

RUHI ARSLANOGLU, PH.D.
Biomedical Engineer / Biomechanics and Tissue Engineering

Investigates and analyzes injuries from a biomechanical and biomedical perspective; determines how injuries were caused; evaluates design and use of medical equipment, devices and implants.

Assesses Injuries: Applies physics, anatomy and physiology principals to assess:

- traumatic brain injuries and skull fractures;
- neck, back and spinal cord injuries;
- orthopedic and neurologic injuries;
- vascular ruptures;
- abdominal organs;
- heart, lungs, skin (including burns) and other organs;
- musculo-skeletal injuries including joints (i.e., shoulders, knees, ankles and elbows), soft tissues (i.e., rotator cuff, tendons and ligaments), and fracture patterns (torso, long bone, hand, foot or skull).

Determines Cause: Applies engineering principles to determine:

- the manner in which tissue failed: the type of loading, the direction of loading and magnitude or size of the load that caused the injury;
- if injury patterns are causally related or consistent with the hazardous condition or circumstances claimed;
- whether there was sufficient force in the right direction to cause an injury;
- the presence of pre-existing conditions and how they affect the injury;
- who and/or what action contributed to the injuries;
- what could have been done to prevent the injuries.

Typical Personal Injury Cases Involve:

- motor vehicle collisions;
- slips, trips and falls;
- medical malpractice or device failures;
- occupational and work place injuries;
- sports and recreational injuries.

PROFESSIONAL EXPERIENCE

- 2011 to present **Robson Forensic, Inc.**
Associate
Provide technical investigations, analysis, reports, and testimony toward the resolution of personal injury litigation involving injury analysis and causation, medical equipment, medical devices, and procedures.
- 2007 to 2010 **Blackstone Medical - Orthofix Spine**, New Jersey
Non-Fusion Technology Group, Research and Development
Research Engineer and Sr. Research Engineer
Scope of Responsibilities:
- Computational analysis for new product development and failure analysis of existing products.
 - Materials testing and characterization.
 - Product testing, failure analysis, biocompatibility.
 - Interacting with surgeon consultants and external research laboratories.
 - Provide interaction between cross-functional research groups to provide continuity of research.
 - Selecting medically acceptable materials.
 - Provide support for selecting manufacturing methodologies.
 - Manage pre-clinical studies and provide support for clinical research.
- 2001 to 2005 **University of California San Diego**
Department of Bioengineering, Cardiac Mechanics Research Group
Research Fellow (National Institute of Health Grant)
Scope of Responsibilities:
- Certified to work in a micro-fabrication facility to make micro-fluidic devices.
 - Developing the concept, fabrication, testing and modifying in order to improve to achieve the goals of research protocols and carrying out the relevant experimentation.
 - Adapting purpose built experimental apparatuses to be used in other areas of research and provided instructions and trained other researchers for their particular experiments.
 - Leading assigned projects with a team of engineers, biologist, and lab technicians.
 - Teaching and assisting numerous graduate and undergraduate level courses.
 - Preparing and publishing manuscripts and publications of scientific findings.
 - Reviewing technical and scientific manuscripts submitted for publication to science journal.
 - Developing and preparing instructions for protocols to conduct science experiments.
 - Conducting and participating in experimental surgeries.
 - Trained and certified to work in medical research environments and handling live animal subjects to comply with all institute policies and procedures in compliance with all relevant laws and regulations.

RUHI ARSLANOGLU, PH.D.
Biomedical Engineer / Biomechanics and Tissue Engineering

- 2001 **Tate Britain and Imperial College of Technology And Medicine**, London, U.K.
Department of Conservation Science
Leverhulme Research Fellow
Scope of Responsibilities:
- Initiated a state of the art computational method to study mechanical behavior of old master paintings and art objects (laminated composite structures with multiple heterogeneous layers) to understand the effects of environmental variables and physical damage due to accidents or various other factors.
 - Developed a systemic computational methodology to perform preliminary predictive analysis of paintings due to environmental variables.
 - Provided engineering consultation for various material handling and transportation issues.
 - Provided expert opinion on damaged art work to determine the extent of damage and possible repair approaches.
- 1999 to 2001 **University of London, Queen Mary and Westfield College, Department of Biomaterials, & University of Surrey, Department of Physics, Materials and Medical Physics**, Surrey, U.K.
Research Fellow (Interdisciplinary Materials Research Center)
Scope of Responsibilities:
- Designed and supervised the fabrication of a new tool to produce standard polymeric drug delivery specimens.
 - Conducted experimental studies to determine diffusion characteristics of various polymeric materials.
 - Designed an improved composite structure polymeric implantable drug delivery device to enhance the controlled release of drugs.
 - Supervised undergraduate and graduate students.
 - Conducted experiments to determine diffusion profiles of polymers using micro-ion beam accelerator.
- 1988 to 1999 **The University of Texas Health Science Center**, San Antonio, Texas
Orthopedic Biomechanics Lab
Research Fellow
- The University of Texas at Austin**, Austin, Texas
Department of Aerospace Engineering and Engineering Mechanics
Research Assistant
- Mechanics Software Inc.**, Austin, Texas
Computational Analysis Engineer
- The University of Texas at Austin**, Austin, Texas
Fusion Research Center, IGNITEX Project
Graduate Research Assistant

RUHI ARSLANOGLU, PH.D.
Biomedical Engineer / Biomechanics and Tissue Engineering

The University of Texas at Austin, Austin, Texas
Department of Aerospace Engineering and Engineering Mechanics and
Department of Mathematics and Computer Science
Teaching Assistant

EDUCATION

Ph.D., Biomedical Engineering (Orthopaedic Biomechanics & Tissue Engineering), The University of Texas at Austin, Austin, Texas
M.Sc., Engineering Mechanics and Aerospace Engineering (Computational Mechanics), The University of Texas at Austin, Austin, Texas
Diploma of Institute of Graduate Studies, Aerospace Engineering, Istanbul Technical University, Istanbul, Turkey
B.Sc., Aerospace and Aeronautical Engineering, Istanbul Technical University, Istanbul, Turkey

Additional Education, Training and Certifications:

Orthopaedic Research Society Annual Meeting, Phoenix, Arizona, 2020

- Young Investigator Career Mentorship, ORS, Phoenix, Arizona, 2020

Biomedical Engineering Society Annual Meeting, Philadelphia, 2019

- BlazeDesign Workshop Mentorship, BMES Annual Meeting, Philadelphia, 2019

Interactive Driver Response Research Program (IDRR) Instruction, Crash Safety Solutions, 2019
46th International Workshop on Human Subjects for Biomechanical Research, San Diego, CA, 2018
62nd STAPP Car Crash Conference, San Diego, CA, 2018
Abbreviated Injury Scale Course, AAAM, Nashville, TN, 2018
Association for the Advancement of Automotive Medicine, 62nd Scientific Annual Conference, Nashville, TN, 2018
Principles of Orthopaedic Surgery: Musculoskeletal Tissue Physiology and Function, Musculoskeletal Pathophysiology. Orthopaedic Research Society & Orthopaedic Research and Education Foundation, New Orleans, Louisiana, 2018
Orthopaedic Research Society Annual Meeting, New Orleans, Louisiana, 2018
45th International Workshop on Human Subjects for Biomechanical Research, Charleston, SC, 2017
61st STAPP Car Crash Conference, Charleston, SC, 2017
ORS PSRS 4th International Spine Research Symposium, Lake Harmony, PA, 2017
Symposium addressing the problems associated with degenerative disc disease, cutting-edge scientific research in areas of basic biology, epidemiology, disease mechanisms, tissue engineering, and imaging of the intervertebral disc in addition to biomechanics of injury.
Orthopaedic Research Society Annual Meeting, San Diego, California, 2017
International Workshop on Human Subjects for Biomechanical Research, NHTSA/Human Injury Research Division, STAPP Car Crash Conference, Washington D.C., 2016
Association for the Advancement of Automotive Medicine, 60th Annual Conference, Waikoloa, HI, 2016

RUHI ARSLANOGLU, PH.D.
Biomedical Engineer / Biomechanics and Tissue Engineering

- Innovations in Biomedical Materials, The American Ceramic Society, Chicago, IL, 2016 *Ceramic and Glass Materials for Implants, Medical Devices and Tissue Engineering*: Collaboration between R&D, medical practitioners, and biomedical materials manufacturers/marketers to better develop emerging technologies into marketable products. Research and product developments related to novel materials for orthopedic, dental, and maxillofacial applications; advanced manufacturing technologies; power sources, energy harvesting, power transmission and telemetry; as well as implantable and wearable sensors.
- Traffic Crash Reconstruction – III: Northwestern University Center for Public Safety, Lancaster, Pennsylvania, 2016
Advanced techniques for reconstructing traffic crashes utilizing statistical variability analysis of real-world case studies including motorcycle, pedestrian and truck collisions.
- Principles of Orthopaedic Surgery: Biomaterials, Bone, Skeletal Muscle, Tendon, Ligament, Cartilage and Meniscus Mechanics. Orthopaedic Research Society & Orthopaedic Research and Education Foundation, Orlando, Florida, 2016
- Orthopaedic Research Society Annual Meeting, Orlando, Florida, 2016
- Traffic Crash Reconstruction - II: Northwestern University Center for Public Safety, Lancaster, Pennsylvania, 2015
Investigator further explores the techniques for reconstructing traffic crashes and acquires advanced skills through the analysis of real-world case studies including motorcycle, pedestrian and truck collisions.
- Principles of Orthopaedic Surgery: Musculoskeletal Tissue Physiology and Function and Musculoskeletal Pathophysiology. Orthopaedic Research Society & Orthopaedic Research and Education Foundation, Las Vegas, Nevada, 2015
- Orthopaedic Research Society Annual Meeting, Las Vegas, Nevada, 2015
- Human Gross Anatomy Course, Wexner Medical Center, Injury Biomechanics Research Center, Ohio State University, Columbus, Ohio, 2014
- Injury Biomechanics Symposium, Ohio State University, Columbus, Ohio, 2014
- Orthopaedic Research Society Annual Meeting, New Orleans, Louisiana, 2014
- Annual Injury Biomechanics Symposium, Ohio State University in Columbus, Ohio, 2013
- International Workshop on Human Subjects for Biomechanical Research, 2013
- STAPP Car Crash Conference, 2013
- Annual Injury Biomechanics Symposium, Ohio State University in Columbus, Ohio, May 13-15th, 2012
The Injury Biomechanics Research Laboratory of OSU hosted this research forum to foster communication between developing and established researchers. Participants included 13 universities and institutions from around the world such as the Automobile Safety Research Group of the Center for Applied Biomechanics, University of Virginia, Virginia Tech, Wake Forest University Center for Injury Biomechanics, and the National Highway Traffic Safety Administration.
- International Workshop on Human Subjects for Biomechanical Research, NHTSA/Human Injury Research Division, 2011
- STAPP Car Crash Conference, 2011
- Biological Safety Specialist, NAMSA Advisory Services' Certification: Developing a Biocompatibility Evaluation Plan, Orlando, Florida, 2009
- Spine Specialist Training, Denver, Colorado, 2007
- Testing and Analysis of Elastomers, Ann Arbor, Michigan, 2007

PROFESSIONAL MEMBERSHIPS

American Ceramics Society (ACS), 2016
Association for the Advancement of Automotive Medicine (AAAM), 2016
Orthopaedic Research Society, 2014
American Society of Testing and Materials (ASTM)
 Committee on Forensic Engineering, 2011
 Committee on Medical and Surgical Materials Devices, 2009
Institute of Materials, U.K., Member, 2000
International Association for Dental Research, Member, 2000
Association for Dental Research, U.K., Member, 2000
Tissue and Cell Engineering Society, U.K., Member, 1999
Society for Biomaterials, U.K., Member, 1999
ITU-MD, Vice-Chair, London Branch, 1998-2001
Biomedical Engineering Society (BMES), Member, 1993
 Medical Devices Specialty Group, 2016
ITU-MD, Founder Member, By-Law Committee, 1993
Texas Mineralized Tissue Society
Graduate Engineering Council, University of Texas at Austin, Engineering Mechanics and
 Aerospace Engineering Department, Elected Representative, 1990-1991
Texas Institute of Computational Mechanics, 1989
American Institute of Aeronautics and Astronautics, Member, 1989

SCHOLARSHIPS and FELLOWSHIPS

Leverhulme Research Fellow, 2001
Graduate Study for Ph.D. Degree in Science Scholarship, The Republic of Turkey, Institution for
 Higher Education (tuition, fees and living expenses), 1989-1993
Graduate Study for M.S. Degree in Engineering Scholarship, The Republic of Turkey, Institution for
 Higher Education, (tuition, fees and living expenses), 1988-1989

EXTRA-CURRICULAR ACTIVITIES

EMT (New Jersey)
NAUI Scuba Diver (Divemaster, Rescue Diver)
Amateur Radio Operator (Technician License)
Woodworker (cabinet and furniture building)
Model glider builder and remote control flying
American Cancer Society, Bike-A-Thon Motorcycle Safety Officer

RUHI ARSLANOGLU, PH.D.
Biomedical Engineer / Biomechanics and Tissue Engineering

REVIEWED PUBLICATIONS, ABSTRACTS, CONFERENCE PRESENTATIONS

A. S. Clough, M. Braden, **Arslanoglu, R.** and M.P. Patel "Polymeric Drug Release Systems and Micro Nuclear Reaction Analysis," 9th International Conference on Polymers in Medicine and Surgery, Danube University, Krems, Austria, September 11-13, 2000.

A. S. Clough, R. Hollands, **Arslanoglu, R.**, M. Braden, and M.P. Patel "Water Uptake Profiles of Polymeric Drug Release Systems Using Micro Nuclear Reaction Analysis," Sixth World Biomaterials Conference, Hawaii, U.S.A., May 15-20, 2000.

Arslanoglu, R., A. S. Clough, R. Hollands, M. Braden, and M.P. Patel "Water Uptake of Polymeric Drug Release Systems," International Association of Dental Research Conference 2000, Washington D.C., U.S.A., April 5-8, 2000.

Arslanoglu, R. "Mathematical Modeling and Experimental Aspects of Cellular Mechanotransduction," Ph.D. Thesis, University of Texas at Austin, January 1999.

Arslanoglu, R. and K.A. Athanasiou "Constitutive Modeling of Cellular Mechanotransduction," Biomedical Engineering Society, 1994 Annual Fall Meeting, Arizona State University, Tempe, Arizona, October 14-16, 1994.

Arslanoglu, R. and K.A. Athanasiou "Constitutive Modeling and Experimental Verification of Cellular Mechanotransduction," Sixth Conference and Workshop, Texas Mineralized Tissue Society, San Antonio, Texas, May 13-15, 1994.

Arslanoglu, R. "Mathematical Modeling of Cellular Mechanotransduction," State/Industry Cooperative Research Center, The University of Texas Health Science Center at San Antonio, Center for the Enhancement of the Biology/Biomaterials Interfaces Annual Meeting, April 21-22, 1994.

Arslanoglu, R. "Constitutive Modeling of Cellular Mechanotransduction Based on Mixture Theories," Southwest Research Institute at San Antonio, Center for Biomaterials and Biomechanics Research, C. Williams Hall Lecture, 9/12/1993.

Arslanoglu, R. "Constitutive Modeling and Experimental Verification of Cellular Mechanotransduction," The University of Texas at Austin, Biomedical Engineering Program, Department of Engineering Graduate Student Paper Competition, 10/25/93.

Arslanoglu, R. "Preliminary Design Analysis of IGNITEX Vacuum Vessel." Thesis, University of Texas at Austin, 1991.

Dong, J.Q., **Arslanoglu, R.**, Becker, E., Carrera, R., Khayrudinov, R., Walls, A., Weldon, W.F. *Preliminary Analysis of the Vacuum Vessel in the Fusion Ignition Experiment IGNITEX.* 1990 IEEE International Conference on Plasma Science, Oakland, CA, May 21-23, 1990.

INVITED SPEAKER

Using Forensic Biomechanics in Personal Injury Cases, U.S. Attorney's Office, Newark, NJ, September 2018.

Medical Device Design: Law Factor, Department of Mechanical and Aeronautical Engineering, W. H. Coulter School of Engineering, Clarkson University, April 14th, 2017.