

**Jorge A. Ochoa, Ph.D., P.E.**  
**Principal Engineer**

**Professional Profile**

Dr. Jorge A. Ochoa is a Principal Engineer in Exponent's Biomedical Engineering practice. Dr. Ochoa has over 25 years of broad experience in all R&D related areas of new product realization, from concept phase to market readiness. His specific expertise encompasses design of surgical instruments and techniques, as well as biomechanics, engineering biomaterials, and preclinical testing strategy. Dr. Ochoa specializes in the major aspects of medical device specific product development: technology forecasting, design control, risk analysis, biomaterials selection, verification/validation testing, failure analysis and intellectual property issues related to strategy, validity and infringement, post market surveillance, and recalls and forensic failure analysis of medical devices. He has served as an expert witness in product liability cases.

Dr. Ochoa's particular research interests are in the areas of the mechanics of cardiovascular and orthopaedic biological tissues and the tissue/implant interface; medical device durability and wear; kinematics and kinetics of human joints; experimental and finite element analysis used to characterize the mechanical behavior of biological tissues and reconstructive devices for orthopedic, spinal surgery and cardiovascular interventions; coatings for enhanced implant fixation and prevention of implant loosening; image guided surgical techniques, computer aided surgical instruments and telemetric medical devices; intelligent implantable medical devices, biosensors and drug/device combination medical devices.

Prior to joining Exponent, Dr. Ochoa was Chief Technology Officer at Archus Orthopaedics, a privately held medical device start-up company. Before that, he spent 13 years at DePuy Orthopaedics, a division of Johnson & Johnson, in various roles of increasing responsibility within R&D including Vice President of R&D. His activities and responsibilities included new product development; customer needs analysis and support, M&A due diligence and integration, intellectual property analysis, and litigation support. Dr. Ochoa is an Affiliate Associate Professor in the Mechanical Engineering Department at the University of Washington.

**Academic Credentials and Professional Honors**

Ph.D., Mechanical Engineering, Purdue University, 1991

M.S., Mechanical Engineering, Purdue University, 1987

Professional Degree, Mechanical Engineering, Missouri University of Science and Technology, 2005

B.S., Mechanical Engineering, Missouri University of Science and Technology (*cum laude*), 1985

Pi Tau Sigma; Phi Eta Sigma; Distinguished Engineering Alumnus, Purdue University, 2009; Best Scientific Paper, Awarded by the Spine Arthroplasty Society, 2008; Academy of

Mechanical and Aerospace Engineers – Missouri University of Science and Technology, 2005; Outstanding Mechanical Engineer, Purdue University, 2002; Clinical Biomechanics Best Paper Award, Awarded by European Society of Biomechanics, 1998; Johnson & Johnson Professional Achievement Award, 1995

### **Licenses and Certifications**

Licensed Professional Engineer, Massachusetts, #40846  
Licensed Professional Engineer, Indiana, #10403496  
Licensed Professional Engineer, Washington, #40751

### **Languages**

Spanish

### **Patents**

Patents 6,866,685 and 6,660,040: Prosthetic Joints Having Reduced Area Bearing Surfaces and Application Thereof to a Range of Sizes of Prosthetic Joints, issued March 15, 2005 and December 9, 2003 (with F. Chan).

Patent 6,206,929: Bipolar Hip Prosthesis with Locking Head, issued March 27, 2001 (with F. Khalili).

Patent 6,139,584: Proximal Femoral Sleeve for a Revision Hip Prosthesis, issued October, 31, 2000 (with F. Khalili).

Patent 6,019,765: Morsellized Bone Allograft Applicator Device, Issued February 1, 2000 (with T. Thornhill, W.H. Kennefick, and E. Larson).

Patent 5,935,172: Prosthesis With Variable Fit and Strain Distribution, issued August 10, 1999 (with M.J. O'Neil).

Patent 5,871,549: Femoral Stem with Reduced Coefficient of Friction with Respect to Bone Cement, issued February 16, 1999 (with C.M. Jayashankar and F.D. Matthews).

Patents 5,868,747 and 5,716,358: Directional Bone Fixation Device, issued February 9, 1999 and February 10, 1998 (with L.L. Rogers).

Patent 5,871,546: Femoral Component Condyle Design for Knee Prosthesis, issued February 16, 1999 (with D.P. Colleran, S.M. Gabriel, and R.E Sommerich).

Patent 5,609,643: Knee Joint Prostheses, issued March 11, 1997 (with D.P. Colleran and R.E. Sommerich).

## Publications

Kurtz SM, Lau E, Ochoa JA, Shkolnikov Y, Pavri BB, Ho RT, Frisch D, Greenspon AJ. Implantation trends and patient profiles for pacemakers and implantable cardioverter defibrillators in the United States: 1993–2006. *Pacing Clin Electrophysiol* 2010 Jan.

Voronov LI, Havey RM, Rosler DM, Sjøvold SG, Rogers SL, Carandang G, Ochoa JA, Yuan H, Webb S, G. Patwardhan AG. L5 – S1 segmental kinematics after facet arthroplasty. *SAS Journal* 2009; 3(2). <http://sasjournal.com/v2/content/15-%E2%80%93s1-segmental-kinematics-after-facet-arthroplasty>.

Phillips FM, Tzermiadianos MN, Voronov LI, Havey RM, Carandang G, Renner SM, Rosler DM, Ochoa JA, Patwardhan AG. Effect of the Total Facet Arthroplasty System after complete laminectomy-facetectomy on the biomechanics of implanted and adjacent segments. *Spine J.* 2009; 9(1):96–102, January.

Bowden AE, Guerin HL, Villarraga ML, Patwardhan A, Ochoa JA. Quality of motion considerations in numerical analysis of motion restoring implants. *Clin Biomech* 2008; 23(5):536–544, June.

Niu Q, Chi X, Leu MC, Ochoa J. Image processing, geometric modeling and data management for development of a virtual bone surgery system. *J Comput Aided Surgery* 2008; 13(1):30–40, January.

Komistek RD, Kane T, Mahfouz M, Ochoa JA, Dennis DA. Knee mechanics: A review of past and present techniques to determine in vivo loads. *J Biomech* 2005; 38(2):215–228, February.

Dennis DA, Komistek RD, Ochoa JA, Haas BD, Hammill C. In vivo comparison of hip separation after metal-on-metal or metal-on-polyethylene THA. *J Bone Joint Surg Am* 2002; 84(10):1836–1841, October.

Kurtz SM, Srivastav S, Dwyer K, Ochoa J, Brown S. Analysis of the stem-sleeve interface in a modular titanium alloy femoral component for total hip replacement, in functional biomaterials. *Trans Tech Publications, Switzerland.* Katsube N, Soboyejo WO, Sacks M (eds), pp. 41–68, 2001.

Dennis DA, Komistek RD, Northcut EJ, Ochoa JA, Ritchie A. In vivo determination of hip joint separation and the forces generated due to impact loading conditions. *J Biomech* 2001; 34(5):623–629, April.

Kurtz SM, Ochoa JA, Hovey CB, and White CV. Simulation of initial frontside and backside wear rates in a modular acetabular component with multiple screw holes. *J Biomech* 1999; 32(9):967–976, August.

Kurtz SM, Ochoa JA, White CV, Srivastav S, Cournoyer J. Backside nonconformity and locking restraints affect liner/shell load transfer mechanisms and relative motion in modular acetabular components for total hip replacement. *J Biomech* 1998; 31:431–437, May.

Ochoa JA, Sanders AP, Kiesler TW, Heck DA, Toombs JP, Brandt KD, Hillberry BM. In vivo observations of hydraulic stiffening in the canine femoral head. *J Biomech Eng* 1997; 119:103–108, February.

Wilson SF, Ochoa JA, Rogers LL, Lancaster RL, Ritchie A. Finite element analysis in the characterization of an absorbable cement restrictor. *J Eng Med, IMechEng* 1995; 209:163–167.

Ochoa JA, Sanders AP, Heck DA, Hillberry BM. Stiffening of the proximal femur due to intertrabecular fluid and intraosseous pressure. *J Biomech Eng* 1991; 113(3):259–262.

Ochoa JA, Heck DA, Hillberry BM. The effect of intertrabecular fluid on femoral head mechanics. *J Rheumatology* 1991; 18(4):580–584.

### **Scientific Exhibits**

Mahfouz MR, Anderle M, Bajares G, Pérez Oliva A, Tokish LJ, Ochoa JA, Komistek RD, Zingde S. In vivo kinematics of the Total Facet Arthroplasty System (TFAS). 75<sup>th</sup> AAOS Scientific Exhibit SE61, Orlando, FL, San Francisco, CA, March 2008.

Dennis DA, Komistek RD, Northcut EJ, Kane TR, Rullkoetter PJ, Ochoa JA, Stiehl JB, Hammill CD, Walker SA. Determination of in vivo Total Hip Arthroplasty (THA) kinematics, kinetics and stresses using fluoroscopy and mathematical modeling. 67<sup>th</sup> AAOS Scientific Exhibit, Orlando, FL, March 2000.

Northcut EJ, Komistek RD, Dennis DA, Ochoa JA, Ritchie A. Impulse loading exhibited at the implanted hip during active joint separation. 66<sup>th</sup> AAOS Scientific Exhibit, Anaheim, CA, February 1999.

Komistek RD, Dennis DA, Northcut EJ, Ochoa JA, Ritchie A. In vivo determination of hip joint separation and the forces generated due to impact loading conditions. AAOS Scientific Exhibit, New Orleans, LA, March 1998.

### **Conference Papers and Abstracts**

Hanzlik J, Patel J, Ochoa JA, Pavri B, Greenspon A, Kurtz S. Retrieval analysis of implantable pacemakers and cardioverter-defibrillators. Biomedical Engineering Society, 2011 Annual Meeting, Hartford, CT, October 12–15, 2011.

Ong KL, Watson H, Patel JD, Kuehn CM, Ochoa JA. Bare-metal and drug-eluting coronary and peripheral vascular stent procedures: Utilization in the U.S. 3rd North American Congress of Epidemiology, Montreal, Quebec, Canada, June 21–24, 2011.

Sanders AP, Tibbitts IB, Kakarla D, Siskey SD, Ochoa JA, Ong KL, Brannon RM. Contact mechanics of impacting slender rods: Measurement and analysis. Paper No. 274, Society for Experimental Mechanics Annual Conference & Exposition on Experimental and Applied Mechanics, Uncasville, CT, June 13–16, 2011.

Ong KL, Lau E, Patel JD, Ochoa JA. Epidemiology of heart valve repair and replacement procedures in the United States: A 15-year perspective. American Heart Association Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke (QCOR), Washington, D.C., May 12–14, 2011.

Ong KL, Watson H, Patel JD, Kuehn CM, Ochoa JA. Bare-metal and drug-eluting coronary and peripheral vascular stent procedures: Utilization in the United States. American Heart Association Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke (QCOR), Washington, D.C., May 12–14, 2011.

Hanzlik, J, Patel JD, Kurtz SM, Pavri BB, Greenspon AJ, Ochoa JA. Insights into cardiac pacemaker and defibrillator revision/upgrades. 37th Annual Northeast Bioengineering Conference, Rensselaer Polytechnic Institute, Troy, NY, April 1–3, 2011.

Patel JD, Kurtz SM, Lau E, Ochoa JA, Pavri BB, Ho R, Frisch DA, Greenspon AJ. Comparison of pacemaker versus ICD infection burden in the United States from 1993–2008. Paper No. AB21-1, Transactions of the 32<sup>nd</sup> Annual Scientific Sessions of the Heart Rhythm Society, San Francisco, CA, May 4–7, 2011.

Ong K, Ianuzzi A, Lau E, Kurtz S, Ochoa J. Epidemiology and in-hospital complications associated with interspinous process decompression device procedures: The initial U.S. experience using national administrative data. 56<sup>th</sup> Annual Meeting Orthopaedic Research Society, P-428, San Francisco, CA, March 6–9, 2010.

Kurtz SM, Lau E, Ochoa JA, Shkolnikov Y, Pavri BB, Ho RT, Frisch D, Greenspon AJ. Projections of pacemaker and ICD utilization in the US from 2010 to 2030. Paper No. AB06-5. Transactions of the 31st Annual Scientific Sessions of the Heart Rhythm Society, Denver, CO, May 12–15, 2010.

Kurtz SM, Lau E, Ochoa JA, Pavri BB, Ho RT, Greenspon AJ. Complications and predictors of ICD outcomes. Paper No. AB28-1. Transactions of the 31st Annual Scientific Sessions of the Heart Rhythm Society, Denver, CO, May 12–15, 2010.

Imsdahl SI, Ochoa JA, Ching RP. Kinematics of the lumbar facet joints and vertebral endplate. NW Biomechanics Symposium, ASB Northwest Regional Meeting, Pullman, WA, June 5–6, 2008.

Voronov LI, Havey RM, Rosler DM, Sjovald SG, Rogers SL, Carandang G, Ochoa JA, Patwardhan AG. Kinematics of facet arthroplasty: A comparison of L5-S1 and L3-L4 levels. Annual Meeting of EuroSpine/SpineWeek, Geneva, Switzerland, p. 185, May 26–31, 2008.

Voronov L, Havey R, Rosler D, Sjovald S, Rogers S, Carandang G, Ochoa JA, Patwardhan A. Kinematics of facet arthroplasty: A comparison of L5-S1 and L3-L4 levels. Spine Arthroplasty Summit 8, Miami, FL, May 6–9, 2008. Best Scientific Paper Award.

Havey RM, Voronov LI, Carandang G, Rosler DM, Ochoa JA, Patwardhan AG. Biomechanics of adjacent segments after facet arthroplasty vs. fusion. Spine Arthroplasty Summit 8, p. 185, Miami, FL, May 6–9, 2008.

Bowden AE, Guerin HL, Villarraga ML, Patwardhan AG, Ochoa JA. Higher order validation metrics are required when numerically modeling physiologic motion of the spine. 54<sup>th</sup> Annual Meeting Orthopaedic Research Society, P-1360, San Francisco, CA, March 2–5, 2008.

Bowden AE, Guerin HL, Villarraga ML, Patwardhan AG, Ochoa JA. Effect of soft tissue mechanical properties on validated quality of motion of the spine. Philadelphia Spine Research Society, Philadelphia, PA, October 9, 2007.

Vadapalli S, Ochoa JA, Rosler DM. Effect of facet arthroplasty on the biomechanics of the lumbar spine—A finite element study. American Society of Biomechanics, 2007 Annual Meeting, P1-9, Stanford, CA, August 22–25, 2007.

Taber BJ, Ochoa JA, Storti D, Ching RP. Characterization of intact lumbar facet kinematics. NW Biomechanics Symposium, ASB Northwest Regional Meeting, Eugene, OR, May 18–19, 2007.

Phillips FM, Voronov LI, Tzermiadianos M, Havey RM, Carandang G, Rosler DM, Ochoa J, Patwardhan AG. Kinematic study of total facet arthroplasty after complete laminectomy-facetectomy. Proceedings, 21<sup>st</sup> Annual Mtg. of the North American Spine Society, Seattle, WA, September 26–30, 2006. The Spine Journal 2006; 6(5), Suppl. 1:137S.

Phillips FM, Voronov LI, Tzermiadianos M, Havey RM, Carandang G, Rosler DM, Ochoa J, Patwardhan AG. Kinematic study of total facet arthroplasty after complete laminectomy-facetectomy. The 13<sup>th</sup> International Meeting on Advanced Spine Techniques, Athens, Greece, July, 2006.

Chi X, Leu MC, Ochoa JA. Modeling of Haptic rendering for virtual bone surgery. 2004 ASME International Mechanical Engineering Congress and R&D Expo and Computers and Information in Engineering Conference, IMECE2004-59814, Anaheim, CA, November 13–19, 2004.

Peng X, Chi X, Ochoa JA, Leu MC. Bone surgery simulation with virtual reality. Proceedings, DETC'03 ASME 2003 Design Engineering Technical Conferences and Computers and Information in Engineering Conference, CIE-2003-43, Chicago, IL, September 2–6, 2003.

Aram L, Lehman A, Lewis P, Render T, Ochoa J, Amirouche F, Gonzalez M. Investigation of cementless cup micromotion and stability after total hip arthroplasty. 4<sup>th</sup> World Congress of Biomechanics, p. 1076, Calgary, Alberta, Canada, August 2002.

Romero F, Amirouche F, Gonzalez M, Render T, Ochoa J. Investigation of stresses between the liner and the acetabular cup in total hip replacement implants. 4<sup>th</sup> World Congress of Biomechanics, p. 1089, Calgary, Alberta, Canada, August 2002.

Dennis D, Komistek R, Northcut E, Ochoa J, Haas B. In vivo determination of hip joint separation in subjects having either a metal-on-metal or metal-on-polyethylene THA. 68<sup>th</sup> Annual Meeting American Academy of Orthopaedic Surgeons, San Francisco, CA, March 2001.

Dennis D, Komistek R, Ochoa J, Northcut E, Hamill C. In vivo determination of femoral head loci pathways during gait in subjects having a metal-on-metal or metal-on-polyethylene THA. 47<sup>th</sup> Annual Meeting Orthopaedic Research Society, San Francisco, CA, March 2001.

Dennis D, Komistek R, Northcut E, Ochoa J, Hamill C. In vivo determination of hip joint separation in subjects having a metal-on-metal or metal-on-polyethylene THA. 47<sup>th</sup> Annual Meeting Orthopaedic Research Society, San Francisco, CA, March 2001.

Dennis D, Haas B, Komistek R, Walker S, Ochoa J. Correlation of in vivo kinematics of total hip arthroplasty with polyethylene wear retrievals. 10<sup>th</sup> Annual Meeting of American Association of Hip and Knee Surgeons, Dallas, TX, November 2000.

Dennis D, Komistek R, Ochoa J, Northcut E, Hammill C. In vivo determination of femoral head loci pathways during gait in subjects having a metal-on-metal or metal-on-polyethylene THA. 10<sup>th</sup> Annual Meeting of American Association of Hip and Knee Surgeons, Dallas, TX, November 2000.

Komistek R, Kane T, Dennis D, Ochoa J, Stiehl J. Use of in vivo kinematic fluoroscopy data to determine lower extremity joint loads. European Society of Biomechanics, Dublin, Ireland, August 2000.

Ochoa J, Komistek R, Dennis D, Northcut E, Hammill C. In vivo determination of femoral head loci pathways during gait in subjects having a metal-on-metal or metal-on-polyethylene THA. European Society of Biomechanics, Dublin, Ireland, August 2000.

Ochoa J, Komistek R, Dennis D, Northcut E, Hammill C. In vivo determination of hip joint separation in subjects having a metal-on-metal or metal-on-polyethylene THA. European Society of Biomechanics, Dublin, Ireland, August 2000.

Kurtz SM, Srivastav S, Dwyer K, Ochoa J, Brown S. Analysis of the stem-sleeve interface in a modular titanium alloy femoral component for total hip replacement. ASME 2000 Congress and Exposition, Symposium on Functional Biomaterials, Joint Replacement, Orlando, FL, November 7, 2000.

Dennis D, Komistek R, Ochoa J, Northcut E. In-vivo determination of femoral head loci pathways during gait in subjects having either a metal-on-metal or metal-on-polyethylene total hip arthroplasty. 113<sup>th</sup> Annual Meeting of the American Orthopaedic Association, Hot Springs, VA, June 2000.

Dennis D, Komistek R, Ochoa J, Northcut E. In-vivo determination of hip joint separation in subjects having either a metal-on-metal or metal-on-polyethylene total hip arthroplasty. 113<sup>th</sup> Annual Meeting of the American Orthopaedic Association, Hot Springs, VA, June 2000.

Ochoa J, Komistek R, Dennis D, Northcut E, Hammill C. In-vivo determination of hip joint separation in subjects having either a metal-on-metal or metal-on-polyethylene total hip arthroplasty. 11<sup>th</sup> International Conference on Mechanics in Medicine and Biology, Maui, HI, April 2000.

Dennis D, Komistek R, Ochoa J, Northcut E, Hammill C. In-vivo determination of hip joint separation in subjects having either a metal-on-metal or metal-on-polyethylene THA. Transactions of the Orthopaedic Research Society, Vol. 25, p. 507, Orlando, FL, March 2000.

Northcut EJ, Komistek RD, Dennis DA, Ochoa JA, Rullkoetter PJ. Impulse loading conditions modeled from in vivo joint separation. ISB, Calgary, Canada, August 1999.

Northcut EJ, Komistek RD, Dennis DA, Ochoa JA, Ritchie A. Impulse loading exhibited at the implanted hip joint during active joint separation. SICOT, Sydney, Australia, April 1999.

Northcut EJ, Komistek RD, Dennis DA, Ochoa JA. In vivo determination of hip joint separation: The potential creation of impulse loading conditions. SICOT, Sydney, Australia, April 1999.

Northcut EJ, Komistek RD, Dennis DA, Ochoa JA, Ritchie A. Impulse loading exhibited at the implanted hip joint during active joint separation. AAOS Exhibit, 66<sup>th</sup> Annual Meeting, Anaheim, CA, February 1999.

Kurtz SM, Ochoa JA, Hovey CB, White CV. Frontside vs. backside wear in an acetabular component with multiple screw holes. Transactions of the Orthopaedic Research Society, Vol 24, p. 54, Anaheim, CA, February 1999.

Rullkoetter PJ, Ochoa JA, Hamilton JV, Chen PCY, Colwell CW, Jr, D' Lima DD. Effect of loading rate on UHMWPE contact mechanics. Transactions of the Orthopaedic Research Society, Vol. 24, p. 826, Anaheim, CA, February 1999.

Komistek RD, Dennis DA, Northcut EJ, Ochoa JA, Ritchie A. In vivo determination of normal, constrained and unconstrained THA kinematics. CORS, Hamamatsu City, Japan, 1998.

Northcut EJ, Komistek RD, Dennis DA, Ochoa JA, Ritchie A. In vivo determination of normal, constrained and unconstrained THA kinematics. Proceedings, 3<sup>rd</sup> Comb. Mtg. ORS USA, Canada, Europe, and Japan, p. 68, September 1998.

Northcut EJ, Komistek RD, Dennis DA, Ochoa JA, Ritchie A. In vivo determination of normal, constrained and unconstrained THA kinematics. European Society Biomech, July 1998. Clinical Biomechanics Best Paper Award.

Komistek RD, Dennis DA, Northcut EJ, Ochoa JA, Ritchie A. In vivo determination of hip joint separation and the forces generated due to impact loading conditions. Transactions of the Orthopaedic Research Society, Vol 23, p. 197, New Orleans, LA, March 1998.

Kurtz SM, Ochoa JA, White C. Liner/shell load transfer mechanisms in a modular acetabular component for total hip replacement. In: Advances in Bioengineering 1997, ASME, pp.303–304, Atlanta, GA, November 1997.

Komistek RD, Dennis DA, Northcut EJ, Ochoa JA, Ritchie A. In vivo determination of hip joint separation and the forces generated due to impact loading conditions. In: The Future of Technology in Arthroplasty. 10<sup>th</sup> Annual Symposium of ISTA, p. 167, San Diego, CA, September 1997.

Kurtz SM, Ochoa JA, White C, Srivastav S, Cournoyer J. Effect of non-conformity and locking restraints on backside relative motion of a metal-backed acetabular component with a polar fenestration. Transactions of the Orthopaedic Research Society, Vol. 22, p. 312, San Francisco, CA, February 1997.

Cournoyer JR, Ochoa JA, Kurtz SM. Relative motion at the backside of a metal-backed acetabular component under quasi-static and dynamic loading. Transactions of the Orthopaedic Research Society, Vol. 22, p. 839, San Francisco, CA, February 1997.

Gibbon AJ, Hynes D, Wooster A, Ochoa JA. Stem geometry influences early femoral osteolysis in total hip replacement. Prog. British Orthop. Soc., p.23, Aberdeen, Scotland, September 1995.

Ochoa JA, Hillberry BM. Experimental verification of hydraulic stiffening of cancellous bone. Proceedings, 2<sup>nd</sup> World Congress Biomech., Vol. 2, p.54, Amsterdam, The Netherlands, July 1994.

Ochoa JA, Hillberry BM. Modeling the hydraulic stiffening of cancellous bone. Proceedings, 2<sup>nd</sup> World Congress Biomech., Vol. 2, p. 236, Amsterdam, The Netherlands, July 1994.

Rogers LL, Wilson SF, Ochoa JA. Design and characterization of an absorbable cement restrictor. Transactions of the Society for Biomaterials, Vol. 19, Birmingham, Al, April 1993.

Luo ZP, Ochoa JA, Hillberry BM. Effects of specimen size on hydraulic stiffening of cancellous bone. Transactions of the Orthopaedic Research Society, Vol. 18, San Francisco, CA, February 1993.

Ochoa JA, Sommerich RE, Zalenski EB. Application of an innovative experimental method to characterize contact mechanics of total joint replacements. Transactions of the Orthopaedic Research Society, Vol 18, San Francisco, CA, February 1993.

Ochoa JA, Hillberry BM. Permeability of bovine cancellous bone. Transactions of the Orthopaedic Research Society, Vol 17, Washington, D.C., February 1992.

Ochoa JA, Hillberry BM. A poroelastic model for the hydraulic stiffening of cancellous bone. Transactions of the Orthopaedic Research Society, Vol 17, Washington, D.C., February 1992.

Ochoa JA, Heck DA, Hillberry BM. Experimental verification of the hydraulic component of stiffness in cancellous bone. Proceedings, World Congress on Med. Phys. and Biomed. Eng., Osaka, Japan, 1991.

Heck DA, Ochoa JA, Kiesler TW, Toombs JP, Brandt KD, Hillberry BM. In-vivo bone hydraulics. Transactions of the Orthopaedic Research Society, Vol. 16, Anaheim, CA, March 1991.

Ochoa JA, Sanders AP, Hillberry BM, Heck DA. Effects of intertrabecular fluid and pressure on the dynamic stiffness of the proximal femur. Advances in Bioengineering 1989, ASME, San Francisco, CA, December 1989.

Ochoa JA, Heck DA, Hillberry BM, Brandt KD. The effect of osseous fluid on the mechanical behavior of femoral heads. Transactions of the 34<sup>th</sup> Orthopaedic Research Society, Vol. 13, p. 126, Atlanta, GA, February 1988.

### **Presentations**

Ochoa JA. The role of analysis in medical device NPD. 2010 MD&D Annual Conference & Exhibition, Minneapolis, MN, October 13, 2010. Session Chair: Preclinical Testing of Implantable Medical Devices.

Ochoa JA. Technical fundamentals of R&D and portfolio management: New product realization in medical devices—The whole story. Invited Speaker, 2009 RAPS Annual Conference & Exhibition, Philadelphia, PA, September 14, 2009.

Ochoa JA. Career perspectives in the medical device industry. Penn Biotech Group Seminar, University of Pennsylvania, Philadelphia, PA, September 15, 2009.

Ochoa JA. Values and value—the role of the leader in work and life, 2008 NAE Engineer of 2020 Workshop, Purdue University, September 30, 2008.

Ochoa JA. Panelist on Consulting Agreements with Physicians: The Role of Bias and Compliance at the Philadelphia Medical Device Symposium, Philadelphia, PA, November 12, 2008.

Ochoa JA. Undergraduate research—(Why) does it matter? 4<sup>th</sup> Annual Undergraduate Research Conference, Key Note Speaker, Missouri University of Science & Technology, Rolla, MO, April 9, 2008.

Ochoa JA. The role of the biomedical engineer in new product realization. BME 390, Professional Seminar, Weldon School of Biomedical Engineering, Purdue University, W. Lafayette, IN, September 21, 2006.

Ochoa JA. Emerging field of biomedical engineering—A mechanical engineer's perspective. ASME District C Student Conference, Missouri University of Science and Technology, Rolla, MO, March 4, 2006.

Ochoa JA. Values based decision-making and its role in value creation. Technology MBA Graduate Seminar, University of Washington, Seattle, WA, October 16, 2004.

Ochoa JA. From bioengineering to interfacial and scale engineering—Evolution of new engineering disciplines. Graduate Seminar, School of Mechanical Engineering, Missouri University of Science and Technology, October 30, 2003.

Ochoa JA. Panelist on career and leadership development forum. Hispanic Organization for Leadership and Achievement (HOLA) at J&J, New Brunswick, NJ, October 23, 2003.

Ochoa JA. Values and value—The role of the leader in work and life. Society of Hispanic Professional Engineers Eastern Technical Career Conference (SHPE-ETCC '03), Keynote speaker, Washington DC, November 14, 2003.

Ochoa JA. Orthopaedic research—The way forward. Oak Ridge National Laboratory, University of Tennessee Mechanical Engineering Combined seminar, Knoxville, TN, March 13, 2003.

Ochoa JA. Technology and IP management in new product commercialization. Guest Lecture, School of Engineering Management EMgt 320 Technical Entrepreneurship. Missouri University of Science and Technology, Rolla, MO, October 10, 2002.

Ochoa JA. The fruit of orthobiologic research. Faculty of Contemporary Techniques and Issues in Orthopaedics, Whistler, BC, Canada, March 6, 2002.

Ochoa JA. The pitfalls that remain in orthopaedic design in 2001. Contemporary Techniques and Issues in Orthopaedics, Vail, CO, February 12, 2001.

Ochoa JA. The role of design, materials and testing in total joint replacement. Guest Lecture, SAE Fort Wayne Chapter, Fort Wayne, IN, April, 2000.

Ochoa JA. Improved wear using gamma sterilization in a vacuum-foil package and calcium stearate free material. Faculty of the 1<sup>st</sup> International Symposium on Total Knee Arthroplasty, Chiba University, Tokyo, Japan, May 1997.

Ochoa JA. Mechanisms of failure in THR. Faculty of the 6<sup>th</sup> Annual Symposium of Arthritis of the Hip and Knee, Vail, CO, March 9, 1996.

Ochoa JA. Proper femoral offset and its impact on THA biomechanics. Faculty at the Total Hip and Knee Replacement Symposium (Italy-US), Marco Island, FL, February 1995.

Ochoa JA. Experimental verification of hydraulic stiffening of cancellous bone. Invited lecture 2<sup>nd</sup> World Congress of Biomechanics Symposium on Bone Structure and Remodeling, Amsterdam, The Netherlands, July 1994.

Ochoa JA. The effect of intertrabecular fluid on the viscoelasticity of bone. 14<sup>th</sup> Annual Garceau-Wray Lectures, Indiana University School of Medicine, November 1989.

Ochoa JA. Orthopaedic biomechanics—An introduction. Seminar, School of Electrical Engineering, Purdue University, October 1987.

Ochoa JA. The effect of internal fluid on the viscoelasticity of bone. Design Seminar, School of Mechanical Engineering, Purdue University, November 1987.

### **Guest Lectures**

Chiba University, Tokyo, Japan  
Colorado School of Mines, Golden, CO  
Indiana University, Bloomington, IN  
Missouri University of Science & Technology, Rolla, MO  
Purdue University, W. Lafayette, IN  
University of Illinois – Chicago, Chicago, IL  
University of Pennsylvania, Philadelphia, PA  
University of Tennessee, Knoxville, TN  
University of Washington, Seattle, WA

### **Prior Experience**

Vice President, R&D and Chief Technology Officer, Archus Orthopedics Inc., 2004–2008  
Vice President, R&D, DePuy, a Johnson & Johnson Co., 2000–2004  
Director, Hip R&D, DePuy, a Johnson & Johnson Co., 1998–2000  
Manager, Hip R&D, Johnson & Johnson Professional, 1994–1998  
Project/Senior Project Engineer, R&D, Johnson & Johnson Professional, 1991–1994  
Research Engineer, Manufacturing Technical Center, Chrysler Corp., 1985–1987

### **Academic Appointments**

- Affiliate Associate Professor, University of Washington, Department of Mechanical Engineering, 2006–present

### **Advisory Appointments**

- Missouri Center of Excellence of the Life Sciences Research Board—Screening Committee: Life Sciences Trust Fund (2008 –)
- Missouri University of Science and Technology, Industrial Advisory Board, School of Mechanical Engineering (1999–)
- Engineering Advisory Committee, Purdue University Schools of Engineering (2001–)
- Industrial Advisory Board, Purdue University School of Biomedical Engineering (2002–)
- Industrial Advisory Board, University of Tennessee School of Biomedical Engineering (2003–)
- Academy of Mechanical and Aerospace Engineers, School of Mechanical Engineering, Missouri University of Science and Technology (2005–)

- University of Illinois-Chicago, Industrial Advisory Board, School of Mechanical Engineering (2001–2004)
- Board of Directors- International Society of Technology in Arthroplasty (ISTA) (2003–2006)
- Intelligent Biomedical Devices and Musculoskeletal Systems, NSF-IUCRC- Industrial Advisory Board (Chairman), Denver, CO (1996–2003)

### **Professional Affiliations**

- American Society of Mechanical Engineers (member)
- ASTM International (member)
- Orthopaedic Research Society (member)
- Spine Arthroplasty Society (member)
- North American Spine Society (member)
- Society of Hispanic Professional Engineers (member)