BLOOMBERG CONSULTING

Post Office Box 336
Gulf Breeze, FL 32562

Phone 850-932-7613
Fax 850-932-7719

www.bloombergconsulting.com

Curriculum Vitae

Dr. J. Marcus Hollis, PhD, PE

Profession: Dr. Hollis is a bio-mechanical engineer specializing in biomechanics, injury causation, and seat belt effectiveness. He analyzes how the human body reacts to forces generated from an accident in order to determine if the injuries are consistent with the accident event. Dr. Hollis utilizes a robust 3-dimensional simulation program to determine how an occupant moves in a particular collision, what the occupant collides with, the forces that are generated, and whether seat belt use would have prevented the reported injuries.

Licensure: Professional Engineer, State of Florida, License Number 63326
Professional Engineer, State of Alabama, License Number 15069

Education: *University of California,* San Diego, CA
1988 – Doctor of Philosophy in Bioengineering
University of Alabama at Birmingham, Birmingham, AL
1983 – Master of Science in Biomedical Engineering
Clemson University, Clemson, SC
1979 – Bachelor of Science in Civil Engineering

Experience: *Bloomberg Consulting, Inc.* - Pensacola, FL
2005 to present - Biomechanics and Injury Causation Consultant

University of South Alabama - Mobile, AL
1995 to present – Adjunct Assistant Professor, Orthopedic Surgery
1996 to present – Adjunct Associate Professor, Mechanical Engineering

University of Arkansas for Medical Sciences – Little Rock, AR
1988 to 1995 – Assistant Professor, Orthopedic Surgery

University of California, San Diego – La Jolla, CA
1984 to 1988 – Research Associate, Orthopedic Biomechanics

Current Research:

- Determination of Cervical Spine Substructure Mechanical Properties (Injury Threshold Related)

Awards:

- The American Orthopedic Society for Sports Medicine: Excellence in Research as Applied to Sports Medicine, Clinical Science (Co-Author), 1990
- The American Orthopedic Society for Sports Medicine: Excellence in Basic Science Research, Sports Science (Co-Author), 1986
- Anterior Cruciate Ligament (ACL) Study Group: Effects of ACL Injury and Reconstruction of Miniscal Strain

Patents:

- Patent Number 6652260 – Composite Allograft Press
- Patent Number 6293971 – Composite Allograft, Press & Methods
- Patent Number 6081741 – Infrared Surgical Site Locating Device & Methods
- Patent Number 5981828 – Composite Allograft, Press, and Methods
- Patent Number 5824078 – Composite Allograft, Press, and Methods
- Patent Number 5402800 – Ankle Laxity Measurement System
- Pending - Infrared Surgical Site Locating Device with Laser
- Application in Progress – Minimally Invasive Method for Soft Tissue Suturing

Professional Associations:

- Society of Automotive Engineers
- Orthopedic Research Society
- American Society of Mechanical Engineers

Training:

- Ongoing Training – Dr. Hollis has analyzed hundreds of SAE technical papers, crash tests, and other leading edge research in the fields of medicine, engineering, and accident reconstruction.
- SAE STAPP Crash Conference
- SAE Airbag Conference
- ASME Bioengineering Conferences
- Orthopedic Research Conferences

Papers and Presentations:

- *Cyclic and Mechanical Testing of Instrumented Swine Spines*, Masters Thesis, University of Alabama at Birmingham, Birmingham, AL, 1983. Thesis Advisor: Professor Jack E. Lemons

- *Development and Application of a Method for Determining the In Situ Forces in Anterior Cruciate Ligament Fiber Bundles*, Ph.D. Dissertation, University of California, San Diego, CA, 1988. Dissertation Advisor: Professor Savio L.Y. Woo

- Nasca RJ, **Hollis JM**, Lemons JE, Cool TA: Cyclic Axial Loading of Spinal Implants. *Spine* 10(9): 792-798 (1985)

- Inoue M, McGurk-Burleson E, **Hollis JM**, Woo, SL-Y: Treatment of Medial Collateral Ligament Injury: I. The Importance of Anterior Cruciate Ligament on the Varus-Valgus Knee Laxity. The 1986 American Orthopedic Society for Sports Medicine Excellence in Research Award (Sports Science). *Am J Sports Med* 15(1): 15-21 (1987)

- Bean DJ, **Hollis JM**, Woo SL-Y, Convery FR: Sustained Pressurization of Polymethylmethacrylate - A Comparison of Low and Moderate Viscosity Bone Cements. *Journal of Orthopedic Research* 6(4): 580-584 (1988)

- Lyon RM, Woo SL-Y, **Hollis JM**, Marcin JP, Lee EB: A New Device to Measure the Structural Properties of the Femur-Anterior Cruciate Ligament-Tibia Complex. *Journal of Biomechanical Engineering* 111:350-354 (1989)

- **Hollis JM**, Takai S, Adams DJ, Horibe S, Woo SL-Y: The Effects of Knee Motion and External Loading on the Length of the Anterior Cruciate Ligament (ACL): A Kinematic Study. *Journal of Biomechanical Engineering* 113:208-214 (1991)

- Woo SL-Y, **Hollis JM**, Adams DJ, Lyon RM, Takai S.: Tensile Properties of the Human Femur-Anterior Cruciate Ligament-Tibia Complex: The Effects of Specimen Age and Orientation. *Am J Sports Med* 19(3): 217-225 (1991)

- **Hollis JM**: Use of a Six Degree of Freedom Position Control Actuator to Study Joint Mechanics. *Advances in Bioengineering* 20:409 (ASME) (1991)

- Flahiff CM, Nelson CL, Gruenwald JM, **Hollis JM**: A Biomechanical Evaluation of an Intramedullary Fixation Device for Intertrochanteric Fractures. *J Trauma* 35:23-27 (1993)

- Hadjari MH, **Hollis JM**, Hofmann OE, Flahiff CM, Nelson CL: Initial Stability of Porous Coated Acetabular Implants: The Effect of Screw Placement, Screw Tightness, Defect Type, and Oversize Implants. *Clinical Orthopedics* 307:117-123 (1994)

- **Hollis JM,** Blasier RD, Flahiff CM: Simulated Lateral Ankle Ligament Injury: Change in Ankle Stability. *Am J Sports Med* 23(6): 672-677 (1995)

- **Hollis JM**, Blasier RD, Flahiff CM, Hofmann OE: Biomechanical Comparison of Reconstruction Techniques in Simulated Lateral Ankle Ligament Injury. *Am J Sports Med* 23(6): 678-682 (1995)

- Flahiff CM, Brooks AT, **Hollis JM**, Vander Shilden JL, Nicholas RW: Biomechanical Analysis of Patellar Tendon Allografts as a Function of Age. *Am J Sports Med* 23(3): 354-358 (1995)

- **Hollis JM**, Niciforis PW, Pearsall AW. Change in Mensical Strain with ACL Injury and After Reconstruction. *Am J Sports Med* 28(5): 700-04 (2000)

- Pearsall, AW; **Hollis, JM**; Russell, Jr., GV; Stokes, D: "A Biomechanical Comparison of Reconstruction Techniques for Disruption of the Acromioclavicular and Coracoclavicular Ligaments." *J Southern Ortho Assoc. Spring 2002: 11(1):11-17*

- Albert W. Pearsall, IV, MD; **J. Marcus Hollis, PhD**; George V. Russell, Jr., MD; Zachary Scheer, BS:" A Biomechanical Comparison of Three Lower Extremity Tendons for Ligamentous Reconstruction about the Knee". *Arthroscopy.* Vol 19, No. 10, 2003

- Pearsall, AW; **Hollis, JM**: "The Effect of Posterior Cruciate Ligament Injury and Reconstruction Upon Meniscal Strain." *The American Journal of Sports Medicine.* In Press

- **Hollis JM**, Woo SL-Y: Estimation of ACL Loads *in situ:* Indirect Methods. In: The Anterior Cruciate Ligament: Current and Future Concepts, D.W. Jackson (ed.), Raven Press

- Flahiff CM, **Hollis JM**: "Mechanical Properties and Use of Orthopedic Graft Tissues" in Encyclopedia Handbook of Biomaterials and Bioengineering Part A: Materials. Wise, D.L. (ed.) Marcel Dekker, Inc., 1(16):517-539 (1995)

- **Hollis JM**, Flahiff CM: "Factors Affecting Bone Ingrowth" in Encyclopedia Handbook of Biomaterials and Bioengineering Part B: Applications. Wise, D.L. (ed.) Marcel Dekker, Inc., l(29):799-821 (1995)

The papers and presentations section represents only a partial listing of Dr. Hollis' research and published documents. A complete list can be supplied upon request.

11/2005

BLOOMBERG CONSULTING

Post Office Box 336
Gulf Breeze, FL 32562

Phone 850-932-7613
Fax 850-932-7719

www.bloombergconsulting.com

Curriculum Vitae

Chris Bloomberg, P.E.

Profession: Mr. Bloomberg is a consulting engineer specializing in the reconstruction of vehicular accidents. He has analyzed in excess of a thousand accidents involving cars, tractor-trailers, pedestrians, bicyclists, motorcycles, heavy trucks, etc. He has considerable experience with leading edge technology in the field, including tractor-trailer and automobile "black box" data retrieval systems, robust 3-dimensional accident reconstruction and simulation programs, photogrammetry software, surveying equipment, and vehicle accelerometers. Mr. Bloomberg also applies his expertise by consulting on traditional engineering projects and general consulting projects.

Licensure: Professional Engineer, State of Florida, License Number 55695
Professional Engineer, State of Alabama, License Number 23356

Education: *The University of Alabama at Birmingham*, Birmingham, AL
1986 to 1990 - Bachelor of Science in Materials Engineering, *Cum Laude*
1991 to 1992 - Graduate Studies in Materials Engineering

Experience: *Bloomberg Consulting, Inc.* - Pensacola, FL
2000 to present - President and Consulting Engineer

Benedict Engineering Company, Inc. - Tallahassee, FL
1998 to 1999 - Vice President of Engineering and Accident Reconstructionist
1996 to 1999 - Accident Reconstructionist and Manager of the Pensacola Office
1993 to 1996 - Accident Reconstructionist

The University of Alabama at Birmingham - Birmingham, AL
1991 to 1992 - Undergraduate Class Instructor and Materials Testing Consultant

Process Equipment Company - Birmingham, AL
1990 to 1991 - Design and Safety Analysis

The University of Alabama at Birmingham - Birmingham, AL
1989 to 1990 - Research for NASA Space Shuttle Projects
1989 to 1990 - Materials Testing Consultant

Professional Associations:

- National Society of Professional Engineers
- National Association of Professional Accident Reconstruction Specialists
- Society of Automotive Engineers
- American Society for Testing and Materials
- Florida Engineering Society
- ASM International
- Phi Kappa Phi
- Tau Beta Pi
- Alpha Sigma Mu

Training:

- Ongoing Accident Reconstruction Training – Since 1993, Mr. Bloomberg has analyzed hundreds of SAE technical papers, crash tests, and other leading edge research in the field of engineering and accident reconstruction.
- Traffic Accident Reconstruction, *Northwestern University*, Evanston, IL
- Commercial Vehicle Accident Reconstruction, *Texas A & M*, Denton, TX
- Extracting and Analyzing Data from Electronic Control Modules, *Detroit Diesel Training Center*, Detroit, MI
- Highway Event Data Recorder Symposium (Vehicle "Black Box" Systems), *National Transportation Safety Board*, Ashburn, VA
- Crash Data Retrieval Certification (Vehicle "Black Box" Systems), *Collision Safety Institute*, Houston, TX
- HTTG Commercial Vehicle Brake Testing, *Transportation Research Center*, East Liberty, OH
- Commercial Vehicle Braking Systems, *Society of Automotive Engineers*, Detroit, MI
- Vehicle Drivetrains, *Society of Automotive Engineers*, Detroit, MI
- HVE-3D Computer Simulations – HVE Forum, *Engineering Dynamics*, Las Vegas, NV
- HVE-3D Computer Simulations – HVE Forum, *Engineering Dynamics*, San Francisco, CA
- HVE-3D Computer Simulations – HVE Forum, *Engineering Dynamics*, Miami, FL
- HVE-2D Computer Simulations, *Northwestern University*, Tallahassee, FL
- Injuries, Anatomy, Biomechanics, and Federal Regulations, *Society of Automotive Engineers*, Detroit, MI
- Biomaterials, *University of Alabama at Birmingham*
- Emergency Collision Avoidance, *Labatt's Test Track*, Toronto, Canada
- Human Factors, *Catair Conference*, Toronto, Canada
- Commercial Vehicle Inspection, *Florida Trucking Association*, Jasper, FL
- Defensive Driving Strategy, *National Safety Council*, Tallahassee, FL
- Fracture Mechanics, *University of Alabama at Birmingham*
- Non-Destructive Testing, *University of Alabama at Birmingham*

Synopsis:

Mr. Bloomberg has extensive knowledge and experience in the areas of engineering and accident reconstruction. He has been involved in the documentation, analysis, and reconstruction of over a thousand vehicle accidents. Included in those have been cases involving automobiles, pedestrians, bicyclists, tractor-trailers, heavy trucks, motorcycles, etc. His experience has included vehicle rollover analysis, nighttime and daytime visibility studies, seat belt use and effectiveness, traffic signal sequencing, headlamp filament analysis, and time/speed/distance analysis. He has considerable experience with leading edge technology in the field, including tractor-trailer and automobile "black box" data retrieval systems, robust 3-dimensional accident reconstruction and simulation programs, photogrammetry software, surveying equipment, and vehicle accelerometers.

Mr. Bloomberg has been qualified as an expert in Florida, Alabama, Mississippi, and Georgia. He has been qualified in both state and federal courts. In the area of accident reconstruction, he has given testimony regarding speeds of vehicles, avoidance possibilities, vehicle crush and delta-v, time and distance relationships, headlamp usage, reaction times, etc. In the area of vehicle restraints, he has given testimony regarding seat belt usage and effectiveness, restraint components, occupant compartment intrusion, vehicle interior damage, occupant kinematics, etc.

11/2005

BLOOMBERG CONSULTING

Post Office Box 336
Gulf Breeze, FL 32562

Phone 850-932-7613
Fax 850-932-7719

www.bloombergconsulting.com

Curriculum Vitae

Michael D. Dorohoff, MSME

Profession: Mr. Dorohoff is a project engineer specializing in automotive engineering, with a focus on vehicle dynamics. He recently served as a University Fellow at the Ohio State University contracted to the National Highway Traffic Safety Administration to study vehicle rollover. As a conclusion to this research, he wrote a Society of Automotive Engineers (SAE) technical paper on vehicle asymmetric response and presented it at the 2004 SAE World Congress. He has experience instrumenting vehicles for field tests, conducting and analyzing suspension and steering parameter measurements, and has utilized several computer simulation programs to analyze vehicle handling, stability, and performance.

Education: *Ohio State University*; Columbus, Ohio
2003 – Master of Science in Mechanical Engineering
University Fellow

Ohio University; Athens, Ohio
2002 – Bachelor of Science in Mechanical Engineering
Honors Program, Summa Cum Laude, Top Senior, Mathematics minor

Experience: *Bloomberg Consulting, Inc.* – Pensacola, FL
2004 to present – Accident Reconstructionist and Project Engineer

National Highway Traffic Safety Administration VRTC – East Liberty, Ohio
2003 – Research Engineer (University Fellow) for Crash Avoidance Group

Goodyear Tire & Rubber Company – Akron, OH
2000 to 2002 – Mechanical Engineering Co-op (Quarterly assignments)

Ohio University Russ College of Engineering Center – Athens, OH
1999 to 2002 – Undergraduate Research Assistant

Ohio University Academic Advancement Center – Athens, OH
1997 to 2002 – Math and Chemistry Tutor, Supplemental Instructor for Statics, Peer Supervisor

Professional Associations:

- Society of Automotive Engineers (SAE)
- American Society of Mechanical Engineers (ASME)
- Tau Beta Pi (former OH Delta President)
- Pi Tau Sigma (Mechanical Engineering Honor Society)
- Sports Car Club of America (SCCA)

Papers and Presentations:

- Dorohoff, M.D., Guenther, D.A., Heydinger, G.J., "A Study of Vehicle Response Asymmetries During Severe Driving Maneuvers," SAE paper No. 2004-01-1788, 2004.

- Dorohoff, M.D., "A Study of Vehicle Response Asymmetries During Severe Driving Maneuvers," MS Thesis, The Ohio State University, 2003.

- Carter, B., Dorohoff, M., Good, M., Lew, J., Williams II, R., "Mechanical Design and Modeling of an Omni-directional RoboCup Player," *The 2002 RoboCup International Symposium,* 2001.

Training:

- Ongoing Accident Reconstruction Training – Since 2002, Mr. Dorohoff has analyzed over a hundred SAE technical papers, crash tests, and other leading edge research in the field of automotive engineering and accident reconstruction.
- Vehicle Accident Reconstruction Methods, taught by Dr. Raymond M. Brach in collaboration with the *Society of Automotive Engineers*; Detroit, Michigan.
- Vehicle Dynamics and Lab, taught by Dr. Dennis Guenther of the *Ohio State University*; Columbus, Ohio.
- Powertrain Dynamics, taught by Dr. Giorgio Rizzoni and Dr. K. Srinivasan of the *Ohio State University*; Columbus, Ohio
- Internal Combustion Engines, taught by Dr. Ahmet Selamet of the *Ohio State University*; Columbus, Ohio.
- Biomechanics, taught by Dr. Necip Berme of the *Ohio State University*; Columbus, Ohio.

11/2005