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Introduction

By Martha L. Gray, PhD, and Andrew D. Pearle, MD

The 2008 American Academy of Orthopaedic Surgeons/Orthopaedic Research Society Advanced Imaging and Computer-Assisted Surgery of the Knee and Hip (AICKH) Research Symposium created a forum for the collaboration of experts from multiple disciplines to advance the state of the art in musculoskeletal imaging and computer-assisted surgery, particularly with regard to the knee and the hip.

The symposium aimed to identify high-impact technologies and opportunities for applications of computer-assisted surgery and to facilitate the development, validation, and implementation of computer-assisted and advanced imaging techniques.

Nearly forty presentations from physicians, researchers, and other experts in the field were given at the invitation-only symposium, which was held on May 15, 16, and 17, 2008, in Providence, Rhode Island. Breakout sessions were conducted so that the group could address specific questions and develop a consensus document outlining these questions and future research directions. This supplement to *The Journal* provides the proceedings of this symposium. Papers are presented in the order in which they appeared in the symposium, with the following sections represented and with a concluding discussion of directions for future research:

—Setting the Stage
—Basic Science Issues in Advanced Musculoskeletal Imaging and Computer-Assisted Surgery
—Morphology, Intraoperative Imaging, and Image Processing
—Macromolecular Imaging of Cartilage
—Knee Degeneration
—Malalignment and Ligamentous Injury
—Chondral Lesions
—Novel Approaches to Imaging and Tracking of Hip Topology

In addition, the American Academy of Orthopaedic Surgeons (AAOS) and the Orthopaedic Research Society (ORS) sponsored four Young Investigators who attended the symposium and contributed greatly to its success. The following Young Investigators were selected after a rigorous application process:

Christian Lattermann, MD, Kentucky Clinic
Xiaojuan Li, PhD, University of California, San Francisco
Allston J. Stubbs, MD, The North Carolina Sports Medicine Institute
Samuel K. Van de Velde, MD, Massachusetts General Hospital

The AAOS research workshops and symposia have received support from the National Institutes of Health and the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) for more than twenty years. The AAOS was pleased to welcome guests from the U.S. Food and Drug Administration (FDA), NIAMS, the National Institute of Child Health and Human Development (NICHD), and the National Institute of Standards and Technology (NIST):

U.S. Food and Drug Administration (FDA)
Barbara Buch, MD, Deputy Director, Division of General, Restorative, and Neurological Devices (DGRND), Center for Devices and Radiological Health (CDRH)/Office of Device Evaluation (ODE)
Jonette R. Foy, PhD, Center for Devices and Radiological Health, Orthopedic Joint Devices Branch

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
James S. Panagis, MD, MPH, Director, Orthopaedics Program

National Institute of Child Health and Human Development (NICHD)
Nancy L. Shinowara, PhD, Director of the Spinal Cord and Musculoskeletal Disorders and Assistive Devices Program

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National Institute of Standards and Technology (NIST)
Mrunal Chapekar, PhD, Technical Program Manager, Technology Innovation Program

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Genzyme Corporation (additional funding)

We would also like to thank the symposium moderators, speakers, breakout session leaders and scribes, Young Investigator attendees, and the numerous individuals and groups that made this symposium possible—Chairman Denis R. Clohisy, MD, and the AAOS Research Development Committee; Christopher Evans, PhD; Kristy Weber, MD, Joshua J. Jacobs, MD, and the AAOS Council on Research, Quality Assessment, and Technology; E. Anthony Rankin, MD, Joseph Zuckerman, MD, John J. Callaghan, MD, James Beaty, MD, and the AAOS Board of Directors; AAOS staff leadership, including Christy M.P. Gilmour, Erin L. Ransford, Robert S. Jasak, and Karen Hackett; and ORS Executive Director Brenda Frederick. ■

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