



VIJAY K. GOEL, PH. D.
Distinguished University Professor
Endowed Chair & McMaster-Gardner Professor of Orthopaedic Bioengineering
Co-Director, Engineering Center for Orthopaedic Research Excellence (E-CORE)
Departments of Bioengineering and Orthopaedic Surgery
Colleges of Engineering and Medicine
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I. EDUCATION

B.E. (Mech.) Hons.	Panjabi University, India	1966
M.E. (Mech. Design)	Roorkee University, India	1971
Ph.D.	University of New South Wales, Australia (Stress Analysis Associated with Total Hip Prosthesis)	1977

II. EXPERIENCE

Distinguished University Professor	University of Toledo	Apr. 09-
Endowed Chair & McMaster-Gardner Professor	Departments of Bioengineering and Orthopaedics Colleges of Engineering and Medicine	July 2006-
of Orthopaedic Bioengineering Co-Director, Engineering Center for Orthopaedic Research Excellence (E-CORE)		
Professor	Department of Bioengineering, 5046 Nitschke Hall College of Engineering, University of Toledo, Toledo, OH 43606	Dec. 2000-
Professor & Chair	Department of Bioengineering, 5051 C Nitschke Hall College of Engineering, University of Toledo, Toledo, OH 43606	Dec. 2000- June 30, 06
Professor & Director	Spine Research Center, Department of Orthopedics University of Toledo Health Campus, Toledo, OH 43606	Dec. 2000-
Adjunct Professor	Palmer Center for Chiropractic Research	2000-
Co-Director	Iowa Spine Research Center	1998-2000
Affiliate Faculty	Aging Studies Program	1996-2000

Associate Director	Iowa Spine Research Center	1994-98
Acting Director	Iowa Institute of Biomedical Engineering	1992-96
Professor	Department of Biomedical Engineering College of Engineering, University of Iowa	1990-2000
Chairman	Department of Biomedical Engineering College of Engineering, University of Iowa	1990-95
Professor	Department of Orthopedics, University of Iowa	1990-2000
Director	Biomechanics Laboratory II	1988-2000
Associate Professor	Department of Biomedical Engineering College of Engineering, University of Iowa	1986-90
Assistant Professor	Department of Biomedical Engineering College of Engineering, University of Iowa	1982-86
Research Associate	Department of Orthopedics, Yale Medical School Yale University, New Haven, CT	1979-82
Assistant Professor	Center for Biomedical Engineering Indian Institute of Technology, New Delhi, India	1978-79
Teaching Fellow	School of Mechanical Engineering University of New South Wales, N.S.W., Australia	1974-77
Assistant Professor	Department of Mechanical Engineering Thapar College of Engineering, Patiala, India	1966-74
Trainee	Ruston & Hornsby (I) Pvt. Ltd., Poona, India	1967
Engineer	I.S.G.E.C., Yamunanager, India	1966

Visiting Professorships

Mayo Clinic Rochester, MN	Visiting Professor in Orthopedic Research	4/19-21/93
Singapore National University, Singapore	Visiting Professor, Orthopedics	2/26; 6/19 1996
Curtin University of	Senior Research Fellow, School of Physiotherapy Technology, Perth, Western Australia	8/7-12/97
Tokyo Denki University Japan	Visiting Professor	6/29-8/8/02
Cleveland Clinic Foundation Cleveland, OH (Spine Institute)	Visiting Professor	5/24-5/25/07

HONORS (As a Student)

Medalist	3rd in the University, Broke Previous Record, Won Bronze Medal	1966
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Gold Medalist	Set New Record, Won Gold Medal and Chancellor's Silver Medal for Being the Best Postgraduate Student	1971
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III. SERVICE – ADMINISTRATIVE & CURRICULAR UNITS WITHIN THE UNIVERSITY

IIIA. At University of Iowa

Secretary, BME program faculty	1982-83
Member, Graduate Committee	1984-88
Co-Chair, Graduate Committee	1988-89
Chair, Graduate Committee	1989-90
Chairman, Department of Biomedical Engineering	July 1990- Dec. 1995
{During my term as Chair of the Department, the Undergraduate Program received a full six-year accreditation and the Ph.D. Program was ranked 19th out of 38 in terms of effectiveness}	
Member, Graduate Committee	1998-2000
Chair, Probationary Faculty Review Committee	1998-99
Co-Chair, Departmental Enhancement Committee	1998-00
Chair, Faculty Search Committee	1998-99
<u>College</u>	
Member, Lecture Committee	1982-83
Member, Placement Committee	1983-84
Member, Engineering Faculty Council	1984-86
Secretary, Engineering Faculty Council	1986-87
Member Engineering I/II Planning Committee	1987-88
Member, Placement Committee	1987-88
Member, Placement Committee	1988-89
Member, Ad Hoc ICAEN User Advisory Committee	1988-89
Member, Placement Committee	1989-90
Member, Engineering Administrative Council	1990-96
Member, Committee on Research Environment	1992-95
Member, Ad Hoc Review Committee for Faculty Development Program	1995-96
Member, Engineering Building Planning Committee	1995-96
Member, Surgical Simulation in Dentistry Group	1996-2000
Member, Curriculum Committee	1996-00
Member, Engineering Administrative Council	1998-2000
Member & Co-Chair, Dean's P & T Review Advisory Committee	1998-2000
<u>University</u>	
Member, Human Subjects Review Committee C	1985-93
Member, Faculty Senate Election Committee	1987-90
Member, Carver Trust Investigator Award Comm.	1994-1996
Chair, College of Dentistry Review Committee	1997
Member, Executive Committee, Center for Aging	1998- 2000
Member, Interview Committee for Medical Students, College of Medicine	1999-00
Member, Interdisciplinary Graduate Degree Program In Applied Mathematics and Computational Science Review Committee	1999-00

IIIB. At University of Toledo

Chair, Department of Bioengineering	2000-
Member, Dean's Council	2000-
Chair, Search Committee for Chair of Civil Engineering, UT Budget Committee	2002 2001-02
Member Bio-Safety Committee	2002-2003
UT Inquiry Panel Member	2004
UT Research Council, Member	Spring 2005

MUO-UT Merger: Cultural, Historical and Shared Governance Subcommittee	2006
Member, Research Advisory Board, Office of Research Collaboration	2006-09
Member, IBC (Institutional Bio-safety Committee)	2006-09
Educational Research Work Group, Medical School	2006-07
UT-Medical School UG Education Committee - Strategic Plan	2007-08
Member, Search Committee, Dean of College of Graduate Studies	2007-09
Member, COE for Translational Health & Bioscience	2009-
Chair, Faculty Search Committee, Bioengineering	2010
Member, Faculty Search Committee, Bioengrg-cum-Chem Engrg	2010-11

During my term as Chair of the Department at Univ. of Iowa, some of the noteworthy points are as follows:

- (a) Undergraduate program received a full six-year accreditation;
- (b) Ph.D. program was ranked 19th out of 38 in terms of effectiveness; Rate of increase in the departmental standing was one of the highest;
- (c) Recruited new faculty of national/international stature;
- (d) Student enrollment increased, both at the undergraduate and graduate levels;
- (e) The productivity and national visibility of BME faculty significantly increased;
- (f) Increased funds in the departmental foundation account;
- (g) Established a new research Institute in collaboration with the Medical College, Departments of Orthopaedics and Neurosurgery; and redirected the mission of another;
- (h) Increased interaction with Medical and Dental schools;
- (i) More BME Students won recognition at the national level;
- (j) Interaction between students and faculty increased; and
- (k) Interaction with industry increased.

On a more personal level, I learnt the significance of listening to faculty, staff and students with outmost care and the need to successfully resolve conflicts amongst them and between the faculty and administration.

At Toledo as Chair:

- Recruited Dr. Ozan Akkus, Assistant Professor, Biomechanics
- Enrollments in UG and Graduate Programs increased steadily
- Publication of a news Letter
- Research funding increased
- Hosted two conferences
- Number of domestic students in the Graduate Program increased
- Strengthened of Bioengineering labs
- Initiation of Collaboration with Pfizer, Inc.
- Collaborative arrangements with Tokyo Denki University
- Faculty beginning to work more cohesively

IV. PROFESSIONAL SERVICES/HONORS/AWARDS

IVA. Conferences (Organizer, etc.)

Meeting Chair	American Society of Biomechanics, Annual Meeting	1993
Member, Organizing Committee	BME Design Workshop, Council of Chairs, Bio and Bioengineering Programs, Arizona State University, Tempe, Arizona, Oct. 14	1994
Co-Chair	Session 3, Capstone Design Courses in BME Curricula, Council of Chairs, Bio and Bioengineering Programs, Arizona Sate University, Tempe, Arizona, Oct. 14	1994
Member	Spine Focus Group Meeting of the Journal "SPINE" Chicago, Ill., March 22-24	1995
Co-Organizer	A Short Course On: Biomaterials and Biomechanics of the Musculoskeletal System, National University Hospital	1996

	National University of Singapore, Singapore, June 17th & 18th (Also delivered four lectures and two lab sessions.)	
Member	Technical Program Committee, IEEE-EMBS Conference Chicago, Ill, Oct.29-Nov. 2	1997
Program Chair	ASEE Biomedical Engineering Division	1997-98
Chair	Technical Program, ASME-BED Summer Conference	1999
Chair, Overall	Bioinformatics Symposium for Drug Development, Department of Bioengineering, University of Toledo, OH, Nov. 16-17 (Total attendees – about 250, helped raise about \$20,000 for the conf.)	2001
Meeting Chair	American Society of Biomechanics Conference, University of Toledo, OH, Sep, 25-27 (Total attendees – about 500, helped raise about \$40,000 for the conf.)	2003
Chair/Co-Chair	Disc Discussion Group, Sponsored by AcroMed, Inc.	2002,03,04
Member	Program Committee, Spine Arthroplasty Society Meeting, New York, NY	2005
Meeting Chair	American Society of Mechanical Engineering – Bioengineering Division Summer meeting, Amelia Island, Fl	2006

IVB. Conferences (Session Chair, Organizer of the Sessions, Invited Speaker, etc.)

Chairman	Spinal Biomechanics I, Session I (Bio 7A), ASME (American Society of Mechanical Engineers) Winter Annual Meeting, Miami, FL (Nov. 18-20)	1985
Chairman	Spine Mechanics & Biomaterials, Advances in Biomedical Engineering V, Shreveport, LA (Oct 20-21)	1986
Chairman	Spine Session - ASME (American Society of Mechanical Engineers) Winter Annual Meeting, Anaheim, California (Dec. 6-10)	1986
Invited Speaker	Spring Symposium on Back Pain, American Back Society, Anaheim, California, April 28 - May 2,	1987
Vice Chairman	Soft Tissue Biomechanics - ASME (American Society of Mechanical Engineers) Winter Annual Meeting, Chicago, Ill. (Nov. 28 - Dec. 2)	1988
Invited Speaker	33rd Spring Congress, Korean Society of Orthopedics, Pusan, Korea, April 20-22, 1989.	1989
Invited Speaker	SAE (Society of Automotive Engineers) - FD&E Committee, University of Iowa, Iowa City, IA, Oct. 16-18.	1989
Discussant	for papers at the national conferences (North Am. Spine Soc.; Federation of Spine Associations)	1989, 90
Invited Speaker	First World Congress of Biomechanics, University of California, San Diego, La Jolla, CA, Aug. 30 - Sept. 4.	1990
Organizer	Forum on Vibration-Induced Musculoskeletal Disorders - ASME 1991 Biomechanics Symposium	1991
Provocateur	Spine Mechanics I Session, 37th Annual Meeting, Orthopedic Research Society, March 4-7,	1991
Vice Chairman	Spine Mechanics - ASME (American Society of Mechanical Engineers) Winter Annual Mtg, Atlanta, GA (Dec. 2-6)	1991
Moderator	Spine Session, 2nd North American Congress on Biomechanics, Chicago, Ill, Aug. 24-28	1992
Chair	Spine Session and Cellular Mechanics Session WAM-ASME, Nov. 8-11	1992
Invited Participant	Workshop on Age Related Changes in the Musculoskeletal Soft Tissue - A Major Cause of Decreasing Mobility with Increasing Age. Sponsored by NIA & NIH, Colorado Springs, CO, Nov. 14-17	1992
Invited Speaker	International Conference on Spine Surgery, Taipei, Taiwan New Orleans, LA, Nov. 30 - Dec. 1	1992

Chair	Biomech. Session, ISSLS, Marseilles, France, Jun 15-191993	
Chair	Biomechanics Session, ISSLS, Seattle, WA, June 21-25	1994
Organizer	Solid Mechanics Sessions (11) for the 1994 ASME-WAM	1994
Invited Speaker	Workshop on New Advances in Spinal Fusion Orthopedic Research Society	1994
Session Chair	8th World Congress on Biomedical Engineering, Singapore	1994
Invited Participant	NIH Workshop "New Horizons of Low Back Pain" San Diego, CA, Nov. 1-4	1995
Invited/Plenary Speaker	Bioceramics 8, 8th International Symposium on Ceramics in Medicine, Nov. 12-16, Sawgrass Resort, FL.	1995
Session Chair	1995 Bioengineering Conference, Beaver Creek, Colorado June 28-July, 2	1995
Provocateur	Spine Mechanics Session, 42nd Annual Meeting, Orthopedic Research Society, Feb. 18-22	1996
Animator	Pre-ISSLS Workshop; In vitro of FE Modeling: Which One is closer to In Vivo?	1996
Invited Speaker	Spineology, Minneapolis, MN, Sep. 29	1997
Member	Ext. Brace Study Group Meeting, Miami, FL, Oct. 11-13	1996
Member	Technical Program Committee, 19th, Intern. Conference of the IEEE Engineering in Medicine and Biology Society	1997
Consultant	Osteotech, Inc., New Jersey, July 31- Aug. 1	1997
Invited /Plenary Speaker	8th World Congress on Biomedical Engineering, Singapore, and Spine Course, Dec. 6-11	1994
Chair	Session on General Biomechanics, ASME-BED Sumr. Conf. Sunriver Resort, Sunriver, Oregon, June 11-15	1997
Consultant/Speaker	Department of Aerospace and Mechanical Engineering University of Oklahoma, Norman, OK, Jan. 21-22,	1998
Invited Speaker	Rutgers University, Department of Mechanical Engineering Piscataway, NJ, Oct. 16,	1998
Guest Lecture	Ethicon, Johnson and Johnson, New Jersey, Oct. 15	1998
Invited Speaker	American Society of Spine Radiology, San Diego, CA, May 28	1999
Session Chair	Spine Biomechanics III, Summer Bioengineering Conference, Big Sky Montana, June 16-20,	1999
Invited Speaker	Iowa Orthopaedic Alumni Association Meeting Sep. 24-25, "Biomechanics of Spinal Instrumentation"	1999
Session Chair	Joint Biomechanics – I, International Mechanical Engineering Congress & Exposition, Nashville, TN, Nov. 14-19 (ASME)	1999
Faculty	Spine Surgery Review Course, American College of Spine Surgery San Antonio, TX	1999
Faculty	June 2 and 3 (Two lectures, Spinal Instability and SSCS Instrumentation) Spine Surgery Review Course, American College of Spine Surgery San Antonio, TX	2000
Co-Chair	Spine Biomechanics Session at WAM-IMECE, Orlando, FL, Nov. 6-11,	2000
Invited Speaker	International Symposium on Disc Degeneration, Berne, Switzerland Jan. 18-19	2001
Invited Speaker	Orthovita, Inc. Philadelphia, PA April 10	2001
Invited Speaker	Biomechanics of the Lumbar Spine, Implant-Design, Zurich, Switzerland, April 24	2001
Invited Speaker	9 th Annual Spine Conference on Low Back Pain – Different Treatment Modalities, Aug. 25, 2001 (Functional Biomechanics of Lumbar Spine)	2001
Faculty	Spine Surgery Review Course, American College of Spine Surgery San Antonio, TX	2001
Chair	Disc Discussion Group, Sponsored by AcroMed, Inc. Oct. 28	2001
Guest Speaker	One-day Symposium on Biomechanical Engineering, ASME International Central Ohio Section, Columbus, OH, March 23 rd ,	2002

Faculty	Title of the Talk: Mechanics of Spine Surgery Spine Surgery Review Course, American College of Spine Surgery Napples, Fl	2002
Invited Speaker	ASME Toledo Chapter, Design and Development of Spinal Implants, Hilton, Toledo, Nov. 5	2002
Keynote Speaker	Biomechanics of Spinal Fixation, Midwest Graduate Student Biomechanics Symposium, University of Toledo, Toledo, OH, April 4-5	2003
Invited Speaker (two talks)	World Spine II, Chicago, ILL Aug. 10-13	2003
Invited Reviewer	IASTED, Biomech 2004, International Conference	2004
Faculty, course	3 rd Emerging Technology in Spine, Washington, DC Sep 30 – Oct 2 nd	2004
Faculty, course	Spondylolysis, Spondylolisthesis and Degenerative Spondylolisthesis Brussels, Belgium, Nov 19 and 20	2004
Invited Talks	Theken Spine, Chicago, ILL, Oct 26-29 During NASS meeting	2004
Session Organizer	Implant Biomechanics, Summer ASME-BED meeting	2005
Invited Talks	3 rd Spinal Instructional Course, Durban, South Africa, Feb 9 -11	2006
Invited Talks (2)	3-hour talk on Biomechanics of Spine and Spinal Instrumentation Preservation of the Motion in the Spine, Hawk's Cay, Duck Key, FL April 5-8	2006
Moderator	First Session, Spine Arthroplasty Society meeting, Montreal, Canada May 9-13	2006
ABET Mock Reviewer	Department of Biomedical Engineering, Rutgers University June 11-12	2006
Conference Chair	ASME-BED Summer Bioengineering Conference, Amelia Island, FL June 21-25	2006
Co-Chair	BioMEMS Session, ASME-BED Summer Bioengineering Conference, Amelia Island, FL, June 21-25	2006
Co-Chair	Spine Arthroplasty Workshop, ASME-BED Summer Bioengineering Conference, Amelia Island, FL, June 21-25	2006
Basic Science Program Chair	Spine Arthroplasty Society (SAS7), Berlin, Germany, April 30 – May 3 rd ,	2007
Basic Science Program Member	Spine Arthroplasty Society (SAS8), Miami, Fl, April 30 – May 3 rd ,	2008
Leader	Pick the 10 most important biomechanics paper from SPINE – Pod cast (Invited on behalf of the Journal by the Publisher and Synthes Spine, Inc.)	2008
Basic Science Program Member	Spine Arthroplasty Society (SAS9), London, England, April 27 – May 2 nd ,	2009
Member	Best Basic Science Paper Award Committee, Spine Arthroplasty Society 2009 (SAS9), London, England, April 27 – May 2 nd ,	
Invited Seminar Speaker	Department of Bioengineering, Kansas University, Lawrence, KS, March 27 th	2009

IVC. International Contributions

Invited Speaker	Department of Orthopedics, National University Hosp. National University of Singapore, Singapore, Feb. 26 - June 19, 1996 (Seven Lectures/Seminars)	1996
Invited Speaker	Department of Orthopedics, University Hospital, Jakarta, Indonesia, June 12.	1996
Invited Speaker	Department of Orthopedics, University Hospital, Malang, Indonesia, June 14.	1996
Advisor	to Assist in setting up a Biomedical Engineering Res. Center National University of Singapore, Singapore.	1996

Invited Speaker	School of Physiotherapy, Curtin University of Technology, Perth, Western Australia, Aug. 12	1997
Invited Speaker	Spine Society of Western Australia, Royal Perth Hospital, Perth, Western Australia, Aug. 12	1997
Invited Speaker	Tokyo Denki University, Japan, Dec. 18-23, at their 2 campuses; also taught a distance learning semester-long course titled "Mechanics of Materials" to engineering students during Fall 1997	1997
Invited Speaker	Tokyo Medical and Dental University, Japan, Dec. 22	1997
Invited Speaker	Yonsei University, Seoul, Korea, Dec. 26	1997
Invited Speaker	Korea Orthopedics & Rehabilitation Engineering Center (KOREC), In-chon, Dec. 27	1997
Invited Speaker	71st Japanese Orthopedic Association Meeting Tokushima, Japan, April 17-20,	1998
Session Chair	Spine Session, World Congress, Sapparo, Japan, Aug.8-10	1998
Invited Speaker	5 th Ceramics Conference, Faenza, Italy, Oct. 1-3	1998
Invited Speaker	Current Concepts in Spinal Surgery in the New Millenium Cape Town, SA June 1 (Biomechanics of Spinal Instrumentation)	2000
Invited Speaker	The South African Spine Society Congress 2000, Cape Town, SA	2000
Keynote Speaker	31 st Japanese Spine Research Society Meeting, Miyazaki, Japan June 6-7; Title: Functional Biomechanics of Spine	2002
Invited Talk	Biomechanics of the Spine and Spinal Implants University of Ulm, Ulm, Germany, May 10 th	2004
Invited Talk	Biomechanical basis of lysis & listhesis in paediatric patients	2005
Invited Talk	Taiwan Orthopedic Society, Taiwan, Annual meeting of Association of Spine Surgeons in India Conference	2005
Research Collaborations	(a) Shibaura Institute of Technology, Tokyo, Japan (b) Tokyo Denki University, Tokyo, Japan © School of Physiotherapy, Perth, Western Australia, Australia (d), University of Tokushima, Tokushima, Japan	
Invited Talk	NIH Sponsored AAOS Symposium on Intervertebral Disc Degeneration Sep 16-18, Chicago, Ill	2005
Test Protocols for Spinal Implants		
Invited Talk	4 th Emerging Technologies in Spine Surgery Sep 15-17, Washington, DC	2005
Artificial Disc vs Other Joint Replacements		
Two Invited talks on Artificial Disc Mechanics	31 st Annual Congress of Spine, Chania, Island of Crete, Greece Oct 27-30	2005
Two Invited talks	Ulrich, inc, Ulm, Germany, Nov 11-13	2005
Two invited talks	Asia pacific Orthopedic Association Annual meeting, Nov 23-27 Taipei, Taiwan	2005
Invited Talk	Meeting of Surgical Treatment of Spine Tumors, Hospital Universitario La FE. Avda. de Campanar, 21 - 46009 Valencia, Spain, Sep 29	2006
Invited Talk	107 th Biannual meeting of the Central Association of Orthopaedic Surgery And Traumatology, Kobe, Japan, Oct 6 and 7th	2006
Invited Talk	8 th International Congress of Physiological Anthropology Kamakura, Japan, Oct 9-14	2006
Invited Member	Working Group of Japanese Spine Industry Meeting, Kobe, Japan Oct 8 th .	2006
Video Interview	WGTE Public Broadcasting, Toledo, OH for a video on engineering for high school students, May 14	2007
Invited Talk	Finite Element Analysis of the Facet Joint, The Science of Facet Joint Repair and Total Posterior Arthroplasty, Oct. 22, Austin, TX (Workshop For Industry, Organized by Robin R. Young on behalf of the industry)	2007
Invited Talks	1. Navigated Disc Replacement - A Biomechanical Perspective. 2 nd Annual Meeting, WENMISS, London, UK, Jan 12-14, 2008 2. Biomechanics of the Intersponous Spacers Appropriate for use with	2008

	MIS Procedures.	
Invited Talks and Course Faculty	3. Is Posterior Disc Arthroplasty an Answer - Biomechanical Perspective. Biomechanics of the Intersponous Spacers Appropriate for use with MIS Procedures and Total Disc Replacement Arthroplasty - Lesson Learnt from Total Hip Replacement Arthroplasty, ISSLS Instructional Course Ganga Hopsiptal, Coimbatore, India, Jan 17-18	2008
Invited talks (Faculty)	10 th International Spine Congress, Alexanderia, Egypt, March 19-21	2008
Invited Talk/Debate	Adjacent Segment Degeneration following TDR, SAS 8, Miami, FL, May 6-9,	2008
Invited Talks at four Industry Sponsored W/S	Innovative Spinal Technologies (IST) and Disc Motion Technologies(DMT) SAS8 meeting, Miami, FL, May 6-9	2008
Invited Talks (2)	Disc Motion Technologies (DMT), Spine Week, Geneva, Switzerland May 27-June 1	2008
Guest Speaker	Kiwanis Toledo, July	2008
Guest Speaker	Lesson Learnt from THA for the Artificial Disc Replacement, Mayo Clinic, Departments of Orthopedics and Biomedical Engineering, Rochester, MN, July 24-25	2008
Reviewer	Honk Kong Science and Technology Proposals	2009-
Invited Speaker	Annual Conference of the World Society for Endoscopic Navigated and Minimal Invasive Spine Surgery"(WENMISS), May 21st -23rd Kota Kinabalu, Malaysia	2009-
Invited Speaker, Session Moderator, etc.	SAS 9 th Annual Meeting, London, UK, April 28-May 2	2009
3 Invited Talks	Combined Meeting of Malaysia Orthopaedic Association and WENMISS, May 22-24	2009
3 Invited Talks	The International Masters Spine Symposium and Cadaver Workshop, The Royal College of Surgeons of England, London, May 28-30	2009
4 Invited Talks	Spine Arthroplasty Society India Chapter, Mahavallipuram, Chennai, India, Oct 3 and 4	2009
Member of the International Program Committee (IPC)	IASTED International Conference on Biomechanics, (BioMech 2011) Pittsburgh, USA, Nov 7 – 11	2011
<u>IVD. Other Pertinent Society Activities</u>		
Member	ASTM Task Force on Spinal Implants (Co-Chairman, Spinal Connectors, Plates and Rods Section)	1989-
Member	Council of Directors of Bio and Biomedical Engineering Programs (also Chair of its Industrial Liaison Committee)	1991-
Secretary	Council of Directors of Bio and Biomedical Engineering Programs	1993-94
Vice Chair (Chair Elect)	Council of Chairs of Bio and Biomedical Engineering Programs	1994-95
Chair	Council of Chairs of Bio and Biomedical Engineering Programs	1995-96
Chair, Nominating Committee	Council of Chairs of Bio and Biomedical Engineering Programs	1996-97
Member/Reviewer	1994 Whitaker Graduate Student Awards (BMES)	1994-95
Vice Chair	Professional Development, ASEE Biomedical Engineering Division	1992-93
Chair	Career Development and Awards, ASEE Biomedical Engineering Division	1994-95
Chair-Elect & Program Chair	ASEE Biomedical Engineering Division	1997-98
Chair	ASEE Biomedical Engineering Division	1998-99

Member	Joint Biomechanics Committee, ASME	1988-
Member	Membership Committee, Bioengineering Div., ASME	1991-
Member	Solid Mechanics Committee, ASME	1991-
Chairman	Solid Mechanics Committee, ASME (Three Year Term)	1993-95
Fellow	American Society of Mechanical Engineers (ASME)	1994-
Member	Executive Board, American Society of Mechanical Engineers - Bioengineering Division (Member-in-Charge External Affairs)	1996-99
Chair	Technical Program, ASME-BED Summer Conference	1999
Secretary-Elect	American Society of Mechanical Engineers - Bioengineering Division	1999-00
Secretary	American Society of Mechanical Engineers - Bioengineering Division	2000-01
Chair	American Society of Mechanical Engineers - Bioengineering Division	2001-02
Past-Chair	American Society of Mechanical Engineers - Bioengineering Division	2002-03
Member	HR Lissner Award Committee	2003-06
Member	Van C. Mow Medal Committee	2004-07
Member	Executive Board, American Society of Biomechanics	1992-93
Member	Executive Board, American Society of Biomechanics	2003-04
Member	American Institute of Medical and Engineering (AIMBE)	1992-94
Fellow	American Inst. for Medical and Biological Engineering (AIMBE)	1994
Member	American Inst. for Medical and Biological Engineering (AIMBE)-- Academic Council Special Committee	1995-
Member	Awards Committee, Poster Session, ISSLS	1992
Member	Awards Committee, Poster Session, ISSLS	1994
Member	Program Committee, ISSLS	1993-94
Member	Program Committee, ISSLS (Expert Reviewer for the Biomechanics Submissions)	1996-97
Member	Executive Committee, ISSLS (also representative for the Central United States)	1998-01
Member	Program Committee, NASS (Reviewer of the abstracts for annual conference)	1996-97
Member, Faculty	Continuing Medical Education Activity, The North Spine Society's Update 1997, New York, NY, Oct. 22	1997
Member	Cervical Spine Research Society, Research Awards Committee	1993-95
Member	Cervical Spine Research Society, Research Awards Committee	1996-99
Adjunct Member	Program Committee, Orthopedic Research Society	1992-93
Member	Subcommittee on Adult Spine Evaluation, American Academy of Orthopedic Surgeons (AAOS)	1993-00
Member	Advisory Committee & Instructional Course on Spinal Surgery for Surgeons, National University of Singapore, Singapore	1996-97
Member	International Advisory Committee, 9th International Conf. on Biomedical Engineering, Singapore	Dec. 1997
Organizer	Mini Symposia on Spinal Implants, IEEE-EMBS Conference Chicago, Ill, Oct.29-Nov. 2	1997
Member	Executive Committee, Center for Aging	1998-

Member	Technical Program Committee, World Congress 2000, Chicago, Ill	2000
Member	& Chair, Track 15: Orthopedic Biomechanics and Ergonomics International Scientific Committee, 6 th Meeting on Ceramics, Cells And Tissues: Drug Delivery Systems, Faenza, Italy, Mar. 9-11	2000
External Reviewer- Graduate Program	Mechanical Engineering, Wayne State University, Detroit, MI	2002
Faculty	2nd Annual DePuy AcroMed Emerging Technologies Meeting Washington, DC. 18-20, September	2003
Seminar Speaker	The Spine Program, UM, Ann Arbor "Functional Biomechanics of Spine" May 6	2003
Member, Fellow Nomination Sub-Cmte	AIMBE	2003
Member Spine Arthroplasty Society	Board of Directors, Disc Motion Technologies Reviewer, Basic Sciences', SAS 5, 2005 Vienna, Austria	05-09 2005
	Program Chair, Basic Science Section Berlin, Germany	2007
	Member Review Panel, Miami, FL	2008
Visiting Professor	Spine Institute, Cleveland Clinic Foundation, Cleveland, OH June 21 and 22.	2007
Member	Executive Committee, WENMISS (World Society for Endoscopic, Navigated & Minimal Invasive Spine Surgery) and Member Program Committee	2008
Member	North American Spine Society/The Spine Journal (NASS/TSJ) Outstanding Paper Awards Selection Committee	2009-
Member, Research Project Management Committee	North American Spine Society (NASS)	2008-11
Reviewer	North American Spine Society (NASS) Annual meeting Abstracts	2011
Member Review Panel	AO Foundation, Switzerland	2010-
Member, International Program Committee	Computational Bioscience (CompBio 2011) in Cambridge, UK July, 11-13, 2011	2011
<u>IVF. Awards</u>		
Volvo Award	International Award for Outstanding Research in the Lumbar Spine (Bioengineering) of the International Society for the Study of the Lumbar Spine	1981
Volvo Award	International Award for Outstanding Research in the Lumbar Spine (Bioengineering) of the International Society for the Study of the Lumbar Spine	1990
AcroMed Award	Award for Outstanding Research in the Lumbar Spine (Bioengineering) of the North American Spine Society	1990
AcroMed Award	Award for Outstanding Research in the Lumbar Spine (Bioengineering) of the North American Spine Society	1992
Grant Award	In Vivo Kinematics of Cervical Spine Following Surgery from Cervical Spine Research Society	1992
Teaching Award	Council on Teaching Award for Developing a Course titled "Biomechanics of Aging"	1990-91
Student Award	Graduate Student Research Forum Award, Midwest Society of Periodontology (Student - Dr. David C. Holmes; Advisor - V. K. Goel; Based on Dr. Holmes' M. S. Thesis)	1991
Student Award	Max L. Smith Student Research Competition of the Iowa Section of the International Association for	1991

Student Award	Dental Research (Student - Dr. David C. Holmes; Advisor - V. K. Goel; Based on Dr. Holmes' M. S. Thesis) Graduate Student Research Award at MS level (3rd Place), American Society of Mechanical Engineering (Awarded to Mr. Brian Monroe; Advisor - V. K. Goel)	1992
Student Award	2nd place Student Research Award, the International Association for Dental Research (Student – Dr. Linda Ricks; Advisor - V. K. Goel; Based on Dr. Ricks' M. S. Thesis)	1993
Mayfield Award	Resident Award, 10th Annual Meeting, Joint Section on Disorders of the Spine and Peripheral Nerves (Resident Timothy C. Ryken, MD; Based on his Biomechanical Project; Advisor - V. K. Goel & Vince Traynelis)	1994
Volvo Award	International Award for Outstanding Research in the Lumbar Spine (Bioengineering) of the International Society for the Study of the Lumbar Spine	1994
Student Award	1st Place Senior Project Design Competition - BS (Students - Nicole M. Grosland & Pranav P. Patel; Advisor - V.K. Goel)	1994
Student Award	3rd Place Senior Project Design Competition - BS (Students - Sean Mish and Brent Zastrow; Advisor - V.K. Goel)	1994
Senior Scientific Paper Award	Annual Meeting of Midwestern Association of Plastic Surgeons (Dr. Ed. Ricciardelli and David G. Hooper; Advisor - V.K.Goel)	1995
AcroMed Award	European Spine Society Award for Outstanding Research (Co-author with Marianne Magnusson, et al.)	1995
Vienna Award	Austrian Society of Physical Medicine & Rehabilitation for Physical Med Research Award (Coauthor with Assen R. Aleksiev)	1995
NASS Award	North American Spine Society Research Grant Award	1995
Theo C. Pilkington Educator Award	Outstanding Educator Award, American Society of Engineering Education-Bioengineering Division (ASEE-BED)	1997
Student Award	Graduate Student Research Award at MS level (2nd Place), American Society of Mechanical Engineering (Awarded to Mr. D. T. Todd; Advisor - V. K. Goel)	1997
Grant Award	Biomechanics of Ligamentous Spine and Spinal Cord During and Post- Whiplash from Cervical Spine Research Society	1998
Student Award	Graduate Student Research Award at PhD level (3rd Place), Summer Bioengineering Conference, American Society of Mechanical Engineering (Awarded to Ms. Renee Heatherly; Advisor - V. K. Goel)	1999
The 2000 Faculty Excellence in Research Student Award	College of Engineering, Faculty Award	2000
Student Award	Undergraduate student, Abigail L. Walters, University of Toledo Undergraduate Research Award (\$2,750)	2003
Student Award	Best Graduate Student MS Thesis Awarded to Scott Holekamp College of Engineering, University of Toledo (Advisor – Vijay K. Goel)	2003
H. R. Lissner Award Best Poster Award	ASME-Bioengineering 31 st Annual meeting of International Society for the Study of Lumbar Spine, Porto, Portugal, May 31- June 5	2004
Best Paper Award	Japanese Spine Research Society (Taisho-Toyama award) (Kuroki, Goel, Holekamp, Ebraheim)	2005
The 2006 Research Award	University of Toledo	2006

The NASS Award	Henry Farfan award for contributing to the art and science of spinal disorder management through service to NASS (North American Spine Society)	2006
Student Award	Carmen Quatman, MD-PhD student, Ruth Jackson Orthopaedic Society Medical Student Scholarship (Co-advisor – V K Goel)	2007
Student Award	Ali Kiapour, PhD student, ASME Summer Bioengineering Conference PhD Competition – Honorable Award (Advisor – V K Goel)	2009
Distinguished University Professor	University of Toledo, Toledo, OH	2009-
Excellence in Education Award	The State of Ohio, Ohio Magazine	2009
ISSLS Wiltse Lifetime Achievement Award	The International Society for the Study of the Lumbar Spine	2010
Co-Guest Editor	Neurology Research International Journal's Special Issue on "Pedicule Based Posterior Dynamic System in the Treatment of Chronic Lumbar Instabilities"	2010
VIJAY GOEL Basic Science Best Paper Prize	The WENMISS Scientific committee want to highlight exceptional contributions by researchers and will award a Basic Science best paper award prize to their elected top paper presented at the meeting (Established in year 2010 by World Society for Endoscopic Navigated and Minimal Invasive Spine Surgery)	2010+
Orthopaedic student of the year award	Carmen Quatman, MD-PhD student (Advisors: Vijay Goel and Tim Hewett), University of Toledo	2011

IVG. Reviewer (Study Sections, Grants, Journals, etc.)

Reviewer:	J. Biomechanical Engineering; J. Biomechanics; J. Ortho. Research; Spine; Clinical Biomechanics; J. Annals of Biom. Engineering; CRC Press, Inc., Boca Raton, Fl.; International Journal of Industrial Ergonomics; European Spine Journal; IEEE Rehabilitation Engineering; J. Spinal Disorders, Spinal Cord, etc.	
Reviewer	Presidential Research Awards for 1985, Palmer College Chiropractic, Davenport, Iowa.	1985
Member/Chair	Site Visit Committee of NIH, Special Study Sections, etc.	1986-
Member	Special Study Section of NIH on Alternative Medicine	1993
Reviewer	National Science Foundation	1986-
Reviewer	Medical Research Council of Canada,	1990
Reviewer	Australian Research Council Research Grants	1992-
Member	Orthopedic Research and Education Foundation's (OREF) Research Grants Peer Review Committee	1993-96
Reviewer/Member	Cervical Spine Research Society Research Awards Committee	1993-99
Reviewer	Grants from West Virginia University	1993
Reviewer	DWHRP Extramural Research Program Study Section-USANRMC	1996
Reviewer	Biomedical Research Technology Special Emphasis Panel-NIH	1997
Reviewer	Consortial Center for Chiropractic Research	1998-00
Reviewer	Austrian Science Fund, Austria AG	1998
Member	National Science Foundation (Biomedical Engineering Education) Review Panel	1999
Member	National Institute on Disability & Rehabilitation Research Review Panel	1998-05
Member	Research Panel, Spinal Problems, American Academy of Orthopedic Surgeons (AAOS)	2000
Reviewer	American Institute of Biological Sciences	2001-
Member	NSF Site Visit Panel for the Vanderbilt-Northwestern-Texas-	2004

Reviewer	Harvard/MIT (VaNTH) Engineering Research Center for Bioengineering Educational Technologies	2004-
Member, Study Section	Journal Bone and Joint Surgery (A) Physiology and Pathobiology of Organ Systems (ZRG1 F10) Study Section (Fellowships)	2006-
Mail Reviewer	NIH Study Section	2009
Reviewer	Dutch BioMedical Materials Program, Netherland	2010
Member	NIH College of CSR Reviewers	2010-12
Reviewer	Special Study Section, NIH	2010+

IVH. Editorial Offices

Member	Board of Advisory Associate Editors, "Spine" (An International Journal)	1986-90
Assoc. Editor-Member	Board of Associate Editors, "Spine" (An International Journal)	1990-
Spine Young Investigator Award Committee of the Journal		2007 -
Member	Editorial Board, European Spine Journal	1993-
Member	Editorial Board, J. of Spinal Disorders	1994-01
Associate Editor	Journal of Biomechanical Engineering, ASME	1995-01
Member, Editorial Board	Journal of Musculo-Skeletal Research (JMSR)	1996-
Member, Editorial Advisory Panel	Australian Journal of Physiotherapy	1998-
Member, Review Board	American Journal of Sports Medicine	1998-
Member	Associate Editorial Board, The Spine Journal	2000-
Special Consultant	Editorial Board, The Spine Journal	2008-
Member (Expert Analyst)	Editorial Board, Orthopedic Quarterly	2001-
Member	Editorial Advisory Board, Pain Physician	2004-
Member	Editorial Advisory Board, J. of Biomechanics	2005-08
Associate Editor	ASME Journal of Medical Devices	2006-09
Member	SAS (Spine Arthroplasty Society) Journal	2006-
Member, Editorial Board	The Open Orthopaedics Journal, Bentham Science Pub Ltd	2007-
Deputy Editor,	SAS Journal, Basic Science Symposium Section,	2007-
Member, Editorial Board	Journal of Craniovertebral Junction and Spine	2009-
Member, Editorial Board	World Journal of Orthopaedics (WJO, World J Orthop)	2010-

IVI. Others

Old Gold Fellowship	The University of Iowa Junior Faculty	1983-84
Member	Sigma Xi	1985-
Initiation	Industry/University Connection for the Dept.	1991-
Fund	Raising Campaign for the Deptt.	1990-95
Member	Rotary International and Paul Harris Fellow (1997)	1990-
Listed in	Who is Who	1993-
Listed in	American Men and Women of Science	1994-
Listed in	International Directory of Distinguished Leaders	1994-
Listed in	Who is Who in Medicine and Health Care	1995-
Member	American Association for the Advancement of Science	1996-
Distinguished Alumni Award	Thapar Institute of Engineering & Technology Patiala, Punjab, India	1996
Honorary member	Central Executive Committee (CEC) of the TIET Alumni Association	2006-08
Member	College of Engineering Building Campaign Faculty/ Staff Committee	1996-98
Member	Tau Beta Phi	2002-

V. GRANTS

Industry, NIH, Foundations, State of Ohio (~\$0.75 M/year)

VI CONSULTING

VIA. Departments/Schools within the University of Iowa

Dental School	1983-
Including membership of the Surgical Simulation in Dentistry Group	
Orthopedics	1982-
Department of Surgery (Neuro and Plastic)	1992-
College of Nursing	1993-

VIB. Other Universities

Yale Medical School, Orthopedics	1982-84
V. A. Hospital, Hines, Ill.	1989-94
University of Alberta, Mechanical Engineering	1989-90
University of California, San Diego	1994-
National University of Singapore	1996-
University of Western Australia, Perth	1997-
Tokyo Denki University, Japan	1997-
CCF	2007-

VIC. Private Companies/Surgeons

1. Medico-Legal Expert	1990-
2. Deere & Company	1984-88
3. Wilson Food Corporation	1988
4. Advanced Spine System, Howland Industry, CA	1987
5. RenGen, Inc.	1992-94
6. Aesculap, Inc.	1992-94
7. QF&C Apparel Ltd.	1994
8. AcroMed Corporation	1986-98
9. Spine-Tech., Inc., Minneapolis, MN	1994-
10. Ray Medica, Inc.	1993-95
11. Private Surgeon: Design of an artificial disc	1993-
12. Sofamor-Danek, Inc.	1993-2001
13. Encore Orthopedics, Inc.	1994-98
14. PLUS (Switzerland)	1994-98
15. Smith & Nephew Richards	1995-99
16. Johnson and Johnson	1995-97
(Through Dr. Brain Adams, MD)	
17. Chase Ergonomics, Inc.	1996-2001
(With Profs. Pope and Wilder)	
18. Osteotech, Inc.	1996-
19. DePuy Motech, Inc./Johnson & Johnson, Inc.	1997-
20. Spineology, Inc.	1997-99
21. Surgical Dynamics, Inc.	1997-2000
22. Advanced Bio-Surface, Inc.	1999-
23. Spinal Concept, Inc.	1999-
24. Phoenix BioMed. Corp.	1999-2000
25. HowMedica, Inc.	1999-2001
26. Implant-Design, Inc.	2001-
27. Orthovita, Inc.	2001-
28. Endospine, Inc.	2001-
29. Intrinsic, Inc.	2001-
(Member, Advisory Panel)	
30. Theken Surgical, Inc.	2002-
31. Spine Wave, Inc.	2003-

32. Biocure, Inc.	2004-
33. U.S. Spine Tech	2004-
34. Stryker, Inc.	2004-
35. Ulrich, Inc., Germany	2004-
36. Laurimed, LLC	2005-
37. Replication Medical Inc.	2007-
38. Ouroboros, Inc.	2008-
39. Titan Spine, Inc.	2008-
40. Surgicraft, Inc.	2008-
41. Vertiflex, Inc.	2007-
42. Scient'xusa, Inc.	2008-
43. Spinal ventures, LLC and ZDr, Inc.	2010-

VID. ADVISORY BOARD/BOARD OF DIRECTORS/Technical Advisor

1. Disc Motion Technology	2005
2. OrthoMEMS (CCF)	2005
3. Nexgen, Inc.	July 2006
4. Laurimed, LLC	2006
5. The Turning Point, LLC	2006
6. The Turning Point, LLC, Vice President, R&D	2009
7. Founding President and CEO, GAMMA Spine and another company	2008
(It has licensed a cage from UT and have sublicensed to X-Spine Systems, Inc on March 1, 2010)	

VIII. PROJECTS (THESES, PH.D./M.S./M.D.) SUPERVISED

Vikas, Anil:	Design and Fabrication of a New Type of Screw Gauge for the Blind (M.S.)	1978
Sarvaria, Sunil:	Biomechanical Evaluation of Different Types of Implants for the Treatment of the Trochantric Fractures of the Femur (M.S.)	1980
Schick, Steve:	Experimental Determination of Errors in the Center of Rotation (M.D.)	1979
Davenport, Steve:	Three-Dimensional Stability of the Thoraco-Lumbar Stabilization Procedure (M.D.)	1980
Wong, John:	Biomechanical Study of Bone-Cement Interface Strength (M.D.)	1980
Cimino, William:	Bone-PMMA Interface Stiffness in Canine Femur (M.D.)	1982
Diek, Gretschen:	Relationship of Posture and Long Term Back Problems. An Epidemiological Study (Ph.D.)	1982
McGowan, Dennis:	An <u>In Vitro</u> Study of the Kinematics of the Normal, Injured and Stabilized Cervical Spine (M.D.)	1983
Goyal, Suresh:	Kinematics of Whole Lumbar Spine (M.S.)	1984
Fromknecht, Steven:	The Kinematic and Kinetic Behavior of a Lumbar Motion Segment in the Intact, Injured and Surgically Treated States (M.S.)	1984
Gurusami, S. A.:	Stresses in the Human Teeth - An Application of Finite Element Technique (M.S.)	1985
Chen, Robert:	Development and Application of Finite Element Model to Analyze Stresses in Human Teeth (M.S.)	1985
Nye, Thomas:	Effect of Stabilization Upon the Kinematics and Ligamentous Strains of the Entire Lumbar Spine (M.S.)	1985
Harris, Kurt	Kinematics of the Cervical Spine Following Laminectomy and Bilateral Fusion (M.D.)	1985

Winterbottom, John:	A Kinetic Model of the Intact and Stabilized Lumbar Motion Segment (M.S.)	1986
Galles, Kyle	Biomechanical Characteristics of the Occipito-Atlanto-Axial Complex (M.D.)	1986
Schulte, Kary	Biomechanics of Anterior Spinal Fixation in the Cervical Region (M.D.)	1987
Voo, L-M.	The Effects of Flexional Cyclic Loading and Ligament Injuries Upon the Load-Deformation Characteristics of Multilevel Lumbar Motion Segments (M.S.)	1987
Lee, Il-key	Stress Analysis of the Elbow Joint with and without Prosthesis (Ph.D.)	1987
Du, W.	Biomechanics of Steffee and Luque Instrumentation - An Experimental Investigation (M.S.)	1988
Kim, Y. E.	An Analytical Investigation of Ligamentous Lumbar Spine Mechanics (Ph.D.)	1988
Morin, D. L.	Three-Dimensional Finite Element Stress Analysis of Varying Orthodontic Bracket Designs (M.S.)	1988
Dr. D. Wexler, M.D.	Biomechanics of the Skin Flaps (Senior Resident Project)	1990
Tae-hong Lim	Design of a Spinal Fixation Device and Its Evaluation: Analytical and Experimental Approach (Ph.D.)	1990
Kevin Farrell	Effects of Frequency on Vibration Response of the Triceps Muscle (M. A. in Physical Therapy)	1990
Toru M. Yamanishi	Development of a Technique to Quantify Strains and Forces in Ligaments Across C0-C1-C2 Complex (M.S.)	1991
H. S. Park	Effects of Vibration on Lumbar Spine Mechanics	1991
J. S. Han	Analysis of the Internal Mechanism of the Spine in Static and Dynamic Loading Postures Using Optimization Technique	1991
Chad Greimann	Dynamics of Fall (M.S. Trainee)	1991
Dr. David Holmes	FEM Analysis of Dental Implants (M.S. in Peridontics)	1991
Jeff Minckey	<u>In Vivo</u> Cervical Spine Mechanics (M.D. Student Project)	1991
Jeff Nesbit	In Vivo Cervical Spine Mechanics (M.D. Student Project)	1992
P. Donaher	Stabilization of the Cervical Spine Following Teardrop Fracture: Evaluation of Anterior Plating, Anterior Wiring and Posterior Methods (M.S. in Biomedical Engineering)	1992
Dr. R. Roach	Biomechanics of the Cervical Spine (Resident Project in Neurosurgery)	1992
David Zich	In Vivo Mechanics of Spine (M.D. Student Project)	1992
Gopi Seenivasan	Application of Adaptive Bone Adaptive Remodeling Theory to the Motion Segments of Lumbar Spine: A Theoretical Study (MS)	1993
Bryan T. Monore	Interlaminar Shear Stresses as a Cause of Disc Degeneration with Age: A Non-linear Composite Finite Element Analysis (M.S. in Biomedical Engineering)	1993
Dr. Linda J. Ricks Williamson	The Effect of Endodontic Preparation on the Stress Distribution on a Central Incisor using a Three-dimensional Finite Element Method (M.S. in Dentistry)	1993
Dr. Katerina Kiranoudis, DDS	Stress Analysis of Structurally Compromised Deciduous Second Molars (M.S. in Pediatric Dentistry)	1993
Bobbie Pustleny	Cervical Spine Mechanics (MS- in Biomedical Engineering)	1993

*Prof & Chair in Korea**Professor – Jan 2003**Assoc Dean, Korea**Vice President, Company*

Lars G. Gilbertson	Mechanism of Fracture and Biomechanics of Orthoses In Thoracolumbar Injuries <i>Associate professor – Orthopedics (Aug 2003)</i> (Ph.D. in Biomedical Engineering)	1993
Sungjae Lee	Three-dimensional Analysis of the Cervical Spine of Patients Following Surgical Procedures Using Simultaneous Roentgen Stereophotogrammetry with Metallic Markers (Ph.D. in Biomedical Engineering)	1993 <i>Professor, Korea</i>
Kurt Gruben	Impact Testing of Helmets (MS- in Biomedical Engineering; also Y. King Liu's Student)	1993
Michelle Sabick	Mechanics of Falls (MS- in Biomedical Engineering; Co-Advisor - J. Hay)	1994
Steven A. Ramirez	Bone Remodeling in the Lumbar Spine - Effects of Varying Loading Conditions (MS in Biomedical Engineering)	1994
Hans E. Hoffman	Biomechanical Efficacy of a New Semi-rigid Spine Fixation Device (MS in Biomedical Engineering)	1995
Wayne Z. Kong	Clinically Relevant Biomechanical Parameters of the Lumbar Spine - A Theoretical and Experimental Investigation (Ph.D. in Biomedical Engineering)	1995
Erik O. Martz	An Artificial Disc Exhibiting a Negative Poisson's (M.S. in Biomedical Engineering; Co-Advisor with Profs. Park and Lakes)	1995
John D. Clausen	Experimental & Theoretical Investigation of Cervical Spine Biomechanics -- Effects of Injury and Stabilization (Ph.D. in Biomedical Engineering)	1996 <i>Res Director, a Company</i>
David M. Hooper	Consequences of Asymmetric Lifting on External and Internal Loads at the L3-L5 Levels (Ph.D. in Biomedical Engineering)	1996 <i>Vice President of a Spinal Implant Company</i>
James W. DeVocht	Biomechanics of the Temporomandibular Joint Using The Finite Element Method (Ph.D. in Biomedical Engineering)	1996
Dwight Todd	Biomechanics of the Artificial Disc (M.S. in Biomedical Engineering; Co-Advisor - Prof. David Wilder)	1997
Michelle Sabick	The Effects of Fall Direction & Protective Responses On The Likelihood of Hip Fractures in Falls (Ph.D. in Biomedical Engineering; Co-Advisor - Prof. Jim Hay)	1997 <i>Associate Prof.</i>
Nigel D. Gomez	Typical Forces Exerted on a Tooth During Carries Detection (M.S. In Mechanical Engineering; Co-Advisor - Prof. K. Malek)	1997
Nicole M. Grosland	Spinal Adaptation in Response to Interbody Fusion Systems: A Theoretical Investigation (Ph.D. in Biomedical Engineering)	1998 <i>Associate Professor</i>
Regina Jane Konz	The Pathomechanics of Spondylolytic Spondylolisthesis - In Vitro and Finite Element Assessments (M.S. in Mechanical Engineering)	1998 <i>Assistant Professor</i>
Christian M. Puttlitz	A Biomechanical Investigation of the Craniovertebral Junction (Ph.D. in Biomedical Engineering)	1999
Robert E. Montgomery	A Biomechanical Investigation of the Harms Interbody Fusion Cage - the <i>In Vitro</i> Cadaveric Testing (M.S. in Biomedical Engineering)	1999
Jeffery B. Bishop	Feature Extraction and Analysis of Dynamic Motion of the Lumbar Spine (Ph.D. In Biomedical Engineering; Co-Advisor - Malcolm H. Pope)	1999
Jeffrey L. Scifert	Biomechanics of the Cervical Spine (Ph.D. in Biomedical Engineering)	2000
Renee L. Heatherly/ Rogge	A Biomechanical Analysis of Extra-Articular Distal Radius Fracture Stability (Ph.D. in Biomedical Engineering)	2000
Hsiung-Tsai Chang	Development, Validation and Comparison of a Finite Element Human	2001

Andrew P. Dooris	Thorax Model for Automotive Impact Injury Studies (Ph.D.) Effect of Implanted Artificial Discs on the Lumbar Spine – An Experimental and Analytical Investigation (Ph.D. in Biomedical Engineering)	2001
Leif Hasselquist	The neurophysiologic Mechanisms of the Cervical Spine During Whiplash (Ph.D. in Biomedical Engineering)	2001
Mary Jackson	Design and Evaluation of a Vertebral Body Replacement Device (M.S. Project in Bioengineering)	2001
Terry Medsen, MD	Hip Fracture Fixation Using a New System (Resident Project)	2001
Ville Pitkanen (From Finland)	Biomechanics of Artificial Facets (MS, still not finished as of Aug. 15, 2002)	2002
Scott A. Holekamp	A parametric Biomechanical Study of Intervertebral Sealant Devices For Lumbar Spinal Disc (MS Thesis)	2003
Janet Huntzinger	Development of a Tissue Engineered Scaffold for use in a Bioartificial Bioartificial Nucleus Pulposus (MS Thesis)	2003
Agrawal Vibhor	Two Dimensional Modeling of the Knee Joint in Deep Flexion to Include "Thigh and Calf" Contact" (MS Thesis); Advisors - Drs. M. Samir Hefzy & Vijay Goel	2003
Ashutosh Khandha	A Parametric Evaluation of the Biomechanics of Lower Lumbar Spine After Fusion Surgery (MS Thesis)	2004
Sasidhar Vadapalli	Stability imparted by a posterior lumbar interbody fusion cage following surgery - A biomechanical Evaluation (MS Thesis)	2004
Despina E. Ciocanel, MD	Biomechanical analysis of C1-C2 fixations: posterior plating vs. transarticluar screw fixation (MS in Orthopedics) (Co-advisor with Dr. Nabil Ebraheim, MD, MCO)	2005
Rebecca Long	Biomechanical and Biochemical evaluation of Gelfoam for use as a scaffold for a Bioartificial Nucleus Pulposus (MS in Bioengineering, Co-Advisor – Ron Fournier)	2005
Miranda Shaw	A Biomechanical Evaluation of Lumbar Facet Replacement Systems (MS in Bioengineering)	2005
Sri Vishnubhotala	A Biomechanical Evaluation of Dynamic Stabilization Systems (MS in Bioengineering)	2005
Ian Cowgill	Investigating Intervertebral Disc Degeneration and Regeneration in a Rabbit Model: A Tissue Engineering Approach (MS in Bioengineering)	2005
Aaron Matyas	Biomechanics of the Elastomer Lumbar Artificial Disc (MS in Bioengineering)	2006
Janardhan S. Yerramshetty	The Effect of Compositional and Physicochemical Heterogeneity on Age-Related Fragility of Human Cortical Bone (PhD in Bioengineering; Advisor – Ozan Akkus, Co-advisor – Vijay Goel)	2006
Ajay Seth	Biomechanics of Cement..... (MS in Bioengineering)	2007
Aditya Muzumdar	Biomechanical Evaluation of Fusion Systems (MS in Bioengineering)	2007
Ankit Mehta	Biomechanical Evaluation of Different Posterior Dynamic Systems (MS in Bioengineering)	2007
Jayant Jangra	Biomechanical Analyses of Dynamic Stabilization Systems (MS in Bioengineering)	2007
Chiragkumar Shah	Biomimatically mineralized polymer scaffolds for bone regeneration (MS in Bioengineering)	2007
Anuj S. Khere	Development and Validation of L3-L4 and C3-C4 Sheep Motion And its Comparison to Corresponding Human Motion Segments (MS in Bioengineering)	2007

David Dick	Biomechanical Performance of the RHAKOSSTM C Spinal Implant In a Cadver Model (MS in Bioengineering)	2007
Srinidhi Deshpande	Degradation Behavior of Ionic Cross-linked Microparticles (MS project, Advisors: Drs Jayasuriya and Goel)	2007
Suneeth Elizabeth Mohan	Effect of Hydrodynamic Loading on the gene expression of intervertebral disc cells (MS in Bioengineering)	2007
Ahmed Faizan	Investigation in to Cervical Spine Biomechanics Following Total Disc Replacement (PhD In Bioengineering)	2008
Amanesh Goyal	Biomechanics of Interspinous Spacers (MS in Bioengineering)	2008
Ramy R. Zaki	A Finite Element Study of Varying Material Properties and Posterior Fixation Configurations in Transforminal Lumbar Inter-body Fusion (MS in Bioengineering)	2009
Carmen Quatman	Anterior Cruciate Ligament Injury Mechanisms in Female Athletes – A Finite Element Investigation (PhD In Biosciences, Advisors: Goel and Hewett) She is a MD/PhD student, MD in 2012	2009
Ali Kiapour	Lumbar Spine mechanics Following 360 Motion Preservation Systems (PhD in Bioengineering)	2009
James O'Donnell	(MS in Bioengineering)	2010
Tejaswy Potluri	(MS in Bioengineering)	2010
Nikhil Kulkarni	Effects of Implant Design on Cervical Disc Arthroplasty performance and Sagittal Balance – A Finite Element Investigation (MS in Bioengineering)	2010
Divya Ambati	Biomechanics of Stabilimax System..... (MS in Bioengineering)	2010
Rachit Parikh	Biomechanical Comparison of Various Posterior Dynamic Stabilization Systems for Different Grades of Facetectomy and Decompression Surgery (MS in Bioengineering)	2010
Leonora A. felon	A Parametric Study of Physiological Changes to Develop A Finite Element Model of Disc Degeneration (MS in Bioengineering)	2010
Richard Ditto	Biomechanics of Interspinous Spacer (MS in Bioengineering, Advisors: Dean Demetropoulos and V Goel)	2011
Avanthi Chikka	A Biomechanical Evaluation of Lumbar Interspinous Spacer (MS in Bioengineering)	2011
Sanghita Bhattacharya	Predictive Finite Element Modeling of Artificial Cervical Disc in a Ligamentous Functional Spine Unit (Ph.D. in Bioengineering)	2011
Devdatt D. Mhatre	Biomechanical Evaluation of vertebral Augmentation to Compare BioCure Cement with PMMA (MS in Bioengineering)	2011

Current students: 8 (PhD and Masters)

IX. UNDERGRADUATE STUDENTS (Senior Design Projects, Summer Co-ops, Independent Study, etc.)

John D. Fisher	A Biomechanical Evaluation of a New Construct to Treat Reverse Oblique Intertrochanteric Femur Fractures Using a Sliding Hip Screw and an Intramedullary Plate (won the senior design award)	2001
Becky Mocniak	Co-op Student, Material for Soft Tissue Biomechnaics Course,	Summer, 2001
Jeremy Heffner	Co-op Student, Spine Testing,	Summer, 2001
William J. Levicky	Co-op Student, Spine Testing,	Summer, 2001
Rustam Salari	An undergraduate student from Columbia, Bio-artificial disc project	Summer 2001

Prashant Thandekar	2 s.h. Independent Study, Spine Biomechanics	Spring, 2001
Rebecca L. Mocniak,	Pull Out Strength of Meniscal Repair Devices After Cyclic	2001-2002
Scott M. Nienberg	Loading of the Knee	
& Michael D. Posner	(Senior Design project; Co-Advisor – Henry Goitz, MD)	
Sarah Anthony and	The Pull-Out Strengths of Meniscal Repair Devices:	2001-2002
Nicholas Wasserman	A Comparative Study	
	(Senior Design project; Co-Advisor – Henry Goitz, MD)	
Indra Neal Sinha	High School Senior Project	Summer 2002
	(High School Student)	
Kristen A. Salzgeber &	Pull Out Strengths of Various Screw Designs	2001-2002
Jessica	(Independent Study)	
Ishita Garg	Pull Out Strengths of Various Screw Designs	Summer 2002
	(Co-op Student, supported by NSF Grant, Dr. Hefzy)	
Ziad ResLan	Bioartificial Disc	Summer 2002
	(Co-op Student, supported by NSF Grant, Dr. Hefzy)	
Kristen A. Salzgeber &	Design project	2002-03
Jessica		
R Milks & M Ehlert	Spine probe (micro-sensor)	2002-03
Abby Walters	Cell mechanics	2002-04
Diona Grefer,	The Labor Back and Knee Saver	2003-04
and Jake Lindquist		
Abigail Brentlinger	Novel Bioreactor Design for Dynamic Culture of Cells & Tissue	2003-04
D Grefer & J Lindquist	The Labor Back and Knee Savor	2003-04
	(Co-advisor – Steve Grefer, Owner, S & G Roofing, Inc)	
Joe Melek	Co-op student on the Golf Exercise Machine	Summer 2004
Ahamad..	Co-op student worked on cell project	Summer 2004
Leonora Felon	Independent Study for Lumbar Spine Mechnaics	2004-05
Matt Allenmang	Plate Holding Surgical Forceps	2004-05
and Matt Bowser	(Senior Design Project)	
Craig Butler	Lumbar Spine Mechanics	Summer 2005
Mohamad	Coop Student	Summer 2005
Vinayak Nikam	High School Student from Ann Arbor, MI	Summer 2007
Jihad Dakkak	Biomechanics of Spine (Co-op Student)	Spring 2009
Erin Nichols ??	Biomechanics of Spine (Co-op Student)	Fall 2009
Harpreet Singh	Spine Biomechanics, Co-op students from UT BIOE	2010-11
Conner high school student – shadowing		Summer 2011

X. POSTDOCTORAL FELLOWS/SHORT TERM VISITORS

Dr. K. Nishiyama, M.D. (Japan)	Biomechanics of the Lumbar Spine	1985
Dr. O. K. Lim, Ph.D.	Vibration White Finger	1986
Dr. T. Okuma, M.D. (Japan)	Biomechanics of the Spine	1988
Dr. William O. Shaffer, M.D.	Vertebral Translational Measurement Study	1988
Dr. J. Y. Chen, M.D. (Taiwan)	Testing of Fixation Devices	1989
Dr. J. K. Gwon, M.D. (Korea)	Biomechanics of Spine	1990
Dr. Han Chang, M.D., Ph.D. (Korea)	In Vivo Cervical Spine Mechanics	1990
Dr. J. Y. Ahn, M.D., Ph.D. (Korea)	Lumbar Spine Mechanics	1991
Dr. D. Kojimoto, M.D. (Japan)	Design of An Artificial Vertebra	1991
Dr. J. Mumford, M.D.	Thoracolumbar Fracture Treatment	1991
Dr. Zekun Zhang, M.D. (China)	Biomechanics of Spine	1992
Dr. James Spivey, DDS	Biomechanics of Dental Implants	1992
Dr. Tim Ryken, M.D.	Biomechanics of the Cervical Spine	1993
Dr. Michael Pfeiffer, M.D. (Ger.)	Lumbo-sacral Fixation Device	1993-94
Dr. Lars G. Gilbertson, Ph.D.	Biomechanics of Falls	1993-95
Dr. Assen Aleksiev, M.D.	Quantification of Back Muscles' EMG	1994-96
(Bulgaria)	(Co-Advisor with M. Pope)	

Dr. Yu-Jen Cheng, MD (Taiwan)	Biomechanics of the Spine	1995-96
Dr. Koichi Sairyo, MD (Japan)	Lumbar Spine Mechanics	1995-97
Dr. Youn-soo Kim, MD (Korea)	Spine Mechanics	1995-96
Dr. Michael Ogon, MD (Austria)	<i>In Vitro</i> Mechanics of the Lumbar Spine	1995-96
Dr. John D. Clausen, Ph.D.	Cervical Spine Biomechanics	1996
Dr. David Hooper, Ph.D.	Lumbar Spine Muscle Mechanics	1996
Dr. Koji Totoribe, M.D. (Japan)	Cervical Spine mechanics	1997-99
Dr. Nicole Grosland, Ph.D.	Lumbar Spine Mechanics	1998-99
Dr. Shih-Tien Wang, M.D. (Taiwan)	Spine Biomechanics	1999-00
Dr. S. Kubo, M.D. (Japan)	Cervical Spine Biomechanics	1999-00
Dr. Hiroshi Kuroki, M.D. (Japan)	Lumbar & Cervical Spine Biomechanics	2001-02
Dr. Wen-Hsing Hsu (Roland), MD (Taiwan)	FEM of the Spine (Part-time from CC Foundation, jointly with Lisa Ferrara)	2003-04
Dr. Koichi Sairyo, MD (Japan) (From Tokushima University)	Spine Mechanics	2003-05
Mr. Akiyoshi Masuda (From Tokushima University)	UG Engineering student (Visited twice)	2003-04 (9 months)
Dr. Akitoshi Itho, PhD (Japan) (From Tokyo Denki University)	Spine mechanics	2003 -04 (6 months)
Dan Gehling, MD (Orthopedic Resident)	LF Thickness	2004-05
Alex Livanov, MD (Russia)	Spine Biomechanics	2005-07
Tomoya Terai, MD (Japan)	Spine Biomechanics	2008-09
Dr. Xia Liu, PhD	Spinal manipulation	2008-
Ali Kiapour, PhD	Spinal Instrumentation and Knee Mechanics	2009-
Deniz Erbulut, PhD, Turkey	Posterior Dynamic Systems (Month of Dec)	2010

XI. Other Personnel Supervised, including special students

Diane McClellan,	Summer training in the lab Junior High Teacher	2008
Sadaf Kashef	Doctoral Student, Deakin University, Australia, spent 2 months To complete her experimental work in the lab	2009
Eric	Medical Student from spent 1 month in the lab to do a project on wear of spinal implants	2009
Joshua Aferzon	University of Connecticut, 2 weeks training	2009
Aakash Agarwal	Spine Biomechanics Training for 2 months (From India – Sikkim)	Summer 2009
DeMita Baker	Toledo Middle School teacher – 6 weeks Training	Summer 2009
Hannah Ogden (ndadancer1@yahoo.com)	Senior High School Student, Notredam Academy	Summer 2010
Ronit Shah	Junior High School Student, Toledo, OH	2009-10
Praapti Jayaswal	Graduate Student, India, Internship	Summer 2010
Ankit Prasad	BIOE UG, OSU	Summer 2010

XII. PRACTICAL PROJECTS

1. Design and development of a peritoneal dialysis machine.
2. Design and development of a uni-directional over-running clutch for use in the artificial leg. The leg design permits cross-legged sitting and squatting.
3. Design and development of a new type of cement injection system for hip prosthesis implantations. Patent: Surgically Implantable Spinal Correction System, (In collaboration with Prof. Joon B. Park and Dr. James N. Weinstein), Patent # 4,836,196 dated June 6, 1989.

4. Patent: Surgically Implantable Fastening System, (In collaboration with Prof. Joon B. Park, Dr. James N. Weinstein and Dr. Malcolm H. Pope), Patent # 6,004,323 dated Dec. 21, 1999.
5. Patent: Bioartificial Intervertebral Disc, Vijay K. Goel and Ron Fournier, Serial No. 10/223275; Filed: August 19, 2002; Issued 10/25/2005, US Class:623017166230661; Intl Class: A61F00244 A61F00254UT File: ENG00102, Attorney File 1-23733
6. Patent: Support Apparel such as back support and system, David Chase, David Wilder, Gary Shumate, Vijay Goel, Malcolm Pope, Patent # US 7,322,952 B2, Jan 29, 2008
7. Patent: Trunk Rotation - Golf Exercise Machine for the Elderly – Vijay K. Goel, Danny Pincivero, David Dick and John Jaegly, Patent # 7,695,415 United States Patent Trademark Office; April 13, 2010, Patent transferred to a start up company, The Turning Point, LLC, Alan Schultheis, President
7. Inventors: Goel, Matyas; For: Self-Distracting Joint Replacement Assembly; Ser. No. 60/781,916 filed March 13, 2006; Our File No.: 1-27723
- ~~8. Inventors: Goel and Kiapour; for Artificial Facets for the Lumbar Spine. Under review, Oct 2006.~~
- ~~9. Fournier, Ronald L., Goel, Vijay K.; Byers, James P.; ENG01206 – “A bioreactor for the in vitro formation of the nucleus pulposus” application approved in March 2007~~
10. Invention disclosures to UT: Elahinia, Goel, and his student: Bio-inspired Shape Memory Alloy Pedicle Screw to Compensate for Bone Degradation in Osteoporosis Patients
11. Inventors: Goel, Matyas; Minimally Invasive Expandable Fusion Cage Ser No, 61/160,051 filed Mar 13, 2009, Our File No. 1-50796. Patent transferred to a startup company, GAMMA SPINE, LLC, Vijay Goel, President and this company has sublicensed it to X-Spine Systems, Inc. March 1, 2010
12. Inventors: Goel, Matyas: Anchoring Pedicle Screw; Ser. No. 61/159,910 filed March 13, 2009; Our File No.: 1-50795
- ~~13. Inventors: Goel, Faizan, Elgafy; For: Cervical Dynamic System in Conjunction with Artificial Disc to Treat Whiplash Injury Patients; Ser. No. 61/159112 filed March 11, 2009; Our File No.: 1-50794 Withdrawn~~
14. Inventors: Shenai, Krishna; Biyani, Ashok; Goel, Vijay K.; Devabhaktuni, Vijay Kumar; Lilly, Brad R: D2009-55 A Novel Procedure & Apparatus for Performing Highly Accurate Surgery
15. Inventors: Goel VK, Dick D, Schultheis A, Germano K: Core Muscle Strengthening. Your Ref. No.: ENG00504; Our File No.: 10025, filed Oct 8, 2010 (CIP)
16. Development of an automated spine test rig in collaboration with ATS, Inc (Norm Carroll, President and CEO) and Lisa Friis, Kansas University, Provisional Patent Application filed May 2011

XIII. SOCIETY MEMBERSHIPS/FELLOWSHIPS

Fellow	American Institute for Medical and Biological Engineering (AIMBE)
Fellow	American Society of Mechanical Engineers (ASME)
Member	American Society of Biomechanics (ASB)
Member	International Society for the Study of the Lumbar Spine (ISSLS)
Member	Orthopedic Research Society (ORS)
Member	Cervical Spine Research Society
Member	American Society of Engineering Education (ASEE)
Member	Council of Chairs of Biomedical and Bioengineering Undergraduate Programs
Member	Biomedical Engineering Society
Member	American Society for Testing Materials (ASTM)
Member	Spine Arthroplasty Society

XIV. COURSES TAUGHT/DEVELOPED

1. Principles of Design I
2. Biomechanics
3. Advanced Biomechanics
4. Mechanical Design
5. Mechanics of Deformable Bodies
6. Dynamics
7. Biomedical Engineering Design I

8. Biomedical Engineering Design II
9. Engineering Analysis
10. Clinical Biomechanics of Spine
11. Engineering I
12. Biomedical Engineering Systems Design
13. Intermediate Mechanics of Deformable Bodies
14. Composite Materials
15. Professional Seminars, Graduate and Undergraduate
16. Biomechanics of Aging
17. Freshmen/Sophomore BME Forum
18. Statics
19. Dynamics
20. Computers In Orthopedics
21. Soft and Hard Tissue Biomechanics
22. Experimental Orthopedic Biomechanics
23. Orthopedic Biomechanics
24. Devolvement and approval of Doctoral Program in Biomedical Engineering in collaboration with Medical School at Toledo, 2007

XV. LABORATORIES DEVELOPED

1. Spine Biomechanics lab.
2. Vibration Lab.
3. EMG Lab for the Study of Lifting
4. Robotics Lab. to Study Surgical Simulation
(In collaboration with the Dept. of Mech. Eng. and V. A. Hospital)
5. Surgical Simulation Applications in Dentistry
6. A set of experiments for Undergraduates in Biomechanics Sub tract
7. Spine Biomechanics Lab
8. Comp[utational Lab.
9. Wear Lab.

XVI. PUBLICATIONS (Listed for the last five years only)

XVIA. BOOKS & CONFERENCE PROCEEDINGS (AUTHOR/EDITOR),FOREWORDS for BOOKS)

3. Goel VK, Panjabi MM (Eds): Roundtables in Spine Surgery; Spine Biomechanics: Evaluation of Motion Preservation Devices and Relevant Terminology, Vol 1, Issue 1, St. Louis; Quality Medical Publishing, 2005.
4. Goel VK: A Foreword for the book titled "Nonfusion Techniques for the Spine – Motion Preservation and Balance" Maxwell JH, Griffith SL, Welch WC (Editors), Quality Medical Publishing, Inc., St. Louis, Missouri (Pub.), 2006
5. Goel VK, Sohi R, Lieber B, Akkus O (Eds): Proceedings of the 2006 Summer Bioengineering Conference, ASME-BED, Amelia Island, FL, June 21-25, 2006
6. Goel VK, Abjornson, C (Editors): Basic Science Symposium I: Bone Graft Substitutes. SAS Journal, 2(1), 55-61, Winter 2008.
7. Goel VK, Ferrara L (Editors): Basic Science Symposium III: Animal Models for Orthopaedic Implant Evaluation" SAS Journal, 2(4), 2008

XVIB. BOOK CHAPTERS

24. Goel VK, Khandha A, Vadapalli S: Musculoskeletal Biomechanics, Chapter 4. In Orthopedic Knowledge Updates 8, Vaccaro AR (Editor), American Academy of Orthopedic Surgeons, 39-56, 2005
25. Panjabi MM, Goel VK: Chapter 6: Adjacent-Level Effects: Design of a New Test Protocol and Finite Element Model Simulations of Disc Replacement. Roundtables in Spine Surgery; Spine Biomechanics: Evaluation of Motion Preservation Devices and Relevant terminology, Vol 1, Issue 1, St. Louis; Quality Medical Publishing, Eds: Vijay K. Goel and Manohar M Panjabi, 2005
26. Goel VK, Panjabi MM: Chapter 1: Introduction. Roundtables in Spine Surgery; Spine Biomechanics: Evaluation of Motion Preservation Devices and Relevant terminology, Vol 1, Issue 1, St. Louis; Quality Medical Publishing, Eds: Vijay K. Goel and Manohar M Panjabi, 2005
27. Scheid EH, Harrop JS, Sharan AD, Bennett, Goel VK: Materials and Material Properties. In Spine Surgery – Techniques, Complications, Avoidance, and Management, 2nd Edition, Benzel EC (Ed), Elsevier, Churchill, Livingstone (Pubs), 220-228, 2004.
28. Sawin PD, Traynelis VC, Eichholz KM, Goel VK: Cervical spine construct design, in Benzel EC (ed): Spine Surgery: Techniques, Complication Avoidance, and Management, 2nd ed. Elsevier, Philadelphia, pp 1596-1608, 2004.
29. Sairyo K, Goel VK, Biyani A, Ebraheim N: Biomechanics of Spondylolysis with reference to its etiology, diagnosis, treatment and slippage. In....., 2005
30. Panjabi MM, Yue JJ, Dvorak J, Goel V, Fairchild T, White AA: Chapter 4 Cervical Spine Kinematics and Clinical Instability. Cervical Spine Research Society, 2005.
31. Goel VK, Biyani A, Ferrara L, Rengachary S, McGowan D: Biomechanics of Human Spine. In Encyclopedia of Medical Devices and Instrumentation, John G. Webster (Editor-in-Chief) John Wiley & Sons, Inc (Pub), 547- 598, Volume 3, 2006
32. Sairyo K, Goel VK, Biyani A, Ebraheim N. Biomechanics of spondylolysis with reference to its etiology, diagnosis, treatment and slippage. Edited Book - The 11th Brussels International Spine Symposium, Brussels, 2004
33. Goel VK, Sairyo K, Vishnubhotla S, Biyani A, Ebraheim N. Spine Disorders: Implications for Bioengineers. In The Spine Technology Handbook. Kurtz and Edidin (Editors), Chapter 6, 145-182, Elsevier Academic Press (Pub), 2005.
34. Goel VK, Faizan A, Felon L, Biyani A, McGowan D, Wang S-T: Biomechanical aspects of the spine motion preservation systems. In Innovations in Spinal Reconstruction – Clinical Examples of Basic Science, Biomechanics, and Engineering. Kai-Uwe Lewandrowski, MD; Iain H. Kalfas, MD; Robert F. McLain, MD; Paul Park, MD; Debra J. Trantolo, PhD; Michael J. Yaszemski, MD, PhD (Co-Editors), 2006.
<http://books.google.com/books?id=7FehnLKEDlgC&pg=PA279&dq=Biomechanical+Aspects+of+the+Spine+Motion+Preservation+Systems&ei=HrHbScHyBYWqlQSIgMHIg#PPA279,M1>
35. Faizan A, Goel VK, Ordway NR, Fayyazi AH, Yuan HA: Biomechanics of Spinal Instrumentation: Applications for Trauma. In Skeletal Trauma, 2nd Edition, Levine A, Eismont F, Zigler J, Garfin SR (Editors), 2007, accepted.
36. Carl A, Oliveira C, Hoy R, Lavelle W, Goel V, Cunningham B: Anatomic Facet Replacement System (AFRSTTM). Motion Preservation Surgery of the Spine: Advanced Techniques and Controversies, edited by James J. Yue, Rudolf Bertagnoli, Paul McAfee, and Howard An, PM Gordon Associates (Pub.), 2007.

37. Faizan A, Ordway NR, Goel VK, Fayyazi AH, Yuan HA: Biomechanics of Spinal Instrumentation: Applications for Trauma. AAOS, 2010.
38. Kaul V, Kiapour A, Gilbertson LG, Goel VK: Biomechanical Testing. SPINE SURGERY: TECHNIQUES, COMPLICATION AVOIDANCE, AND MANAGEMENT, 2-VOLUME SET, Third Edition edited by Edward C. Benzel, Pub: Saunders, an imprint of Elsevier Inc., 2011.
39. Implant Attributes: Distraction, Compression, and Three-Point Bending. SPINE SURGERY: TECHNIQUES, COMPLICATION AVOIDANCE, AND MANAGEMENT, 2-VOLUME SET, Third Edition edited by Edward C. Benzel, Pub: Saunders, an imprint of Elsevier Inc., 2011.
40. Goel VK: Biomechanics of Unstable Carniovertebral Junction. Chapter 6, Pages 39-47, Goel A, Cacciola F (Eds); Thieme Publisher, 2011.
41. Fontes R, Sawin PD, Traynelis VC, Goel VK: Cervical Spine Construct Design. SPINE SURGERY: TECHNIQUES, COMPLICATION AVOIDANCE, AND MANAGEMENT, 2-VOLUME SET, Third Edition edited by Edward C. Benzel, Pub: Saunders, an imprint of Elsevier Inc., 2011.
42. Goel VK, Kuroki H, Rajasekaran S: Biomechanical Aspects of Spinal Infections. In the book - Spinal Infections & Trauma, Chapter 2, 16-24, Eds: Rajasekaran S, Jain AK, Shetty AP, Kanna RM, Pub: Jaypee Brothers Medical Publishers (P) Ltd, New Delhi, 2011.

XVIC. JOURNALS

115. Kuroki H, Rengachary S, Goel V, Holekamp S, Pitkänen V, Ebraheim N: Biomechanical Comparison of Two Stabilization Techniques of the Atlantoaxial Joints - Transarticular Screw Fixation Versus Screw and Rod Fixation. Operative Neurosurgery, 56, ONS 151-159, 2005.
116. Wang S-T, Goel VK, Fu T-U, Kubo S, Choi Woosung, Liu C-L, Tain-Hsiung Chen T-S: Posterior Instrumentation Reduces Differences in Spine Stability Due to Different Cage Orientations – An In vitro Study. Spine 30, 62-67, 2005
117. Sairyo K, Katoh S, Yasui N, Goel VK, Vadapalli S, Masuda A, Biyani A, Ebraheim N: Athletes with Unilateral Spondylolysis are at Risk of Stress Fracture of the Contra-lateral Pedicle and Pars Interarticularis: A Clinical and Biomechanical Study. Am J. Sports Med, Vol 32, X, 1-8, 2005
118. Sairyo K, Goel VK, Masuda A, Biyani A, Ebraheim N, Mishiro T, Terai T: Biomechanical Rationale of Endoscopic Decompression for Lumbar Spondylolysis As An Effective Minimally Invasive Procedure - A study based on the Finite Element Analysis. Minimally Invasive Neurosurg, 48: 119-122, 2005
119. Sairyo K, Katoh S, Komatsubara S, Terai T, Yasui N, Goel VK, Vadapali S, Biyani A, Ebraheim N: Spondylolysis fracture angle in children and adolescents on CT indicates the fracture producing force vector– A biomechanical rationale. Internet Journal of Spine Surgery, Volume 1 Number 2, 2005.
120. Sairyo K, Biyani A, Goel V, Leaman D, Booth Jr R, Thomas J, Gehling D, Vishnubhotla S, Long R, Ebraheim N: Pathomechanism of Ligamentum Flavum Hypertrophy - A Multidisciplinary Investigation based on Clinical, Biomechanical, Histological and Biological Assessments. Spine, 30, 2649-2656, 2005.
121. Goel VK, Grauer J, Patel TG, Biyani A, Sairyo K, Vishnubhotla S, Matyas A, Cowgill I, Shaw M, Long R, Dick D, Panjabi MM, Serhan H: Effects of Charite Artificial Disc on the Implanted and Adjacent Spinal Segments Mechanics Using a Hybrid Testing Protocol. Spine, 30, 2755-2764, 2005.
122. Goel VK, Ebraheim NA, Biyani A, Rengachary S, Faizan A: Role of mechanical factors in the evaluation of pedicle screw type spinal fixation devices. Neurology India, 53, (4), 399-407,

- 2005.<http://www.neurologyindia.com/article.asp?issn=00283886;year=2005;volume=53;issue=4;spage=399;epage=407;aulast=Goel>
123. Sairyo K, Katoh S, Takata Y, Terai T, Yasui N, Goel VK, Masuda A, Vadapalli S, Biyani A, Ebraheim N: MRI signal changes of the pedicle as an indicator for early diagnosis of spondylolysis in children and adolescents: A clinical and biomechanical study. Spine, 31, 206-211, 2006.
 124. Sakai T, Yamada H, Nakamura T, Nanamori K, Kawasaki Y, Hanaoka N, Nakamura E, Uchida K, Goel VK, Vishnubhotra S, Sairyo K: Lumbar Spinal Disorders in Patients with Athetoid Cerebral Palsy. A Clinical and Biomechanical study. Spine, 31, E66-E70, 2006.
 125. Martz EO, Lakes RS, Goel VK, Park JB: Design of an artificial intervertebral disc exhibiting a negative Poisson's ratio. Cellular Polymers, 24, 127-138, 2005.
 126. Biyani A, Sairyo K, Liljenquist J, Goel V: Ipsilateral Pedicle Screw Fixation And Contralateral Translaminar Facet Screw Placement In Conjunction With TLIF: Technical Note. The Internet Journal of Spine Surgery. Volume 2 Number 1, 2005.
 127. Wang S-T, Goel VK, Fu C-Y, Kubo S, Cho W-S, Liu C-L, Chen T-H: Comparison of Two Interbody Fusion Cages as Posterior Lumbar Interbody Fusion in a Cadaveric Model. International Orthopedics, (SICOT) (on line), 2006.
 128. Goel VK, Panjabi MM, Patwardhan AG, Dooris AP, Serhan H: Test Protocols for Spinal Implants. J Bone Joint Surg (Am), 88:103-9, 2006, (Suppl 2).
 129. Liu J-Y, Ebraheim NA, Haman SP, Shafiq Q, Karare N, Biyani A, Goel VK, Woldenberg L: Effect of the Increase in the height of lumbar disc space on facet joint articulation area in Sagittal plane. Spine, 31(7), E198-202, 2006.
 130. Sairyo K, Biyani A, Ebraheim N, masuda A, Liu JJ: Decompression Surgery For Lumbar Spondylolysis Without Fusion: A Review Article. The Internet Journal of Spine Surgery. 2006. Volume 2 Number 2. <http://www.ispub.com/ostia/index.php?xmlFilePath=journals/ijss/vol2n2/lumbar.xml>
 131. Sairyo K, Goel VK, Masuda A, Vishnubhotla S, Ahmad F, Biyani A, Ebraheim N, Murakami R, Yonekura D. Three Dimensional Finite Element Analysis of the Pediatric Lumbar Spine: Part I: Pathomechanism of apophyseal bony ring fracture. Eur Spine J, 15, 923-929, 2006.
 132. Sairyo K, Goel VK, Masuda A, Vishnubhotla S, Ahmad F, Biyani A, Ebraheim N, Murakami R, Yonekura D. Three Dimensional Finite Element Analysis of the Pediatric Lumbar Spine: Part II: Biomechanical change as the initiating factor for pediatric isthmic spondylolisthesis at the growth plate. Eur Spine J, 15, 930-935, 2006.
 133. Sairyo K, Goel VK, Vadapalli S, Vishnubhotla SL, Biyani A, Ebraheim N, Terai T, Sakai T: Biomechanical comparison of lumbar spine with or without spina bifida occulta. A finite element analysis. J. Spinal Cord, 44, 440-444, 2006
 134. Liu J-Y, Ebraheim NA, Haman SP, Sanford Jr. CG, Sairyo K, Faizan A, Goel VK: How the Increase of the Cervical Disc Space Height Affects the Facet Joint - An Anatomy Study. Spine, 31(12), E350-354, 2006.
 135. Vadapalli S, Robon M, Biyani A, Sairyo K, Khandha A, Goel VK: Effect of Lumbar Interbody Cage Geometry on Construct Stability: A Cadaveric Study. Spine, 31(19), 2189-2194, 2006.
 136. Kasra M, Merryman WD, Loveless KN, Goel VK, Martin JD, Buckwalter JA: Frequency response of pig intervertebral disc cells subjected to dynamic hydrostatic pressure. JOR, Vol 24, Issue 10, 1967-1973, Oct 2006.

137. Grauer J, Biyani A, Faizan A, Kiapour A, Sairyo K, Ivanov A, Ebraheim N, Serhan H, Patel TC, Goel VK: Biomechanics of Two Level CHARITE Artificial Disc Placement in Comparison to Fusion Plus Single Level Disc Placement Combination. The Spine Journal, The Spine Journal, 6(6):659-66, 2006.
138. Vadapalli S, Sairyo K, Goel VK, Robon M, Biyani A, Khandha A, Ebraheim NA: Biomechanical Rationale for Using Polyetheretherketone (PEEK) Spacers for Lumbar Interbody Fusion-A Finite Element Study. Spine, 31 (26), E992-E998, Dec 2006.
139. Sairyo K, Goel VK, Faizan A, Vadapalli S, Biyani S, Ebraheim N: Buck's Direct Repair of Lumbar Spondylolysis Restores Disc Stresses at the Involved and Adjacent Levels. Clinical Biomech, 21 (10), 1020-6, 2006
140. Bono C M, Khandha A, Vadapalli S, Holekamp S, Goel VK, Garfin SR: Residual Sagittal Motion After Lumbar Fusion – A Finite Element Analysis with Implications on Radiographic Flexion-Extension Criteria. Spine, 32 (4), 417-422, 2007.
141. Goel VK, Ferrara L: Wiley Encyclopedia of Biomedical Engineering, Vols 1-6 Edited by Metin Akay, Hoboken, NJ, Wiley-Interscience 2006 – Review. JAMA, 297, #14, April 11, 2007.
142. Liu Jiayong, Ebraheim NA, Hartman RG., Sanford Jr. CG., Muzumdar AM, Yeasting RA, Goel VK. Morphological changes of the cervical intervertebral foramen during unilateral facet dislocation. Spine J. 2007 Sept.—Oct.6 (5) Supplement
143. Goel VK, Mehta A, Jangra J, Faizan A, Kiapour A, Hoy, RW, Fauth AR: Anatomic Facet Replacement System (AFRS™) Restores Lumbar Segment Mechanics to Intact: A Finite Element and In Vitro Cadaver Investigation. SAS Journal, Vol 01(01), 46-54, Winter 2007.
144. Goel VK, Kiapour A, Faizan A, Krishna M, Friesem T: A Matched Paired Posterior Disc Implant and Dynamic Stabilizer (360 Motion Preservation System) Reproduce Normal Spinal Motion: A Finite Element Study. SAS Journal ,Vol 01(01), 55-62, Winter 2007.
145. Sairyo Koichi, Biyani Ashok, Goel Vijay K, Leaman Douglas W, Booth Robert Jr, Thomas Jean, Ebraheim Nabil A, Cowgill Ian A, Mohan Suneeth E: Lumbar ligamentum flavum hypertrophy is due to accumulation of inflammation related scar tissue. Spine, 32, E340-E347, 2007.
146. Shaw M, Goel VK, Sairyo K, Jangra J, Biyani A, Ebraheim N: Application of the Finite Element Technique in the Design and Evaluation of the Artificial facets for the Lumbar Spine. ASME J Biomedical Devices, Vol 1, 176-179, 2007.
147. McGowan DP, Goel VK: Aching Backs Get Support from FDA, But Not Payors. AAOS-Now, Vol 1, #7, Sep 2007.
148. Kosaka H, Sairyo K, Biyani A, Leaman D, Yeasting R, Higashino K, Sakai T, Sano T, Katho S, Goel VK, Yasui N: Pathomechanism of loss of elasticity and hypertrophy of lumbar flavum in elderly patients with lumbar spinal canal stenosis. Spine, 32, 2805-2811, 2007.
149. Goel, VK: A Commentary on the manuscript titled "Hybrid Testing of Lumbar Charite Discs versus Fusions by Panjabi et al". Spine, 32, 967, 2007.
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153. Molitor, S and Goel VK: Handbook of Neural Engineering, Edited by Metin Akay Wiley-IEEE Press 2007 – Review. JAMA, 298, #8, Aug. 22/29, 2007
154. Anno S, Abe T, Sairyo K, Kudo K, Yamamoto T, Ogata K, Goel VK: Interactions between SNP Alleles at Multiple Loci Contribute to Variation in Skin Pigmentation in 122 Caucasians. Evolutionary Bioinformatics, Vol.3 , Pp. 169–178, 2007 http://lapress.com/journals.php?pa=toc&journal_id=17
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