AAAM Specialized Course on:

The BASICS of CRASH INJURY and BIOMECHANICS

October 16, 2003 • New Orleans, LA

P R O G R A M

7:45 **Introduction**
Richard Kent, PhD, University of Virginia

8:00 **Terminology and General Principles**
Gary Deegear, MD, Biodynamic Research Corporation

8:45 **The Basis of Skull and Brain Injury**
Scott Krenrich, MD, Biodynamic Research Corporation

9:45 **The Cervical Spine — Injury and Biomechanics**
Frank Pintar, PhD, Medical College of Wisconsin

10:45 **- BREAK -**

11:00 **Thoracoabdominal Anatomy, Biomechanics, and Injury Causation**
Richard Kent, PhD, University of Virginia

12:00 **- LUNCH -**

12:45 **Pertinent Biomechanics of the Upper Extremity**
Donald Huelke, PhD, University of Michigan

1:30 **The Lower Extremity: Injury, Biomechanics and Disability**
James Funk, PhD, Biodynamic Research Corporation

2:15 **- BREAK -**

2:30 **Injury and Occupant Kinematics in Rollovers**
Debora Marth, PhD, Ford Motor Company

3:15 **Injury Consequences and Outcomes of the Geriatric Crash Victim**
Jeffrey Augenstein, MD, PhD, University of Miami School of Medicine

3:45 **Car Crash Injuries from Autopsy Data and Causes of Injury from Vehicle Inspections**
Richard Bandstra, PhD, Volkswagen of America, Inc.

4:30 **Restraint Systems: Minimizing Whole-Body Injury Risk**
Richard Kent, PhD, University of Virginia

5:30 **- ADJOURN -**

Our Faculty

Jeffrey S. Augenstein, MD, PhD - Miami, FL
Dr. Augenstein is Professor of Surgery at the University of Miami School of Medicine and Director of the William Lehman Injury Research Center located at the Ryder Trauma Center. He specializes in hospital based automobile crash research including patterns among belted drivers protected by airbags, pediatric injuries associated with airbag deployment and crash analysis and reconstruction. Dr. Augenstein has written and spoken extensively on the disease of trauma with articles in numerous publications. He is a AAAM Fellow and is Immediate Past President of AAAM.

Richard A. Bandstra, PhD - Englewood Cliffs, NJ
Dr. Richard Bandstra is a Product Engineer for Volkswagen of America. He has over 25 years of experience in the analysis and performance of vehicle and occupant restraint systems in crash-related situations. He holds a MS Degree in Human Anatomy, a second MS Degree in Bioengineering, and a PhD in Crash Injury Research. As a consequence of his doctoral program internship, Dr. Bandstra has unique insight into the biomechanics of trauma due to impact, restraint system performance, and vehicle design, obtained through interdisciplinary investigations of fatal motor vehicle occupants with the Bergen County (NJ) Medical Examiner's Office and the Fatal Accident Investigation Unit. Dr. Bandstra continues as a post-doctoral consutlant to the Medical Examiner's in fatal motor vehicle collisions. Dr. Bandstra participated as a presenter in the Biomechanics of Impact Trauma Seminar in 1996, and has served as an adjunct faculty member of the Department of Human Anatomy and Bioengineering at Fairleigh Dickinson Unviersity. He is a long time AAAM member.

Gary S. Deegear, MD - San Antonio, TX
Dr. Deegear is a consultant with Biodynamic Research Corporation. He obtained his BS in Geology at Stephen F. Austin State University and a Doctor of Medicine at the University of Texas Health Science Center. He is Board Certified in Family Practice. Dr. Deegear completed advance studies in Traffic Accident Reconstruction and Bloodstain Evidence at Northwestern University and Medicolegal Death Investigation at St. Louis University. Dr. Deegear is a member of the American Academy of Forensic Sciences and his focus is the application of forensics and medicine to injury analysis and accident investigation. Dr. Deegear is a member of AAAM and serves as a regular faculty member.

James R. Funk, PhD - San Antonio, TX
Dr. Funk obtained his doctorate in biomedical engineering from the University of Virginia and was a research associate at UVA's Automobile Safety Laboratory for several years. He is currently Technical Director with Biodynamic Research Corporation and performs injury causation analysis for cases involving automobile and other crashes. He has published numerous articles for journals and conferences. Dr. Funk is a AAAM member and serves as faculty for this course.

Donald F. Huelke, PhD - Ann Arbor, MI
Dr. Huelke is an Emeritus Professor of Anatomy from the University of Michigan Medical School. He is also an Emeritus Research Scientist from the University of Michigan Transportation Research Institute. He was one of the first researchers to evaluate the effectiveness of the energy absorbing steering column and the injury reduction of the high penetration windshield. He was also early-on in reporting crashes involving airbag deployments. He has received numerous awards for his research, presentations and publications. Dr. Huelke is a Past President of AAAM and currently serves on the Scientific Program Committee and is chair of the Fellow Review Committee. He has served as faculty for this course since its inception. Additionally, Dr. Huelke has organized several specialized AAAM conferences — advanced air bag technology in frontal and side impacts (2000) and the aging and driving symposium (2001).

Richard Kent, PhD - Charlottesville, VA
Dr. Kent is an Assistant Professor of Mechanical and Aerospace Engineering at the University of Virginia, with a joint appointment as Clinical Assistant Professor of Emergency Medicine. He has worked in the field of transportation safety for approximately 10 years and has been the head of automobile safety research at the UVA Center for Applied Biomechanics since 2001. Dr. Kent's automotive research interests include crash protection for older occupants, injury criteria development, and the elimination of restraint-induced injuries to both adults and children. A member of AAAM since 1997, Dr. Kent has performed a range of services for the Association, including faculty for several crash investigation and biomechanics courses, and, most recently, member of the Scientific Program Committee and Board of Director. He is a member of SAE, ASB, and Sigma Xi, and holds Bachelors and Masters Degrees from the University of Utah. His contributions to the field include over 50 refereed publications and two book chapters and he is the recipient of the 2001 IRCOBI Best Young Researcher Award, the 2001 Stapp Best Student Paper Award, and the 2002 AAAM Best Scientific Paper Award. Dr. Kent is the organizer of this course.

Scott Krenrich, MD - San Antonio, TX
Dr. Krenrich received his undergraduate training in physics at Columbia Union College in 1972. Following active duty service in the United States Army, he was accepted to the School of Medicine at Loma Linda University in 1976, obtaining his MD degree in 1980 and completing his internship training in 1981. From 1982-90, he practiced both as a general practitioner and as an emergency physician. In 1994, he completed his specialty training in both Anatomic and Clinical Pathology at Loma Linda University. After a brief period of practice as a surgical pathologist, he joined the staff of Biodynamic Research Corporation (BRC), in San Antonio, Texas, where he has been a consultant since December 1994. While with BRC, he has performed numerous case-specific analyses of the injury mechanisms associated with both vehicular and non-vehicular accidents. He has also participated in research activities in the field of occupant kinematics, and has co-authored articles published under the auspices of the SAE and AAAM. Dr. Krenrich, a AAAM member, often serves as faculty for this course.

Debora Marth, PhD - Dearborn, MI
Dr. Marth is a Design Analysis Engineer with Ford Motor Company. She received her undergraduate degree in Mechanical Engineering from the University of Michigan, and her PhD from Wayne State University in Biomedical Engineering. Her doctoral dissertation focused on biomechanics of the shoulder in lateral impact. Debora has worked in the automotive industry for the past 11 years in the area of safety, and has done research in the area of vehicle rollovers. She is a guest lecturer at Wayne State University and the Director of Technical Sessions for the Society of Automotive Engineers Detroit section. She is a AAAM member and serves on the Scientific Program Committee.

Frank A. Pintar, PhD - Milwaukee, WI
Dr. Pintar is a Professor in the Department of Neurosurgery at the Medical College of Wisconsin, Adjunct Professor of Biomedical Engineering at Marquette University and Director of the Neuroscience Research Laboratories at the VA Medical Center. Over the years, Dr. Pintar has served as a research mentor to over 30 graduate students, post-docs, residents, fellows and junior faculty in the medical school and engineering school. He has held numerous positions on Medical College of Wisconsin committees and is currently chair of the Faculty Benefits and Career Development Committee. Dr. Pintar has authored more than 500 research publications including two books on head and neck trauma and over 100 peer-reviewed journal papers. His current research interests include brain and spinal cord injury, trauma biomechanics and spinal surgery techniques. He is one of the principal investigators of the MCW CIREN Center (ten in the nation). As a member of AAAM, he has been actively involved as an instructor of our biomechanics courses and has given invited lectures at our specialty conferences. He was given the AAAM best scientific paper award in 1997. Dr. Pintar conducts paper reviews for the AAAM and has contributed papers to the annual conference since 1995.