finite deformation. 2011 ASME Summer Bioengineering Conference, Farmington, PA, June 23, 2011.
55. Implementation of Finite Deformation Triphasic Modeling in the Finite Element Code FEBio. 2012 ASME Summer Bioengineering Conference, Fajardo, Puerto Rico, June 22, 2012.
56. Mixture framework for modeling mechanics, transport, and growth in biological tissues and cells. Plenary lecture, 22nd International Workshop on Computational Mechanics of Materials, Baltimore, MD, September 26, 2012.
57. A Gauss-Kronrod-trapezoidal integration scheme for modeling biological tissues with continuous fiber distributions. 2014 Computer Methods in Biomechanics and Biomedical Engineering Conference, Amsterdam, The Netherlands, October 15, 2014.
58. FEBio: Finite elements for biomechanics (workshop). International Society of Biomechanics, Glasgow, United Kingdom, July 15, 2015.
59. Biphasic analysis of cartilage stresses in the patellofemoral joint. 2015 Computer Methods in Biomechanics and Biomedical Engineering Conference, Montreal, Canada, September 2, 2015.

Current Funding

1. The National Institutes of Health, R01 GM083925, "FEBio - Finite Elements for Biomechanics and Biophysics," Co-Principal Investigators: Gerard A. Ateshian and Jeffrey A. Weiss (University of Utah) \$981,488 (DC), \$1,182,643 (TC), 09/1/12-08/31/16.
2. National Institutes of Health, R01 AR060361, "Optimizing Nutrient Supply in Large Engineered Cartilage Tissue Constructs," Co-Principal Investigators: Gerard A. Ateshian and Clark T. Hung, \$1,125,000 (DC), \$1,742,366 (TC), 9/20/10-8/31/2016.
3. National Institutes of Health, T32 AR059038, "Multidisciplinary Engineering Training in Musculoskeletal Research," Principal Investigator: G.A. Ateshian, \$1,269,000 (DC), \$1,332,120 (TC), 09/01/2011-08/31/2016.
4. Columbia-Coulter Translational Research Partnership, WHCF CU12-0369, "Osteochondral allograft bending: Safely reshaping articular surfaces for treating osteoarthritis," Co-Principal Investigators: G.A. Ateshian, M.P. Rosenwasser, \$91,880 (DC), 09/01/14- 12/31/15.

Previous Funding

1. The Whitaker Foundation, "Contact Mechanics and Lubrication of Diarthrodial Joints;" Principal Investigator, \$180,000, 8/1/92-7/31/95.
2. The Orthopaedic Research and Education Foundation, "Optimal Tracking of the Patellofemoral Joint and Clinical Implications," Senior Investigator, \$150,000, 7/1/93-6/30/95.
3. The National Science Foundation, High Performance Computing and Communications Program, "Understanding Human Joint Mechanics through Advanced Computational Models;" Co-Principal Investigator, ASC-9318184, \$421,477 (TC), 9/1/93-8/31/97.

4. The National Institutes of Health, "Etiology of Thumb Carpometacarpal Joint Osteoarthritis;" Co-Investigator, RO1 AR41020, \$967,158 (TC), 4/15/94-4/14/98.
5. The National Science Foundation, "Acquisition of a Rapid Prototyping System," Co-Investigator, CISE-9529346, \$61,334 (TC), 12/1/95-11/30/98.
6. The Whitaker Foundation, "Tissue Biomechanics and Biochemistry: A Theme for the Development of a Biomedical Engineering Department at Columbia University;" Special Opportunity Award, Co-Investigator, \$995,610 (TC), 1/1/96-12/31/98.
7. New York College of Podiatric Medicine gift fund, "Contours of Articular Surfaces of the Medial Tarsometatarsal Joint in Relation to Metatarsus Primus Adductus," \$12,283, 9/1/98-11/30/98.
8. The National Collegiate Inventors and Innovators Alliance (NCIIA), "A Low-Cost, Pneumatic Materials Tester For Biological Tissues and Other Flexible Materials," Co-Principal Investigator, \$14,000 (TC), 1/6/98-1/5/99.
9. Zimmer, "Finite Element Analysis of Shoulder Prostheses," Principal Investigator, \$7,675 (TC), 8/1/98-31/1/99.
10. The National Institutes of Health, "Biotribology of diarthrodial joints;" Principal Investigator, 1 R29 AR43628, \$566,513 (TC), 6/15/95-5/31/00.
11. The National Institutes of Health, "Biomechanical factors in OA of the glenohumeral joint;" Co-Investigator, 1R01 AR42850, \$1,488,866 (TC), 3/1/96-2/29/00.
12. Zimmer, "In Vitro Testing of Shoulders and Shoulder Prostheses in Cadavera," Principal Investigator, \$98,063 (TC), 8/1/98-8/12/01.
13. The National Institutes of Health, "Etiology of CMC Joint Osteoarthritis," Co-Investigator, 1 R01 AR41020, \$531,987 (DC) \$907,038 (TC), 4/1/98-3/31/02.
14. The National Institutes of Health, SBIR Phase I, "Laser-Assisted Cartilage Repair Using Collagen Adhesives," 1-R43-AR48738-01, Co-Investigator, \$32,943 (TC), 4/17/02-10/16/02.
15. The National Institutes of Health, RO1, "Anisotropy and Nonlinearity of Cartilage Mechanics," Principal Investigator, 1 R01 AR46532, \$457,892 (DC), \$724,377 (TC), 2/1/00-1/31/04.
16. National Institutes of Health, R01 AR43628, "Biotribology of Diarthrodial Joints," Principal Investigator, \$525,000 (DC), \$845,205 (TC), 6/1/00-5/31/04.
17. The National Institutes of Health, R01 AR49922, "Intervertebral Disc Response to Cyclic Loading In Vivo," Principal Investigator: C. T. Hung, \$1,041,497 (TC), 09/26/02-08/31/06.
18. The National Institutes of Health, R21 EB004532, "Confined Compression Of Single Cells Using AFM," Principal Investigator: K.D. Costa, \$275,000 (DC), \$423,045 (TC), 9/1/04-8/31/06.
68. The National Institutes of Health, R21 AR053530, "Tissue Engineered Osteochondral Patella Resurfacing," Principal Investigator: J.L. Cook (U Missouri), C.T. Hung (Consortium PI at Columbia), \$275,000 (DC), \$420,323 (TC), (Consortium: \$90,747 TC), 3/1/06-2/28/09.
69. National Institutes of Health, R01 AR43628, "Biotribology of Diarthrodial Joints," Principal Investigator: G.A. Ateshian, \$704,000 (DC), \$1,084,973 (TC), 7/1/04-4/30/09.
70. The Musculoskeletal Transplant Foundation, MTF CU07-194, "Physiologic Loading for Long-Term Maintenance of Osteochondral Grafts in Culture," Principal Investigator: C.T. Hung, \$125,000 (TC), 01/01/08-5/31/09.

71. National Institutes of Health, R01 AR46568, "Physiologic Loading for Cartilage Tissue Engineering," Principal Investigator: C. T. Hung, \$1,400,000 (TC), 1/24/00-08/31/09.
72. The National Institutes of Health, R01, "Anisotropy and Nonlinearity of Cartilage Mechanics," Principal Investigator: G.A. Ateshian, 1 R01 AR46532, \$910,000 (DC), \$1,430,516 (TC), 2/1/04-1/31/10.
19. The National Institutes of Health, R01 AR052871, "Chondrocyte Mechanotransduction Using Microfluidics," Principal Investigator: C.T. Hung, \$1,449,000 (TC), 08/06/06-7/31/10.
20. The National Institutes of Health, R01 GM083925, "FEBio - Finite Elements for Biomechanics and Biophysics," Co-Principal Investigators: Gerard A. Ateshian and Jeffrey A. Weiss (University of Utah) \$1,091,684 (DC), \$1,318,933 (TC), 09/30/08-09/01/12.
21. National Institutes of Health, R01 AR46568, "Physiologic Loading for Cartilage Tissue Engineering," Principal Investigator: C. T. Hung, \$3,156,823 (TC), 09/01/09-08/31/14.
22. National Institutes of Health, R01 AR043628, "Biotribology of Diarthrodial Joints," Principal Investigator: G.A. Ateshian, \$1,241,280 (TC), 06/01/2010-11/30/2014.

Proposals Pending

1. National Institutes of Health, R01 AR043628, "Biotribology of Diarthrodial Joints," Principal Investigator: G.A. Ateshian, \$1,548,984 (TC), 10/01/2015-09/30/2019.
2. National Institutes of Health, R01 AR068133, "Incorporation of Dexamethasone Delivery within Engineered Cartilage," Principal Investigator: C.T. Hung, \$2,970,249 (TC), 10/01/2015-09/30/2019.

Consultation and Mentorship on Grants

1. The National Institutes of Health, "Mechanical Stimulation of IVD Cells;" Consultant, R01 AR47442, PI: Lori A. Setton, Duke University, 03/01/01-02/28/06.
2. The National Institutes of Health, "Correlates of cartilage thickness in the knees of subjects in the Framingham Study;" Consultant, PI: David T. Felson, Boston University.
3. The National Institutes of Health, "Tissue engineering of temporomandibular joint cartilage;" Mentor: B1K22 DE14228, 7/1/01-6/30/04, PI: Steven B. Nicoll, Columbia University.
4. The National Institutes of Health, R01 AR053344, "Biomechanics of the Dysplastic Hip," Principal Investigator: J.A. Weiss, 07/01/07-06/30/12.

Journal Review Activities

American Journal of Sports Medicine
Annals of Biomedical Engineering
Biomechanics and Modeling in Mechanobiology
Biorheology
Cellular and Molecular Bioengineering
Clinical Orthopaedics and Related Research
International Journal of Engineering Science
International Journal of Non-Linear Mechanics
International Journal for Numerical Methods in Engineering

Journal of Biomechanical Engineering
Journal of Shoulder and Elbow Surgery
Journal of Structural Biology
Journal of Orthopaedic Research
Journal of Physical Chemistry
Magnetic Resonance in Medicine
Medical Engineering and Physics
Osteoarthritis and Cartilage
Tissue Engineering

Grant Review Activities

National Institute of Aging, ad hoc reviewer
National Institute of Arthritis and Musculoskeletal and Skin Diseases, ad hoc reviewer
National Science Foundation, ad hoc reviewer
Natural Sciences and Engineering Research Council of Canada
The Whitaker Foundation, consulting reviewer

Post-Doctoral Fellows

Michael A. Soltz, PhD, Columbia University, New York, NY, Advisor: Gerard A. Ateshian (2000-2001)
Steven B. Nicoll, PhD, University of California, Berkeley and San Francisco, Advisor: Dr. Rajendra S. Bhatnagar (2000-2002). Current Position: Associate Professor of Biomedical Engineering, City College of the City University of New York, New York, NY (2010-)
Hui Chen, PhD, Cornell University, Ithaca, NY, PhD Advisor: Subrata Mukherjee (2008-2010). Credit Risk Manager, American Express, New York, NY.
Michael B. Albro, PhD, Columbia University, New York, NY, PhD Advisor: Gerard A. Ateshian (2010-2014). Marie Curie Research Fellow, Imperial College, London, United Kingdom.

Past Doctoral Students

1. Huiqun Wang, 1993-97, Advisor: GA Ateshian, Financial Analyst, Bloomberg, New York, NY.
Boundary lubrication of articular cartilage: The role of interstitial fluid pressure, surface porosities and equilibrium friction coefficient.
2. Xiaodong Wang, 1994-97, Advisor: GA Ateshian, Financial Analyst, Solomon Brothers, New York, NY.
The frictional role of interstitial fluid viscosity at the interface of deformable porous media.
3. Michael A. Soltz, 1996-2000, Advisor: GA Ateshian. Current Position: Program Manager, Pre-Clinical, Covidien, North Haven, CT. Past positions: Senior Engineer, US Surgical, North Haven, CT. Engineer II, Thoratec Corp., Pleasanton, CA. Principal Engineer – Research & Development, BD Medical – Medical Surgical Systems, Franklin Lakes, NJ.
Investigation of a Boundary Friction Model for Articular Cartilage: Effects of Interstitial Fluid Pressurization and Surface Topography

4. Rajeev Kelkar, 1992-96, Advisors: GA Ateshian, VC Mow. Current Position: Insight Science Technology, Sunnyvale, CA. Past Positions: ProAnalysis, Inc., Mountain View, CA; Exponent, Inc., Menlo Park, CA
Normal and abnormal mechanics of the shoulder: studies of articular geometry, contact and kinematics.
5. S. Daniel Kwak, 1991-97, Advisors: GA Ateshian, VC Mow. Current Position: DePuy Spine, Raynham, MA. Past Positions: IT Engineer, ATG, Boston, MA; Lecturer, Harvard University, Boston Children's Hospital.
Experimental and mathematical investigation of the human knee: anatomy, kinematics and contact.
6. Liangfeng Xu, 1994-99, Advisors: GA Ateshian, VC Mow. Current Position: Senior Research Engineer, Nokia, Irving, TX.
Biomechanics of the thumb carpometacarpal joint: Topography, ligamentous structure, articular contact, and kinematics.
7. Chun-Yuh Huang, 1995-2001, Advisors: GA Ateshian, VC Mow. Current Position: Associate Professor of Biomedical Engineering, University of Miami, FL (2009-). Past Positions: Assistant Professor, College of Dental Medicine, Nova Southeastern University, Fort Lauderdale, FL (2006-2008); Postdoctoral fellow, University of Miami, Miami, FL, 2001-2006.
Biomechanics of soft tissues in the shoulder joint – Glenohumeral cartilage, ligament, and rotator cuff tendon.
8. Zohara Cohen, 1994-2001, Advisors: GA Ateshian, VC Mow. Current Position: Program Director, Division of Discovery Science & Technology, National Institute of Biomedical Imaging and Bioengineering, National Institutes of Health, Bethesda, MD. Past Position: Postdoctoral research fellow, Physical Disabilities Branch, National Institutes of Health, Bethesda, MD, 2001-2006.
Analysis of diagnostic tools and treatment methods for osteoarthritis in the patellofemoral joint: In vivo methods for employing magnetic resonance imaging
9. Vincent Wang, 1996-2001, Advisors: GA Ateshian, VC Mow. Current Position: Associate Professor, Department of Biomedical Engineering and Mechanics, Virginia Tech, Blacksburg, VA. Past Positions: Assistant Professor, Dept. of Orthopaedic Surgery, Rush University Medical Center, Chicago, IL. Post-doctoral fellow, Mt-Sinai Hospital, New York, NY, 2001-2006.
Biomechanics of the normal and surgically reconstructed shoulder
10. Changbin Wang, 1999-2001, Advisors: CT Hung, GA Ateshian. Current Position: Director, OPEN Underwriting - Pricing and Balance Transfer, American Express, New York, NY. Past position: Post-doctoral fellow, Columbia University, New York, NY.
Digital video microscopy-based determination of cartilage inhomogeneity, anisotropy and tension-compression nonlinearity: Implications on chondrocyte environment
11. Robert L. Mauck, 1998-2003, Advisors: CT Hung, GA Ateshian. Current Position: Associate Professor, Orthopaedic Surgery, University of Pennsylvania, Philadelphia (2005-). Past Position: Post-doctoral fellow, National Institutes of Health (2003-2005).

Functional tissue engineering of articular cartilage: The effect of physical forces on the in vitro growth of engineered constructs

12. Ramaswamy Krishnan, 1999-2004, Advisor: GA Ateshian. Current Position: Instructor, Department of Emergency Medicine, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA (2011-). Past Positions: Engineer, Exponent, Inc., Philadelphia, PA (2004-2005); Research Fellow, Department of Environmental Health, Harvard School of Public Health, Cambridge, MA (2005-2011).

Role of interstitial fluid pressurization in articular cartilage lubrication

13. Seonghun Park, 2002-2005, Advisor: GA Ateshian. Current Position: Associate Professor of Mechanical Engineering, Pusan University, South Korea (2007-). Past Position: Post-doctoral fellow, Hospital for Special Surgery, New York (2005-2007).

Interstitial fluid flow-dependent and flow-independent mechanical and tribological response of articular cartilage

14. Ines Basalo Perez-Luna, 2000-2005, Advisor: GA Ateshian. Current Position: Assistant Professor in Practice, Department of Mechanical Engineering, University of Miami, Miami, FL. Past Positions: Adjunct Professor of Mechanical Engineering, Columbia University, New York, NY (2008-). Adjunct Professor of Mechanical Engineering, The Cooper Union (2007-2008); CIBC World Markets Corp., New York (2006-2007).

Effects of enzymatic degradation on the frictional properties of articular cartilage and development of an orthotropic finite deformation constitutive law

15. Nadeen Chahine, 2000-2006, Advisors: GA Ateshian, CT Hung. Current Position: Associate Professor of Molecular Medicine and Neurosurgery, Feinstein Institute for Medical Research, Manhasset, NY (2008-). Past Position: Lawrence Postdoctoral Fellow, Lawrence Livermore National Lab, California (2006-2008).

Multi-scale measurements of the mechanical and transport properties of native and engineered articular cartilage

16. Eric G. Lima, 2001-2008, Advisors: CT Hung, GA Ateshian. Current Position: Associate Professor of Mechanical Engineering, The Cooper Union, New York, NY (2008-).

The tissue engineering of functional osteochondral construct for cartilage repair

17. Clare Canal, 2002-2009, Advisor: GA Ateshian. Current Position: Postdoctoral Fellow, Department of Orthopaedic Surgery, Mt. Sinai Hospital, New York, NY (2011-).

Contact mechanics of articular layers: 2D strain fields and their relation to tissue inhomogeneity.

18. Matteo Caligaris, 2004-2010, Advisor: GA Ateshian. Current Position: Senior Design Engineer, Pall Life Science, Media technology and Development, Port Washington, NY (2012-).

Effect of migrating contact area and degenerative joint disease on interstitial fluid pressurization and the frictional response of articular cartilage

19. Michael Albro, 2005-2010, Advisor: GA Ateshian. Current Position: Postdoctoral fellow, Department of Mechanical Engineering, Columbia University, New York, NY (2010-)

Solute transport in porous deformable media: Active uptake in dynamically loaded tissue and molecular partitioning in the cellular cytoplasm

20. Roger Goldman, 2007-2011, Advisors: N. Simaan, GA Ateshian. Current Position: Resident, Columbia University Medical Center, New York, NY (2011-)
Analysis, algorithms, and control for intelligent surgical exploration and intervention
21. Sevan Oungoulian, 2008-2015, Advisor: GA Ateshian. Current Position: Development Scientist, TriReme Medical Inc., Pleasanton, CA (2015-)
Friction and wear measurements of bovine articular cartilage against non-native materials
22. Charlie Yongpravat, 2009-2015, Advisors: GA Ateshian, CS Ahmad. Current Position: Biomedical Engineer, Division of Cardiovascular Devices, Food and Drug Administration, Washington, D.C.
Pre-surgical planning of total shoulder arthroplasty and glenohumeral instability repair

Current Doctoral Students

1. Alexander Cigan, 2010-, Advisor: GA Ateshian
2. Brian Jones, 2010-, Advisor: GA Ateshian
3. Robert Nims (SEAS Presidential Fellow), 2010-, Advisor: GA Ateshian
4. Chieh Hou, 2012-, Advisor: GA Ateshian
5. Krista Durney, 2012-, Advisor: GA Ateshian
6. Brandon K. Zimmerman (NSF Fellow), 2014-, Advisor: GA Ateshian
7. Jay Shim (NSF Fellow), 2015-, Advisor: GA Ateshian

Masters and Visiting Students

Michael Jenkins, 1995-96
James Kim, 1995-96
Anna Stankiewicz, 1997-99
Kin Tso, 1998
Christine Palma, 1999-2000
Rumana Huq, 1999
Ines Basalo Perez-Luna, 2000
Steven Steer, 2000
Seonghun Park, 2000
Malaika Gamble, 2000
Nadine Chahine, 2000
Adam Mantzaris, 2001-2002
George Yuan, 2001-2002
James W. Raistrick, 2002-2003
Noah Meade, 2002-2003
Bryte Moe-Anderson, 2002-2003
Michael Albro, 2004-2005
Michael Mitchell, 2004-2005
Paola de Leon, 2004-2005
Victoria Wei, 2004-2005
Christine Schwaller, 2005-2006
Daniel Ginat, 2005
Michael Kaplun, 2005-2008

Vikram Rajan, 2006-2009
Oluwaseun Omofoye, 2007
Ricardo Vallejo Estrada, 2007
Elliot Greenblatt, 2008
Bo Chen, 2009
Stephany Chang, 2009-2010
Orian Ben-Artzi, 2010-2011
Thomas Schmidt, 2011 (visiting, Duisberg-Essen University, Germany)
Szusien Chen, 2011
Zekai Zhou, 2012
Daye Lin, 2012
Sara Manzano Martínez, 2013 (visiting, Zaragoza University, Spain)
Hadley Feingold, 2014 (visiting, Wesleyan University, CT)
Lucie Karbowski, 2014 (visiting, University of Lorraine, France)
Antoine Dusséaux, 2015 (visiting, Ecole Polytechnique, France)
Marina Morrow, 2015 (visiting, University of Rochester, NY)
James Boorman-Padgett, 2015

Undergraduate Students (ME E3900-3901 Honors Tutorial Advisees / ME E3998 Projects in Mechanical Engineering, Summer Internships)

Michael Gertner (1991), Vincent Wang (1993-94), Zohara Cohen (1994), Cheryl Naehar (1994), Amanda Adams (1994), Bruce Badner (1994), Nina Padmore (1994), Steve Thomopoulos (1994), Michael Jenkins (1995), Fazal Mohd-Ghazali (1995), William Morrison (1996-97), Alex Shterenberg (1996), Stephanie Burky (1997), Ruddy Castillo (1997), Oladapo Fakunle (1998-99), Shant Barsoumian (1999-2000), Jennifer Wade (1999), Jimmy Deng (2000), Steven Steer (2000), Aaron Williams (2000-2001), Monika Kopacz (2000-2003), Joshua Mason (2001), Lindsay Kuhn (2001-2002), Rania El-Beshbeshy (2002-2003), Nicole Gabriel (2002), Rena Ridovsky (2002-2003), Qi Qi Cheng (2002-2004), Barry Wohl (2002-2003), Gidon Ofek (2003), Elise Mariner (2003), David Raj (2003-2004), Wasnard Victor (2003-2005), Paola de Leon (2004), Tania Ullah (2004), Michael Carter (2004-2005), John Grando (2007), Roland Li (2007-2010), Leah Petersen (2008), Rajan Banerjee (2008-2010), Mai Hyunh (2009-2010), Frances Bell (2010), Richard Romeo (2010), Chelsea Saniel (2010), Yuna Saiki (2010), Sung Hoon Steven Yoon (2010-2011), Brenda Chen (2011), John Esau (2011-2012), Marissa Dreyer (2011-2012), Calvin Zhu (2011-2012), Kevin Yeroushalmi (2011-2012), Kristin Hehir (2011-2012), Mary Quien (2012), Garren Tutunjian (2012), Jay Shim (2012-2014), Daniel Park (2012-2013), Kathleen Atkatsh (2013), Akaljot Singh (2013-2015), Kelly Terlizzi (2014-2015), Ashley Koo (2015-), Jason Suh (2015-).

Teaching

Fall 1991	ME E3601 Classical Control Systems (48 students)
Spring 1992	EM E3105 Mechanics (71 students)
Fall 1992	ME E4701 Introduction to Biomechanics (14 students)
Spring 1993	ME E3409 Introduction to Computer-Aided Design (51 students)
Fall 1993	ME E3401 Mechanics of Machines (37 students)
Spring 1994	ME E3408 Introduction to Computer-Aided Design I (49 students)
Fall 1994	ME E4701 Introduction to Biomechanics (16 students)

Fall 1994 ME E6422 Introduction to Elasticity I (17 students)
Spring 1995 EM E3105 Mechanics (19 students)
Fall 1995 ME E6422 Introduction to Elasticity I (12 students)
Spring 1996 EM E3105 Mechanics (26 students)
Fall 1996 ME E3401 Mechanics of Machines (19 students)
Spring 1997 ME E3408 Computer Graphics and Design (33 students)
Fall 1997 ME E3409 Computer Aided Design (29 students)
Fall 1997 ME-BME E4702 Advanced Musculoskeletal Biomechanics (12 students, with XE Guo)

Spring 1998 ME E3408 Computer Graphics and Design (26 students)
Spring 1998 BME E3910 Biomedical Engineering Design (9 students)
Spring 1999 ME E3408 Computer Graphics and Design (30 students)
Spring 1999 BME E3910 Biomedical Engineering Design (18 students)
Fall 1999 ME E6422 Introduction to Elasticity I (19 students)
Fall 1999 ME-BME E4702 Advanced Musculoskeletal Biomechanics (18 students, with XE Guo)

Spring 2000 ME E3408 Computer Graphics and Design (24 students)
Spring 2000 BME E3910 Biomedical Engineering Design (31 students, with team)
Spring 2000 BME E3820 Biomedical Engineering Laboratory II (35 students, 4 of 14 weeks, with XE Guo)

Spring 2000 BME E4502 Tissue Engineering II (30 students, 2.5 of 14 weeks, with CT Hung)

Fall 2000 ME E3401 Mechanics of Machines (18 students)
Spring 2001 ME E3408 Computer Graphics and Design (36 students)
Spring 2001 BME E3910 Biomedical Engineering Design (42 students, with team)
Spring 2001 BME E3820 Biomedical Engineering Laboratory II (34 students, 6 of 14 weeks, with CT Hung)

Fall 2001 MEBM E6310 Mixture Theories for Biological Tissues I (9 students)
Spring 2002 ME E3408 Computer Graphics and Design (32 students)
Spring 2002 MEBM E6311 Mixture Theories for Biological Tissues II (11 students)
Spring 2002 BME E3820 Biomedical Engineering Laboratory II (38 students, 5 of 14 weeks, with CT Hung)

Fall 2002 MECE E6422 Introduction to Elasticity I (19 students)
Spring 2003 ME E3408 Computer Graphics and Design (42 students)
Spring 2003 BME E3820 Biomedical Engineering Laboratory II (48 students, 5 of 14 weeks, with CT Hung)

Spring 2003 BME E3910 Biomedical Engineering Design (supervised a design teams, with P Sajda)

Fall 2003 MECE E3409 Computer-Aided Design (18 students)
Fall 2003 MECE E1001 Mechanical Engineering: From Micromachines to Jumbo Jets (37 students, 2 of 14 weeks)

Spring 2004 MECE E3408 Computer Graphics and Design (39 students)
Fall 2004 MECE E3409 Computer Aided Design (39 students)
Fall 2004 MEBM E6310 Mixture Theory for Biological Tissues (12 students)
Fall 2004 BMEN E3830 Biomedical Engineering Lab II (69 students, 2 of 14 weeks)
Spring 2005 On sabbatical leave

Fall 2005	MECE E3409 Computer Aided Design (41 students)
Fall 2005	MECE E6422 Introduction to Elasticity I (21 students)
Spring 2006	BMEN E3920 Biomedical Engineering Design II (68 students)
Fall 2006	MECE E3409 Computer Aided Design (55 students)
Fall 2006	MEBM E6310 Mixture Theory for Biological Tissues I (8 students)
Spring 2007	MEBM E6311 Mixture Theory for Biological Tissues II (8 students)
Fall 2007	MECE E3409 Computer Aided Design (41 students)
Fall 2007	MECE E6422 Introduction to Elasticity I (17 students)
Fall 2008	MECE E1001 From Micromachines to Jumbo Jets (35 students)
Fall 2009	MECE E1001 From Micromachines to Jumbo Jets (45 students)
Fall 2009	MEBM E6310 Mixture Theory for Biological Tissues I (7 students)
Spring 2010	MEBM E6311 Mixture Theory for Biological Tissues II (4 students)
Fall 2010	MECE E3409 Machine Design (45 students)
Fall 2010	MECE E6422 Introduction to Elasticity I (39 students)
Fall 2011	MECE E3409 Machine Design (62 students)
Fall 2011	MECE E6422 Introduction to Elasticity I (15 students)
Fall 2012	MECE E3409 Machine Design (62 students)
Spring 2013	MEBM E6310 Mixture Theory for Biological Tissues I (12 students)
Fall 2013	MECE E6422 Introduction to Elasticity I (21 students)
Spring 2014	MECE E3450 Computer-Aided Design (26 students)
Fall 2014	On sabbatical leave
Spring 2015	MECE E6100 Advanced Mechanics of Fluids (22 students)
Fall 2015	MECE E3450 Computer-Aided Design (14 students)
Fall 2015	MECE E6422 Introduction to Elasticity (32 students)

University Activities

Mechanical Engineering Representative to Committee on Instruction (2015-)

Member of Undergraduate Committee, Department of Mechanical Engineering (2015-)

Chair of Fluid Mechanics Search Committee, Department of Mechanical Engineering (2014-2015)

Chair of Department of Mechanical Engineering (2011-2014)

Member of Graduate Committee, Department of Mechanical Engineering (2011-2015)

Member of SEAS Strategic Planning Committee (2010)

SEAS Dean Search Committee (2007-2009)

Chair of Faculty Search Committee, Department of Mechanical Engineering (2007-2008)

Member of Graduate Committee, Department of Biomedical Engineering (2007-2011)

Chair of Undergraduate Committee, Department of Mechanical Engineering (2006-2011)

Member of Laboratory Committee, Department of Biomedical Engineering (2005-2007)

Academic Quality Fund Review Committee (2003-2004)

Egleston Medal Committee (2003-2004, 2010-)

Chair of ABET Committee, Department of Biomedical Engineering (2001-2003)

Member of ABET Committee, Department of Biomedical Engineering (2000-2003)

Certified in Good Clinical Practices, Office of Clinical Trial, Columbia University/New York-Presbyterian Hospital (2000)

Vice-Chair, Department of Biomedical Engineering (1999-2002)

Chair of Laboratory Committee, Department of Biomedical Engineering (1999-2002)

Member of Undergraduate Committee, Department of Biomedical Engineering (1999-2007)

Member of Graduate Committee, Department of Biomedical Engineering (1999-2002)

Y2K Representative, Department of Mechanical Engineering (1999-2000)

Chair of Laboratory Committee, Department of Mechanical Engineering (1995-1997)

Member of Center for Biomedical Engineering (1995-2000)

Sophomore Advisor, Department of Mechanical Engineering (1995-1996)

Member of Biomedical Engineering Program Steering Committee (1995).

University Senator, (1994-1996) (Faculty Affairs Committee, Libraries and Academic Computing Committee)

Secretary, Mechanical Engineering Faculty Meetings (1993-1994).

Undergraduate Committee, Department of Mechanical Engineering (1991-present)

Member of Laboratory Committee, Department of Mechanical Engineering (1991-2004)

Doctoral Committee, Ter-Ping Liao, 1993 (ME); Chinchih Fang, 1993 (ME); Anil Kaul, 1993 (ME); Taehee Kim, 1993 (ME); Tamer Wasfy, 1994 (ME); Yungao Sun, 1994 (ME, Chair); Lilai Yang, 1994 (ME); Don Lin, 1994 (ME); Yoo Chan Jeon, 1994 (ME); Haluk Elci, 1995 (ME); Gangbing Song, 1995 (ME); Dragan Lozancic, 1995 (ME); Bill Yoshimi, 1995 (ME); Nathaniel Bachrach, 1995 (ME); Chen-Ying Wang, 1995 (ME); James C. Iatridis, 1996 (ME); Rajeev Kelkar, 1996 (ME); Yi-Cheng Huang, 1996 (ME); Hyun-Sang Jang (ME), 1996; Raed Kombargi, 1997 (AP); Huiqun Wang, 1997 (ME); S. Daniel Kwak, 1997 (ME); Xiaodong Wang, 1997 (ME); Jianjun Feng, 1999 (ME, City University of New York); Osama R. Mawlawi, 1999 (BE); Liangfeng Xu, 1999 (ME); Michael A. Soltz, 2000 (ME); Hong-Jen Chen, 2001 (ME); Zohara A. Cohen, 2001 (ME); Chun-Yuh Charles Huang, 2001 (ME); Changbin Wang, 2001 (ME); Vincent M. Wang, 2001 (ME); Kuan Zhang, 2002 (ME, Chair); Neil Dong, 2002 (ME); Raphael Akogyeram, 2002 (ME, Chair); Peter A. LeVoci, 2002 (ME, Chair); Dejan Milentijevic, 2003 (BME, City University of New York); Robert L. Mauck, 2003 (BME); Matthew F. Koff, 2004 (BME); Ramaswamy Krishnan, 2004 (ME); Pen-Hsiu Grace Chao, 2005 (BME, Chair); Seonghun Park, 2005 (ME); Yong Xue Gan, 2005 (ME); Ines Basalo Perez-Luna, 2006 (ME); Nadeen O. Chahine, 2006 (BME); Terri-Ann Kelly, 2006 (BME, Chair); Ningli Liu, 2006 (ME); Andrew Anderson, 2007 (BE, University of Utah); Kenneth W. Ng, 2007 (BME); Kathryn Guterl (BME); Eric G. Lima 2008 (BME); Mattei Ciocarlie (CS); Thomas Alexander Quinn, 2008 (BME), Thai Huu T. Nguyen, 2009 (ME); Liming Bian, 2009 (BME); Michael B. Albro, 2009 (BME); Matteo Caligaris, 2010 (ME); Wei Wei, 2010 (ME); Nandan Nerurkar, 2010 (ME, University of Pennsylvania); Ben Elkin, 2010 (BME, Chair); Gregory Fomovsky, 2010 (BME, Chair); Pablo Prieto-Muñoz, 2012 (ENME); Jean Provost, 2012 (BME); Bhavik Nathwani, 2012 (ME, Chair); Gen Satoh 2013 (ME, Chair); Emil Sandoz-Rosado 2013 (ME, Chair); Colin McAuliffe, 2013 (ENME); Andrea Tan 2014 (BME, Chair); Sonal Sampat 2014 (BME, Chair); Sally Arno 2014 (NYU – Hospital for Joint Diseases); Ronny Li 2014 (BME); Wang Yao 2014 (ME); Kyoko Yoshida 2014 (ME); Michael Fernandez 2014 (ME); Charlie

Yongpravat 2015 (ME); Margaret Boushell 2015 (BME); Adam Nover 2015 (BME); Alexandre Costet 2015 (BME).

Book Editorships

1. Proceedings of the 1999 Summer Bioengineering Conference. V.K. Goel, R.L. Spilker, G.A. Ateshian and L.J. Soslowsky, eds. ASME, BED-Vol. 42,1999.
2. Proceedings of the 2001 Summer Bioengineering Conference. R.D. Kamm, G.W. Schmid-Schonbein, G.A. Ateshian and M.S. Hefzy, eds. ASME, BED-Vol. 50, 2001.

Book Chapters

1. Mow, V.C., Ateshian, G.A., and Rosenwasser, M.P. (1988) Development of finite element models for diarthrodial joints. In: Computational Methods in Bioengineering, ASME, R.L. Spilker and B.R. Simon (eds.), 9:1-14.
2. Soslowsky, L.J., Ateshian, G.A., and Mow, V.C. (1990) Stereophotogrammetric Determination of Joint Anatomy and Contact Areas. In: Biomechanics of Diarthrodial Joints, V.C. Mow, A. Ratcliffe, and S.L-Y. Woo (eds.), Springer-Verlag, New York, 2:243-268.
3. Mow, V.C., Ateshian, G.A., and Ratcliffe, A. (1992) Anatomic Form and Biomechanical Properties of Articular Cartilage of the Knee Joint. In: Biology and Biomechanics of the Traumatized Synovial Joint, The Knee as a Model, G.A.M. Finerman, and F.R. Noyes (eds), AAOS, 55-81.
4. Ateshian, G.A., Colman, W.W., and Mow, V.C. (1994) Quantitative Anatomy of the Knee Joint. In: Knee Surgery, F.H. Fu, C.D. Harner, and K.G. Vince (eds), Williams & Wilkins, Baltimore, Maryland, Vol. 1, pp. 55-76.
5. Mow, V.C., Ateshian, G.A., and Spilker, R.L. (1995) Biomechanics of Diarthrodial Joints: A Review. In: The Laureate of the Dragon, Kai-Ming Chan (ed), Waverly Info-Med Ltd, Hong Kong, pp. 3-31.
6. Ateshian, G.A., and Soslowsky, L.J. (1997) Quantitative anatomy of diarthrodial joint articular layers. In:Basic Orthopaedic Biomechanics, V.C. Mow and W.C. Hayes (eds), Raven Press, New York, 2nd ed, pp. 253-273.
7. Mow, V.C., and Ateshian, G.A. (1997) Friction, Lubrication, and Wear of Diarthrodial Joints. In:Basic Orthopaedic Biomechanics, V.C. Mow and W.C. Hayes (eds), Raven Press, New York, 2nd ed, pp. 275-315.
8. Mow, V.C., Flatow, E.L., and Ateshian, G.A. (2000) Biomechanics. In: Orthopaedic Basic Science, J. A. Buckwalter, T.A. Einhorn, and S.R. Simon (eds), American Academy of Orthopaedic Surgeons, Rosemont, IL, 2nd ed, pp. 133-180.
9. Ateshian, G.A., and Wang, X. (2000) Boundary Conditions at the Viscous Sliding Interface of Incompressible Porous Deformable Media. In: Multifield Problems, State of the Art. A.-M. Sändig, W. Schiehlen, W. Wendland (eds), Springer Verlag, Berlin, pp. 115-124.
10. Ateshian, G.A., and Hung, C.T. (2004) Functional Properties of Native Articular Cartilage. In: Functional Tissue Engineering: The Role of Biomechanics. F. Guilak, D. Butler, S.A. Goldstein, D. Mooney (eds), Springer-Verlag, New York, pp.46-68.

Full-Length Papers

1. **Ateshian, G.A.**, Soslowky, L.J., and Mow, V.C., 1991. Quantitation of articular surface topography and cartilage thickness in knee joints using stereophotogrammetry. *J Biomech* **24**(8), 761-776
2. Soslowky, L.J., Flatow, E.L., Bigliani, L.U., Pawluk, R.J., **Ateshian, G.A.**, and Mow, V.C., 1992. Quantitation of in situ contact areas at the glenohumeral joint: a biomechanical study. *J Orthop Res* **10**(4), 524-534
3. **Ateshian, G.A.**, Rosenwasser, M.P., and Mow, V.C., 1992. Curvature characteristics and congruence of the thumb carpometacarpal joint: differences between female and male joints. *J Biomech* **25**(6), 591-607
4. **Ateshian, G.A.**, 1993. A B-spline least-squares surface-fitting method for articular surfaces of diarthrodial joints. *J Biomech Eng* **115**(4A), 366-373
5. Mow, V.C., **Ateshian, G.A.**, and Spilker, R.L., 1993. Biomechanics of diarthrodial joints: a review of twenty years of progress. *J Biomech Eng* **115**(4B), 460-467
6. **Ateshian, G.A.**, Kwak, S.D., Soslowky, L.J., and Mow, V.C., 1994. A stereophotogrammetric method for determining in situ contact areas in diarthrodial joints, and a comparison with other methods. *J Biomech* **27**(1), 111-124
7. Mow, V.C., Bachrach, N.M., and **Ateshian, G.A.**, 1994. Effects of a subchondral bone perforation on the load support mechanism within articular cartilage. *Wear* **175**(1-2), 167-175
8. **Ateshian, G.A.**, Lai, W.M., Zhu, W.B., and Mow, V.C., 1994. An asymptotic solution for the contact of two biphasic cartilage layers. *J Biomech* **27**(11), 1347-1360
9. Flatow, E.L., **Ateshian, G.A.**, Soslowky, L.J., Pawluk, R.J., Grelsamer, R.P., Mow, V.C., and Bigliani, L.U., 1994. Computer simulation of glenohumeral and patellofemoral subluxation. Estimating pathological articular contact. *Clin Orthop Relat Res*(306), 28-33
10. **Ateshian, G.A.**, Ark, J.W., Rosenwasser, M.P., Pawluk, R.J., Soslowky, L.J., and Mow, V.C., 1995. Contact areas in the thumb carpometacarpal joint. *J Orthop Res* **13**(3), 450-458
11. **Ateshian, G.A.**, and Wang, H., 1995. A theoretical solution for the frictionless rolling contact of cylindrical biphasic articular cartilage layers. *J Biomech* **28**(11), 1341-1355
12. **Ateshian, G.A.**, 1997. A theoretical formulation for boundary friction in articular cartilage. *J Biomech Eng* **119**(1), 81-86
13. Kwak, S.D., Colman, W.W., **Ateshian, G.A.**, Grelsamer, R.P., Henry, J.H., and Mow, V.C., 1997. Anatomy of the human patellofemoral joint articular cartilage: surface curvature analysis. *J Orthop Res* **15**(3), 468-472
14. **Ateshian, G.A.**, and Wang, H., 1997. Rolling resistance of articular cartilage due to interstitial fluid flow. *Proc Inst Mech Eng [H]* **211**(5), 419-424
15. Wang, H., and **Ateshian, G.A.**, 1997. The normal stress effect and equilibrium friction coefficient of articular cartilage under steady frictional shear. *J Biomech* **30**(8), 771-776
16. **Ateshian, G.A.**, Warden, W.H., Kim, J.J., Grelsamer, R.P., and Mow, V.C., 1997. Finite deformation biphasic material properties of bovine articular cartilage from confined compression experiments. *J Biomech* **30**(11-12), 1157-1164
17. **Ateshian, G.A.**, Huiqun, W., and Lai, W.M., 1998. The role of interstitial fluid pressurization and surface porosities on the boundary friction of articular cartilage. *J Tribol, Trans ASME* **120**, 241-251

18. **Ateshian, G.A.**, and Wang, X., 1998. Sliding tractions on a deformable porous layer. *J Tribol, Trans ASME* **120**(1), 89-96
19. Xu, L., Strauch, R.J., **Ateshian, G.A.**, Pawluk, R.J., Mow, V.C., and Rosenwasser, M.P., 1998. Topography of the osteoarthritic thumb carpometacarpal joint and its variations with regard to gender, age, site, and osteoarthritic stage. *J Hand Surg [Am]* **23**(3), 454-464
20. Ahmad, C.S., Kwak, S.D., **Ateshian, G.A.**, Warden, W.H., Steadman, J.R., and Mow, V.C., 1998. Effects of patellar tendon adhesion to the anterior tibia on knee mechanics. *Am J Sports Med* **26**(5), 715-724
21. Soltz, M.A., and **Ateshian, G.A.**, 1998. Experimental verification and theoretical prediction of cartilage interstitial fluid pressurization at an impermeable contact interface in confined compression. *J Biomech* **31**(10), 927-934
22. Mow, V.C., **Ateshian, G.A.**, Lai, W.M., and Gu, W.Y., 1998. Effects of fixed charges on the stress-relaxation behavior of hydrated soft tissues in a confined compression problem. *International Journal of Solids and Structures* **35**(34-35), 4945-4962
23. Cohen, Z.A., McCarthy, D.M., Kwak, S.D., Legrand, P., Fogarasi, F., Ciaccio, E.J., and **Ateshian, G.A.**, 1999. Knee cartilage topography, thickness, and contact areas from MRI: in-vitro calibration and in-vivo measurements. *Osteoarthritis Cartilage* **7**(1), 95-109
24. Kelkar, R., and **Ateshian, G.A.**, 1999. Contact creep of biphasic cartilage layers. *Journal of Applied Mechanics, Transactions ASME* **66**(1), 137-145
25. Donzelli, P.S., Spilker, R.L., **Ateshian, G.A.**, and Mow, V.C., 1999. Contact analysis of biphasic transversely isotropic cartilage layers and correlations with tissue failure. *J Biomech* **32**(10), 1037-1047
26. Kwak, S.D., Ahmad, C.S., Gardner, T.R., Grelsamer, R.P., Henry, J.H., Blankevoort, L., **Ateshian, G.A.**, and Mow, V.C., 2000. Hamstrings and iliotibial band forces affect knee kinematics and contact pattern. *J Orthop Res* **18**(1), 101-108
27. Kwak, S.D., Blankevoort, L., and **Ateshian, G.A.**, 2000. A Mathematical Formulation for 3D Quasi-Static Multibody Models of Diarthrodial Joints. *Comput Methods Biomech Biomed Engin* **3**(1), 41-64
28. Soltz, M.A., and **Ateshian, G.A.**, 2000. Interstitial fluid pressurization during confined compression cyclical loading of articular cartilage. *Ann Biomed Eng* **28**(2), 150-159
29. Mauck, R.L., Soltz, M.A., Wang, C.C., Wong, D.D., Chao, P.H., Valhmu, W.B., Hung, C.T., and **Ateshian, G.A.**, 2000. Functional tissue engineering of articular cartilage through dynamic loading of chondrocyte-seeded agarose gels. *J Biomech Eng* **122**(3), 252-260
30. Lai, W.M., Mow, V.C., Sun, D.D., and **Ateshian, G.A.**, 2000. On the electric potentials inside a charged soft hydrated biological tissue: streaming potential versus diffusion potential. *J Biomech Eng* **122**(4), 336-346
31. Rivers, P.A., Rosenwasser, M.P., Mow, V.C., Pawluk, R.J., Strauch, R.J., Sugalski, M.T., and **Ateshian, G.A.**, 2000. Osteoarthritic changes in the biochemical composition of thumb carpometacarpal joint cartilage and correlation with biomechanical properties. *J Hand Surg [Am]* **25**(5), 889-898
32. Soltz, M.A., and **Ateshian, G.A.**, 2000. A Conewise Linear Elasticity mixture model for the analysis of tension-compression nonlinearity in articular cartilage. *J Biomech Eng* **122**(6), 576-586 PMID: 2854000.

33. Felson, D.T., Lawrence, R.C., Dieppe, P.A., Hirsch, R., Helmick, C.G., Jordan, J.M., Kington, R.S., Lane, N.E., Nevitt, M.C., Zhang, Y., Sowers, M., McAlindon, T., Spector, T.D., Poole, A.R., Yanovski, S.Z., **Ateshian, G.**, Sharma, L., Buckwalter, J.A., Brandt, K.D., and Fries, J.F., 2000. Osteoarthritis: new insights. Part 1: the disease and its risk factors. *Ann Intern Med* **133**(8), 635-646
34. Kelkar, R., Wang, V.M., Flatow, E.L., Newton, P.M., **Ateshian, G.A.**, Bigliani, L.U., Pawluk, R.J., and Mow, V.C., 2001. Glenohumeral mechanics: a study of articular geometry, contact, and kinematics. *J Shoulder Elbow Surg* **10**(1), 73-84
35. Ahmad, C.S., Cohen, Z.A., Levine, W.N., **Ateshian, G.A.**, and Mow, V.C., 2001. Biomechanical and topographic considerations for autologous osteochondral grafting in the knee. *Am J Sports Med* **29**(2), 201-206
36. Cohen, Z.A., Roglic, H., Grelsamer, R.P., Henry, J.H., Levine, W.N., Mow, V.C., and **Ateshian, G.A.**, 2001. Patellofemoral stresses during open and closed kinetic chain exercises. An analysis using computer simulation. *Am J Sports Med* **29**(4), 480-487
37. Huang, C.Y., Mow, V.C., and **Ateshian, G.A.**, 2001. The role of flow-independent viscoelasticity in the biphasic tensile and compressive responses of articular cartilage. *J Biomech Eng* **123**(5), 410-417
38. Dykxj, D., **Ateshian, G.A.**, Trepal, M.J., and MacDonald, L.R., 2001. Articular geometry of the medial tarsometatarsal joint in the foot: comparison of metatarsus primus adductus and metatarsus primus rectus. *J Foot Ankle Surg* **40**(6), 357-365
39. Kitano, T., **Ateshian, G.A.**, Mow, V.C., Kadoya, Y., and Yamano, Y., 2001. Constituents and pH changes in protein rich hyaluronan solution affect the biotribological properties of artificial articular joints. *J Biomech* **34**(8), 1031-1037
40. Lai, W.M., Sun, D.D., **Ateshian, G.A.**, Guo, X.E., and Mow, V.C., 2002. Electrical signals for chondrocytes in cartilage. *Biorheology* **39**(1-2), 39-45
41. Wang, C.C., Guo, X.E., Sun, D., Mow, V.C., **Ateshian, G.A.**, and Hung, C.T., 2002. The functional environment of chondrocytes within cartilage subjected to compressive loading: a theoretical and experimental approach. *Biorheology* **39**(1-2), 11-25
42. Hohe, J., **Ateshian, G.**, Reiser, M., Englmeier, K.H., and Eckstein, F., 2002. Surface size, curvature analysis, and assessment of knee joint incongruity with MRI in vivo. *Magn Reson Med* **47**(3), 554-561
43. Wang, C.C., Deng, J.M., **Ateshian, G.A.**, and Hung, C.T., 2002. An automated approach for direct measurement of two-dimensional strain distributions within articular cartilage under unconfined compression. *J Biomech Eng* **124**(5), 557-567
44. Mauck, R.L., Seyhan, S.L., **Ateshian, G.A.**, and Hung, C.T., 2002. Influence of seeding density and dynamic deformational loading on the developing structure/function relationships of chondrocyte-seeded agarose hydrogels. *Ann Biomed Eng* **30**(8), 1046-1056
45. Morrison, B., 3rd, Cater, H.L., Wang, C.C., Thomas, F.C., Hung, C.T., **Ateshian, G.A.**, and Sundstrom, L.E., 2003. A tissue level tolerance criterion for living brain developed with an in vitro model of traumatic mechanical loading. *Stapp Car Crash J* **47**, 93-105
46. Cohen, Z.A., Henry, J.H., McCarthy, D.M., Mow, V.C., and **Ateshian, G.A.**, 2003. Computer simulations of patellofemoral joint surgery. Patient-specific models for tuberosity transfer. *Am J Sports Med* **31**(1), 87-98
47. Huang, C.Y., Soltz, M.A., Kopacz, M., Mow, V.C., and **Ateshian, G.A.**, 2003. Experimental verification of the roles of intrinsic matrix viscoelasticity and tension-

- compression nonlinearity in the biphasic response of cartilage. *J Biomech Eng* **125**(1), 84-93
48. **Ateshian, G.A.**, Soltz, M.A., Mauck, R.L., Basalo, I.M., Hung, C.T., and Lai, W.M., 2003. The role of osmotic pressure and tension-compression nonlinearity in the frictional response of articular cartilage. *Transport in Porous Media* **50**(1-2), 5-33
 49. Ahmad, C.S., Cohen, Z.A., Levine, W.N., Gardner, T.R., **Ateshian, G.A.**, and Mow, V.C., 2003. Codominance of the individual posterior cruciate ligament bundles. An analysis of bundle lengths and orientation. *Am J Sports Med* **31**(2), 221-225
 50. Wang, C.C., Chahine, N.O., Hung, C.T., and **Ateshian, G.A.**, 2003. Optical determination of anisotropic material properties of bovine articular cartilage in compression. *J Biomech* **36**(3), 339-353 PMID: 2809654.
 51. Koff, M.F., Ugwonal, O.F., Strauch, R.J., Rosenwasser, M.P., **Ateshian, G.A.**, and Mow, V.C., 2003. Sequential wear patterns of the articular cartilage of the thumb carpometacarpal joint in osteoarthritis. *J Hand Surg [Am]* **28**(4), 597-604
 52. Mauck, R.L., Nicoll, S.B., Seyhan, S.L., **Ateshian, G.A.**, and Hung, C.T., 2003. Synergistic action of growth factors and dynamic loading for articular cartilage tissue engineering. *Tissue Eng* **9**(4), 597-611
 53. Brown, G.D., 3rd, Roh, M.S., Strauch, R.J., Rosenwasser, M.P., **Ateshian, G.A.**, and Mow, V.C., 2003. Radiography and visual pathology of the osteoarthritic scaphotrapezio-trapezoidal joint, and its relationship to trapeziometacarpal osteoarthritis. *J Hand Surg [Am]* **28**(5), 739-743
 54. Krishnan, R., Park, S., Eckstein, F., and **Ateshian, G.A.**, 2003. Inhomogeneous cartilage properties enhance superficial interstitial fluid support and frictional properties, but do not provide a homogeneous state of stress. *J Biomech Eng* **125**(5), 569-577 PMID: 2842189.
 55. Mauck, R.L., Hung, C.T., and **Ateshian, G.A.**, 2003. Modeling of neutral solute transport in a dynamically loaded porous permeable gel: implications for articular cartilage biosynthesis and tissue engineering. *J Biomech Eng* **125**(5), 602-614 PMID: 2854001.
 56. Soltz, M.A., Basalo, I.M., and **Ateshian, G.A.**, 2003. Hydrostatic pressurization and depletion of trapped lubricant pool during creep contact of a rippled indenter against a biphasic articular cartilage layer. *J Biomech Eng* **125**(5), 585-593 PMID: 2842086.
 57. Cohen, Z.A., Mow, V.C., Henry, J.H., Levine, W.N., and **Ateshian, G.A.**, 2003. Templates of the cartilage layers of the patellofemoral joint and their use in the assessment of osteoarthritic cartilage damage. *Osteoarthritis Cartilage* **11**(8), 569-579
 58. Hung, C.T., Lima, E.G., Mauck, R.L., Takai, E., LeRoux, M.A., Lu, H.H., Stark, R.G., Guo, X.E., and **Ateshian, G.A.**, 2003. Anatomically shaped osteochondral constructs for articular cartilage repair. *J Biomech* **36**(12), 1853-1864
 59. Mauck, R.L., Wang, C.C., Oswald, E.S., **Ateshian, G.A.**, and Hung, C.T., 2003. The role of cell seeding density and nutrient supply for articular cartilage tissue engineering with deformational loading. *Osteoarthritis Cartilage* **11**(12), 879-890
 60. Park, S., Krishnan, R., Nicoll, S.B., and **Ateshian, G.A.**, 2003. Cartilage interstitial fluid load support in unconfined compression. *J Biomech* **36**(12), 1785-1796 PMID: 2833094.
 61. Hung, C.T., Mauck, R.L., Wang, C.C., Lima, E.G., and **Ateshian, G.A.**, 2004. A paradigm for functional tissue engineering of articular cartilage via applied physiologic deformational loading. *Ann Biomed Eng* **32**(1), 35-49

62. Park, S., Hung, C.T., and **Ateshian, G.A.**, 2004. Mechanical response of bovine articular cartilage under dynamic unconfined compression loading at physiological stress levels. *Osteoarthritis Cartilage* **12**(1), 65-73
63. **Ateshian, G.A.**, Chahine, N.O., Basalo, I.M., and Hung, C.T., 2004. The correspondence between equilibrium biphasic and triphasic material properties in mixture models of articular cartilage. *J Biomech* **37**(3), 391-400 PMID: 2819758.
64. Krishnan, R., Kopacz, M., and **Ateshian, G.A.**, 2004. Experimental verification of the role of interstitial fluid pressurization in cartilage lubrication. *J Orthop Res* **22**(3), 565-570 PMID: 2842190.
65. Kelly, T.A., Wang, C.C., Mauck, R.L., **Ateshian, G.A.**, and Hung, C.T., 2004. Role of cell-associated matrix in the development of free-swelling and dynamically loaded chondrocyte-seeded agarose gels. *Biorheology* **41**(3-4), 223-237
66. Lima, E.G., Mauck, R.L., Han, S.H., Park, S., Ng, K.W., **Ateshian, G.A.**, and Hung, C.T., 2004. Functional tissue engineering of chondral and osteochondral constructs. *Biorheology* **41**(3-4), 577-590
67. Basalo, I.M., Mauck, R.L., Kelly, T.A., Nicoll, S.B., Chen, F.H., Hung, C.T., and **Ateshian, G.A.**, 2004. Cartilage interstitial fluid load support in unconfined compression following enzymatic digestion. *J Biomech Eng* **126**(6), 779-786
68. Chahine, N.O., Wang, C.C., Hung, C.T., and **Ateshian, G.A.**, 2004. Anisotropic strain-dependent material properties of bovine articular cartilage in the transitional range from tension to compression. *J Biomech* **37**(8), 1251-1261 PMID: 2819725.
69. Park, S., Costa, K.D., and **Ateshian, G.A.**, 2004. Microscale frictional response of bovine articular cartilage from atomic force microscopy. *J Biomech* **37**(11), 1679-1687 PMID: 2809665.
70. Krishnan, R., Caligaris, M., Mauck, R.L., Hung, C.T., Costa, K.D., and **Ateshian, G.A.**, 2004. Removal of the superficial zone of bovine articular cartilage does not increase its frictional coefficient. *Osteoarthritis Cartilage* **12**(12), 947-955 PMID: 2828954.
71. Ng, K.W., Wang, C.C., Mauck, R.L., Kelly, T.A., Chahine, N.O., Costa, K.D., **Ateshian, G.A.**, and Hung, C.T., 2005. A layered agarose approach to fabricate depth-dependent inhomogeneity in chondrocyte-seeded constructs. *J Orthop Res* **23**(1), 134-141
72. Wang, V.M., Krishnan, R., Ugwonal, O.F., Flatow, E.L., Bigliani, L.U., and **Ateshian, G.A.**, 2005. Biomechanical evaluation of a novel glenoid design in total shoulder arthroplasty. *J Shoulder Elbow Surg* **14**(1 Suppl S), 129S-140S
73. Chahine, N.O., Chen, F.H., Hung, C.T., and **Ateshian, G.A.**, 2005. Direct measurement of osmotic pressure of glycosaminoglycan solutions by membrane osmometry at room temperature. *Biophys J* **89**(3), 1543-1550 PMID: 1366659.
74. Huang, C.Y., Stankiewicz, A., **Ateshian, G.A.**, and Mow, V.C., 2005. Anisotropy, inhomogeneity, and tension-compression nonlinearity of human glenohumeral cartilage in finite deformation. *J Biomech* **38**(4), 799-809
75. Basalo, I.M., Raj, D., Krishnan, R., Chen, F.H., Hung, C.T., and **Ateshian, G.A.**, 2005. Effects of enzymatic degradation on the frictional response of articular cartilage in stress relaxation. *J Biomech* **38**(6), 1343-1349 PMID: 2833092.
76. Krishnan, R., Mariner, E.N., and **Ateshian, G.A.**, 2005. Effect of dynamic loading on the frictional response of bovine articular cartilage. *J Biomech* **38**(8), 1665-1673
77. **Ateshian, G.A.**, and Hung, C.T., 2005. Patellofemoral joint biomechanics and tissue engineering. *Clin Orthop Relat Res*(436), 81-90

78. Basalo, I.M., Chahine, N.O., Kaplun, M., Chen, F.H., Hung, C.T., and **Ateshian, G.A.**, 2006. Chondroitin sulfate reduces the friction coefficient of articular cartilage. *J Biomech*
79. Basalo, I.M., Chen, F.H., Hung, C.T., and **Ateshian, G.A.**, 2006. Frictional response of bovine articular cartilage under creep loading following proteoglycan digestion with chondroitinase ABC. *J Biomech Eng* **128**(1), 131-134 PMID: 2819726.
80. **Ateshian, G.A.**, Likhitpanichkul, M., and Hung, C.T., 2006. A mixture theory analysis for passive transport in osmotic loading of cells. *J Biomech* **39**(3), 464-475 PMID: 2859701.
81. Ng, K.W., Mauck, R.L., Statman, L.Y., Lin, E.Y., **Ateshian, G.A.**, and Hung, C.T., 2006. Dynamic deformational loading results in selective application of mechanical stimulation in a layered, tissue-engineered cartilage construct. *Biorheology* **43**(3-4), 497-507
82. Park, S., and **Ateshian, G.A.**, 2006. Dynamic response of immature bovine articular cartilage in tension and compression, and nonlinear viscoelastic modeling of the tensile response. *J Biomech Eng* **128**(4), 623-630 PMID: 2842191.
83. **Ateshian, G.A.**, and Hung, C.T., 2006. The natural synovial joint: Properties of cartilage. *Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology* **220**(8), 657-670
84. Kelly, T.A., Ng, K.W., Wang, C.C., **Ateshian, G.A.**, and Hung, C.T., 2006. Spatial and temporal development of chondrocyte-seeded agarose constructs in free-swelling and dynamically loaded cultures. *J Biomech* **39**(8), 1489-1497
85. Eckstein, F., **Ateshian, G.**, Burgkart, R., Burstein, D., Cicuttini, F., Dardzinski, B., Gray, M., Link, T.M., Majumdar, S., Mosher, T., Peterfy, C., Totterman, S., Waterton, J., Winalski, C.S., and Felson, D., 2006. Proposal for a nomenclature for magnetic resonance imaging based measures of articular cartilage in osteoarthritis. *Osteoarthritis Cartilage* **14**(10), 974-983
86. Ho, M.M., Kelly, T.A., Guo, X.E., **Ateshian, G.A.**, and Hung, C.T., 2006. Spatially varying material properties of the rat caudal intervertebral disc. *Spine* **31**(15), E486-493
87. **Ateshian, G.A.**, 2007. On the theory of reactive mixtures for modeling biological growth. *Biomech Model Mechanobiol*
88. Basalo, I.M., Chahine, N.O., Kaplun, M., Chen, F.H., Hung, C.T., and **Ateshian, G.A.**, 2007. Chondroitin sulfate reduces the friction coefficient of articular cartilage. *J Biomech* **40**, 1847-1854
89. Chahine, N.O., Hung, C.T., and **Ateshian, G.A.**, 2007. In-situ measurements of chondrocyte deformation under transient loading. *Eur Cell Mater* **13**, 100-111; discussion 111
90. Ng, K.W., Defrancis, J.G., Kugler, L.E., Kelly, T.A., Ho, M.M., O'Connor C, J., **Ateshian, G.A.**, and Hung, C.T., 2007. Amino acids supply in culture media is not a limiting factor in the matrix synthesis of engineered cartilage tissue. *Amino Acids*
91. Pillai, R.R., Thoomukuntla, B., **Ateshian, G.A.**, and Fischer, K.J., 2007. MRI-based modeling for evaluation of in vivo contact mechanics in the human wrist during active light grasp. *J Biomech*
92. **Ateshian, G.A.**, 2007. Special Issue on Cartilage (Part II). *Biomech Model Mechanobiol* **6**(1-2), 1-3
93. **Ateshian, G.A.**, Costa, K.D., and Hung, C.T., 2007. A theoretical analysis of water transport through chondrocytes. *Biomech Model Mechanobiol* **6**(1-2), 91-101 PMID: 2853978.

94. Chahine, N.O., **Ateshian, G.A.**, and Hung, C.T., 2007. The effect of finite compressive strain on chondrocyte viability in statically loaded bovine articular cartilage. *Biomech Model Mechanobiol* **6**(1-2), 103-111
95. **Ateshian, G.A.**, 2007. Artificial cartilage: weaving in three dimensions. *Nat Mater* **6**(2), 89-90
96. **Ateshian, G.A.**, 2007. Anisotropy of fibrous tissues in relation to the distribution of tensed and buckled fibers. *J Biomech Eng* **129**(2), 240-249 PMID: 2805028.
97. **Ateshian, G.A.**, Ellis, B.J., and Weiss, J.A., 2007. Equivalence between short-time biphasic and incompressible elastic material responses. *J Biomech Eng* **129**(3), 405-412
98. Albro, M.B., Chahine, N.O., Caligaris, M., Wei, V.I., Likhitpanichkul, M., Ng, K.W., Hung, C.T., and **Ateshian, G.A.**, 2007. Osmotic loading of spherical gels: a biomimetic study of hindered transport in the cell protoplasm. *J Biomech Eng* **129**(4), 503-510 PMID: 2828939.
99. Lima, E.G., Bian, L., Ng, K.W., Mauck, R.L., Byers, B.A., Tuan, R.S., **Ateshian, G.A.**, and Hung, C.T., 2007. The beneficial effect of delayed compressive loading on tissue-engineered cartilage constructs cultured with TGF-beta3. *Osteoarthritis Cartilage* **15**(9), 1025-1033 PMID: 2724596.
100. Ng, K.W., Saliman, J.D., Lin, E.Y., Statman, L.Y., Kugler, L.E., Lo, S.B., **Ateshian, G.A.**, and Hung, C.T., 2007. Culture duration modulates collagen hydrolysate-induced tissue remodeling in chondrocyte-seeded agarose hydrogels. *Ann Biomed Eng* **35**(11), 1914-1923
101. Carter, M.J., Basalo, I.M., and **Ateshian, G.A.**, 2007. The temporal response of the friction coefficient of articular cartilage depends on the contact area. *J Biomech* **40**(14), 3257-3260 PMID: 2094001.
102. Ng, K.W., DeFrancis, J.G., Kugler, L.E., Kelly, T.A., Ho, M.M., O'Connor, C.J., **Ateshian, G.A.**, and Hung, C.T., 2008. Amino acids supply in culture media is not a limiting factor in the matrix synthesis of engineered cartilage tissue. *Amino Acids* **35**(2), 433-438
103. Azeloglu, E.U., Albro, M.B., Thimmappa, V.A., **Ateshian, G.A.**, and Costa, K.D., 2008. Heterogeneous transmural proteoglycan distribution provides a mechanism for regulating residual stresses in the aorta. *Am J Physiol Heart Circ Physiol* **294**(3), H1197-1205
104. Park, S., Nicoll, S.B., Mauck, R.L., and **Ateshian, G.A.**, 2008. Cartilage mechanical response under dynamic compression at physiological stress levels following collagenase digestion. *Ann Biomed Eng* **36**(3), 425-434
105. Oswald, E.S., Chao, P.H., Bulinski, J.C., **Ateshian, G.A.**, and Hung, C.T., 2008. Dependence of zonal chondrocyte water transport properties on osmotic environment. *Cell Mol Bioeng* **1**(4), 339-348 PMID: 2792913.
106. Kelly, T.A., Fisher, M.B., Oswald, E.S., Tai, T., Mauck, R.L., **Ateshian, G.A.**, and Hung, C.T., 2008. Low-serum media and dynamic deformational loading in tissue engineering of articular cartilage. *Ann Biomed Eng* **36**(5), 769-779
107. Bian, L., Lima, E.G., Angione, S.L., Ng, K.W., Williams, D.Y., Xu, D., Stoker, A.M., Cook, J.L., **Ateshian, G.A.**, and Hung, C.T., 2008. Mechanical and biochemical characterization of cartilage explants in serum-free culture. *J Biomech* **41**(6), 1153-1159
108. Caligaris, M., and **Ateshian, G.A.**, 2008. Effects of sustained interstitial fluid pressurization under migrating contact area, and boundary lubrication by synovial fluid, on cartilage friction. *Osteoarthritis Cartilage* **16**(10), 1220-1227 PMID: 2622427.

109. Lima, E.G., Tan, A.R., Tai, T., Bian, L., Stoker, A.M., **Ateshian, G.A.**, Cook, J.L., and Hung, C.T., 2008. Differences in interleukin-1 response between engineered and native cartilage. *Tissue Eng Part A* **14**(10), 1721-1730
110. Albro, M.B., Chahine, N.O., Li, R., Yeager, K., Hung, C.T., and **Ateshian, G.A.**, 2008. Dynamic loading of deformable porous media can induce active solute transport. *J Biomech* **41**(15), 3152-3157 PMID: 2633098.
111. Canal, C.E., Hung, C.T., and **Ateshian, G.A.**, 2008. Two-dimensional strain fields on the cross-section of the bovine humeral head under contact loading. *J Biomech* **41**(15), 3145-3151 PMID: 2633100.
112. Lima, E.G., Tan, A.R., Tai, T., Bian, L., **Ateshian, G.A.**, Cook, J.L., and Hung, C.T., 2008. Physiologic deformational loading does not counteract the catabolic effects of interleukin-1 in long-term culture of chondrocyte-seeded agarose constructs. *J Biomech* **41**(15), 3253-3259 PMID: 2724593.
113. Moffat, K.L., Sun, W.H., Pena, P.E., Chahine, N.O., Doty, S.B., **Ateshian, G.A.**, Hung, C.T., and Lu, H.H., 2008. Characterization of the structure-function relationship at the ligament-to-bone interface. *Proc Natl Acad Sci U S A* **105**(23), 7947-7952 PMID: 2430342.
114. Lima, E.G., Grace Chao, P.H., **Ateshian, G.A.**, Bal, B.S., Cook, J.L., Vunjak-Novakovic, G., and Hung, C.T., 2008. The effect of devitalized trabecular bone on the formation of osteochondral tissue-engineered constructs. *Biomaterials* **29**(32), 4292-4299 PMID: 2562244.
115. Bian, L., Fong, J.V., Lima, E.G., Stoker, A.M., **Ateshian, G.A.**, Cook, J.L., and Hung, C.T., 2009. Dynamic mechanical loading enhances functional properties of tissue engineered cartilage using mature canine chondrocytes. *Tissue Eng Part A*
116. Kelly, T.A., Ng, K.W., **Ateshian, G.A.**, and Hung, C.T., 2009. Analysis of radial variations in material properties and matrix composition of chondrocyte-seeded agarose hydrogel constructs. *Osteoarthritis Cartilage* **17**(1), 73-82 PMID: 2821566.
117. Ng, K.W., Kugler, L.E., Doty, S.B., **Ateshian, G.A.**, and Hung, C.T., 2009. Scaffold degradation elevates the collagen content and dynamic compressive modulus in engineered articular cartilage. *Osteoarthritis Cartilage* **17**(2), 220-227 PMID: 2795572.
118. Albro, M., Rajan, V., Li, R., Hung, C., and **Ateshian, G.**, 2009. Characterization of the concentration-dependence of solute diffusivity and partitioning in a model dextran-agarose transport system. *Cell Mol Bioeng* **2**(3), 295-305 PMID: In Process.
119. Bian, L., Kaplun, M., Williams, D.Y., Xu, D., **Ateshian, G.A.**, and Hung, C.T., 2009. Influence of chondroitin sulfate on the biochemical, mechanical and frictional properties of cartilage explants in long-term culture. *J Biomech* **42**(3), 286-290 PMID: 2819724.
120. Lima, E.G., Tan, A.R., Tai, T., Marra, K.G., DeFail, A., **Ateshian, G.A.**, and Hung, C.T., 2009. Genipin enhances the mechanical properties of tissue-engineered cartilage and protects against inflammatory degradation when used as a medium supplement. *J Biomed Mater Res A* **91**(3), 692-700 PMID: 2767416.
121. Park, S., Costa, K.D., **Ateshian, G.A.**, and Hong, K.S., 2009. Mechanical properties of bovine articular cartilage under microscale indentation loading from atomic force microscopy. *Proc Inst Mech Eng H* **223**(3), 339-347
122. Chahine, N.O., Albro, M.B., Lima, E.G., Wei, V.I., Dubois, C.R., Hung, C.T., and **Ateshian, G.A.**, 2009. Effect of dynamic loading on the transport of solutes into agarose hydrogels. *Biophys J* **97**(4), 968-975 PMID: 2726307.

123. Bian, L., Angione, S.L., Ng, K.W., Lima, E.G., Williams, D.Y., Mao, D.Q., **Ateshian, G.A.**, and Hung, C.T., 2009. Influence of decreasing nutrient path length on the development of engineered cartilage. *Osteoarthritis Cartilage* **17**(5), 677-685
124. **Ateshian, G.A.**, and Costa, K.D., 2009. A frame-invariant formulation of Fung elasticity. *J Biomech* **42**(6), 781-785
125. **Ateshian, G.A.**, Rajan, V., Chahine, N.O., Canal, C.E., and Hung, C.T., 2009. Modeling the matrix of articular cartilage using a continuous fiber angular distribution predicts many observed phenomena. *J Biomech Eng* **131**(6), 061003 PMID: 2842192.
126. Bian, L., Crivello, K.M., Ng, K.W., Xu, D., Williams, D.Y., **Ateshian, G.A.**, and Hung, C.T., 2009. Influence of temporary chondroitinase ABC-induced glycosaminoglycan suppression on maturation of tissue-engineered cartilage. *Tissue Eng Part A* **15**(8), 2065-2072 PMID: 2792113.
127. **Ateshian, G.A.**, 2009. The role of interstitial fluid pressurization in articular cartilage lubrication. *J Biomech* **42**(9), 1163-1176 PMID: 2758165.
128. Guterl, C.C., Gardner, T.R., Rajan, V., Ahmad, C.S., Hung, C.T., and **Ateshian, G.A.**, 2009. Two-dimensional strain fields on the cross-section of the human patellofemoral joint under physiological loading. *J Biomech* **42**(9), 1275-1281
129. Ng, K.W., **Ateshian, G.A.**, and Hung, C.T., 2009. Zonal chondrocytes seeded in a layered agarose hydrogel create engineered cartilage with depth-dependent cellular and mechanical inhomogeneity. *Tissue Eng Part A* **15**(9), 2315-2324 PMID: 2787199.
130. **Ateshian, G.A.**, Costa, K.D., Azeloglu, E.U., Morrison, B., 3rd, and Hung, C.T., 2009. Continuum modeling of biological tissue growth by cell division, and alteration of intracellular osmolytes and extracellular fixed charge density. *J Biomech Eng* **131**(10), 101001 PMID: 2860886.
131. **Ateshian, G.A.**, and Friedman, M.H., 2009. Integrative biomechanics: a paradigm for clinical applications of fundamental mechanics. *J Biomech* **42**(10), 1444-1451
132. Caligaris, M., Canal, C.E., Ahmad, C.S., Gardner, T.R., and **Ateshian, G.A.**, 2009. Investigation of the frictional response of osteoarthritic human tibiofemoral joints and the potential beneficial tribological effect of healthy synovial fluid. *Osteoarthritis Cartilage* **17**(10), 1327-1332 PMID: 2753744.
133. Albro, M.B., Petersen, L.E., Li, R., Hung, C.T., and **Ateshian, G.A.**, 2009. Influence of the partitioning of osmolytes by the cytoplasm on the passive response of cells to osmotic loading. *Biophys J* **97**(11), 2886-2893 PMID: 2784563.
134. Albro, M.B., Li, R., Banerjee, R.E., Hung, C.T., and **Ateshian, G.A.**, 2010. Validation of theoretical framework explaining active solute uptake in dynamically loaded porous media. *J Biomech*
135. **Ateshian, G.A.**, Maas, S., and Weiss, J.A., 2010. Finite element algorithm for frictionless contact of porous permeable media under finite deformation and sliding. *J Biomech Eng* **132**, 061006 (061013 pp.)
136. **Ateshian, G.A.**, and Ricken, T., 2010. Multigenerational interstitial growth of biological tissues. *Biomech Model Mechanobiol*, **9**:689-702.
137. Bian, L., Stoker, A.M., Marberry, K.M., **Ateshian, G.A.**, Cook, J.L., and Hung, C.T., 2010. Effects of dexamethasone on the functional properties of cartilage explants during long-term culture. *Am J Sports Med* **38**(1), 78-85
138. Ng, K.W., Lima, E.G., Bian, L., O'Connor, C.J., Jayabalan, P.S., Stoker, A.M., Kuroki, K., Cook, C.R., **Ateshian, G.A.**, Cook, J.L., and Hung, C.T., 2010. Passaged adult

- chondrocytes can form engineered cartilage with functional mechanical properties: a canine model. *Tissue Eng Part A* **16**(3), 1041-1051 PMID: 2862612.
139. **Ateshian, G.A.**, Morrison, B., 3rd, and Hung, C.T., 2010. Modeling of active transmembrane transport in a mixture theory framework. *Ann Biomed Eng* **38**(5), 1801-1814
 140. Bian, L., Fong, J.V., Lima, E.G., Stoker, A.M., **Ateshian, G.A.**, Cook, J.L., and Hung, C.T., 2010. Dynamic mechanical loading enhances functional properties of tissue-engineered cartilage using mature canine chondrocytes. *Tissue Eng Part A* **16**(5), 1781-1790
 141. Jiang, J., Tang, A., **Ateshian, G.A.**, Guo, X.E., Hung, C.T., and Lu, H.H., 2010. Bioactive stratified polymer ceramic-hydrogel scaffold for integrative osteochondral repair. *Ann Biomed Eng* **38**(6), 2183-2196
 142. Canal Guterl, C., Hung, C.T., and **Ateshian, G.A.**, 2010. Electrostatic and non-electrostatic contributions of proteoglycans to the compressive equilibrium modulus of bovine articular cartilage. *J Biomech* **43**(7), 1343-1350 PMID: 2900255.
 143. **Ateshian, G.A.**, and Weiss, J.A., 2010. Anisotropic hydraulic permeability under finite deformation. *J Biomech Eng*, **132**(11):111004.
 144. **Ateshian, G.A.**, 2011. The role of mass balance equations in growth mechanics illustrated in surface and volume dissolution. *J Biomech Eng*, **133**(1):011010, PMID: 3086819.
 145. Ambrosi, D., **Ateshian, G.A.**, Arruda, E.M., Cowin, S.C., Dumais, J., Goriely, A., Holzapfel, G.A., Humphrey, J.D., Kemkemer, R., Kuhl, E., Olberding, J.E., Taber, L.A., and Garikipati, K., 2011. Perspectives on biological growth and remodeling. *J Mech Phys Solids* **59**(4), 863-883 PMID: 3083065.
 146. Albro, M.B., Banerjee, R.E., Li, R., Oungoulian, S.R., Chen, B., Del Palomar, A.P., Hung, C.T., and **Ateshian, G.A.**, 2011. Dynamic loading of immature epiphyseal cartilage pumps nutrients out of vascular canals. *J Biomech* **44**(9), 1654-1659.
 147. Tan, A.R., Dong, E.Y., Andry, J.P., Bulinski, J.C., Ateshian, G.A., and Hung, C.T., 2011. Coculture of engineered cartilage with primary chondrocytes induces expedited growth. *Clinical Orthopaedics and Related Research*, **469**(10), 2735-2743 PMID: 3171525.
 148. Tan, A.R., Dong, E.Y., Ateshian, G.A., and Hung, C.T., 2010. Response of engineered cartilage to mechanical insult depends on construct maturity. *Osteoarthritis and Cartilage*, **18**(12), 1577-1585 PMID: 3099249.
 149. Sampat, S.R., O'Connell, G.D., Fong, J.V., Alegre-Aguaron, E., Ateshian, G.A., and Hung, C.T., 2011. Growth factor priming of synovium-derived stem cells for cartilage tissue engineering. *Tissue Engineering. Part A*, **17**(17-18), 2259-2265 PMID: 3161099.
 150. Ng, K.W., O'Connor, C.J., Kugler, L.E., Cook, J.L., **Ateshian, G.A.**, and Hung, C.T., 2011. Transient supplementation of anabolic growth factors rapidly stimulates matrix synthesis in engineered cartilage. *Annals of Biomedical Engineering*, **39**(10):2491-500.
 151. **Ateshian, G.A.**, Albro, M.B., Maas, S., and Weiss, J.A., 2011. Finite element implementation of mechano-chemical phenomena in neutral deformable porous media under finite deformation. *Journal of Biomechanical Engineering*, **133**(8):081005.
 152. Albro, M.B., Cigan, A.D., Nims, R.J., Yeroushalmi, K.J., Oungoulian, S.R., Hung, C.T., and **Ateshian, G.A.**, 2012. Shearing of synovial fluid activates latent TGF-beta. *Osteoarthritis and Cartilage* **20**(11), 1374-1382 PMID: 3448789.

153. **Ateshian, G.A.**, and Humphrey, J.D., 2012. Continuum mixture models of biological growth and remodeling: past successes and future opportunities. *Annual Review of Biomedical Engineering* **14**, 97-111.
154. **Ateshian, G.A.**, Maas, S., and Weiss, J.A., 2012. Solute transport across a contact interface in deformable porous media. *Journal of Biomechanics* **45**(6), 1023-1027 PMID: 3351088.
155. **Ateshian, G.A.**, Morrison, B., 3rd, Holmes, J.W., and Hung, C.T., 2012. Mechanics of Cell Growth. *Mechanics Research Communications* **42**, 118-125 PMID: 3418607.
156. Huang, A.H., Baker, B.M., **Ateshian, G.A.**, and Mauck, R.L., 2012. Sliding contact loading enhances the tensile properties of mesenchymal stem cell-seeded hydrogels. *European Cells & Materials* **24**, 29-45.
157. Lima, E.G., Durney, K.M., Sirsi, S.R., Nover, A.B., **Ateshian, G.A.**, Borden, M.A., and Hung, C.T., 2012. Microbubbles as biocompatible porogens for hydrogel scaffolds. *Acta Biomaterialia* **8**(12), 4334-4341.
158. Maas, S.A., Ellis, B.J., **Ateshian, G.A.**, and Weiss, J.A., 2012. FEBio: finite elements for biomechanics. *Journal of Biomechanical Engineering* **134**(1), 011005.
159. O'Connell, G.D., Fong, J.V., Dunleavy, N., Joffe, A., **Ateshian, G.A.**, and Hung, C.T., 2012. Trimethylamine N-oxide as a media supplement for cartilage tissue engineering. *Journal of Orthopaedic Research* **30**(12), 1898-1905.
160. O'Connell, G.D., Lima, E.G., Bian, L., Chahine, N.O., Albro, M.B., Cook, J.L., **Ateshian, G.A.**, and Hung, C.T., 2012. Toward engineering a biological joint replacement. *Journal of Knee Surgery* **25**(3), 187-196.
161. Albro, M.B., Cigan, A.D., Nims, R.J., Yeroushalmi, K.J., Oungouliau, S.R., Hung, C.T., and **Ateshian, G.A.**, 2012. Shearing of synovial fluid activates latent TGF-beta. *Osteoarthritis Cartilage* **20**(11), 1374-1382 PMID: 3448789.
162. Oungouliau, S.R., Chang, S., Bortz, O., Hehir, K.E., Zhu, K., Willis, C.E., Hung, C.T., and **Ateshian, G.A.**, 2013. Articular cartilage wear characterization with a particle sizing and counting analyzer. *Journal of Biomechanical Engineering* **135**(2), 024501 PMID: 3660847.
163. Albro, M.B., Nims, R.J., Cigan, A.D., Yeroushalmi, K.J., Alliston, T., Hung, C.T., and **Ateshian, G.A.**, 2013. Accumulation of exogenous activated TGF-beta in the superficial zone of articular cartilage. *Biophysical Journal* **104**(8), 1794-1804 PMID: 3627867.
164. Albro, M.B., Nims, R.J., Cigan, A.D., Yeroushalmi, K.J., Shim, J.J., Hung, C.T., and **Ateshian, G.A.**, 2013. Dynamic mechanical compression of devitalized articular cartilage does not activate latent TGF-beta. *Journal of Biomechanics* **46**(8), 1433-1439 PMID: 3810401.
165. Cigan, A.D., Nims, R.J., Albro, M.B., Esau, J.D., Dreyer, M.P., Vunjak-Novakovic, G., Hung, C.T., and **Ateshian, G.A.**, 2013. Insulin, ascorbate, and glucose have a much greater influence than transferrin and selenous Acid on the in vitro growth of engineered cartilage in chondrogenic media. *Tissue Eng Part A* **19**(17-18), 1941-1948 PMID: 3725793.
166. Kelly, T.A., Roach, B.L., Weidner, Z.D., Mackenzie-Smith, C.R., O'Connell, G.D., Lima, E.G., Stoker, A.M., Cook, J.L., **Ateshian, G.A.**, and Hung, C.T., 2013. Tissue-engineered articular cartilage exhibits tension-compression nonlinearity reminiscent of the native cartilage. *J Biomech* **46**(11), 1784-1791 PMID: 3713158.

167. **Ateshian, G.A.**, Maas, S., and Weiss, J.A., 2013. Multiphasic finite element framework for modeling hydrated mixtures with multiple neutral and charged solutes. *J Biomech Eng* **135**(11), 111001 PMID: 3792408.
168. Sampat, S.R., Dermksian, M.V., Oungoulian, S.R., Winchester, R.J., Bulinski, J.C., **Ateshian, G.A.**, and Hung, C.T., 2013. Applied osmotic loading for promoting development of engineered cartilage. *J Biomech* **46**(15), 2674-2681 PMID: 3902123.
169. Roccabianca, S., **Ateshian, G.A.**, and Humphrey, J.D., 2014. Biomechanical roles of medial pooling of glycosaminoglycans in thoracic aortic dissection. *Biomech Model Mechanobiol* **13**(1), 13-25 PMID: 3918738.
170. Myers, K., and **Ateshian, G.A.**, 2014. Interstitial growth and remodeling of biological tissues: tissue composition as state variables. *J Mech Behav Biomed Mater* **29**, 544-556 PMID: 3812404.
171. Henak, C.R., **Ateshian, G.A.**, and Weiss, J.A., 2014. Finite element prediction of transchondral stress and strain in the human hip. *J Biomech Eng* **136**(2), 021021
172. Oungoulian, S.R., Hehir, K.E., Zhu, K., Willis, C.E., Marinescu, A.G., Merali, N., Ahmad, C.S., Hung, C.T., and **Ateshian, G.A.**, 2014. Effect of glutaraldehyde fixation on the frictional response of immature bovine articular cartilage explants. *J Biomech* **47**(3), 694-701 PMID: 3913559.
173. Alegre-Aguaron, E., Sampat, S.R., Xiong, J.C., Colligan, R.M., Bulinski, J.C., Cook, J.L., **Ateshian, G.A.**, Brown, L.M., and Hung, C.T., 2014. Growth factor priming differentially modulates components of the extracellular matrix proteome in chondrocytes and synovium-derived stem cells. *PLoS One* **9**(2), e88053 PMID: 3917883.
174. **Ateshian, G.A.**, Nims, R.J., Maas, S., and Weiss, J.A., 2014. Computational modeling of chemical reactions and interstitial growth and remodeling involving charged solutes and solid-bound molecules. *Biomech Model Mechanobiol* **13**(5), 1105-1120 PMID: 4141041.
175. O'Connell, G.D., Nims, R.J., Green, J., Cigan, A.D., **Ateshian, G.A.**, and Hung, C.T., 2014. Time and dose-dependent effects of chondroitinase ABC on growth of engineered cartilage. *Eur Cell Mater* **27**, 312-320 PMID: 4096549.
176. Bhumiratana, S., Eton, R.E., Oungoulian, S.R., Wan, L.Q., **Ateshian, G.A.**, and Vunjak-Novakovic, G., 2014. Large, stratified, and mechanically functional human cartilage grown in vitro by mesenchymal condensation. *Proc Natl Acad Sci U S A* **111**(19), 6940-6945 PMID: 4024923.
177. Tan, A.R., Alegre-Aguaron, E., O'Connell, G.D., VandenBerg, C.D., Aaron, R.K., Vunjak-Novakovic, G., Chloe Bulinski, J., **Ateshian, G.A.**, and Hung, C.T., 2015. Passage-dependent relationship between mesenchymal stem cell mobilization and chondrogenic potential. *Osteoarthritis Cartilage* **23**(2), 319-327 PMID: 4369922.
178. Cigan, A.D., Nims, R.J., Albro, M.B., Vunjak-Novakovic, G., Hung, C.T., and **Ateshian, G.A.**, 2014. Nutrient channels and stirring enhanced the composition and stiffness of large cartilage constructs. *J Biomech* **47**(16), 3847-3854 PMID: 4261053.
179. Tan, A.R., Alegre-Aguaron, E., O'Connell, G.D., VandenBerg, C.D., Aaron, R.K., Vunjak-Novakovic, G., Chloe Bulinski, J., **Ateshian, G.A.**, and Hung, C.T., 2015. Passage-dependent relationship between mesenchymal stem cell mobilization and chondrogenic potential. *Osteoarthritis Cartilage* **23**(2), 319-327 PMID: PMC4369922.
180. Nims, R.J., Cigan, A.D., Albro, M.B., Vunjak-Novakovic, G., Hung, C.T., and **Ateshian, G.A.**, 2015. Matrix Production in Large Engineered Cartilage Constructs Is Enhanced by

- Nutrient Channels and Excess Media Supply. *Tissue Eng Part C Methods* **21**(7), 747-757
PMCID: PMC4499772.
181. O'Connell, G.D., Tan, A.R., Cui, V., Bulinski, J.C., Cook, J.L., Attur, M., Abramson, S.B., **Ateshian, G.A.**, and Hung, C.T., 2015. Human chondrocyte migration behaviour to guide the development of engineered cartilage. *J Tissue Eng Regen Med* PMCID: PMC4531108.
 182. **Ateshian, G.A.**, Henak, C.R., and Weiss, J.A., 2015. Toward patient-specific articular contact mechanics. *J Biomech* **48**(5), 779-786 PMCID: PMC4416416.
 183. **Ateshian, G.A.**, 2015. Viscoelasticity using reactive constrained solid mixtures. *J Biomech* **48**(6), 941-947 PMCID: PMC4422403.
 184. Roach, B.L., Hung, C.T., Cook, J.L., **Ateshian, G.A.**, and Tan, A.R., 2015. Fabrication of tissue engineered osteochondral grafts for restoring the articular surface of diarthrodial joints. *Methods* **84**, 103-108 PMCID: PMC4667358.
 185. Oungouljian, S.R., Durney, K.M., Jones, B.K., Ahmad, C.S., Hung, C.T., and **Ateshian, G.A.**, 2015. Wear and damage of articular cartilage with friction against orthopedic implant materials. *J Biomech* **48**(10), 1957-1964 PMCID: PMC4492870.
 186. Hou, C., and **Ateshian, G.A.**, 2016. A Gauss-Kronrod-Trapezoidal integration scheme for modeling biological tissues with continuous fiber distributions. *Comput Methods Biomech Biomed Engin* **19**(8), 883-893
 187. Nover, A.B., Stefani, R.M., Lee, S.L., **Ateshian, G.A.**, Stoker, A.M., Cook, J.L., and Hung, C.T., 2016. Long-term storage and preservation of tissue engineered articular cartilage. *J Orthop Res* **34**(1), 141-148 PMCID: PMC4710567.
 188. Nover, A.B., Lee, S.L., Georgescu, M.S., Howard, D.R., Saunders, R.A., Yu, W.T., Klein, R.W., Napolitano, A.P., **Ateshian, G.A.**, and Hung, C.T., 2015. Porous titanium bases for osteochondral tissue engineering. *Acta Biomater* **27**, 286-293 PMCID: PMC4698168.
 189. Jones, B.K., Durney, K.M., Hung, C.T., and **Ateshian, G.A.**, 2015. The friction coefficient of shoulder joints remains remarkably low over 24h of loading. *J Biomech* **48**(14), 3945-3949 PMCID: PMC4707938.
 190. Albro, M.B., Nims, R.J., Durney, K.M., Cigan, A.D., Shim, J.J., Vunjak-Novakovic, G., Hung, C.T., and **Ateshian, G.A.**, 2016. Heterogeneous engineered cartilage growth results from gradients of media-supplemented active TGF-beta and is ameliorated by the alternative supplementation of latent TGF-beta. *Biomaterials* **77**, 173-185 PMCID: In Process.
 191. Jones, B., Hung, C.T., and **Ateshian, G.**, 2016. Biphasic analysis of cartilage stresses in the patellofemoral Joint. *J Knee Surg* **29**(2), 92-98 PMCID: PMC4747677.
 192. Tan, A.R., VandenBerg, C.D., Attur, M., Abramson, S.B., Knight, M.M., Bulinski, J.C., **Ateshian, G.A.**, Cook, J.L., and Hung, C.T., 2015. Cytokine preconditioning of engineered cartilage provides protection against interleukin-1 insult. *Arthritis Res Ther* **17**, 361 PMCID: PMC4704536.
 193. Hung, C.T., and **Ateshian, G.A.**, 2016. Grading of osteoarthritic cartilage: Correlations between histology and biomechanics. *J Orthop Res* **34**(1), 8-9
 194. Nover, A.B., Hou, G.Y., Han, Y., Wang, S., O'Connell, G.D., **Ateshian, G.A.**, Konofagou, E.E., and Hung, C.T., 2016. High intensity focused ultrasound as a tool for tissue engineering: Application to cartilage. *Med Eng Phys* **38**(2), 192-198

195. Nims, R.J., Durney, K.M., Cigan, A.D., Dusseaux, A., Hung, C.T., and **Ateshian, G.A.**, 2016. Continuum theory of fibrous tissue damage mechanics using bond kinetics: application to cartilage tissue engineering. *Interface Focus* **6**(1), 20150063 PMID: PMC4686240.
196. Nover, A.B., Jones, B.K., Yu, W.T., Donovan, D.S., Podolnick, J.D., Cook, J.L., **Ateshian, G.A.**, and Hung, C.T., 2016. A puzzle assembly strategy for fabrication of large engineered cartilage tissue constructs. *J Biomech* In Press.

Patents

1. Ateshian, G.A., Rosenwasser, M.P., Pawluk, R.J., and Mow, V.C.: Anatomically correct prosthesis and method and apparatus for manufacturing prosthesis. U.S. Patent No. 6,459,948; continued with Patent No. 6,126,690, issued October 1, 2002.
2. Ateshian, G.A., Blankevoort, L., Kwak, S.D., and Mow, V.C.: Three dimensional multibody modeling of anatomical joints. U.S. Serial No. 08/972,160, filed July 11, 1997. Patent No. 6,161,080, issued December 12, 2000.

Conference Proceedings Papers

1. Cohen, Z.A., McCarthy, D.M., Roglic, H., Henry, J.H., Rodkey, W.G., Steadman, R.J., Mow, V.C., and **Ateshian, G.A.**, 1998. Computer-aided planning of patellofemoral joint OA surgery: Developing physical models from patient MRI. *First International Conference on Medical Image Computing and Computer-Assisted Intervention*, Lecture Notes in Computer Science, Vol. 1496, W.M. Wells, A. Colchester, S. Delp (eds.), Springer, Berlin, pp. 9-20.
2. Cohen, Z.A., and **Ateshian, G.A.**, 2000. Simulation of patellofemoral joint reconstructive surgery on patient-specific models. *Third International Conference on Medical Image-Computing and Computer-Assisted Intervention – MICCAI 2000*, Lecture Notes in Computer Science, Vol. 1935, S.L. Delp, A.M. DiGioia, B. Jaramaz (eds), Springer, Berlin, pp. 1076-1085.
3. Lai, W.M., Sun, D.D., **Ateshian, G.A.**, Guo, X.E., and Mow, V.C., 2000. Effects of inhomogeneous fixed charge density on the electrical signals for chondrocytes in cartilage. *Mechanics in Biology*, ASME, AMD-Vol. 242/BED-Vol. 46, J. Casey and G. Bao (eds.), New York, pp. 201-213.
4. Soltz, M.A., and **Ateshian, G.A.**, 2000. Hydrostatic pressurization and depletion of trapped lubricant pool during creep and sliding of a rippled indenter against a biphasic articular cartilage layer. *Mechanics in Biology*, ASME, AMD-Vol. 242/BED-Vol. 46, J. Casey and G. Bao (eds.), New York, pp. 243-253.
5. Morrison III, B., Cater, H.L., Wang, C.C-B., Thomas, F.C., Hung, C.T., **Ateshian, G.A.**, and Sundstrom, L.E., 2003. A tissue level tolerance criterion for living brain developed with an in vitro model of traumatic mechanical loading. *Stapp Car Crash Journal*, **47**:1-13.
6. Basalo, I.M., Cohen, B., **Ateshian, G.A.**, 2003. A finite deformation theory for articular cartilage with orthotropic symmetry and tension-compression nonlinearity. In: *Proceedings of the Second M.I.T. Conference on Computational Fluid and Solid Mechanics*, Cambridge, MA, K.J. Bathe (ed), Elsevier.

7. Lima, E.G., Bian, L., Mauck, R.L., Byers, B.A., Tuan, R.S., **Ateshian, G.A.**, and Hung, C.T., 2006. The effect of applied compressive loading on tissue-engineered cartilage constructs cultured with TGF-beta3. In: *Conf Proc IEEE Eng Med Biol Soc.* pp. 779-782.
8. Moffat, K.L., Sun, W.H., Chahine, N.O., Pena, P.E., Doty, S.B., Hung, C.T., **Ateshian, G.A.**, and Lu, H.H., 2006. Characterization of the mechanical properties and mineral distribution of the anterior cruciate ligament-to-bone insertion site. In: *Conf Proc IEEE Eng Med Biol Soc.* pp. 2366-2369.
9. Oswald, E.S., Chao, P.H., Bulinski, J.C., **Ateshian, G.A.**, and Hung, C.T., 2006. Chondrocyte nuclear response to osmotic loading. In: *Conf Proc IEEE Eng Med Biol Soc.* pp. 3659-3661.

Abstracts and Extended Abstracts

1. Vosburgh, F., Hoeltzel, D.A., **Ateshian, G.**, Zimmerman, M., and Cochran, G.V.B. (1987) Aramid composites and fracture fixation: Experimental and finite element evaluation. *Biomechanics Symposium*, ASME, Butler, D.L. and Torzilli, P.A. (eds.), **84**:121-124.
2. **Ateshian, G.A.**, Soslowky, L.J., Froimson, M.I., Lai, W.M., and Mow, V.C. (1988) Stereophotogrammetric determinations of patellar cartilage thickness and surface geometry. *Advances in Bioengineering*, ASME, BED **8**:167-170.
3. Soslowky, L.J., **Ateshian, G.A.**, Bigliani, L.U., Flatow, E.L., and Mow, V.C. (1989) Sphericity of glenohumeral joint articulating surfaces. *Transactions of the Orthopaedic Research Society*, **14**:228.
4. **Ateshian, G.A.**, Soslowky, L.J., Froimson, M.I., Kelly, M.A., and Mow, V.C. (1989) Determination of patellofemoral contact areas from stereophotogrammetric models of joint surfaces. *Biomechanics Symposium*, P.A. Torzilli, and M.H. Friedman (eds), ASME, AMD **98**:105-108.
5. Soslowky, L.J., **Ateshian, G.A.**, Pollock, R.G., and Mow, V.C. (1989) An in situ method to determine diarthrodial joint contact areas using stereophotogrammetry. *Advances in Bioengineering*, ASME, BED **15**:129-130.
6. **Ateshian, G.A.**, Soslowky, L.J., Ark, J.W., Pawluk, R.J., Rosenwasser, M.P., and Mow, V.C. (1990) Determination of thumb carpometacarpal joint contact in lateral pinch. *Proceedings of First World Congress on Biomechanics*, San Diego, **2**:161.
7. **Ateshian, G.A.**, Ark, J.W., Soslowky, L.J., Pawluk, R.J., Rosenwasser, M.P., and Mow, V.C. (1990) A quantitative method to study the biomechanics of the carpometacarpal joint of the thumb. *Advances in Bioengineering*, ASME, BED **17**:327-330.
8. Flatow, E.L., Bigliani, L.U., Soslowky, L.J., Mow, V.C., **Ateshian, G.A.**, and Ark, J.W. (1991) Shoulder joint anatomy and the effect of sublaxations and incongruity on glenohumeral contact. *58th Annual Meeting of the American Academy of Orthopaedic Surgeons*, Paper no. 389, 238.
9. Soslowky, L.J., Pawluk, R.J., Ark, J.W., **Ateshian, G.A.**, Flatow, E.L., Bigliani, L.U., and Mow, V.C. (1991) In situ articular contact at the glenohumeral and subacromial joints. *Transactions of the Orthopaedic Research Society*, **16**:569.
10. Ark, J.W., **Ateshian, G.A.**, Soslowky, L.J., Pawluk, R.J., Rosenwasser, M.P., and Mow, V.C. (1991) In situ contact areas in the thumb carpometacarpal joint. *Transactions of the Orthopaedic Research Society*, **16**:216.

11. **Ateshian, G.A.**, Lai, W.M., and Mow, V.C. (1991) A model for fluid-film lubrication of diarthrodial joints: The moving load problem. *Proceedings of the 3rd U.S.-China-Japan Conference on Biomechanics*, 103-104.
12. **Ateshian, G.A.**, and Soslowky, L.J. (1992) Human knee joint anatomy and cartilage thickness. *Transactions of the Orthopaedic Research Society*, **17**:619.
13. **Ateshian, G.A.**, Rosenwasser, M.P., and Mow, V.C. (1992) Anatomy and congruence of the thumb carpometacarpal joint. *Advances in Industrial Ergonomics and Safety IV*, S. Kumar (ed), Taylor & Francis, 761-768.
14. **Ateshian, G.A.**, Lai, W.M., Zhu, W.B., and Mow, V.C. (1992) A biphasic model for contact in diarthrodial joints. *Advances in Bioengineering*, ASME, BED **22**:191-194.
15. **Ateshian, G.A.**, Kwak, S.D., Soslowky, L.J., and Mow, V.C. (1992) A stereophotogrammetric method for determining *in situ* contact areas in diarthrodial joints: A comparison study. *Advances in Bioengineering*, ASME, BED **22**:35-38.
16. Kelkar, R., Flatow, E.L., Bigliani, L.U., Soslowky, L.J., **Ateshian, G.A.**, Pawluk, R.J., and Mow, V.C. (1992) A stereophotogrammetric method to determine the kinematics of the glenohumeral joint. *Advances in Bioengineering*, ASME, BED **22**:143-146.
17. **Ateshian, G.A.**, Gardner, T.R., Saed-Nejad, F., and Rosenwasser, M.P. (1993) Material properties and biochemical composition of thumb carpometacarpal joint cartilage. *Transactions of the Orthopaedic Research Society*, **18**:323.
18. **Ateshian, G.A.**, Kwak, S.D., Soslowky, L.J., Grelsamer, R.P., and Mow, V.C. (1993) Contact area measurements in diarthrodial joints: A comparison with a new stereophotogrammetry method. *Transactions of the Orthopaedic Research Society*, **18**:347.
19. Cohen, B., Gardner, T.R., and **Ateshian, G.A.** (1993) The influence of transverse isotropy on cartilage indentation behavior: A study of the human humeral head. *Transactions of the Orthopaedic Research Society*, **18**:185.
20. Kelkar, R., Newton, P.M., Armengol, J., **Ateshian, G.A.**, Pawluk, R.J., Flatow, E.L., Bigliani, L.U., and Mow, V.C. (1993) Three-dimensional kinematics of the glenohumeral joint during abduction in the scapular plane. *Transactions of the Orthopaedic Research Society*, **18**:136.
21. Bachrach, N.M., **Ateshian, G.A.**, and Mow, V.C. (1993) Effects of subchondral plate fracture on articular cartilage response. *Bioengineering Conference 1993*, ASME, BED **24**:630-633.
22. Mow, V.C., and **Ateshian, G.A.** (1993) Recent advances in biomechanical studies of diarthrodial joints. *Japanese Orthopaedic Research Society*.
23. Spilker, R.L., Almeida, E.S., Clutz, C., Shephard, M. S., **Ateshian, G.A.**, and Donzelli, P.S. (1993) Three dimensional automated biphasic finite element analysis of soft tissues from stereophotogrammetric data. *Advances in Bioengineering*, ASME, BED **26**:15-18.
24. Bachrach, N.M., **Ateshian, G.A.**, and Mow, V.C. (1994) Altered load-support mechanism in articular cartilage due to impact induced defects in the subchondral plate. *Transactions of the Orthopaedic Research Society*, **19**:415.
25. Warden, W.H., **Ateshian, G.A.**, Grelsamer, R.P., and Mow, V.C. (1994) Biphasic finite deformation material properties of bovine articular cartilage. *Transactions of the Orthopaedic Research Society*, **19**:413.

26. **Ateshian, G.A.**, Warden, W.H., Grelsamer, R.P., and Mow, V.C. (1994) Biphasic finite deformation properties of bovine articular cartilage. *Proceedings of the Second World Congress of Biomechanics*, Amsterdam, **2**:215b.
27. Spilker, R.L., Shephard, M.S., **Ateshian, G.A.**, Mow, V.C., Almeida, E.S., Donzelli, P.S., and Clutz, C. (1994) Simulating the 3D biphasic response of soft tissues in diarthrodial joints using physiologic data. *Proceedings of the Second World Congress of Biomechanics*, Amsterdam, **2**:212b.
28. Spilker, R.L., Almeida, E.S., Clutz, C.J., Shephard, M.S., **Ateshian, G.A.**, Mow, V.C., and Donzelli, P.S. (1994) Automated finite element analysis of soft tissue models defined using stereophotogrammetric measurements. *The Third World Congress on Computational Mechanics*, IACM, Chiba, Japan, **2**:1694-1695.
29. Kwak, S.D., Colman, W.W., **Ateshian, G.A.**, Grelsamer, R.P., and Mow, V.C. (1994) Curvature analysis of the human retropatellar articular cartilage surface. *Advances in Bioengineering*, ASME, BED **28**:131-132.
30. Gardner, T.R., **Ateshian, G.A.**, Grelsamer, R.P., and Mow, V.C. (1994) A 6 DOF knee testing device to determine patellar tracking and patellofemoral joint contact area via stereophotogrammetry. *Advances in Bioengineering*, ASME, BED **28**:279-280.
31. **Ateshian, G.A.**, and Wang, H. (1994) Theoretical analysis of the moving contact of biphasic cartilage layers. *Advances in Bioengineering*, ASME, BED **28**:141-142.
32. **Ateshian, G.A.** (1994) A theoretical model for boundary friction in articular cartilage. *Annals of Biomedical Engineering*, **22 (Suppl 1)**:63.
33. **Ateshian, G.A.**, and Wang, H. (1994) Rolling and sliding contact of cylindrical articular surfaces using integral transform methods. *High Performance Computing in Bioengineering Workshop*, Pittsburgh Supercomputing Center, Proceedings, pp. 21-22.
34. Colman, W.W., Kwak, S.D., **Ateshian, G.A.**, Grelsamer, R.P., Henry, J.H., and Mow, V.C. (1995) Curvature analysis of the human patellofemoral joint articular surfaces. *Transactions of the Orthopaedic Research Society*, **20**:694.
35. Wang, V.M., Kelkar, R., and **Ateshian, G.A.** (1995) A new experimental technique for measuring the time-dependent and congruence-dependent creep and contact radius in a diarthrodial joint contact model. *1995 Bioengineering Conference*, ASME, BED **29**:145-146.
36. **Ateshian, G.A.** (1995) Continuity requirements across a contact interface in the formulation of a boundary friction model for biphasic articular cartilage. *1995 Bioengineering Conference*, ASME, BED **29**:147-148.
37. Kelkar, R., and **Ateshian, G.A.** (1995) Contact creep response between a rigid impermeable cylinder and a biphasic cartilage layer using integral transforms. *1995 Bioengineering Conference*, ASME, BED **29**:313-314.
38. **Ateshian, G.A.** (1995) Generating trimmed B-spline models of articular cartilage layers from unordered 3D surface data points. *1995 Bioengineering Conference*, ASME, BED **29**:217-218.
39. O'Bara, R.M., Shephard, M.S., and **Ateshian, G.A.** (1995) Geometric model construction and mesh generation for soft tissues in joints. *1995 Bioengineering Conference*, ASME, BED **29**:215-216.
40. **Ateshian, G.A.** (1995) A theoretical model for boundary friction in articular cartilage. *Proceedings of the 4th China--Japan-U.S.A.-Singapore Conference on Biomechanics*, G.

- Yang, K. Hayashi, S.L-Y. Woo, and J.C.H. Goh (eds), International Academic Publishers, pp. 142-145.
41. **Ateshian, G.A.**, Kwak, S.D., Colman, W.W., Mow, V.C., Henry, J.H., and Grelsamer, R.P. (1995) Anatomy of the human retropatellar articular cartilage surface: A study of curvature properties. *Combined Congress of the International Arthroscopy Association and the International Society of the Knee*, Hong Kong, May 27-31, 126.
 42. Kwak, S.D., Blankevoort, L., Ahmad, C.S., Gardner, T.R., Grelsamer, R.P., Henry, J.H., **Ateshian, G.A.**, and Mow, V.C. (1995) An anatomically based 3-D coordinate system for the knee joint. *Advances in Bioengineering*, ASME, BED **31**:309-310.
 43. Xu, L.F., Ahmad, C.S., Strauch, R.J., Wang, V.M., Wang, H., Rosenwasser, M.P., Pawluk, R.J., Mow, V.C., **Ateshian, G.A.** (1995) A new method to measure congruence of the thumb carpometacarpal joint: Maximum contact area criterion. *Advances in Bioengineering*, ASME, BED **31**:113-114.
 44. Wang, L.H., **Ateshian, G.A.** (1995) The velocity and compressive strain dependence of the cartilage equilibrium friction coefficient. *Advances in Bioengineering*, ASME, BED **31**:51-52.
 45. **Ateshian, G.A.**, Cohen, Z.A., Kwak, S.D., Wang, V.M., Ahmad, C.S., Kelkar, R., Raimondo, R.A., Feldman, F., Miller, T.T., Mun, I.K., Bigliani, L.U., Mow, V.C., Peterfy, C.G. (1995) Determination of in situ contact areas in diarthrodial joints by MRI. *Advances in Bioengineering*, ASME, BED **31**:225-226.
 46. Kelkar, R., Colman, W.W., **Ateshian, G.A.**, Soslowsky, L.J., Pollock, R.G., Flatow, E.L., Bigliani, L.U., Mow, V.C. (1995) Three-dimensional topography of the acromion: a quantitative study and simulation of surgical alterations. *Advances in Bioengineering*, ASME, BED **31**:149-150.
 47. Selby, K., Peterfy, C.G., Cohen, Z.A., **Ateshian, G.A.**, Mow, V.C., Roos, M., Wong, S., Newitt, D.C., van Dijke, C.F., Wendland, M., and Genant, H.K. (1995) In vivo MR quantification of articular cartilage water content: a potential early indicator of osteoarthritis. In: Book of Abstracts: Society of Magnetic Resonance 1995, 204.
 48. Kelkar, R., and **Ateshian, G.A.** (1995) Biphasic contact creep between two dissimilar articular cartilage layers under a step load. *Annals of Biomedical Engineering*, **23** (Suppl. 1):463.
 49. Spilker, R.L., Shephard, M.S., Flaherty, J.E., Holmes, M.H., Szymanski, B.K., **Ateshian, G.A.**, and Mow, V.C. (1995) Advanced computational methods for the analysis of biphasic tissues in a joint. *Annals of Biomedical Engineering*, **23** (Suppl. 1):497.
 50. Kwak, S.D., **Ateshian, G.A.**, Blankevoort, L., Ahmad, C.S., Gardner, T.R., Grelsamer, R.P., and Mow, V.C. (1995) Development of multibody model for diarthrodial joints using accurate 3-D cartilage and bone surfaces. *Annals of Biomedical Engineering*, **23** (Suppl. 1):498.
 51. Wang, L.H., Xu, L.F., Ahmad, C.S., Strauch, R.J., Rosenwasser, M.P., Pawluk, R.J., Blankevoort, L.B., **Ateshian, G.A.**, and Mow, V.C. (1995) Mechanical properties of the thumb carpometacarpal cartilage. *Proceedings of the 2nd Triennial International Hand and Wrist Biomechanics Symposium*, September 1995, San Francisco, p. 48.
 52. Xu, L.F., Ahmad, C.S., Strauch, R.J., Wang, V.M., Wang, L.H., Rosenwasser, M.P., Pawluk, R.J., Blankevoort, L.B., **Ateshian, G.A.**, and Mow, V.C. (1995) An analysis of the congruence of the thumb carpometacarpal joint. *Proceedings of the 2nd Triennial*

- International Hand and Wrist Biomechanics Symposium*, September 1995, San Francisco, p. 46.
53. Ahmad, C.S., Kwak, S.D., Grelsamer, R.P., Henry, J., Gardner, T.R., **Ateshian, G.A.**, Mow, V.C. (1996) The influence of iliotibial band tension on patellar tracking and patellofemoral contact. *Orthopaedic Transactions*, **20**:119-120.
 54. Wang, H., and **Ateshian, G.A.** (1996) The normal stress effect of articular cartilage under steady frictional shear persists after removal of the surface zone. *Transactions of the Orthopaedic Research Society*, **21**:8.
 55. Kwak, S.D., Ahmad, C.S., Gardner, T.R., Wu, H., Grelsamer, R.P., Henry, J.H., Blankevoort, L., **Ateshian, G.A.**, and Mow, V.C. (1996) The iliotibial band has a small but significant effect on knee kinematics and articular contact. *Transactions of the Orthopaedic Research Society*, **21**:718.
 56. **Ateshian, G.A.**, Wang, H., Saed-Nejad, F., Ratcliffe, A. (1996) The normal stress effect in articular cartilage under steady frictional shear. 1996 ASME Mechanics & Materials Conference, Book of Abstracts, p. 135.
 57. Blankevoort, L., Kwak, S.D., Gardner, T.R., Grelsamer, R.P., Henry, J.H., **Ateshian, G.A.**, and Mow, V.C. (1996) Effects of global and anatomic coordinate systems on knee joint kinematics. *Proceedings of the European Society of Biomechanics*, **10**:260.
 58. **Ateshian, G.A.**, and Wang, H. (1996) Rolling resistance of articular cartilage due to interstitial fluid flow. *Advances in Bioengineering*, ASME, BED **33**:429-430.
 59. Xu, L.F., Jenkins, M.S., Bucchieri, J.S., Strauch, R., Wang, L.H., Rosenwasser, M.P., **Ateshian, G.A.**, Pawluk, R.J., and Mow, V.C. (1996) Curvature and congruence analysis of the thumb carpometacarpal joint. *Advances in Bioengineering*, ASME, BED **33**:113-114.
 60. Cohen, Z.A., Kwak, S.D., **Ateshian, G.A.**, Blankevoort, L., Henry, J.H., Grelsamer, R.P., and Mow, V.C. (1996) The effect of tibial tuberosity transfer on the patellofemoral joint: A 3-D simulation. *Advances in Bioengineering*, ASME, BED **33**:387-388.
 61. Wang, H., **Ateshian, G.A.**, Saed-Nejad, F., and Ratcliffe, A. (1996) The role of proteoglycans in the frictional properties and normal stress effect of articular cartilage. *Advances in Bioengineering*, ASME, BED **33**:423-424.
 62. Kwak, S.D., **Ateshian, G.A.**, Blankevoort, L., Ahmad, C.S., Gardner, T.R., Grelsamer, R.P., Henry, J.H., and Mow, V.C. (1996) A general mathematical multibody model for diarthrodial joints: Application and validation using the patellofemoral joint. *Advances in Bioengineering*, ASME, BED **33**:239-240, First Place Award for PhD-Level Student Competition.
 63. Wang, L.H., Soltz, M.A., **Ateshian, G.A.** (1997) Interstitial fluid pressurization regulates the frictional response of cartilage. *Transactions of the Orthopaedic Research Society*, **22**:83.
 64. Cohen, Z.A., McCarthy, D.M., **Ateshian, G.A.**, Kwak, S.D., Peterfy, C.G., Alderson, P., Grelsamer, R.P., Henry, J.H., and Mow, V.C. (1997) In vivo and in vitro knee joint cartilage topography, thickness, and contact areas from MRI. *Transactions of the Orthopaedic Research Society*, **22**:625.
 65. Ahmad, C.S., Kwak, S.D., **Ateshian, G.A.**, Gardner, T.R., Blankevoort, L., Warden, W.H., Grelsamer, R.P., Henry, J.H., Steadman, J.R., and Mow, V.C. (1997) Adhesive contracture of the patellar ligament: Effect on patellar and tibial kinematics and contact. *Transactions of the Orthopaedic Research Society*, **22**:716.

66. Kitano, T., Wang, L.H., **Ateshian, G.A.**, Mow, V.C., Kadoya, Y., Kobayashi, A., and Yamano, Y. (1997) Role of constituents and pH changes in protein rich hyaluronan solution on frictional properties between UHMWPE and stainless steel. *Transactions of the Orthopaedic Research Society*, **22**:760.
67. Kwak, S.D., Ahmad, C.S., Gardner, T.R., Wu, H., Grelsamer, R.P., Henry, J.H., Blankevoort, L., **Ateshian, G.A.**, and Mow, V.C. (1997) Tibiofemoral and patellofemoral kinematics and contact: Effects of hamstrings and iliotibial band force. *1997 ASME Summer Bioengineering Conference*, **BED 35**:41-42.
68. Cohen, Z.A., McCarthy, D.M., **Ateshian, G.A.**, Kwak, S.D., Peterfy, C.G., Alderson, P., Grelsamer, R.P., Henry, J.H., and Mow, V.C. (1997) Knee joint topography and contact areas: Validation of measurements from MRI. *1997 ASME Summer Bioengineering Conference*, **BED 35**:45-46.
69. **Ateshian, G.A.**, Wang, H., and Lai, W.M. (1997) The role of interstitial fluid pressurization and surface porosities on the boundary friction of articular cartilage. *1997 ASME Summer Bioengineering Conference*, **BED 35**:111-112.
70. Wang, H., Strauch, R.J., **Ateshian, G.A.**, Pawluk, R.J., Xu, L., Rosenwasser, M.P., and Mow, V.C. (1997) Mechanical properties of trapeziometacarpal joint cartilage and their variations with degeneration, age, gender, and site. *1997 ASME Summer Bioengineering Conference*, **BED 35**:113-114.
71. Xu, L., Wang, L.H., Strauch, R.J., Pawluk, R.J., Bucchieri, J.S., Rosenwasser, M.P., **Ateshian, G.A.**, and Mow, V.C. (1997) Topography of the osteoarthritic trapeziometacarpal joint: The function of age and gender. *1997 ASME Summer Bioengineering Conference*, **BED 35**:401-402.
72. **Ateshian, G.A.**, Wang, H., and Lai, W.M. (1997) The role of interstitial fluid pressurization and equilibrium friction coefficient on the boundary friction of articular cartilage. *World Tribology Congress*, 8-12 September 1997, Abstracts of Papers, 250.
73. Soltz, M.A., and **Ateshian, G.A.** (1997) Experimental measurement of cartilage interstitial fluid pressurization under confined compression stress-relaxation. *Advances in Bioengineering*, ASME, **BED 36**:159-160.
74. Xu, L., Blankevoort, L., **Ateshian, G.A.**, Cohen, N.P., Strauch, R.J., Rosenwasser, M.P., and Mow, V.C. (1997) A mathematical model of the thumb carpometacarpal joint. *Advances in Bioengineering*, ASME, **BED 36**:151-152.
75. Roglic, H., Kwak, S.D., Henry, J.H., **Ateshian, G.A.**, Rodkey, W., Steadman, J.R., and Mow, V.C. (1997) Adhesions of the patellar and quadriceps tendons: Mathematical model simulation. *Advances in Bioengineering*, ASME, **BED 36**:261-262.
76. Xu, L., Cohen, N.P., Roglic, H., Roh, M., Strauch, R.J., Rosenwasser, M.P., **Ateshian, G.A.**, and Mow, V.C. (1998) A parametric analysis of laxity in the thumb carpometacarpal joint. *Transactions of the Orthopaedic Research Society*, **23**:288.
77. Rivers, P.A., Wang, H., Strauch, R.J., **Ateshian, G.A.**, Pawluk, R.J., Rosenwasser, M.P., Ratcliffe, A., and Mow, V.C. (1998) Osteoarthritic changes in the biochemical composition of carpometacarpal joint cartilage and correlation with compressive modulus. *Transactions of the Orthopaedic Research Society*, **23**:754.
78. Wang, H., Strauch, R.J., **Ateshian, G.A.**, Pawluk, R.J., Xu, L., Rosenwasser, M.P., and Mow, V.C. (1998) Variations of compressive stiffness and thickness of the thumb carpometacarpal joint cartilage with degeneration and age. *Transactions of the Orthopaedic Research Society*, **23**:488.

79. Cohen, Z.A., McCarthy, D.S., Henry, J.H., Mow, V.C., and **Ateshian, G.A.** (1998) Patellofemoral joint cartilage thickness and contact areas from MRI for patients with osteoarthritis. *Transactions of the Orthopaedic Research Society*, **23**:204.
80. Roglic, H., **Ateshian, G.A.**, Cohen, Z.A., Kwak, S.D., Gardner, T.R., Henry, J.H., Rodkey, W., Steadman, J.R., and Mow, V.C. (1998) A computer simulation of tibial tuberosity elevation and patellar tendon adhesions. *Transactions of the Orthopaedic Research Society*, **23**:617.
81. Soltz, M.A., and **Ateshian, G.A.** (1998) Experimental verification of cartilage fluid pressurization in confined compression creep and stress relaxation. *Transactions of the Orthopaedic Research Society*, **23**:224.
82. Rosenwasser, M.P., Roh, M.S., Xu, L., **Ateshian, G.A.**, Pawluk, R.J., Strauch, R.J., and Mow, V.C. (1998) Kinematics of the thumb carpometacarpal joint in active functions. *Third Triennial Hand and Wrist Biomechanics Symposium*.
83. Strauch, R.J., Xu, L., **Ateshian, G.A.**, Roglic, H., Pawluk, R.J., Rosenwasser, M.P., and Mow, V.C. (1998) Contact areas of the thumb carpometacarpal joint in pronation: A computer simulation. *Third Triennial Hand and Wrist Biomechanics Symposium*.
84. Lai, W.M., **Ateshian, G.A.**, Gu, W.Y., and Mow, V.C. (1998) Recent advances on constitutive modeling of mechano-electrochemical phenomena in articular cartilage. *Third World Congress of Biomechanics*, Sapporo, Japan, 107a.
85. **Ateshian, G.A.**, Wang, X., Soltz, M.A. (1998) Boundary conditions at the sliding interface of contacting biphasic cartilage media with viscous interstitial fluid phase. *Third World Congress of Biomechanics*, Sapporo, Japan, 110a.
86. Blankevoort, L., and **Ateshian, G.A.** (1998) Advances in mathematical modeling of the knee. *Third World Congress of Biomechanics*, Sapporo, Japan, 112a.
87. Xu, L., Mow, V.C., **Ateshian, G.A.**, Strauch, R.J., and Rosenwasser, M.P. (1998) Effects of ligament instability and articular anatomy on trapeziometacarpal joint contact. *Third World Congress of Biomechanics*, Sapporo, Japan, 119a.
88. **Ateshian, G.A.**, Cohen, Z.A., Roglic, H., Henry, J.H., Steadman, R., McCarthy, D.M., and Mow, V.C. (1998) Planning of diarthrodial joint surgery using quantitative magnetic resonance imaging data. *Third World Congress of Biomechanics*, Sapporo, Japan, 115b.
89. Soltz, M.A., and **Ateshian, G.A.** (1998) Measurement of cartilage fluid pressurization in confined compression cyclical loading. *Fifth Japan-U.S.-Singapore-China Conference on Biomechanics*, Sendai, Japan.
90. **Ateshian, G.A.**, Lai, W.M., Gu, W.Y., and Mow, V.C. (1998) Ionic polarization in charged hydrated soft tissues. *Advances in Bioengineering*, ASME, **BED 39**:253-254.
91. Soltz, M.A., and **Ateshian, G.A.** (1998) Measurement of cartilage fluid pressurization in confined compression cyclical loading. *Advances in Bioengineering*, ASME, **BED 39**:23-24, 2nd place in PhD Student Paper Competition.
92. Mow, V.C., **Ateshian, G.A.**, Lai, W.M., Sun, D.N., Wang, C.B., and Gu, W.Y. (1998) Effects of fixed charged density on stress-relaxation behavior of hydrated soft tissues in confined compression. *Advances in Bioengineering*, ASME, **BED 39**:267-268.
93. Huang, C-Y., Stankiewicz, A., Ateshian, G.A., Flatow, E.L., Bigliani, L.U., Mow, V.C. (1999) Anisotropy, inhomogeneity, and tension-compression nonlinearity of human glenohumeral cartilage in finite deformation. *Trans Orthop Res Soc*, **24**:95.
94. Brown, G.D., Roh, M.S., Xu, L., Strauch, R.J., Rosenwasser, M.P., Pawluk, R.J., Ateshian, G.A., Mow, V.C. (1999) Topography, radiography, and pathology of the

- scaphotrapeziotrapezoidal joint, and its relationship to thumb carpometacarpal osteoarthritis. *Trans Orthop Res Soc*, **24**:119.
95. Ateshian, G.A., Soltz M.A. (1999) Conewise linear elasticity mixture model for the analysis of tension-compression nonlinearity in articular cartilage. *Trans Orthop Res Soc*, **24**:158.
 96. Francisco, A.C., Guilak F., Vail, T.P., Cohen, Z.A., Ateshian, G.A., Setton, L.A., Nyarko, S.J., Carlson (1999) High resolution MRI microscopy reveals histologic changes of cartilage and bone structure in a small animal model of spontaneous osteoarthritis. *Trans Orthop Res Soc*, **24**:218.
 97. Leroux, M.A., Ateshian, G.A., Setton, L.A. (1999) Evidence of nonlinear coupled shear-normal stress effects in articular cartilage. *Trans Orthop Res Soc*, **24**:641.
 98. Mow V.C., Ateshian G.A., Lai W.M., Kang K., Sun D.N., Gu W.Y. (1999) Effect of fixed charge density on stress-relaxation behavior of hydrated soft tissues in confined compression. *Trans Orthop Res Soc*, **24**:646.
 99. Roglic H., Ateshian G.A., Cohen Z.A., Grelsamer R.P., Henry J.H., Steadman J.R., Mow, V.C. (1999) Analysis of open and closed kinetic chain exercises using multibody computer models from cadaver knees. *Trans Orthop Res Soc*, **24**:948.
 100. Soltz, M.A., and Ateshian, G.A. (1999) Does osmotic pressure influence the frictional response of articular cartilage? *1999 Summer Bioengineering Conference*, ASME, **BED 42**:67-68.
 101. Ateshian, G.A., and Soltz, M.A. (1999) A biphasic conewise linear elasticity model for modeling tension-compression nonlinearity in articular cartilage. *1999 Summer Bioengineering Conference*, ASME, **BED 42**:69-70.
 102. Ün, K., Donzelli^{P.S.}, Spilker, R.L., Wang, V.M., Ateshian, G.A., and Mow, V.C. (1999) Simulation of biphasic soft tissue contact in diarthroidal joints using penetration data. *1999 Summer Bioengineering Conference*, ASME, **BED 42**:115-116.
 103. Soltz, M.A., Mauck, R.L., Hung, C.T., and Ateshian, G.A. (1999) Fluid pressurization in agarose hydrogels under mechanical loading. *1999 Summer Bioengineering Conference*, ASME, **BED 42**:127-128.
 104. Cohen, Z.A., Ahmad, C.S., Roglic, H., Levine, W.N., Henry, J.H., Ateshian, G.A., Mow, V.C. (1999) Biomechanical considerations for autologous osteochondral grafting of the femoral articular surface. *1999 Summer Bioengineering Conference*, ASME, **BED 42**:129-130.
 105. Lai, W.M., Ateshian, G.A., Sun, D.D., and Mow, V.C. (1999) The electrical environment of chondrocytes in normal and OA cartilage: Streaming potential vs. Nernst potential. *1999 Summer Bioengineering Conference*, ASME, **BED 42**:135-136.
 106. Donzelli, P.S., Ateshian, G.A., Spilker, R.L., Mow, V.C. (1999) Contact as a paradigm for finite element solutions of hydrated soft tissue mechanics. *1999 Summer Bioengineering Conference*, ASME, **BED 42**:333-334.
 107. Ateshian, G.A., Cohen, Z.A., McCarthy, D.M. (1999) In vivo biomechanical analysis of osteoarthritic patellofemoral joints using 3D multi-body models from patient MRI. *1999 Summer Bioengineering Conference*, ASME, **BED 42**:447-448.
 108. Huang, C-Y., Stankiewicz, A., Ateshian, G.A., Flatow, E.L., Bigliani, L.U., Mow, V.C. (1999) Tensile and compressive stiffness of human glenohumeral cartilage under finite deformation. *1999 Summer Bioengineering Conference*, ASME, **BED 42**:469-470.

109. Roglic, H., Xu, L., Roh, M.S., Balaguer, E.J., Pawluk, R.J., Strauch, R.J., Rosenwasser, M.P., Ateshian, G.A., Mow, V.C. (1999) Contact areas and kinematics of thumb carpometacarpal joint in functional pinch and grasp. *1999 Summer Bioengineering Conference*, ASME, **BED 42**:555-556.
110. Soltz, M.A., Stankiewicz, A., Mauck, R.L., Ateshian, G.A., Hung, C.T. (1999) Direct hydraulic permeability measurements of agarose hydrogels used as cell scaffolds. *Advances in Bioengineering*, ASME, **BED 43**:229-230.
111. Mauck, R.L., Soltz, M.A., Raia, F.J., Gilbert, B., Valhmu, W.B., Ateshian, G.A., Hung, C.T. (1999) Time-varying effect of ascorbate on the compressive modulus and gag content of chondrocyte-seeded agarose cultures. *Advances in Bioengineering*, ASME, **BED 43**:105-106.
112. Stankiewicz, A., Ateshian, G.A., Bigliani, L.U., Mow, V.C. (1999) Permeability of human glenohumeral joint cartilage. *Advances in Bioengineering*, ASME, **BED 43**:231-232.
113. Soltz, M.A., Mauck, R.L., Hung, C.T., Ateshian, G.A. (1999) Is articular cartilage orthotropic in compression?. *Advances in Bioengineering*, ASME, **BED 43**:209-210.
114. Cohen, Z.A., Ateshian, G.A. (1999) The influence of cartilage thickness in the multibody modeling of patellofemoral joint kinematics and contact stresses. *Advances in Bioengineering*, ASME, **BED 43**:205-206.
115. Ateshian, G.A., Soltz, M.A. (1999) Finite element contact analysis of a cartilage layer exhibiting tension-compression nonlinearity. *Advances in Bioengineering*, ASME, **BED 43**:215-216.
116. Soltz, M.A., Palma, C., Barsoumian, S., Wang, C.C-B., Hung, C.T., Ateshian, G.A. (2000) Multi-axial loading of bovine articular cartilage in unconfined compression. *Transactions of the Orthopaedic Research Society*, **25**:888.
117. Mow, V.C., Lai, W.M., Sun, D.D-N., Ateshian, G.A. (2000) On the electric potentials inside a charged soft hydrated biological tissue. *Transactions of the Orthopaedic Research Society*, **25**:883.
118. Wang, C.C-B, Soltz, M.A., Mauck, R.L., Valhmu, W.B., Ateshian, G.A., Hung, C.T. (2000) Comparison of equilibrium axial strain distribution in articular cartilage explants and cell-seeded alginate disks under unconfined compression. *Transactions of the Orthopaedic Research Society*, **25**:131.
119. Mauck, R.L., Wong, D.D., Soltz, M.A., Seruya, M., Ateshian, G.A., Valhmu, W.B., Hung, C.T. (2000) Characterization of alginate constructs for articular cartilage tissue engineering. *Transactions of the Orthopaedic Research Society*, **25**:200.
120. Mauck, R.L., Palmer, G.D., Wang, C.C-B., Soltz, M.A., Valhmu, W.B., Ateshian, G.A., Hung, C.T. (2000) Dynamic compression stimulates the development of equilibrium aggregate modulus in tissue engineered cartilage constructs. *Advances in Bioengineering*, ASME, **BED 48**:67-68.
121. Soltz, M.A., Koff, M.F., Balaguer, E.J., Pawluk, R.J., Strauch, R.J., Rosenwasser, M.P., Ateshian, G.A., Mow, V.C. (2000) A device for evaluating laxity of the thumb carpometacarpal joint. *Advances in Bioengineering*, ASME, **BED 48**:143-144.
122. Cohen, Z.A., Levine, W.N., Mow, V.C., Ateshian, G.A. (2000) Surface topography and cartilage thickness templates for the femur and patella based on an average of healthy articular surfaces. *Advances in Bioengineering*, ASME, **BED 48**:157-158.

123. Koff, M.F., Cohen, Z.A., Ugwonali, O., Balaguer, E.J., Ateshian, G.A., Mow, V.C. (2000) Normal cartilage thickness and osteoarthritic wear patterns of the human CMC joint. *Advances in Bioengineering*, ASME, **BED 48**:159-160.
124. Huang, C-Y., Soltz, M.A., Kopacz, M., Mow, V.C., Ateshian, G.A. (2001) Tension-compression nonlinearity and intrinsic viscoelasticity of articular cartilage solid matrix. *Transactions of the Orthopaedic Research Society*, **26**:418.
125. Soltz, M.A., Mauck, R.L., Hung, C.T., Ateshian, G.A. (2001) Osmotic pressure influence on the frictional response of articular cartilage. *Transactions of the Orthopaedic Research Society*, **26**:60.
126. Wang, C.C-B., Guo, X.E., Deng, J.J., Mow, V.C., Ateshian, G.A., Hung, C.T. (2001) A novel non-invasive technique for determining distribution of fixed-charge density within articular cartilage. *Transactions of the Orthopaedic Research Society*, **26**:129.
127. Cohen, Z.A., Moa-Anderson, B.J., Hepinstall, M.S., Levine, W.N., Mow, V.C., Ateshian, G.A. (2001) Templates of normal patellofemoral joint cartilage thickness and tools for the detection of cartilage lesions in patients with osteoarthritis. *Transactions of the Orthopaedic Research Society*, **26**:357.
128. LeRoux, M.A., Ateshian, G.A., Vail, T.P., Setton, L.A. (2001) Effects of collagen fiber anisotropy on the hydraulic permeability of the meniscus. *Transactions of the Orthopaedic Research Society*, **26**:45.
129. Mauck, R.L., Seyhan, S.L., Wang, C-C.B., Soltz, M.A., Chao, P.G., Valhmu, W.B., Ateshian, G.A., Hung, C.T. (2001) Physiologic loading for cartilage tissue engineering - effect of chondrocyte seeding density. *Transactions of the Orthopaedic Research Society*, **26**:622.
130. Mauck, R.L., Wang, C-C.B., Seyhan, S.L., Kelly, T.N., Valhmu, W.B., Ateshian, G.A., Hung, C.T. (2001) Seeding density influences the development of mechanical properties in agarose constructs. *Transactions of the Orthopaedic Research Society*, **26**:432.
131. Krishnan, R., Park, S., Soltz, M.A., Pawluk, R.J., Ateshian, G.A. (2001) Depth-dependent tensile and compressive properties of human patellofemoral joint cartilage. *2001 Summer Bioengineering Conference*, ASME, **BED 50**:847-848.
132. Mauck, R.L., Seyhan, S.L., Nicoll, S.B., Ateshian, G.A., Hung, C.T. (2001) Transforming growth factor beta1 increases the mechanical properties and matrix development of chondrocyte-seeded agarose hydrogels. *2001 Summer Bioengineering Conference*, ASME, **BED 50**:691-692.
133. Gardner, T.R., Balaguer, E.J., Ateshian, G.A., Mow, V.C. (2001) Comparison of isotropic and transversely isotropic material properties from confined compression and indentation. *2001 Summer Bioengineering Conference*, ASME, **BED 50**:715-716.
134. Huang, C.Y., Soltz, M.A., Kopacz, M., Mow, V.C., Ateshian, G.A. (2001) Experimental verification of the role of intrinsic matrix viscoelasticity and tension-compression nonlinearity in the biphasic response of cartilage in unconfined compression. *2001 Summer Bioengineering Conference*, ASME, **BED 50**:717-718.
135. Wang, C.C-B., Chahine, N.O., Kelly, T.N., Valhmu, W.B., Hung, C.T., Ateshian, G.A. (2001) Optical determination of anisotropic material properties of bovine articular cartilage in compression. *2001 Summer Bioengineering Conference*, ASME, **BED 50**:719-720.
136. Krishnan, R., Park, S., Soltz, M.A., Pawluk, R.J., Ateshian, G.A. (2001) The influence of depth dependent inhomogeneity on the contact response of human patellar cartilage.

- Proceedings of the 2001 ASME International Mechanical Engineering Congress and Exposition*, paper 23060.
137. Andarawis, N.A., Seyhan, S.L., Mauck, R.L., Ateshian, G.A., Hung, C.T. (2001) A novel device for direct permeation measurements of hydrogels and soft hydrated tissues. *Proceedings of the 2001 ASME International Mechanical Engineering Congress and Exposition*, paper 23149.
 138. Kelly, T-A.N., Wang, C.C-B., Chahine, N.O., Ateshian, G.A., Hung, C.T. (2001) Temporal development of material properties in free-swelling chondrocyte-seeded agarose constructs. *Proceedings of the 2001 ASME International Mechanical Engineering Congress and Exposition*, paper 23144.
 139. Basalo, I.M., Ateshian, G.A. (2001) Hydrodynamic pressurization of a trapped lubricant pool between a rippled rigid indenter and an elastic layer: an investigation into the role of surface roughness on cartilage lubrication. *Proceedings of the 2001 ASME International Mechanical Engineering Congress and Exposition*, paper 23063.
 140. Wang, C.C-B., Chahine, N.O., Kelly, T-A., Lai, W.M., Hung, C.T., Ateshian, G.A. (2001) The strain-softening of bovine articular cartilage under infinitesimal deformation in unconfined compression. *Proceedings of the 2001 ASME International Mechanical Engineering Congress and Exposition*, paper 23061.
 141. Ateshian, G.A., Stark, R., Mauck, R.L., Hung, C.T. (2001) Joint-specific articular surface molds for the production of anatomically shaped tissue-engineered cartilage constructs. *Annals of Biomedical Engineering*, **29 (Sup. 1)**:S-151.
 142. Chahine, N.O., Wang, C.C-B., Kelly, T-A., Lai, W.M., Hung, C.T., Ateshian, G.A. (2001) The strain-softening of bovine articular cartilage under infinitesimal deformation in unconfined compression. *Annals of Biomedical Engineering*, **29 (Sup. 1)**:S-31.
 143. Chahine, N.O., Wang, C.C-B., Mason, J.H., Lai, W.M., Hung, C.T., Ateshian, G.A. (2002) The roles of osmotic swelling pressure and tension-compression nonlinearity on stress-strain responses of bovine articular cartilage. *48th Annual Meeting of the Orthopaedic Research Society*, Paper No. 0083.
 144. Mauck, R.L., Seyhan, S.L., Jamieson, K.V., Nicoll, S.B., Ateshian, G.A., Hung, C.T. (2002) Synergistic effects of growth factors and dynamic loading for cartilage tissue engineering. *48th Annual Meeting of the Orthopaedic Research Society*, Paper No: 0213.
 145. Mauck, R.L., Nicoll, S.B., Stark, R., Hung, C.T., Ateshian, G.A. (2002) Joint-specific surface molds for articular cartilage tissue engineering. *48th Annual Meeting of the Orthopaedic Research Society*, Paper No: 0251.
 146. Wang, V.M, Krishnan, R., Ugwonal, O.F.C., Flatow, E.L., Bigliani, L.U., Ateshian, G.A. (2002) Biomechanical evaluation of a novel glenoid design in total shoulder arthroplasty. *48th Annual Meeting of the Orthopaedic Research Society*, Paper No: 0282.
 147. Wang, C.C-B., Chahine, N.O., Kelly, T.N., Hung, C.T., Ateshian, G.A. (2002) Optical measurements of anisotropic material properties of articular cartilage and determination of its material symmetry in compression. *48th Annual Meeting of the Orthopaedic Research Society*, Poster No: 0394.
 148. LeRoux, M.A., Raina, P., Ateshian, G.A., Guo, X.E., Hung, C.T. (2002) Novel composite chondrocyte-seeded agarose-bone constructs for in vitro chondrogenesis. *48th Annual Meeting of the Orthopaedic Research Society*, Poster No: 0469.

149. Ramaswamy, K., Ateshian, G.A. (2002) Experimental verification of the role of interstitial fluid pressurization in the frictional response of bovine articular cartilage. *2002 World Congress of Biomechanics*, paper 5172.
150. Krishnan, R., Ateshian, G.A. (2002) The frictional coefficient of bovine articular cartilage correlates with interstitial fluid load support in creep. *ASME 2002 International Mechanical Engineering Congress and Exposition*, Paper No. 32522, First Place Award for PhD-Level Student Competition.
151. Park, S., Krishnan, R., Nicoll, S.B., Ateshian, G.A. (2002) Cartilage interstitial fluid load support in unconfined compression. *ASME 2002 International Mechanical Engineering Congress and Exposition*, Paper No. 32620.
152. Chahine, N.O., Wang, C.C-B., Hung, C.T., Ateshian, G.A. (2002) Determination of Poisson's ratios of bovine articular cartilage in tension and compression using osmotic and mechanical loading. *ASME 2002 International Mechanical Engineering Congress and Exposition*, Paper No. 32622.
153. Takai, E., Guo, X.E., Lu, H.H., LeRoux, M.A., Raina, P., Ateshian, G.A., Hung, C.T. (2002) Strategy for tissue engineering of osteochondral constructs. *ASME 2002 International Mechanical Engineering Congress and Exposition*, Paper No. 33595.
154. Nicoll, S.B., Mauck, R.L., Tsay, R.C., Hung, C.T., Ateshian, G.A. (2002) Intermittent Hydrostatic Pressurization Modulates Gene Expression In Human Dermal Fibroblasts Seeded In Three-dimensional Polymer Scaffolds, *ASME 2002 International Mechanical Engineering Congress and Exposition*, Paper No. 33604.
155. Hung, C.T., Lima, E.G., Mauck, R.L., Lu, H.H., Ateshian, G.A. (2003) Considerations for the design of biphasic anatomically shaped constructs for articular cartilage tissue engineering. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Poster No. 0971.
156. Mauck, R.L., Wang C.C-B., Cheng, Q., Gabriel, N., Oswald, E.S., Ateshian, G.A., Hung, C.T. (2003) Optimization of parameters for articular cartilage tissue engineering with deformational loading. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Paper No. 0305.
157. Kim, C.H., Han, S.H., Chen, F.H., Chan, M.L., Ateshian, G.A., Hung, C.T., Guo, X.E. (2003) Intervertebral disc response to *in vivo* dynamic loading in a rat-tail model. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Paper No. 0057.
158. Kelly, T.N., Wang, C.C-B., Mauck, R.L., Chahine, N.O., Ateshian, G.A., Hung, C.T. (2003) Effects of dynamic loading on material properties of chondron-seeded hydrogels. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Paper No. 0312.
159. Ng, K., Wang, C.C-B., Guo, X.E., Ateshian, G.A., Hung, C.T. (2003) Characterization of inhomogeneous bi-layered chondrocyte-seeded agarose constructs of differing agarose concentrations. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Poster No. 0960.
160. Mauck, R.L., Hung, C.T., Ateshian, G.A. (2003) Modeling solute transport with mixture theory for dynamically loaded porous permeable gels. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Poster No. 0662.
161. Mauck, R.L., Lima, E.G., Oswald, E.S., Ateshian, G.A., Hung, C.T. (2003) Hydrostatic pressure increases matrix deposition and material properties of chondrocyte-seeded agarose hydrogels. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Poster No. 0685.

162. Nicoll, S.B., Mauck, R.L., Bordone, L.A., Tsay, R., Hung, C.T., Ateshian, G.A. (2003) Hydrostatic pressure stimulates expression of fibrocartilaginous extracellular matrix proteins in human dermal fibroblasts seeded in 3-d polymer scaffolds. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Poster No. 0950.
163. Chahine, N.O., Wang, C.C-B., Kelly, T.N., Elbeshbeshy, R., Mauck, R.L., Hung, C.T., Ateshian, G.A. (2003) The effect of finite compressive strain on chondrocyte viability in statically loaded bovine articular cartilage. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Poster No. 0646.
164. Park, S., Nicoll, S.B., Ateshian, G.A. (2003) Mechanical response of bovine articular cartilage under dynamic unconfined compression loading at physiological stress levels following enzymatic digestion. *49th Annual Meeting of the Orthopaedic Research Society*, Paper No. 0040.
165. Krishnan, R., Kopacz, M., Ateshian, G.A. (2003) Verification of the role of interstitial fluid load support in the frictional response of bovine articular cartilage. *49th Annual Meeting of the Orthopaedic Research Society*, Vol. 28, Paper No. 0287.
166. Basalo, I.M., Mauck, R.L., Nicoll, S.B., Chen, F.H., Ateshian, G.A. (2003) Interstitial fluid load support of bovine articular cartilage in unconfined compression following collagenase digestion. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 557.
167. Canal, C.E., Meade, N.K., Wang, C.CB., Hung, C.T., Ateshian, G.A. (2003) Optical measurement of in situ strain fields within osteochondral tissue under indentation and unconfined compression. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 363.
168. Chahine, N.O., Wang, C.CB., Elbeshbeshy, R.R., Chen, F.H., Hung, C.T., Ateshian, G.A. (2003) Depth-dependent orthotropic tensile and compressive properties of human patellar cartilage. *Proceedings of the 2003 Summer Bioengineering Conference*, Poster 1145.
169. Chahine, N.O., Mantzaris, A.A., Chen, F.H., Hung, C.T., Ateshian, G.A. (2003) Direct measurement of osmotic pressure of glycosaminoglycan solutions by membrane osmometry. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 563.
170. Ho, M.M.Y., Ng, K.W., Mauck, R.L., Ateshian, G.A., Hung, C.T. (2003) Gelling temperature and gel concentration effects on tissue development in chondrocyte-seeded agarose hydrogels. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 355.
171. Kelly, T.N., Wang, C.C-B., Mauck, R.L., Ateshian, G.A., Hung, C.T. (2003) Effects of seeding density and native pericellular matrix on response of chondrocytes to dynamic deformational loading. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 187.
172. Krishnan, R., Kopacz, M., Ateshian, G.A. (2003) Frictional response of bovine articular cartilage before and after removal of the superficial tangential zone. *Proceedings of the 2003 Summer Bioengineering Conference*, Poster 1143.
173. Lima, E.G., Mauck, R.L., Park, S., Gasinu, S.Y., Ng, K.W., Hung, C.T., Ateshian, G.A. (2003) Material properties of osteochondral constructs and biphasic finite element models of dynamic loading for articular cartilage tissue engineering. *Proceedings of the 2003 Summer Bioengineering Conference*, Poster 1129.
174. Mauck, R.L., Wang, C.C-B., Chen, F.H., Lu, H.H., Ateshian, G.A., Hung, C.T. (2003) Dynamic deformational loading of chondrocyte-seeded agarose hydrogels modulates

- deposition and structural organization of matrix constituents. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 531.
175. Mauck, R.L., Oswald, E.S., Cheng, Q., Majumdar, M.K., Nicoll, S.B., Ateshian, G.A., Hung, C.T. (2003) Hydrostatic pressure enhances chondrogenic differentiation of human mesenchymal stem cells in alginate disks. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 265.
 176. Mauck, R.L., Ho, M.M.Y., Hung, C.T., Ateshian, G.A. (2003) Growth factor supplementation and dynamic hydrostatic pressurization for articular cartilage tissue engineering. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 283.
 177. Moa-Anderson, B., Costa, K.D., Hung, C.T., Ateshian, G.A. (2003) Bovine articular cartilage surface topography and roughness in fresh versus frozen tissue samples using atomic force microscopy. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 561.
 178. Park, S., Krishnan, R., Hung, C.T., Ateshian, G.A. (2003) In situ measurement of the dynamic modulus of bovine humeral head articular cartilage under physiological contact loading conditions. *Proceedings of the 2003 Summer Bioengineering Conference*, Poster 1207.
 179. Wang, C.C-B., Kelly, T.N., Mauck, R.L., Ateshian, G.A., Hung, C.T. (2003) Temporal and spatial development of construct stiffness in chondrocyte-seeded agarose disks cultured in free-swelling and dynamically loaded configurations. *Proceedings of the 2003 Summer Bioengineering Conference*, Paper 279.
 180. Krishnan, R., Caligaris, M., Mauck, R.L., Hung, C.T., Costa, K.D., Ateshian, G.A. (2004) Removal of the superficial zone of bovine articular cartilage does not increase its frictional coefficient. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Paper No. 172.
 181. Chahine, N.O., Chen F.H., Hung C.T., Ateshian G.A. (2004) Direct measurement of the osmotic pressure of glycosaminoglycan solutions at room temperature in sodium chloride. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Poster No. 524.
 182. Lima, E.G., Mauck, R.L., Gasinu, S., Ateshian, G.A., Hung, C.T. (2004) Functional tissue engineering of free-swelling and dynamically loaded osteochondral constructs. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Paper No. 13.
 183. Mauck, R.L., Chahine, N.O., Lima, E.G., Hung, C.T., Ateshian, G.A. (2004) Functional tissue formation: from bulk properties to cellular microenvironments. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Paper No. 309.
 184. Chahine, N.O., DuBois, C.R., Ateshian, G.A., Hung, C.T. (2004) Optical determination of strain fields at the interface between graft and articular cartilage in an in vitro model of cartilage repair. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Paper No. 174.
 185. Kelly, T.N., Oswald, E.S., Mauck, R.L., Ateshian, G.A., Hung, C.T. (2004) Reducing serum dependence: tissue engineering of cartilage in its supplemented media. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Poster No. 725.
 186. Jiang, J., Hung, C.T., Guo, X.E., Ateshian, G.A., Lu, H.H. (2004) Three-dimensional degradable, bioactive polymer ceramic-hydrogel composite for osteochondral repair. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Paper No. 15.

187. Kelly, T.-A.N., Ho, M.M.Y., Mauck, R.L., Ateshian, G.A., Hung, C.T. (2004) Effects of pre-elaborated ECM on development of in chondrocyte-seeded agarose constructs subjected to physiologic deformational loading. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Poster No. 695.
188. Han, S.H., Ho, M.M.Y., Kim, C.H., Chen, F.H., Weidenbaum, M., Ateshian, G.A., Hung, C.T., Guo, X.E. (2004) In vivo hyperphysiologic load at high frequencies is detrimental to intervertebral disc composition in rat tails. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Paper No. 22.
189. Park, S., Costa, K.D., Ateshian, G.A. (2004) Microscale frictional coefficient of bovine articular cartilage from atomic force microscopy. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Paper No. 169.
190. Ng, K.W., Mauck R.L., Ateshian, G.A., Hung, C.T. (2004) Dynamic loading modulates the inhomogeneity of bi-layered chondrocyte-seeded agarose constructs of differing agarose concentrations. *50th Annual Meeting of the Orthopaedic Research Society*, Vol. 29, Poster No. 842.
191. Basalo, I.M., Raj, D., Krishnan, R., Chen, F.H., Hung, C.T., Ateshian, G.A. (2004) Effects of chondroitinase ABC treatment on the frictional response of articular cartilage in stress relaxation. 2004 European Society of Biomechanics Meeting, S-Hertogenbosch, The Netherlands.
192. Basalo I.M., Ateshian, G.A., Hung, C.T. (2004) Effect of chondroitinase ABC on the equilibrium frictional properties of articular cartilage. 2004 Biomedical Engineering Society Meeting (BMES), Philadelphia, PA.
193. Chahine, N.O., Lima, E.G., Hung, C.T., and Ateshian, G.A. (2004) Effect of dynamic deformational loading on the transport of dextran molecules into agarose gels, *ASME 2004 International Mechanical Engineering Congress and Exposition*, Paper No. 61368, First Place Award for PhD-Level Student Competition.
194. Krishnan, R., Kopacz, M., Carter, M.J., and Ateshian, G.A. (2004) Strain dependent variations in the frictional properties of bovine articular cartilage, *ASME 2004 International Mechanical Engineering Congress and Exposition*, Paper No. 59275
195. Park, S., and Ateshian, G.A. (2004) Flow-independent viscoelastic response of bovine articular cartilage under dynamic tensile loading, *ASME 2004 International Mechanical Engineering Congress and Exposition*, Paper No. 59367
196. Park, S., and Ateshian, G.A. (2005) Flow-dependent and flow-independent viscoelastic response of bovine articular cartilage under dynamic tensile and compressive loading. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 0049.
197. Ng, K.W., Saliman, J.D., Kelly, T.N., Statman, L.Y., Ateshian, G.A., and Hung, C.T. (2005) Collagen hydrolysate increases the mechanical properties and type II collagen synthesis of tissue engineered articular cartilage. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 0259.
198. Ho, M.M., Ng, K.W., Capiola, D.R., Weidenbaum, M., Ateshian, G.A., Guo, X.E., and Hung, C.T. (2005) A rat-tail in vivo bioreactor for physiologic loading of tissue engineered constructs. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 0261.
199. Ho, M.M., Ateshian, G.A., and Hung, C.T. (2005) Determination of in situ strain fields in rat tail intervertebral disc under axial compressive loading. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 0271.

200. Cook, J.L., Lima, E.G., Hung, C.T., Ateshian, G.A., Kuroki, K., Stoker, A.M., and Fox, D.B. (2005) In vitro and in vivo evaluation of tissue-engineered constructs for articular cartilage regeneration. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 1767.
201. Ng, K.W., Saliman, J.D., Kelly, T.N., Statman, L.Y., Ateshian, G.A., and Hung, C.T. (2005) Hyaluronan modulates the material properties and biochemical content of dynamically-loaded chondrocyte-seeded agarose constructs. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 1787.
202. Kelly, T.N., Fisher, M.B., Lima, E.G., Ateshian, G.A., and Hung, C.T. (2005) Integrative properties of chondrocyte-seeded agarose constructs. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 1788.
203. Ho, M.M., Ng, K.W., Kelly, T.N., Ateshian, G.A., Kuroki, K., Cook, J.L., and Hung, C.T. (2005) Synoviocyte potential for articular cartilage tissue engineering and repair. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 1789.
204. Kelly, T.N., Ng, K.W., Lee, E., Lima, E.G., Statman, L.Y., Doty, S.B., Costa, K.D., Ateshian, G.A., and Hung, C.T. (2005) Development of radial properties of engineered articular cartilage using unconfined compression loading. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 1790.
205. Chahine, N.O., Lima, E.G., Victor, W., Hung, C.T., and Ateshian, G.A. (2005) Dynamic deformational loading significantly enhances the transport of dextran molecules into agarose hydrogels. *51st Annual Meeting of the Orthopaedic Research Society*, Vol. 30, Paper No. 1791.
206. Albro, M.B., Chahine, N.O., Ng, K.W., Likhitpanichkul, M., Hung, C.T., and Ateshian, G.A. (2005) Osmotic Loading Of Alginate Gels: A biomimetic study of hindered transport in the cell cytoplasm. *Proceedings of the 2005 Summer Bioengineering Conference*.
207. Ho, M.M., Kelly, T.A.N., Ateshian, G.A., and Hung, C.T. (2005) Rat tail intervertebral disc mechanical response with intact and excised nucleus pulposus. *Proceedings of the 2005 Summer Bioengineering Conference*.
208. Ng, K.W., Statman, L.Y., Ateshian, G.A., and Hung, C.T. (2005) Evaluation of hyclone bovine growth serum for use in cartilage tissue engineering. *Proceedings of the 2005 Summer Bioengineering Conference*.
209. Canal, C.E., Chahine, N.O., Chorney, E.T., and Ateshian, G.A. (2005) Optical measurement of in situ strain fields within bovine humeral head articular layer. *Proceedings of the 2005 Summer Bioengineering Conference*.
210. Chahine, N.O., Chen, F.H., Hung, C.T., and Ateshian, G.A. (2005) The contribution of osmotic pressure to the effective compressive aggregate modulus of bovine articular cartilage. *Proceedings of the 2005 Summer Bioengineering Conference*.
211. Chahine, N.O., Lima, E.G., Wei, V.I., Hung, C.T., and Ateshian, G.A. (2005) Effect of simultaneous application of direct perfusion and dynamic loading on the transport of dextran into agarose hydrogels. *Proceedings of the 2005 Summer Bioengineering Conference*.
212. Pillai, R.R., Ateshian, G.A., and Fischer, K.J. (2005) Evaluation of in vivo radiocarpal contact mechanics during grasp. *Proceedings of the 2005 Summer Bioengineering Conference*.

213. Kelly, T-A.N., Chahine, N.O., Fisher, M.B., Ng, K.W., Tai, T., Ateshian, G.A., and Hung, C.T. (2005) Tension-compression nonlinearity in chondrocyte-seeded agarose hydrogels. *Proceedings of the 2005 Summer Bioengineering Conference*.
214. Thoomukuntla, B.R., Pillai, R.R., McIff, T.E., Mehmet Bilgen, Ateshian, G.A., and Fischer, K.J. (2005) Validation of an MRI-based method for in vivo joint contact mechanics analyses. *Proceedings of the 2005 Summer Bioengineering Conference*.
215. Moffat, K.L., Chahine, N.O., Hung, C.T., Ateshian, G.A., and Lu, H.H. (2005) Characterization of the mechanical properties of the ACL-bone insertion site. *Proceedings of the 2005 Summer Bioengineering Conference*.
216. Lima, E.G., Setti, P., Ateshian, G.A., Cook, J.L., Cook, C.R., Hile, D.D., and Hung, C.T. (2005) Tissue engineering of cylindrical and anatomically-shaped osteochondral constructs using poly(propylene glycol-co-fumaric acid) as a moldable, porous substrate. *Proceedings of the 2005 Summer Bioengineering Conference*.
217. Caligaris, M., and Ateshian, G.A. (2006) Migrating articular contact areas promote sustainable low friction coefficients. *52nd Annual Meeting of the Orthopaedic Research Society*, Vol. 31, Paper No. 0083.
218. Chao, P.G., Bulinski, J.C., Ateshian, G.A., and Hung, C.T. (2006) Effects of osmotic loading on chondrocyte nuclear size. *52nd Annual Meeting of the Orthopaedic Research Society*, Vol. 31, Paper No. 0134.
219. Ho, M.M., Ng, K.W., Quinnan, S., Weidenbaum, M., Ateshian, G.A., Guo, X.E., and Hung, C.T. (2006) Cellular responses of tissue engineered constructs in a rat-tail in vivo bioreactor. *52nd Annual Meeting of the Orthopaedic Research Society*, Vol. 31, Paper No. 0789.
220. Kelly, T.A., Ng, K.W., Tai, T., Ateshian, G.A., and Hung, C.T. (2006) Effects of low-serum and dynamic loading on chondrocyte-seeded constructs. *52nd Annual Meeting of the Orthopaedic Research Society*, Vol. 31, Paper No. 0790.
221. Ng, K.W., Bian, L.M., Lin, E., Kelly, T.A., Ateshian, G.A., and Hung, C.T. (2006) Essential amino acids supplementation modulates chondrocyte behavior in 3D agarose culture. *52nd Annual Meeting of the Orthopaedic Research Society*, Vol. 31, Paper No. 0791.
222. Chahine, N.O., Wei, V., Lima, E.G., Albrow, M.B., Hung, C.T., and Ateshian, G.A. (2006) Effect of perfusion and dynamic loading on the distribution and content of solutes in patellar shaped agarose constructs. *52nd Annual Meeting of the Orthopaedic Research Society*, Vol. 31, Paper No. 0792.
223. Ng, K.W., Friedman, D., Statman, L., Kelly, T.A., Ateshian, G.A., and Hung, C.T. (2006) Cell seeding method influences tissue spatial development in chondrocyte-seeded gelatin scaffolds. *52nd Annual Meeting of the Orthopaedic Research Society*, Vol. 31, Paper No. 0793.
224. Lima, E.G., Tai, T., Bian, L.M., Ateshian, G.A., and Hung, C.T. (2006) Physiologic deformational loading does not counteract the catabolic effects of Interleukin-1 β in cultured chondrocyte-seeded agarose constructs. *52nd Annual Meeting of the Orthopaedic Research Society*, Vol. 31, Paper No. 1455.
225. Lima, E.G., Bian, L.M., Serebrov, A., Mauck, R.L., Byers, B., Tuan, R., Ateshian, G.A., and Hung, C.T. (2006) Measuring the frictional properties of tissue-engineered cartilage constructs. *52nd Annual Meeting of the Orthopaedic Research Society*, Vol. 31, Paper No. 1501.

226. Basalo, I., Chahine, N.O., Kaplun, M., Chen, F.H., Hung, C.T., and Ateshian, G.A. (2006) Chondroitin sulfate reduces the friction coefficient of articular cartilage. *Proceedings of the 2006 Summer Bioengineering Conference, Paper No. 157491.*
227. Chahine, N.O., Lima, E.G., Wei, V.I., Albro, M.B., Hung, C.T., and Ateshian, G.A. (2006) Effect of direct perfusion and dynamic loading on solute transport in patellar shaped constructs. *Proceedings of the 2006 Summer Bioengineering Conference, Paper No. 157496.*
228. Ng, K.W., Kugler, L., Kelly, T-A.N., DeFrancis, J., Ateshian, G.A., and Hung, C.T. (2006) Enzymatic removal of agarose scaffold for tissue engineered cartilage. *Proceedings of the 2006 Summer Bioengineering Conference, Paper No. 157473.*
229. Ateshian, G.A., Ellis, B., and Weiss, J.A. (2006) Equivalence between instantaneous biphasic and incompressible elastic material response. *Proceedings of the 2006 Summer Bioengineering Conference, Paper No. 157382.*
230. Anderson, A., Ellis, B., Maas, S., Peters, C., Ateshian, G.A., and Weiss, J.A. (2006) Experimental measurement and finite element prediction of cartilage contact pressures in the human hip. *Proceedings of the 2006 Summer Bioengineering Conference, Paper No. 157533.*
231. Chahine, N.O., Hung, C.T., and Ateshian, G.A. (2006) In situ strain measurements of chondrocyte deformation under transient loading. *Proceedings of the 2006 Summer Bioengineering Conference, Paper No. 157498.*
232. Ateshian, G.A., Chahine, N.O., Wei, V.I., Albro, M.B., and Hung, C.T. (2006) Computational methods for solute transport in soft tissues and tissue constructs under static and dynamic loading. *Proceedings of the 5th World Congress of Biomechanics, Paper No. 5804.*
233. Ateshian, G.A., Costa, K.D., and Hung, C.T. (2006) A computational analysis of water transport through chondrocytes. *Proceedings of the 5th World Congress of Biomechanics, Paper No. 5811.*
234. Bose, K., Azeloglu, E.U., Lima, E.G., Ateshian, G.A., and Costa, K.D. (2006) Development of a novel flat punch indentation technique for probing meso-scale mechanical response of soft matter with atomic force microscopy. *Proceedings of the 5th World Congress of Biomechanics, Paper No. 7537.*
235. Bose, K., Ateshian, G.A., and Costa, K.D. (2006) Atomic force microscopy based technique to measure the viscoelastic response of fibroblasts and chondrocytes using unconfined compression. *Proceedings of the 5th World Congress of Biomechanics, Paper No. 7543.*
236. Albro, M.B., Chao, P.G., Hung, C.T., and Ateshian, G.A. (2007) Partial volume recovery of chondrocytes upon osmotic loading explained by the cytoplasm's passive steric exclusion of select solute species. *53rd Annual Meeting of the Orthopaedic Research Society, Vol. 32, Paper No. 0151.*
237. Caligaris, M., and Ateshian, G.A. (2007) Cartilage interstitial fluid pressurization is far more effective at reducing friction than boundary lubrication by synovial fluid. *53rd Annual Meeting of the Orthopaedic Research Society, Vol. 32, Paper No. 0155.*
238. Lima, E.G., Bian, L.M., Yagoda, D., Mauck, R.L., Byers, B., Tuan, R., Ateshian, G.A., and Hung, C.T. (2007) The beneficial effect of delayed compressive loading on tissue-engineered cartilage constructs cultured with TGF- β 3. *53rd Annual Meeting of the Orthopaedic Research Society, Vol. 32, Paper No. 0253.*

239. Lima, E.G., Tai, T., Marra, K., Ateshian, G.A., and Hung, C.T. (2007) The use of genipin as a cross-linker to enhance the mechanical properties of tissue-engineered cartilage constructs. *53rd Annual Meeting of the Orthopaedic Research Society*, Vol. 32, Paper No. 0351.
240. Bian, L.M., Lima, E.G., Angione, S., Ng, K.W., Doty, S., Ateshian, G.A., and Hung, C.T. (2007) Efficacy of serum-free medium and dynamic loading in maintenance of long-term cultures of cartilage explants. *53rd Annual Meeting of the Orthopaedic Research Society*, Vol. 32, Paper No. 0569.
241. Canal, C.E., Gardner, T.R., and Ateshian, G.A. (2007) Optical strain measurements on the mid-sagittal cross-section of the human patellofemoral joint under physiological loading. *53rd Annual Meeting of the Orthopaedic Research Society*, Vol. 32, Paper No. 0618.
242. Oswald, E.S., Chao, P.G., Cheng, S.L., Shin, R., Bulinski, J.C., Ateshian, G.A., and Hung, C.T. (2007) Zonal-dependent response of chondrocytes to osmotic loading. *53rd Annual Meeting of the Orthopaedic Research Society*, Vol. 32, Paper No. 0910.
243. Bian, L.M., Angione, S., Ng, K.W., Lima, E.G., Ateshian, G.A., and Hung, C.T. (2007) Influence of initial construct thickness on the material and biochemical properties of engineered cartilage. *53rd Annual Meeting of the Orthopaedic Research Society*, Vol. 32, Paper No. 1477.
244. Kelly, T.A., Ateshian, G.A., and Hung, C.T. (2007) Effect of dynamic loading on tension-compression nonlinearity in engineered cartilage. *53rd Annual Meeting of the Orthopaedic Research Society*, Vol. 32, Paper No. 1478.
245. Ng, K.W., Kugler, L., Ateshian, G.A., and Hung, C.T. (2007) Mechanical and biochemical properties of engineered chondrocyte-seeded hydrogel constructs recover over time in culture after enzymatic scaffold removal. *53rd Annual Meeting of the Orthopaedic Research Society*, Vol. 32, Paper No. 1479.
246. Bian, L.M., Angione, S., Lima, E.G., Ng, K.W., Ateshian, G.A., and Hung, C.T. (2007) Tissue-engineered cartilage constructs using mature bovine chondrocytes: effects of temporal exposure to growth factors and dynamic deformational loading. *53rd Annual Meeting of the Orthopaedic Research Society*, Vol. 32, Paper No. 1480.
247. Kelly, T.A., Ateshian, G.A., and Hung, C.T. (2007) Radial development of material properties in chondrocyte-seeded agarose hydrogels. *53rd Annual Meeting of the Orthopaedic Research Society*, Vol. 32, Paper No. 1481.
248. Ateshian, G.A., Azeloglu, E.U., Albro, M.B., and Costa, K.D. (2007) Mixture theory analysis of interstitial growth of proteoglycans as a mechanism regulating residual stresses in biological tissues. *44th Annual Technical Meeting of the Society of Engineering Science*.
249. Kugler, L., Ng, K.W., O'Connor, C., Ateshian, G.A., Hung, C.T. (2007) Scaffold properties play a critical role in the retention of synthesized glycosaminoglycans in tissue engineered cartilage. *Proceedings of the 2007 Summer Bioengineering Conference*.
250. O'Connor, C., Ng, K.W., Kugler, L., Ateshian, G.A., Hung, C.T. (2007) The response of tissue engineered cartilage to the temporal application of transforming and Insulin-like growth factors. *Proceedings of the 2007 Summer Bioengineering Conference*.
251. Albro, M.B., Rajan, V., Hung, C.T., Ateshian, G.A. (2007) Fickian behavior and concentration-dependence of the diffusion of dextran in agarose. *Proceedings of the 2007 Summer Bioengineering Conference*.

252. Azeloglu, E., Albro, M.B., Thimmappa, V., Haggart, C., Ng, K.W., Ateshian, G.A., Costa, K. (2007) The role of proteoglycans on residual stresses in the aorta. *Proceedings of the 2007 Summer Bioengineering Conference*.
253. Bian, L., Ng, K.W., Lima, E.G., Ateshian, G.A., Hung, C.T. (2007) Influence of nutrient channels on development of engineered cartilage properties. *Proceedings of the 2007 Summer Bioengineering Conference*.
254. Lima, E.G., Bian, L., Gonzales, F., Ateshian, G.A., Hung, C.T. (2007) Influence of Interleukin treatment on engineered and native articular cartilage. *Proceedings of the 2007 Summer Bioengineering Conference*.
255. Oswald, E., Chao, P-H.G., Bulinski, J.C., Ateshian, G.A., Hung, C.T. (2007) The role of microtubule organization in chondrocyte response to osmotic loading. *Proceedings of the 2007 Summer Bioengineering Conference*.
256. Costa, K.D., Ateshian, G.A., Azeloglu, E.U. (2007) Multi-scale mechanical properties of single cells using local indentation and global compression with the atomic force microscope, *Proceedings of the 44th Annual Technical Meeting of the Society of Engineering Science*.
257. Ateshian, G.A., Azeloglu, E.U., Albro, M.B., Costa, K.D. (2007) Mixture theory analysis of interstitial growth of proteoglycans as a mechanism regulating residual stresses in biological tissues. *Proceedings of the 44th Annual Technical Meeting of the Society of Engineering Science*.
258. Caligaris, M., Ateshian, G.A. (2008) Investigation of the frictional response of osteoarthritic human tibiofemoral joints and the potential beneficial tribological effect of healthy synovial fluid. *54th Annual Meeting of the Orthopaedic Research Society*, Vol. 33, Paper No. 0211.
259. Ng, K.W., O'Connor, C.J., Ateshian, G.A., Hung, C.T. (2008) Designing depth-varying cellular and mechanical inhomogeneity in engineered cartilage. *54th Annual Meeting of the Orthopaedic Research Society*, Vol. 33, Paper No. 0378.
260. Ng, K.W., O'Connor, C.J., Kugler, L.E., Ateshian, G.A., Hung, C.T. (2008) The response of engineered cartilage to a timed application of transforming and insulin-like growth factors. *54th Annual Meeting of the Orthopaedic Research Society*, Vol. 33, Paper No. 0588.
261. Ng, K.W., O'Connor, C.J., Lima, E.G., Lo, S.B., Ateshian, G.A., Cook, J.L., Hung, C.T. (2008) Primed mature canine chondrocytes can develop an engineered cartilage tissue with physiologic properties. *54th Annual Meeting of the Orthopaedic Research Society*, Vol. 33, Paper No. 0599.
262. Bian, L., Williams, D.Y., Mao, D.Q., Xu, D., Ateshian, G.A., Hung, C.T. (2008) Influence of Temporary Chondroitinase ABC-induced GAG Suppression on Maturation of Tissue Engineered Cartilage. *54th Annual Meeting of the Orthopaedic Research Society*, Vol. 33, Paper No. 0601.
263. Canal, C., Hung, C.T., Ateshian, G.A. (2008) Complete Proteoglycan Extraction From Bovine Articular Cartilage Reduces Its Compressive Modulus More Than Twenty-Fold. *54th Annual Meeting of the Orthopaedic Research Society*, Vol. 33, Paper No. 0619.
264. Bian, L.g, Xu, D., Mao, D.Q., Williams, D.Y., Cook, J.L., Ateshian, G.A., Hung, C.T. (2008) Long-term Preservation of Chondral and Osteochondral Explants Using Tissue Culture. *54th Annual Meeting of the Orthopaedic Research Society*, Vol. 33, Paper No. 1058.

265. Lima, E.G., Stoker, A.M., Sohal, J., Davis, D., Ateshian, G.A., Cook, J.L., Hung, C.T. (2008) Beneficial Effects of Dexamethasone on the Preservation of Chondral Allografts. *54th Annual Meeting of the Orthopaedic Research Society*, Vol. 33, Paper No. 1060.
266. Oswald, E.S., Chao, P-H.G., Mao, D.Q., Bulinski, J.C., Ateshian, G.A., Hung, C.T. (2008) Insensitivity of Zonal Chondrocyte Proteoglycan Synthesis to Media Osmolarity and Sodium Concentration in Long-term Culture. *54th Annual Meeting of the Orthopaedic Research Society*, Vol. 33, Paper No. 1184.
267. Ateshian, G.A., Rajan, V., Chahine, N.O., Canal, C.E., Hung, C.T. (2008) Modeling cartilage with a continuous fiber angular distribution predicts many observed phenomena. *2008 Annual Meeting of the Biomedical Engineering Society*, Abstract No. 100.
268. Ng, K., Lima, E., Stoker, A., Kuroki, K., Bal, B., G., Cook, J., Hung, C.T. (2009) In vivo response to canine chondral and osteochondral engineered cartilage implantation, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 0060.
269. Lima, E., Chao, Pen-h., Ateshian, G.A., Cook, J., Bal, B. S., Vunjak-Novakovic, G., Hung, C.T. (2009) Porous Tantalum Metal Outperforms Devitalized Bone as a Substrate for Osteochondral Tissue Engineering, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 0124.
270. Albro, M., Li, R., Yeager, K., Hung, C.T., Ateshian, G.A. (2009) Dynamic Loading of Porous Gels and Cartilage Can Induce Active Solute Transport, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 0151.
271. Bian, L., Xu, D., Williams, David Y., J., Ateshian, G.A., Hung, Clark T.) Effects of Dexamethasone on the Functional Properties of Cartilage Explants during Long-term Culture, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 0329.
272. Ng, K., Heitman, D., Ateshian, G.A., Cook, J., Hung, C.T. (2009) The response of adult engineered canine cartilage to the sequential or combined application of TGF- β 3 and IGF-I, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 1017.
273. Oswald, E., Ahmed, H., Ateshian, G.A., Hung, C.T. (2009) Extracellular Fixed Charge Density and Osmotic Effects on Chondrocyte Proteoglycan Replenishment after Enzymatic Digestion of Cartilage Explants, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 1045.
274. Tan, A., Ateshian, G.A., Hung, C.T. (2009) Chondrocyte Death in Overloaded Engineered Cartilage Depends on Construct Maturity, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 1090.
275. Oswald, E., Bian, L., Cook, J., Ateshian, G.A., Hung, C.T. (2009) Optimization of Osteoarthritic Chondrocytes as Cartilage Repair Cells using Physico-Chemical Techniques, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 1229.
276. Bian, L., Oswald, E., Williams, David Y., D., Ateshian, G.A., Rubin, J P., Kacey G., Hung, C.T. (2009) Chondrogenic induction of human adipose-derived stem cells in agarose hydrogel, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 1301.
277. Tan, A., Dinh, A., Albro, M., Ateshian, G.A., Hung, C.T. (2009) Type IX Agarose Gel Produces Better Tissue Engineered Cartilage Constructs than Type VII Agarose, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 1302.

278. Tan, A., Barsi, J., Jayabalan, P., Rahaman, M., Bal, B. S., Ateshian, G.A., Cook, J., Hung, C.T. (2009) Bioactive G. (13-93) as medium Supplement for Culturing Tissue-Engineered Cartilage, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 1314.
279. Cook, J., Lima, E., Ng, K., Kuroki, K., Stoker, A., Bal, S., Ateshian, G.A., Hung, C.T. (2009) Towards Biologic Osteochondral Resurfacing of the Canine Patella using Tissue Engineered Anatomic Constructs, *55th Annual Meeting of the Orthopaedic Research Society*, Vol.34, Paper No. 1355.
280. Durney, K., Sirsi, S., Nover, A., Ateshian, G., Konofagou, E., Maleke, C., Borden, M., Lima, E., Hung, C.T. (2010) Using microbubbles to modulate hydrogel scaffold properties for cartilage tissue engineering, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 0091.
281. Henninger, H., Underwood, C., Ateshian, G., Weiss, J. (2010) Depletion of sulfated gags increases the transverse permeability of medial collateral ligament, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 0199.
282. Huang, A., Baker, B., Ateshian, G., Mauck, R. (2010) Sliding contact enhances mesenchymal stem cell chondrogenesis in 3D culture, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 0315.
283. Bian, L., Ng, K., Lima, E., xu, D., Jayabalan, P., Ateshian, G., Stoker, A., Cook, J., Hung, C. (2010) Applied dynamic loading enhances mechanical properties of engineered cartilage using adult chondrocytes, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 0382.
284. Oswald, E., Ahmed, H., Bulinski, C., Ateshian, G., Hung, C. (2010) Role of Na-K-Cl cotransporter in chondrocyte glycosaminoglycan production with long-term culture in varying osmolarities, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 0874.
285. Oswald, E., Kramer, S., Bulinski, C., Ateshian, G., Hung, C. (2010) The effect of osmolarity and salt concentration on zonal chondrocyte glycosaminoglycan production in long-term pellet culture, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 0875.
286. Albro, M., Li, R., Banerjee, R., Chen, B., Oungouljian, S., del Palomar, A., Trubelja, A., Hung, C., Ateshian, G. (2010) Dynamic loading of immature cartilage pumps transferrin out of blood vessel remnants and into the tissue matrix over short time scales, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 0912.
287. Tan, A., Rajan, V., Ateshian, G., Hung, C. (2010) Reparative capacity of engineered cartilage to overload-induced cracking or cutting injury in culture, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 1331.
288. Tan, A., Dong, E., Ateshian, G., Hung, C. (2010) Tissue engineered cartilage growth is expedited when co-cultured with a chondrocyte feeder layer, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 1333.
289. Rajan, V., Caligaris, M., Hung, C., Ahmad, C., Ateshian, G. (2010) Hemiarthroplasties defeat interstitial fluid pressurization in cartilage and promote greater friction than natural joints, *56th Annual Meeting of the Orthopaedic Research Society*, Vol. 35, Paper No. 2120.

290. Ateshian, G.A., Ricken, T. (2010) Multigenerational interstitial growth of biological tissues, *Proceedings of the ASME 2010 Summer Bioengineering Conference*, SBC2010-19185.
291. Ateshian, G.A., Maas, S., Weiss, J.A. (2010) Finite element algorithm for frictionless contact of porous permeable media under finite deformation and sliding, *Proceedings of the ASME 2010 Summer Bioengineering Conference*, SBC2010-19183.
292. Gunja, N., Fong, J., Tan, A., Moy, M.Y., Xu, D., O'Connell, G., Bulinski, J.C., Ateshian, G.A., Hung, C.T. (2010) Priming of synovium derived mesenchymal stem cells for cartilage tissue engineering, *Proceedings of the ASME 2010 Summer Bioengineering Conference*, SBC2010-19453.
293. Tan, A.R., Dong, E.Y., Rho, B., Sampat, S.R., Bulinski, J.C., Ateshian, G.A., Hung, C.T. (2010) Co-culture of a chondrocyte monolayer with engineered cartilage constructs immediately increases tissue properties, *Proceedings of the ASME 2010 Summer Bioengineering Conference*, SBC2010-19459.
294. Huang, A.H., Baker, B.M., Ateshian, G.A., Mauck, R.L. (2010) Sliding contact loading improves the tensile properties of msc-based engineered cartilage, *Proceedings of the ASME 2010 Summer Bioengineering Conference*, SBC2010-19292.
295. Dujari, D., Cunningham, A., Gunja, N., Chen, A., Bulinski, C., Ateshian, G.A., Hung, C.T. (2011) Directed synovium-derived stem cell migration in response to an applied DC electric field, *57th Annual Meeting of the Orthopaedic Research Society*, Vol. 36, Paper No. 0234.
296. Durney, K.M., Sirsi, S.R., Nover, A.B., Ateshian, G.A., Konofagou, E., Borden, M.A., Hung, C.T., Lima, E.G. (2011) Microbubbles improve depth-dependent mechanical properties of cartilage tissue engineered constructs, *57th Annual Meeting of the Orthopaedic Research Society*, Vol. 36, Paper No. 0258.
297. Tan, A.R., Dowling, R.M., Andry, J.P., Yeager, K., Cook, J.L., Ateshian, G.A., Hung, C.T. (2011) Optimizing osteochondral graft harvesting techniques to reduce cell death in surrounding tissue, *57th Annual Meeting of the Orthopaedic Research Society*, Vol. 36, Paper No. 1448.
298. Tan, A.R., Andry, J.P., Bulinski, J.C., Ateshian, G.A., Hung, C.T. (2011) Time-dependence of co-culture setup for expedited tissue engineered cartilage formation, *57th Annual Meeting of the Orthopaedic Research Society*, Vol. 36, Paper No. 1812.
299. Sampat, S.R., O'Connell, G.D., Fong, J.V., Ateshian, G.A., Hung, C.T. (2011) Optimization of synovium-derived stem cells for cartilage tissue engineering, *57th Annual Meeting of the Orthopaedic Research Society*, Vol. 36, Paper No. 2062.
300. Oungouljian, S.R., Albro, M.B., Saniel, C., Bell, F.A., Hung, C.T., Ateshian, G.A. (2011) The dose-dependent effect of TGF- β on immature bovine articular cartilage properties during long term culture, *57th Annual Meeting of the Orthopaedic Research Society*, Vol. 36, Paper No. 2130.
301. Albro, M.B., Oungouljian, S.R., Romeo, R., Saniel, C., Hung, C.T., Ateshian, G.A. (2011) Shear-induced activation of latent TGF-beta1 in synovial fluid, *57th Annual Meeting of the Orthopaedic Research Society*, Vol. 36, Paper No. 2131.
302. Oswald, E., Stoker, A.M., Ahmed, H.S., Kramer, S.P., Bulinski, J.C., Ateshian, G.A., Hung, C.T. (2011) Effect of passaging and 3D culture osmotic conditions on osteoarthritic human chondrocyte GAG and MMP/TIMP enzyme production, *57th Annual Meeting of the Orthopaedic Research Society*, Vol. 36, Paper No. 2172.

303. Rho, B., Ateshian, G.A., Bulinski, C., Hung, C.T. (2011) Passaging effects on chondrocyte and synovium-derived stem cell swelling response to hypo-osmotic loading, *57th Annual Meeting of the Orthopaedic Research Society*, Vol. 36, Paper No. 2173.
304. Oungouljian, S.R., Chan, K., Barritt, J., McDonald, C.A., Copperman, A.B., Elad, D., Ateshian, G.A. (2011) Influence of zona pellucida area expansion stiffness on the passive response of oocytes to osmotic loading, *Proceedings of the ASME 2011 Summer Bioengineering Conference*, SBC2011-53826.
305. Ateshian, G.A., Albro, M.B., Maas, S., Weiss, J.A. (2011) Finite element implementation of neutral solute transport in porous biological soft tissues under finite deformation, *Proceedings of the ASME 2011 Summer Bioengineering Conference*, SBC2011-53477.
306. O'Connell, G.D., Gollnick, C., Bellamkonda, R., Ateshian, G.A., Hung, C.T. (2011) Beneficial effects of chondroitinase ABC release from lipid microtubes encapsulated in chondrocyte- seeded hydrogel constructs, *Proceedings of the ASME 2011 Summer Bioengineering Conference*, SBC2011-53832.
307. O'Connell, G.D., Hung, C.T., Ateshian, G.A. (2011) Experimental and theoretical evaluation of failure properties for immature tissue engineered cartilage, *Proceedings of the ASME 2011 Summer Bioengineering Conference*, SBC2011-53385.
308. Tan, A., Alegre-Aguaron, E., Dujari, D.N., Sampat, S.R., Bulinski, J.C., Ateshian, G.A., Hung, C.T. (2011) Effects of passaging on the migration response of synovium-derived stem cells to an applied DC electric field, *Proceedings of the ASME 2011 Summer Bioengineering Conference*, SBC2011-53674.
309. Albro, M., Nims, R., Cigan, A.D., Chen, Y.B., Hung, C.T., Ateshian, G.A. (2012) Accumulation of exogenous activated TGF- β in the superficial zone of immature bovine articular cartilage, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 15.
310. Sampat, S.R., Ackerman, G.P., Dermksian, M. V., Ateshian, G.A., Hung, C.T. (2012) Applied osmotic loading for promoting development of engineered cartilage using synovium-derived stem cells, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 208.
311. O'Connell, G.D., Gollnick, C., Ateshian, G.A., Bellamkonda, R., Hung, C.T. (2012) Lipid microtubes improve nutrient transport in engineered cartilage, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 239.
312. Nims, R., Cigan, A.D., Albro, M., Wood, K.C., Hung, C.T., Ateshian, G.A. (2012) Engineered cartilage retains a much greater fraction of synthesized GAG and collagen than COMP, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 670.
313. Albro, M., Cigan, A., Nims, R., Chen, B., Hung, C.T., Ateshian, G.A. (2012) Synthesis and incorporation of latent TGF- β into the extracellular matrix of engineered cartilage constructs, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 677.
314. Tan, A.R., VandenBerg, C.D., Ateshian, G.A., Hung, C.T. (2012) Preexposure of engineered cartilage to Interleukin-1 α affords protection against subsequent cytokine exposure, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 713.
315. O'Connell, G.D., Carapezza, M.A., Newman, I.B., Ateshian, G.A., Hung, C.T. (2012) Applied dynamic loading following chABC digestion increases collagen production in

- engineered cartilage, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 827.
316. Nover, A.B., Dermksian, M.V., Hou, G.Y., Konofagou, E.E., Ateshian, G.A., Hung, C.T. (2012) Albumin as a substrate for focused ultrasound sealing of engineered cartilage, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 1446.
 317. Nover, A.B., Ye, M.T., Samojlik, S.K., O'Connell, G.D., Ateshian, G.A., Lima, E.G., Hung, C.T. (2012) The influence of dynamic loading on bio-titanium hybrid osteochondral tissue engineered constructs, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 1736.
 318. Oungoulian, S.R., Bortz, O., Xu, S., Chang, S., Ahmad, C.S., Hung, C.T., Ateshian, G.A. (2012) Cartilage allograft stabilization with glutaraldehyde as a potential resurfacing material for joint hemiarthroplasty, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 1745.
 319. Tan, A.R., Alegre Aguarón, E., Bulinski, J.C., Ateshian, G.A., Hung, C.T. (2012) Co-culture of synovium derived stem cells induces cell migration into adjacent wound sites within chondrocyte-seeded engineered cartilage, *58th Annual Meeting of the Orthopaedic Research Society*, Vol. 37, Paper No. 1755.
 320. Hung, C.T., Sampat, S., Robinson, D., Ackerman, G., Dermksian, M., Ateshian, G.A. (2012) Applied Osmotic Loading for Promoting Development of Engineered Cartilage, *Proceedings of the ASME 2012 Summer Bioengineering Conference*, SBC2012-80449.
 321. Nover, A.B., Ateshian, G.A., Hung, C.T., Durney, K.M., Lima, E.G., Sirsi, S.R., Borden, M.A. (2012) Effect of microbubble incorporation on local solute transport in tissue engineered cartilage constructs, *Proceedings of the ASME 2012 Summer Bioengineering Conference*, SBC2012-80608.
 322. Ateshian, G.A., Maas, S., Weiss, J.A. (2012) Implementation of finite deformation triphasic modeling in the finite element code FEBio, *Proceedings of the ASME 2012 Summer Bioengineering Conference*, SBC2012-80148.
 323. Oungoulian, S.R., Bortz, O., Hehir, K.E., Zhu, K., Hung, C.T., Ateshian, G.A. (2012) Articular cartilage wear characterization with a particle sizing and counting analyzer, *Proceedings of the ASME 2012 Summer Bioengineering Conference*, SBC2012-80381 (First place award in PhD Student Competition).
 324. O'Connell, G.D., Ateshian, G.A., Hung, C.T., Gollnick, C., Bellamkonda, R. (2012) Lipid microtubes as a nutrient reservoir or enzyme delivery vehicle in engineered cartilage, *Proceedings of the ASME 2012 Summer Bioengineering Conference*, SBC2012-80472.
 325. Ateshian, G.A., Nims, R., Cigan, A.D., Albro, M.B., Hung, C.T. (2012) Finite element modeling of matrix synthesis and binding kinetics in a biphasic-solute material, *Proceedings of the ASME 2012 Summer Bioengineering Conference*, SBC2012-80485.
 326. Cigan, A.D., Nims, R., Albro, M.B., Breves, S.L., Hung, C.T., Ateshian, G.A. (2012) Insulin and ascorbate have a much greater influence than transferrin and selenous acid on the growth of engineered cartilage in chondrogenic media, *Proceedings of the ASME 2012 Summer Bioengineering Conference*, SBC2012-80572
 327. Nover, A.B., Wood, K.C., O'Connell, G.D., Ateshian, G.A., Hung, C.T., Essner, A.P., Klein, R.W., Napolitano, A.P., Lima, E.G. (2012) Characterization of depth-dependent mechanical properties in bio-titanium hybrid osteochondral tissue engineered constructs, *Proceedings of the ASME 2012 Summer Bioengineering Conference*, SBC2012-80600.

328. Albro, M.B., Nims, R.J., Cigan, A.D., Shim, J.J., Chen, Y.B.C., Hung, C.T., and Ateshian, G.A., 2013. Dynamic Mechanical Compression of Articular Cartilage Does Not Activate TGF- β . In: *2013 Annual Meeting of the Orthopaedic Research Society*. ORS, San Antonio, TX, pp. 311.
329. Cigan, A.D., Nims, R.J., Albro, M.B., Quien, M.M., Vunjak-Novakovic, G., Hung, C.T., and Ateshian, G.A., 2013. Identification of a Glucose Concentration Threshold Critical for Tissue Growth in Engineered Cartilage. In: *2013 Annual Meeting of the Orthopaedic Research Society*. ORS, San Antonio, TX, pp. 1305.
330. Kelly, T.A., Roach, B.L., MacKenzie-Smith, C., O'Connell, G.D., Ateshian, G.A., and Hung, C.T., 2013. Chondroitinase ABC-Treatment Enhances Tension Compression Nonlinearity in Tissue-Engineered Articular Cartilage. In: *2013 Annual Meeting of the Orthopaedic Research Society*. ORS, San Antonio, TX, pp. 1292.
331. Nims, R.J., Cigan, A.D., Albro, M.B., O'Connell, G.D., Park, D.B., Hung, C.T., and Ateshian, G.A., 2013. Frequent Chondroitinase Treatment of Engineered Cartilage with Native Level of Cell seeding Density Does Not Enhance Collagen Deposition and is Detrimental to Chondrocytes. In: *2013 Annual Meeting of the Orthopaedic Research Society*. ORS, San Antonio, TX, pp. 1293.
332. Nover, A.B., Saunders, R.A., Klein, R.W., Essner, A.P., Napolitano, A.P., Lima, E.G., Ateshian, G.A., and Hung, C.T., 2013. Characterization and Evaluation of Osteochondral Tissue Engineered Constructs on a Porous Titanium Base. In: *2013 Annual Meeting of the Orthopaedic Research Society*. ORS, San Antonio, TX, pp. 161.
333. Roach, B.L., Chen, T.H., Kelmendi-Doko, A., Marra, K., Ateshian, G.A., and Hung, C.T., 2013. Development of Engineered Articular Cartilage Supported by Internal Release of Dexamethasone. In: *2013 Annual Meeting of the Orthopaedic Research Society*. ORS, San Antonio, TX, pp. 529.
334. Sampat, S.R., Dermksian, M.V., Ateshian, G.A., and Hung, C.T., 2013. Osmotic Regulation of Synovium-Derived Stem Cells. In: *2013 Annual Meeting of the Orthopaedic Research Society*. ORS, San Antonio, TX, pp. 465.
335. Tan, A.R., Langford, T.F., Aaron, R.K., Bulinski, J.C., Ateshian, G.A., and Hung, C.T., 2013. Differing Effects of Interleukin-1e+/- on the Response of Chondrocytes and Synovium Derived Stem Cells in Response to an Applied DC Electric Field. In: *2013 Annual Meeting of the Orthopaedic Research Society*. ORS, San Antonio, TX, pp. 342.
336. Tan, A.R., Langford, T.F., Chao, P., Aaron, R.K., Bulinski, J.C., Ateshian, G.A., and Hung, C.T., 2013. Role of AQP1 Water Channel During Chondrocyte Migration in an Applied DC Electric Field. In: *2013 Annual Meeting of the Orthopaedic Research Society*. ORS, San Antonio, TX, pp. 551.
337. Ateshian, G.A., 2013. Finite Element Modeling of Frictionless Sliding Contact Between Multiphasic Materials Under Finite Deformation. In: *11th International Symposium, Computer Methods in Biomechanics and Biomedical Engineering*. Salt Lake City, UT, pp. 386-387.
338. Henak, C.R., Ateshian, G.A., Maas, S.A., and Weiss, J.A., 2013. Effects of Constitutive Model on Specimen-Specific Predictions of Cartilage Mechanics in the Human Hip. In: *11th International Symposium, Computer Methods in Biomechanics and Biomedical Engineering*. Salt Lake City, UT, pp. 388-389.
339. Nims, R.J., Cigan, A.D., Albro, M.B., Park, D.B., Vunjak-Novakovic, G., Hung, C.T., and Ateshian, G.A., 2013. Increasing Glucose Availability in Large Engineered Cartilage

- Constructs Using Nutrient Channels: A Finite Element Study. In: *11th International Symposium, Computer Methods in Biomechanics and Biomedical Engineering*. Salt Lake City, UT, pp. 339-340.
340. Cigan, A.D., Nims, R.J., Albro, M.B., Hung, C.T., and Ateshian, G.A., 2013. Effects of Media Stirring and Presence of Nutrient Channels on Functional Properties of Large Engineered Cartilage Constructs. In: *ASME 2013 Summer Bioengineering Conference*. ASME, Sunriver, OR, pp. 14128.
 341. Henak, C., Kapron, A., Anderson, A., Ateshian, G.A., Ellis, B., and Weiss, J.A., 2013. Effects of Cartilage Constitutive Model on Specimen-Specific Validation and Predictions of Cartilage Mechanics in the Human Hip. In: *ASME 2013 Summer Bioengineering Conference*. ASME, Sunriver, OR, pp. 14132.
 342. Jones, B.K., Ahmad, C.S., and Ateshian, G.A., 2013. Glutaraldehyde fixation of bovine humeral head articular cartilage maintains functional frictional properties. In: *ASME 2013 Summer Bioengineering Conference*. ASME, Sunriver, OR, pp. 14216.
 343. Kelly, T.A., 2013. Chondroitinase-ABC Digestion And Dynamic Loading Increase Tension-Compression Nonlinearity In Tissue-Engineered Cartilage. In: *ASME 2013 Summer Bioengineering Conference*. ASME, Sunriver, OR, pp. 14621.
 344. Nims, R.J., Cigan, A.D., Albro, M.B., Hung, C.T., and Ateshian, G.A., 2013. Binding and Release Kinetics of Glycosaminoglycans and Collagen in Engineered Cartilage Under TGF- β Supplementation. In: *ASME 2013 Summer Bioengineering Conference*. ASME, Sunriver, OR, pp. 14660.
 345. O'Connell, G.D., Cui, V., Nims, R.J., Ateshian, G.A., Hung, C.T., and Nover, A.B., 2013. Prolonged Treatment Of Ultra-Low Dose Chondroitinase ABC Improves Matrix Production In Engineered Cartilage. In: *ASME 2013 Summer Bioengineering Conference*. ASME, Sunriver, OR, pp. 14191.
 346. Roach, B.L., Tan, A.R., Stoker, A.M., Cook, J.L., Yeager, K.J., Ateshian, G.A., and Hung, C.T., 2013. Fabrication of Tissue-Engineered Cartilage Grafts With Anatomic Surface Contours For Repair Of Large Focal Defects. In: *ASME 2013 Summer Bioengineering Conference*. ASME, Sunriver, OR, pp. 14657.
 347. Cigan, A.D., Nims, R.J., Albro, M.B., Quien, M.M., Atkash, K., Hung, C.T., and Ateshian, G.A., 2014. Elevated Matrix Production in Large Engineered Cartilage Constructs Significantly Facilitated by Nutrient Channels and Sufficient Media. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 134.
 348. Sampat, S.R., Bulinski, J.C., Ateshian, G.A., and Hung, C.T., 2014. Physical Regulation of Osmotic Loading in Engineered Cartilage. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 177.
 349. Roach, B.L., Paik, D.C., Ateshian, G.A., and Hung, C.T., 2014. The Use Of Chemical Crosslinkers To Enhance The Shear Properties Of Engineered Cartilage. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 218.
 350. Tan, A.R., Ateshian, G.A., and Hung, C.T., 2014. Early Physiologic Dynamic Loading Mitigates Catabolic Glycosaminoglycan Degradation by IL-1 α in Tissue Engineered Constructs. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 383.
 351. Nover, A.B., Estell, E.G., Georgescu, M.S., Rogers, L.A., Lee, S.L., Ateshian, G.A., and Hung, C.T., 2014. Analysis of Structure-Function Relationships in Functional Engineered

- Cartilage Using Controlled Enzymatic Digestion. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 397.
352. Nover, A.B., Roach, B.L., Georgescu, M.S., Rogers, L.A., Hawkins, E.J., Ahmad, C.S., Cook, J.L., Ateshian, G.A., and Hung, C.T., 2014. Continuous Application of TGF- β 3 Improves In Vitro Tissue Engineered Cartilage In An Adult Preclinical Ovine Model. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 410.
353. Nims, R.J., Cigan, A.D., Albro, M.B., Vunjak-Novakovic, G., Hung, C.T., and Ateshian, G.A., 2014. Inorganic Sulfate Supplementation is Not Required for Extracellular Matrix Sulfation in Long-Term Culture of Engineered Cartilage. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 1243.
354. Silverstein, A.M., Stoker, A.M., Bulinski, J.C., Ateshian, G.A., Cook, J.L., and Hung, C.T., 2014. Osteoarthritic Chondrocytes as a Cell Source for Engineering Cartilage for Translational Research. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 1258.
355. Estell, E.G., Sampat, S.R., Bulinski, J.C., Ateshian, G.A., and Hung, C.T., 2014. Transient Trimethylamine N-oxide Supplementation Confers Chondroprotection to Engineered Cartilage Post-Culture Under Stress Conditions. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 1264.
356. Sampat, S.R., Bulinski, J.C., Ateshian, G.A., and Hung, C.T., 2014. Trimethylamine N-Oxide Media Supplementation for Cartilage Tissue Engineering of Synovium-Derived Stem Cells. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 1266.
357. Nover, A.B., Rogers, L.A., Georgescu, M.S., Gerold, F.J., Lee, S.L., Roach, B.L., Ahmad, C.S., Ateshian, G.A., and Hung, C.T., 2014. Strategy for Scale-Up of Large Engineered Cartilage Constructs. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 1276.
358. Albro, M.B., Durney, K.M., Shim, J.J., Nims, R.J., Cigan, A.D., Alliston, T., Hung, C.T., and Ateshian, G.A., 2014. Endogenous Stores of Latent Tgf- β Function to Maintain the Mechanical Integrity of Articular Cartilage Independent of Physiologic Mechanical Loading: Assessment Through the Novel Validation of the Specificity of a Small Molecule Tgf- β Inhibitor. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 1300.
359. Albro, M.B., Durney, K.M., Shim, J.J., Singh, A., Cigan, A.D., Nims, R.J., Jones, B.K., Hung, C.T., and Ateshian, G.A., 2014. Synovial Fluid and Physiologic Levels of Cortisol, Insulin, and Glucose in Media Maintain the Homeostasis of Immature Bovine Cartilage Explants over Long Term Culture. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 1304.
360. Henak, C.R., Ateshian, G.A., and Weiss, J.A., 2014. Finite Element Prediction of Transchondral Stress and Strain in the Human Hip: Effects of Cartilage Constitutive Model. In: *2014 Annual Meeting of the Orthopaedic Research Society*. ORS, New Orleans, LA, pp. 1307.
361. Roach, B.L., Paik, D.C., Ateshian, G.A., and Hung, C.T., 2014. The use of genipin to enhance mechanical function of articular cartilage. *Seventh World Congress of Biomechanics*, Boston, MA.

362. Nims, R.J., Cigan, A.D., Albro, M.B., Vunjak-Novakovic, G., Hung, C.T., and Ateshian, G.A., 2014. Optimization of culture conditions for large cartilage tissue constructs using computational modeling of nutrient consumption, matrix deposition and growth. *Seventh World Congress of Biomechanics*, Boston, MA.
363. Nover, A.B., Lee, S.L., Rogers, L.A., Yu, W.T., Lima, E.G., Stoker, A.M., Cook, J.L., Ateshian, G.A., and Hung, C.T., 2014. Strategy for preservation of tissue engineered articular cartilage for long-term storage. *Seventh World Congress of Biomechanics*, Boston, MA.
364. Ateshian, G.A., Nims, R.J., Maas, S., and Weiss, J.A., 2014. Finite element modeling of mechanics, transport, and chemical reactions in biological tissues and cells. *Seventh World Congress of Biomechanics*, Boston, MA.
365. Hou, C., and Ateshian, G.A., 2014. A Gauss-Kronrod-trapezoidal integration scheme for modeling biological tissues with continuous fiber distributions. *12th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering*, Amsterdam, The Netherlands.
366. Albro, M.B., Durney, K.M., Shim, J.J., Singh, A., Ateshian, G.A., and Stevens, M.M., 2015. Endogenous stores of latent TGF- β serve to maintain the integrity and viability of articular cartilage over long term culture in response to physiologic and excessive dynamic mechanical loading. In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 0055.
367. Albro, M.B., Nims, R.J., Durney, K.M., Cigan, A.D., Shim, J.J., Vunjak-Novakovic, G., Hung, C.T., and Ateshian, G.A., 2015. Heterogeneous growth of engineered cartilage results from gradients of media supplemented active TGF- β and is ameliorated through the alternative supplementation of latent TGF- β . In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 1246.
368. Cigan, A.D., Nims, R.J., Albro, M.B., Jones, B.K., Feingold, H.J., Vunjak-Novakovic, G., Hung, C.T., and Ateshian, G.A., 2015. Characterization of a human chondrocyte-agarose system for engineering cartilage: The importance of cell seeding density. In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 1249.
369. Durney, K.M., Nims, R.J., Albro, M.B., Gu, T., Karbowski, L., Singh, A., Vukelic, S., Hung, C.T., and Ateshian, G.A., 2015. Raman spectrographic characterization of cartilage matrix swelling via lysyl oxidase inhibition in immature explants and tissue constructs. In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 0323.
370. Estell, E.G., Tan, A.R., Bansal, S., Ateshian, G.A., and Hung, C.T., 2015. Modulation of hydrogel crosslinking density to promote development of functional mechanical properties in engineered cartilage. In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 1248.
371. Jones, B.K., and Ateshian, G.A., 2015. The effect of sliding speed and congruence on the 24 h friction response of human glenohumeral joints. In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 1223.
372. Kelly, T.-A.N., Lopez, P.A., Tan, A.R., Dermksian, M.K., Chen, C., Stoker, A.M., Cook, J.L., Ateshian, G.A., and Hung, C.T., 2015. Comparison of insulin, ITS and ITS+ on the development of tissue-engineered cartilage. In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 1247.

373. Nims, R.J., Cigan, A.D., Albro, M.B., Hung, C.T., and Ateshian, G.A., 2015. Glucose- and TGF- β -dependent matrix synthesis models explain heterogeneous matrix deposition in large engineered tissues . In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 1251.
374. Nover, A.B., Lee, S.L., Yu, W.T., Stefani, R.M., Ateshian, G.A., Stoker, A.M., Cook, J.L., and Hung, C.T., 2015. Long-term storage and preservation of tissue engineered articular cartilage . In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 1250.
375. Roach, B.L., Kelmendi-Doko, A., Balutis, E.C., Jones, B.K., Ateshian, G.A., Marra, K.G., and Hung, C.T., 2015. Chondroprotection of tissue-engineered cartilage via internal delivery of dexamethasone . In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 0345.
376. Stefani, R., Tan, A.R., Nover, A.B., Bulinski, J.C., Ateshian, G.A., and Hung, C.T., 2015. Characterization of a model system to study synovial membrane transport properties . In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV.
377. Tan, A.R., Attur, M., Abramson, S., Knight, M.M., Bulinski, J.C., Ateshian, G.A., and Hung, C.T., 2015. Low-dose preconditioning of engineered cartilage with interleukin-1 κ provides sustained protection against subsequent cytokine exposure . In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 0428.
378. Tan, A.R., Estell, E.G., Farr, J., Ahmad, C.S., Ateshian, G.A., Cook, J.L., and Hung, C.T., 2015. Design and fabrication of minced engineered cartilage fragments for joint repair . In: *2015 Annual Meeting of the Orthopaedic Research Society*. ORS, Las Vegas, NV, pp. 0344.
379. Jones, B.K., Hung, C.T., and Ateshian, G.A., 2015. Biphasic analysis of cartilage stresses in the patellofemoral joint. In: *13th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering*. Montreal, Canada.
380. Roach, B.L., Kelly, T.-A.N., Dermksian, M.K., Bansal, S., Lopez, P.A., Stoker, A.M., Cook, J.L., Ateshian, G.A., and Hung, C.T., 2015. The impact of physical and enzymatic treatment on the development of tissue-engineered articular cartilage generated from adult human chondrocytes. In: *2015 Summer Biomechanics, Bioengineering, and Biotransport Conference*. Snowbird, UT, pp. SB3C2015-1099.
381. Wang, C., Durney, K.M., Kuo, J.L., Norton, J.R., Ateshian, G.A., and Vukelic, S., 2015. Quantitative analysis of Raman spectra for assessment of crosslink concentrations toward diagnosing early osteoarthritis. In: *2015 Summer Biomechanics, Bioengineering, and Biotransport Conference*. Snowbird, UT, pp. SB3C2015-2452.
382. Hou, C., Terlizzi, K., and Ateshian, G.A., 2015. Finite element modeling of active transmembrane cell transport. In: *2015 Summer Biomechanics, Bioengineering, and Biotransport Conference*. Snowbird, UT, pp. SB3C2015-2356.
383. Nims, R.J., Cigan, A.D., Jones, B.K., Durney, K.M., Hung, C.T., and Ateshian, G.A., 2015. A multigenerational collagen damage model explains engineered cartilage growth and remodeling phenomena. In: *2015 Summer Biomechanics, Bioengineering, and Biotransport Conference*. Snowbird, UT, pp. SB3C2015-2642.
384. Durney, K.M., Oungoulian, S.R., Jones, B.K., Suh, J.T., Hung, C.T., and Ateshian, G.A., 2015. Cartilage wear initiated by fatigue damage under physiologic loading when fluid load support and boundary lubrication are compromised. In: *2015 Summer Biomechanics, Bioengineering, and Biotransport Conference*. Snowbird, UT, pp. SB3C2015-1160.

385. Silverstein, A.M., Stefani, R.M., Oungoulian, S.R., Tong, E.L., Attur, M.G., Abramson, S.B., Ahmad, C.S., Cook, J.L., Ateshian, G.A., Bulinski, J.C., and Hung, C.T., 2015. Toward understanding the mechanisms by which microparticles induce synovial inflammation in osteoarthritis. In: *2015 Summer Biomechanics, Bioengineering, and Biotransport Conference*. Snowbird, UT, pp. SB3C2015-2374.
386. Nover, A.B., Stefani, R.M., Lee, S.L., Peyser, R.A., Howard, D.R., Ateshian, G.A., Stoker, A.M., Cook, J.L., and Hung, C.T., 2015. Optimization of parameters for long-term storage of tissue engineered articular cartilage. In: *2015 Summer Biomechanics, Bioengineering, and Biotransport Conference*. Snowbird, UT, pp. SB3C2015-2385.
387. Yongpravat, C., Kovacevic, D., Lynch, T.S., Jobin, C.M., Levine, W.N., Ateshian, G.A., Gardner, T.R., and Ahmad, C.S., 2015. Validation of a subject-specific computer model of glenohumeral instability and capsular plication. In: *2015 Summer Biomechanics, Bioengineering, and Biotransport Conference*. Snowbird, UT, pp. SB3C2015-2616.