

**Laura Liptai, Doctorate of Philosophy  
Board Certified Forensic Engineer**

**BioMedical Engineering Ph.D. M.S.  
Mechanical Engineering B.S.**

**Engineering and Applied Science  
Mechanism and Causation of Trauma  
Accident Reconstruction  
Impact Biomechanics**

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**B I O M E D I C A L  
F O R E N S I C S** 

Ph.D. BioMedical Engineering, University of California at Davis  
Mathematical Modeling of Side Impact Head Dynamics 1996

M.S. BioMedical Engineering, University of California at Davis  
Occupant Protection Design Improvement 1993

M.B.A. Engineering Project Mgt, University of Southern California, Robotic  
Motor Usage 1985

B.S. Mechanical Engineering, University of California at Davis  
National 3<sup>rd</sup> Place Human Powered Vehicle Design 1983

Ergonomics/Human Factors, DIS Royal Academy of Denmark 1981

### **Academic Appointments and Positions**

University of California at Davis  
Anatomy and Histology, School of Medicine 1994  
Mechanical/Machine Design, School of Engineering 1993

### **Honors**

Awarded Andrew Payne National Award  
for Exemplary Contribution in Advancing Forensic Engineering Sciences for  
pioneering new techniques or procedures which have widespread  
acceptance and contribute to the advancement of forensic engineering  
science. 2010

Board of Directors  
American Academy of Forensic Sciences  
Worldwide membership of 5600 representing all 50 United States, Canada  
and 54 other countries, the American Academy of Forensic Sciences is a  
multi-disciplinary organization that provides leadership to advance  
science, foster research and encourage international collaboration.  
2010 elect  
2011-2013 term

Board of Directors  
International Board of Forensic Engineering Sciences  
Accredited by the Forensic Science Accreditation Board that was formed by  
the American Academy of Forensic Sciences with support from the US  
Department of Justice, the IBFES executes strict criteria culminating in peer  
reviews as well as oral and written examinations for domestic and  
international candidates.  
Diplomate 2005-present  
Board of Directors 2008-present

## Honors continued

“Reference Manual on Scientific Evidence, Third Edition”

National Academy of Sciences Reviewer of the Reference Guide on Engineering

The manual is developed by the National Academy of Sciences (NAS) and the Federal Judicial Center (FJC). The National Academy of Sciences is a society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and their use for the general welfare. Upon the authority of the charter granted by Congress in 1863, the National Academy of Science has a mandate that requires it to advise the federal government on scientific and technical matters. The Federal Judicial Center, established by Congress in 1967 (28 U.S.C. §§ 620-629), is the research and education agency of the federal judicial system responsible for continuing education and training for federal judges, court employees, and others as well as conducting research on behalf of the federal judiciary. 2010

Journal of Forensic Science

Engineering Manuscript Reviewer 2008-present

National Engineering Honor Tau Beta Pi

Elected for Distinguished Achievement in Engineering Scholarship 1995

National Biological Sciences Research Honor Phi Sigma

Awarded by the University of California for Research in the Biological Sciences 1995

## Clinical Experience

Radiology and Neuroradiology, University of California at Davis Medical Center (UCDMC)

Magnetic Resonance Imaging Rotation 1996

Computerized Tomography Rotation 1995

Forensic Pathology

Sacramento County, California Coroner's Office 1993

Santa Clara County, California Coroner's Office, Volunteer 2002-2003

Orthopedic Trauma UCDMC 1992

Physical Medicine and Rehabilitation, Spine Injury Clinic UCDMC 1992

## International and U.S. Territories

“Quantification of Occupant Dynamics, Delta V and Acceleration Associated with Vehicle Component Damage in Sideswipe Impact”

International Society of Biomechanics XXII World Congress, University of Cape Town, South Africa 2009

“Forensic BioMedical Engineering Experimentation and Mathematical Modeling to Analyze Automotive Trauma Causation”

Encyclopedia of Forensic Science, *John Wiley & Sons*, London, United Kingdom 2009

“Basic Elements in Accident Reconstruction”

Encyclopedia of Forensic Science, *John Wiley & Sons*, London, United Kingdom 2009

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### **International and U.S. Territories** continued

“Forensic Engineering Analysis of Propeller Contact Injury”  
National Academy of Forensic Engineers Co-Author/Speaker, San Juan, Puerto Rico 2008  
Journal of the National Academy of Forensic Engineers 2008

“BioMedical Engineering Analysis of Pedestrian Obstacles and Recovery/Fall Mechanics”  
International Academy of Forensic Sciences Author/Speaker, Hong Kong 2005

“Forensic Engineering Analysis of Passenger Vehicle A-Pillar Impact With Tractor-Trailer: Full Scale Crash Tests”  
International Academy of Forensic Sciences Author/Speaker, Hong Kong 2005

Chairman European Technical Research Conference, Society of Forensic Engineers and Scientists  
Paris, France 2002

### **Research, Committees and Publications**

Chairman Interdisciplinary Symposium “International Research: The Forensic Edge”  
Atlanta, GA 2010 appointment for 2012

Interdisciplinary Symposium Engineering Sciences Representative “The Forensic Engineering Method”  
Chicago, IL presenting 2011

Analysis of Cutaneous/Cortical Head, Extremity and Thoracic Trauma Associated with Glass Impact in Automotive, Industrial and Residential/Commercial Building Construction Applications Utilizing the Forensic Engineering Method  
American Academy of Forensic Sciences Author, Chicago, IL presenting 2011

American Society for Testing and Materials (ASTM) E30.08 2003-2008 E58 2009-present  
Organized in 1898, ASTM International is one of the largest voluntary standards developing organizations in the world, representing producers, users, consumers, government and academia from over 100 countries, publishing technical documents that are a basis for manufacturing, management, procurement, codes and regulations.  
National Forensic Engineering Task Force. Twelve engineers nationally selected to advise and direct future engineering standards.  
Editor, Standard Guide for the Practice of Forensic Engineering, ASTM 2008, contributing 2009 to present  
Chairman BioMedical Engineering, International E-30 Technical Standard Guides and Practices, ASTM 2003, 2004

“Forensic Engineering Analysis of Golf Course, Golf Related Trauma”  
National Academy of Forensic Engineers, Tuscon, AZ presenting 2011  
Journal of the National Academy of Forensic Engineers projected 2011-2012

“Forensic Engineering and the Scientific Method”  
National Academy of Forensic Engineers, Orlando, FL 2010  
Journal of the National Academy of Forensic Engineers 2010-2011 pending

“Biomedical/Biomechanical Analysis of Injury/Trauma Reported for Restrained and Un-Restrained Adult and Pediatric Occupants Involved in Vehicular Rollover Crashes: A Nominal and Statistical Approach”  
American Academy of Forensic Sciences, Seattle, WA 2010

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## Research, Committees and Publications continued

BioMedical Engineering/Biomechanics Track Chairman, American Academy of Forensic Sciences Annual Meeting, Engineering Sciences Section, Seattle, WA 2010

“Forensic Engineering Analysis of Industrial and Heavy Equipment Trauma Causation”  
American Academy of Forensic Sciences YSYF Author/Speaker Denver, CO 2009

Accident Reconstruction Committee Correspondent, National Academy of Forensic Engineering 2009

International Symposium on Peer Reviewing  
American Academy of Forensic Sciences, Engineering Sciences Representative 2009

Crash Injury Research and Engineering Network (CIREN), Crash Database Input Review  
University of Michigan Research Guest, Ann Arbor, MI 2008

“Hydrodynamic and BioMedical Engineering Factors in Propeller Contact Injury”  
American Academy of Forensic Sciences Author/Speaker, Washington, D.C. 2008

Forensic Engineering Practice Committee, Guidelines for the P.E. as a Forensic Engineer  
National Academy of Forensic Engineers 2007-2008

“Forensic BioMedical Engineering Experimentation and Modeling”  
National Academy of Forensic Engineers Speaker, Ponte Vedra, FL 2007  
Journal of the National Academy of Forensic Engineers 2007

Scientific Program Chairman, Head and Brain Trauma Interdisciplinary Symposium  
“BioMedical Engineering Perspective of Head and Brain Trauma”  
American Academy of Forensic Sciences Author/Speaker, San Antonio, TX 2007

“Variations in Evidentiary Standards and Engineering Standards Analysis”  
American Academy of Forensic Sciences Author/Speaker with Joe S. Cecil, Ph.D., J.D., Judicial Research Council,  
Washington, D.C., Seattle, WA 2006

“Biomedical Engineering Analysis of Brain Injury,” American Academy of Psychiatry and the Law, Chicago 2006

“Forensic Engineering Analysis of Pedestrian Trauma Using BioMedical and Accident Reconstruction Methods”  
National Academy of Forensic Engineers Co-Speaker, Boston, MA 2006  
Journal of the National Academy of Forensic Engineers 2006

“Forensic Engineering Science, the Application of Applied Scientific Principles to the Investigation, Analysis and Reconstruction of Physical Events”  
American Academy of Forensic Sciences YFSF Author/Speaker, Seattle, WA 2006

Chairman of Engineering Sciences Section, American Academy of Forensic Science, including: mechanical, electrical, civil, biomedical, materials, environmental and physics 2005-2006

Co-Chairman American Academy of Forensic Sciences Engineering Sciences Technical Program 2005-2006

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## Research, Committees and Publications continued

“Forensic Engineering Analysis of Head Impacts within a Vehicle Subject to Side Impact”

National Academy of Forensic Engineers Speaker, San Diego, CA 2005

Journal of the National Academy of Engineers 2005

Continuing Education/Membership Committee, American Academy of Forensic Sciences 2005-2006

“Tutorial and Panel on Engineering Evidence and Lay Testimony”

American Academy of Forensic Sciences Author/Speaker, New Orleans, LA 2005

American Academy of Forensic Sciences, Engineering Section, Awards Committee 2000-2002, 2003-2004; Ethics Chairman 2004-2005

Technical Program BioMedical Engineering Tract Chairman, American Academy of Forensic Science, Dallas, TX 2004

“Experimental Analysis of Pediatric Brain Injury Causation Utilizing Scientifically Proven Quantitative Measures”  
International Mechanical Engineering Congress & Exposition Co-Author, Anaheim, CA 2004

“Decoupling of Lagrangian Equations of Motion to Improve Computational Efficiency and Application to Multi-Body Constrained BioMedical Engineering Systems”

American Academy of Forensic Sciences Author/Speaker, Dallas, TX 2004

“Head Impact by Golf Ball: Digital Data Acquisition and Analysis Compared to Alternative Methodologies” American Academy of Forensic Sciences Author/Speaker, Dallas, TX 2004

“Accident Reconstruction of 14-Passenger Catastrophic Rollover and Analysis of How Occupant Restraints Could Have Prevented Five Fatalities and Four Serious/Severe Traumas Including Analysis of Pediatric Restraint Usage”

American Academy of Forensic Sciences Author/Speaker, Dallas, TX 2004

“BioMedical Engineering: Physical Evidence as the Silent Witness”

American Academy of Forensic Sciences SA Author/Speaker, Dallas, TX 2004

Faculty, Student Section American Academy of Forensic Sciences

An international, multi-disciplinary faculty that provides leadership and mentoring to aspiring forensic scientists with the objective of promoting education in forensic science.

2011 Chicago, IL pending

2010 Seattle, WA

2009 Denver, CO

2008 Washington, D.C.

2007 San Antonio, TX

2006 Seattle, WA

2005 New Orleans, LA

2004 Dallas, TX

2003 Chicago, IL

“Orthopedic Implant Failure: Analysis of Internal Fixation Failure of a Three-Dimensional Joint”

American Academy of Forensic Sciences Author/ Speaker, Reno, NV 2000

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## Research, Committees and Publications continued

“BioMedical Assessment of Rollover Collisions”

Society of Automotive Engineers Topical Technical Workshop (TOPTEC) Author/Speaker  
San Diego, CA 1999

American Back Society, Clinical Committee, Neurological Diseases and Injuries 1998

“Analysis of Flying Harness System”

American Academy of Forensic Sciences Author/Speaker, San Francisco, CA 1998

Co-Established Trauma Research Group, University of California at Davis Medical Center 1996

Human Biomechanics & Simulation Standards Committee, Society of Automotive Engineers 1996

Chairman of Technical Program: Annual Articulated Total Body User’s Group

Hosted conference with Wright Patterson Air Force personnel, Phoenix, AZ February 1996

Articulated Total Body Model User’s Group Executive Committee 1995-1996

Full Scale Automotive Crash Testing at CalTrans Highway Patrol High Speed Test Track, CalTrans Materials, Engineering and Testing Services Volunteer, Structural Materials Branch, West Sacramento, CA 1992-1996

Mathematical Modeling & Human Body Simulation, Research Guest, Armstrong Laboratories

Wright Patterson Air Force Base, Dayton, OH 1995

“The Relationship Between Mass and Acceleration for Impacts on Padded Surfaces”

Biomechanical differences of varied surface properties in the prevention of head injury in adults and children.

Journal of Biomechanics, Co-Author 1994

Ford Motor Company Side Air Bag Full-Scale Sled Cadaver Testing

Wayne State University, Bioengineering Center, Detroit, MI 1994

## Seminars, Symposia and Lectures

“Aquatic Trauma: Proper Interpretation of Physical Evidence from Watercraft”

Society of Forensic Engineers and Scientists Author/Speaker, Monterey, CA 2008

“Probability Quantification of Diffuse Trauma to the Brain and Multidisciplinary Analysis of Industrial Loader Fatalities”

Society of Forensic Engineers and Scientists Author/Speaker, Incline Village, NV 2006

“BioMedical Engineering Analysis of Brain Injury”

Registered Nurse Education Author/Speaker, Walnut Creek, CA 2006

“Non-Impact Head Injuries”

Society of Forensic Engineers and Scientists Author/Speaker, San Jose, CA 2005

“Cranial Trauma Quantification on the Basis of Hertzian Contact Theory”

Invitation by the Turkish Government, declined invitation due to Iraqi conflict 2003

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### **Seminars, Symposia and Lectures** *continued*

“Trauma Causation of a Survivable Open Book Fracture/Crush to the Pelvis”  
Society of Forensic Engineers and Scientists Author/Speaker, Solvang, CA 2003

“Brain Protection in Helmet Analysis,” and “Causal Assessment of Slip and Fall Trauma”  
Sacramento Area Chapter of Nurses Author/Speaker, Sacramento, CA 2003

“Technical Analyses and Report Writing”  
Society of Forensic Engineers and Scientists Author/Speaker, Oakland, CA 2003

“Etiology of Peripheral Neuropathies”  
Society of Forensic Engineers and Scientists Author/Speaker, Yosemite, CA 2000

“Causation of Lumbar Spine Pathology”  
Society of Forensic Engineers and Scientists Author/Speaker, Yosemite, CA 2000

“Brain Injury Etiology”  
Northern California Fraud Investigators Association Conference Author/Speaker, Monterey, CA 2000

“Brain Injury Biomechanics”  
“Crash Testing with Dummies”  
Northern California Trauma Conference for trauma surgeons and other health care providers Author/Speaker, Sacramento, CA 1999

“Head Trauma”  
Northern California Trauma Conference for trauma surgeons and other health care providers Author/Speaker, Sacramento, CA 1998

“Biomechanics of Side Impact Trauma”  
Society of Forensic Engineers & Scientists Author/Speaker, Carmel, CA 1997

“Head Trauma and Brain Injury”  
Forensic Pathology Department, Sacramento County Coroner’s Office Lecturer, Sacramento, CA 1993

Occupant Restraint Technology and Injury Assessment Testing with the Hybrid III Dummy  
University of California, Davis, CA 1992-1993

### **BioMedical and Mechanical Consulting Experience**

BioMedical Forensics  
Engineering and Scientific Consulting, BioMedical and Mechanical Applied Science  
Mechanism & Causation of Injury, Impact Biomechanics, Accident Reconstruction 2003-present

L.L. Liptai BioMedical Engineering  
BioMedical and Mechanical Applied Science, Product Liability and Accident Reconstruction 1996-2003

Technical Consultant with Anatomist Lawrence M. Elson, Ph.D.  
Injury Causation, Mechanics of Injury, BioMedical Engineering, Anatomical Basis of Medicine/Surgery 1996-1998

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### **BioMedical and Mechanical Consulting Experience** continued

Liptai Engineering

BioMedical and Mechanical Applied Science, Accident Reconstruction, Product Liability 1983-1996

Bechtel Control Systems, Engineering Intern 1982-1983

### **Professional Associations** Past and Present

Advanced Highway Maintenance Construction Technology Research via doctoral research advisor 1995-1997

American Academy of Forensic Sciences

American Back Society

American Society of Mechanical Engineers

American Society of Safety Engineers

American Society of Testing and Materials

Articulated Total Body User's Group

Association for the Advancement of Automotive Medicine

International Board of Forensic Engineering Sciences

National Academy of Forensic Engineers Correspondent

Society of Automotive Engineers

Society of Forensic Engineers and Scientists

Tau Beta Pi ~ National Engineering Honor Society

UCD Medical Center Orthopedic Research via qualifying committee faculty/research group director 1995-1996

### **Continuing Education and Professional Development**

Segway Dynamic Stabilization and Inertial Sensing Controls Research 2010

Forensic Engineering Seminars, National Academy of Forensic Engineers Jan/July 2005, Jan/July 2006, July 2008, Jan 2009, Jan 2010

Occupant and Vehicle Kinematics in Rollovers Professional Development Program  
Society of Automotive Engineers, Detroit, MI 2008

Certification: Boating Course Approved by the National Association of State Boating Law Administration and Recognized by the United States Coast Guard Auxiliary 2008

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**Continuing Education and Professional Development** continued

Certification: Motorcycle Training Approved by the Commissioner of the California Highway Patrol 2007

All Terrain Vehicle Safety Institute 2007

Crash Data Retrieval Specialist Certification  
Vetronix Crash Data Retrieval (CDR) System April 2003

Occupant Protection Emerging Topics and Technologies (TOPTEC)  
Tempe, AZ May 1998

Side Impact Design Considerations for Safer Vehicles  
Society of Automotive Engineers, Tempe, AZ May 1998

Diagnosis & Treatment of Neck and Back Pain: Integrated Approach  
Stanford University School of Medicine and American Back Society, San Francisco, CA December 1997

Armed Forces Institute of Pathology: Basic Forensic Pathology  
Department of the Army, Center for Advanced Medical Education, Rockville, MD October 1997

High Speed Rear Impact  
Society of Automotive Engineers, Tempe, AZ October 1997

Airbag Design & Performance  
Society of Automotive Engineers, Costa Mesa, CA August 1997

Biomechanics of Impact Trauma  
Associated for the Advancement of Automotive Medicine, Chicago, IL December 1996

The Biomechanics of Impact and Its Relationship to Crash Performance Standards  
Chicago, IL 1996

Articulated Total Body Model Colloquium  
Phoenix, AZ 1996  
Dayton, OH 1995

Injuries, Anatomy, Biomechanics & Federal Regulations  
Irvine, CA 1995

Rear Impact Collision Topics and Technologies (TOPTEC)  
Irvine, CA 1994

Head and Neck Injury Symposium  
Troy, MI September 1994

U/L3/CV/2013.3.5

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