

SANA U. KHAN, M.D., PH.D.

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SUMMARY

Dr. Khan is an accomplished radiologist, researcher, teacher and entrepreneur. He has built advanced medical diagnostic centers nationally focused on accurate diagnoses of musculoskeletal injuries utilizing the Upright, Kinetic MRI. He also brings extensive experience in the medico-legal aspect of industrial injuries as well as Sports Medicine Imaging.

TRAINING & EDUCATION

University of California , Irvine, CA <i>Residency in Diagnostic Radiology</i>	1994 – 1998
Harbor/UCLA Medical Center , Los Angeles, CA <i>Internship</i>	1993 – 1994
UCLA School of Medicine , Los Angeles, CA <i>M.D., Dean's Scholar, June 1993</i> <i>Ph.D., Anatomy & Neurobiology, Clinical Neurophysiology, June 1993</i>	1986 – 1993
University of California , Irvine <i>B.S. in Biology, June 1986</i>	1982 – 1986

PROFESSIONAL EXPERIENCE

ExpertMRI Medical Group , Los Angeles, CA Professional medical group primarily focused on MRI reading.	2017-present
AiM Radiology Medical Group , Anaheim, CA <i>Chairman and Founder.</i> Professional medical group that is focused on the medical-legal radiology market. Specifically, the group has developed and utilizes proprietary software to provide primary and secondary MRI. The group also provides imaging based disability ratings required by the AMA Guides to the Evaluation of Permanent Impairment	2008 – present
True View Radiology Centers , Los Angeles, CA <i>Chairman and Co-founder.</i> A network of free-standing and mobile imaging and neurodiagnostic centers specializing in industrial injury.	2002-2008
The Union Institute Graduate School , Cincinnati, OH <i>Adjunct Professor</i> , Department of Biopsychology	2001 –2004
Crescent Diagnostic Medical Group , Anaheim, CA <i>Chief Executive Officer and founder.</i> A leading medical diagnostic company in California specializing in ultrasound, echocardiogram, neurodiagnostics and osteoporosis evaluations.	1996 –2002
UCLA School of Medicine , Los Angeles, CA <i>Teaching Assistant</i> , Microscopic Anatomy 1987, Gross Anatomy 1988, Neurology 1989-1990	1987 – 1990

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HONORS

Ernst & Young Entrepreneur of the Year, 2008 Finalist in California Orange County/Dessert Cities and Arizona.

U.S. Congressional Medal of Distinction, 2008 for Advancement of Medical Science (Radiology).

City of Houston "Honorary Citizen" award, 2005 from Hon. Bill White, Mayor of Houston for financial and academic contributions to the city.

UCLA School of Medicine

Dean's Scholar, 1993

Dean's Academic Achievement Award, 1991–92

Department of Anatomy and Cell Biology, 1989

Clinical Neurophysiology Graduate Fellowship, 1988–92

UCLA Alumni Association Distinguished Scholar

ICFOG Grant, 1989–90

National Research Service Award, 1991

Josiah Brown Research Award, 1991

Bowen Award, 1986–87

American Epilepsy Society Medical Student Fellowship, 1990

University of California, Irvine President's Undergraduate Fellowship Award, 1985

Fellow, Jewish–Christian–Islamic Academy, 1995

School of Biological Science Excellence in Undergraduate Research Award, 1985 – 1986

Phi Beta Kappa, 1986

Dean's List, 1984–86

Adeline Gunther Award, 1992–1996

SELECTED PUBLICATIONS

Khan, S.U., C.E. Ribak. GABAergic neurons in the hippocampus of the epileptic gerbil. *Journal of Biological Sciences*, 17:362-373, 1985.

Khan, S.U., C.E. Ribak. The effects of lesions of the hippocampal fiber connections on seizure activity. *Journal of Biological Sciences*, 18:354-361, 1986.

Ribak, C.E. and **S.U. Khan**. The effects of knife cuts of hippocampal pathways on epileptic activity in the seizure-sensitive gerbil. *Brain Research*, 418:146-151, 1987.

Hovda, D., R. Sutton, **S.U. Khan**, and R. Fisher. Commisural cortico-cortical projections originate from pyramidal and non-pyramidal cells in the sensorimotor neocortex of the cats. *Anat Rec*, 220:46A, 1988.

Wilson, C.L., M. Isokawa-Akesson, R.C. Frysinger, **S.U. Khan**, T.L. Babb. Neurophysiological measures of human limbic system connections. *Neurosci Abstr*, 14:922, 1988.

Wilson, C.L., **S.U. Khan**, M. Isokawa-Akesson, T.L. Babb and M.F. Levesque. Excitability of epileptogenic vs. non-epileptogenic mesial temporal lobe during stimulation of perforant path in patients with complex-partial epilepsy. *Epilepsia*, 30:645, 1989.

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- Khan, S.U.**, C.L. Wilson, M. Isokawa-Akesson, T.L. Babb and M.F. Levesque. Increased paired-pulse suppression in the human temporal lobe. *Neurosci Abstr*, 15:236, 1989.
- Wilson, C.L., **S.U. Khan**, M. Isokawa-Akesson, T.L. Babb and M.F. Levesque. Excitability of specific hippocampal formation pathways in epileptogenic human temporal lobe. *Neurosci Abstr*, 15:236, 1989.
- Khan, S.U.**, C.L. Wilson, J. Engel Jr. and M.F. Levesque. Contrasting changes in EPSP slope of associational and perforant pathways in epileptic patients. *Epilepsia*, 31:651, 1990.
- Wilson, C.L., **S.U. Khan**, H.C. Hu and M.F. Levesque. Stimulation evoked population spikes in the human epileptogenic hippocampal formation show enhanced inhibition. *Neurosci Abstr*, 17:1255, 1991.
- Khan, S.U.**, C.L. Wilson, G.J. Kricorian, and M.F. Levesque. Enhanced paired-pulse inhibition in the human epileptogenic amygdala and hippocampal pathways. *Neurosci Abstr*, 17:1254, 1991.
- Spillers, S.H., C.L. Wilson, **S.U. Khan**, and M.F. Levesque. Decreased responsiveness of limbic pathways in the epileptogenic mesial temporal lobe. *Neurology*, 41:232, 1991.
- Wilson, C.L., T.A. Carpenter, **S.U. Khan**, M.F. Levesque, and J. Engel Jr. Differences in excitability of epileptogenic vs. nonepileptogenic limbic structures during single pulse electrical stimulation of temporal lobe in complex partial epilepsy patients. *Epilepsia*, 32:54, 1991.
- Khan, S.U.**, C.L. Wilson, and E.J. Behnke. Increased excitability in the epileptogenic human temporal lobe: A current strength analysis. *Neurosci Abstr*, 18:160, 1992.
- Wilson, C.L., **S.U. Khan**, B. Colder, G. Branch, E. Behnke, and M.F. Levesque. Evoked potential analysis of interhemispheric connections mediating limbic seizure propagation. *Epilepsia*, 33 (S3):59, 1992.
- Khan, S.U.**, C.L. Wilson, G.J. Kricorian, E.J. Behnke, J. Engel Jr. The threshold for electrical activation is lowered in the epileptogenic human amygdala. *Epilepsia*, 1993.
- Cutrone J., Georgiou, D., **S.U. Khan**, A.J. Pollack, S. French, M.M. Laks, and B.H. Brundage. A new approach for the quantitation of right ventricular mass by fast computed tomography: Validation in human heart specimens. *American Journal of Cardiology* 42 (1):100A, 1994.
- Cutrone, J.A., D. Georgiou, **S.U. Khan**, H. Fischer, R. Belardinelli, M.M. Laks, and B.H. Brundage. Quantitation of right ventricular mass by ultrafast CT and MR Imaging: Preliminary results with comparison to autopsy data. *American Journal of Radiology* 162 (suppl.):175, 1994.
- Velasco A.L., C. L. Wilson, B.W. Colder, E.J. Behnke, M.H. Shomer, **S.U. Khan** and J. Engel, Jr. Synchrony in interictal EEG spiking and unit activity in patients with complex partial seizures. *Epilepsia*, 35 (S8):129, 1994.
- Velasco A.L., C.L. Wilson, B.W. Colder, M.H. Shomer, E.J. Behnke, **S.U. Khan** and J. Engel, Jr. Relationship between interictal EEG spike and neuronal synchrony and functional limbic pathways. *Neuroscience Abstr*. 20:1449, 1994.
- Wilson, C.L., **S.U. Khan**, M. Isokawa, T.L. Babb, M.F. Levesque, E.J. Behnke and J. Engel Jr. Enhanced paired pulse inhibition and facilitation in human epileptogenic hippocampal formation. submitted to *J. Neuroscience*, 1994 (In press).
- Khan, S.U.**, C.L. Wilson, J. Engel Jr., E.J. Behnke, T.L. Babb and M.F. Levesque. Differences in excitability of pathways in the epileptogenic and non-epileptogenic human hippocampal formation. To be submitted to *Hippocampus*, 1995. (Manuscript in preparation)
- Khan, S.U.**, C.L. Wilson, G.J. Kricorian, T.L. Babb, M.F. Levesque, E.J. Behnke, and J. Engel Jr. Excitability of epileptogenic human amygdalo-hippocampal and hippocampal-amygdalar pathways. To be submitted to *Brain Research*, 1995. (Manuscript in preparation)

SANA U. KHAN, M.D., PH.D.

- Cutrone, J.A., D. Georgiou, **S.U. Khan**, A. Pollack, M.M. Laks, B.H. Brundage. Right ventricular mass measurement by electron beam computed tomography: Validation with autopsy data. *Investigative Radiology*, 30:64-68, 1995.
- Cutrone, J.A., D. Georgiou, **S.U. Khan**, H. Fischer, R. Belardinelli, M.M. Laks, B.H. Brundage. Comparison of electron beam computed tomography and MRI quantitation of right ventricular mass: Validation with autopsy weights. Submitted to *Academic Radiology*, 1995.

TECHNICAL SERVICE DIRECTOR UPRIGHT MRI RESEARCH, UCLA DEPARTMENT OF
ORTHOPEDIC SURGERY, CLINICAL SERVICES DIRECTOR, JEFFREY WANG, M.D.

- Miyazaki M, Hong SW, Yoon SH, Zou J, Tow B, Alanay A, Abitbol JJ, Wang JC. Kinematic analysis of the relationship between the grade of disc degeneration and motion unit of the cervical spine. *Spine*. 2008 Jan 15;33(2):187-93.
- Yuichiro Morishita MD, Shinichi Hida MD, Masashi Miyazaki MD, Soon Hong MD, Jun Zou MD, Feng Wei MD, Masatochi Naito MD, Jeffrey C. Wang MD. The Effects of the Degenerative Changes in the Functional Spinal Unit on the Kinematics of the Cervical Spine. *Spine*. 2008, 33(6):178-182.
- Miyazaki M, Hymanson HJ, Morishita Y, He W, Zhang H, Wu G, Kong MH, Tsumura H, Wang JC. Kinematic analysis of the relationship between sagittal alignment and disc degeneration in the cervical spine. *Spine (Phila Pa 1976)*. 2008 Nov 1;33(23):E870-6.
- Miyazaki, M., Hong, S.W., Yoon, S.H., Morishita, Y., Wang, J.C. Reliability of a magnetic resonance imaging-based grading system for cervical intervertebral disc degeneration. *Journal of spinal disorders & techniques*. Volume 21, issue 4, year 2008, pp. 288 – 292
- Yuichiro Morishita, Masatoshi Naito, Henry Hymanson, Masashi Miyazaki, Guizhong Wu, Jeffrey C. Wang. The Relationship Between the Cervical Spinal Canal Diameter and the Pathological Changes in the Cervical Spine. *Eur Spine J* (2009) 18:877-883.
- Kong MH, He W, Tsai YD, Chen NF, Keorochana G, Do D. Wang JC. Relationship of Facet Tropism with Degeneration and Stability of the Functional Spinal Unit. *Yonsei Med J* 2009, 50(5):624-629.
- Morishita Y, Falakassa J, Naito M, Hymanson HJ, Taghavi C, Wang JC. The kinematic relationships of the upper cervical spine. *Spine (Phila Pa 1976)*. 2009 Nov 15;34(24):2642-5.
- Daffner SD, Xin J, Taghavi CE, Hymanson HJ, Mudiyan C, Hongyu W, Wang JC. Cervical segmental motion at levels adjacent to disc herniation as determined with kinetic magnetic resonance imaging. *Spine (Phila Pa 1976)*. 2009 Oct 15;34(22):2389-94.
- Morishita Y, Naito M, Wang JC. Cervical spinal canal stenosis: the differences between stenosis at the lower cervical and multiple segment levels. *Int Orthop*. 2010 Nov 27. [Epub ahead of print]
- Fei Z, Fan C, Ngo S, Xu J, Wang J. Dynamic evaluation of cervical disc herniation using kinetic MRI. *J Clin Neurosci*. 2010 Dec 13. [Epub ahead of print]
- Jun Zou MD, Huilin Yang MD, Masashi Miyazaki MD, Feng Wei MD, Soon Hong MD, Seung Yoon MD, Yuichiro Morishita MD, Jeffrey C. Wang MD. Missed Lumbar Disc Herniations Diagnosed with Kinematic Magnetic Resonance Imaging. *Spine*. 2008, 33(5):140-144.
- Morishita Y, Hymanson H, Miyazaki M, Zhang HH, He W, Wu G, Kong MH, Wang JC. Kinematic Evaluation of the Spine: A Kinetic MRI Study. *Journal of Orthopaedic Surgery* 2008;16(3):348-50.

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- Kong MH, Hymanson HJ, Song KY, Chin DK, Cho YE, Yoon do H, Wang JC. Kinetic Magnetic Resonance Imaging Analysis Of Abnormal Segmental Motion Of The Functional Spine Unit. *J Neurosurg Spine*. 2009 Apr;10(4):357-65.
- Kong MH, Morishita Y, He W, Miyazaki M, Zhang H, Wu G, Hymanson HJ, Wang JC. Lumbar segmental mobility according to the grade of the disc, the facet joint, the muscle, and the ligament pathology by using kinetic magnetic resonance imaging. *Spine (Phila Pa 1976)*. 2009 Nov 1;34(23):2537-44.
- Zou J, Yang H, Miyazaki M, Morishita Y, Wei F, McGovern S, Wang JC. Dynamic bulging of intervertebral discs in the degenerative lumbar spine. *Spine (Phila Pa 1976)*. 2009 Nov 1;34(23):2545-50.
- Jang SY, Kong MH, Hymanson HJ, Jin TK, Song KY, Wang JC. Radiographic parameters of segmental instability in lumbar spine using kinetic MRI. *J Korean Neurosurg Soc*. 2009 Jan;45(1):24-31. Epub 2009 Jan 31.
- Miyazaki M, Morishita Y, Takita C, Yoshiiwa T, Wang JC, Tsumura H. Analysis of the Relationship Between Facet Joint Angle Orientation and Lumbar Spine Canal Diameter With Respect to the Kinematics of the Lumbar Spinal Unit. *J Spinal Disord Tech*. 2010 Jun;23(4):242-8.
- Gun Keorochana, Cyrus E. Taghavi, Shiau-Tzu Tzeng, Kwang-Bok Lee, Jen-Chung Liao, Jeong Hyun Yoo, Jeffrey C. Wang. MRI classification of interspinous ligament degeneration of the lumbar spine: intraobserver and interobserver reliability and the frequency of disagreement. *Eur Spine J*. Feb. 2010. 19:1740-1745.
- Keorochana G, Taghavi CE, Tzeng ST, Morishita Y, Yoo JH, Lee KB, Liao JC, Wang JC. Magnetic resonance imaging grading of interspinous ligament degeneration of the lumbar spine and its relation to aging, spinal degeneration, and segmental motion. *J Neurosurg Spine*. 2010 Oct;13(4):494-9.
- Wei F, Wang J, Zou J, Hong SW, Zhang H, He W, Miyazaki M, Lee SH, Alanay A. Effect of lumbar angular motion on central canal diameter: positional MRI study in 491 cases. *Chin Med J (Engl)*. 2010 Jun;123(11):1422-5.
- Do DH, Taghavi CE, Fong W, Kong MH, Morishita Y, Wang JC. The relationship between degree of facet tropism and amount of dynamic disc bulge in lumbar spine of patients symptomatic for low back pain. *Eur Spine J*. 2011, 20:71-78.
- Keorochana G, Taghavi CE, Lee KB, Yoo JH, Liao JC, Fei Z, Wang JC. Effect of sagittal alignment on kinematic changes and degree of disc degeneration in the lumbar spine: an analysis using positional MRI. *Spine (Phila Pa 1976)*. 2011 May 15;36(11):893-8. PMID: 21242877
- Yanlin T, Aghdasi BG, Montgomery SR, Inoue H, Lu C, Wang JC. Kinetic magnetic resonance imaging analysis of lumbar segmental mobility in patients without significant spondylosis. *Eur Spine J*. Published online: 07 June 2012

SELECTED BOOK AUTHORSHIP

- Khan, S.U.** (1993) Paired pulse excitability of the epileptogenic temporal lobe. (C. Wilson and J. Engel Jr., ed.), Michigan: Bell & Howell Co.
- Bhushan, V., C. Amin, T. Le (1995) *First Aid for the USMLE Part I*. (**S.U. Khan**, Associate contributor), New York: Appleton and Lange.
- Bhushan, V., C. Amin, T. Le (1997) *Jump Start MCAT*. (**S.U. Khan**, Contributor), Baltimore, Maryland: Williams & Wilkins.

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GUEST LECTURER / SPEAKER

4/7/04: Med-Legal Roundtable Meeting-Marriott Inn-Palmdale- Topic: AOCCEM Guidelines, Applications and Implications – Keynote Speaker

6/8/04: Orange County Chiropractic Association Meeting, Newport Beach
Topic: Stand Up, Positional Imaging – Guest Lecturer

10/23/04: AMA Impairment Rating Seminar-Pepperdine University –Orange County Center, Irvine
Topic: AMA Guidelines and Spine – Guest Lecturer

1/22/05: Independent Disability Evaluator Certification Program-Pepperdine University-Orange County Center Irvine Topic: AMA Guidelines and Spine – Guest Lecturer

4/8/05: CAAA-AMA Guides- Med-Legal Seminar- Southern California Seminar-Sheraton Gateway LAX- Panel Speaker

10/1/04 : Western Orthopedic Association's 68th Annual Conv.-Westin St Francis, San Francisco-Speaker

5/25/05: UCLA: UCLA Spine Center-Santa Monica – Grand Rounds Lecturer

4/19/05: CAAA Harbor Chapter Meeting-Long Beach Topic: AMA Guidelines and ACOEM – Keynote Speaker

7/9/05: Associated Physicians Network- AMA Guidelines and ACOEM Seminar-Guest Lecturer

8/9/05: Comprehensive Workers Compensation Seminar:-Montura Hotel, L A Topic "Demystifying State Senate Bill 899: "Successful Strategies for Workers Comp Professionals – Guest Lecturer

10/19/05: CAAA Greater Inland Empire Chapter Meeting- THE USE OF NEW MRI TECHNOLOGY AS OBJECTIVE BASED MEDICINE TO ASSESS AMA IMPAIRMENT RATINGS – KEYNOTE SPEAKER

10/28/05: ACT Work Comp Seminar- AMA Guidelines-Outline w/case histories and how they rate – Guest Lecturer

11/9/05: Prospice Group presents: ACOEM & AMA Impairment System-Norwalk Marriott Hotel, Norwalk, CA Topic: General Overview of SB899 and SB 228 and AMA Guidelines – Guest Lecturer

11/17/05: UCI-Department of Orthopedic Surgery Grand Rounds-Topic: x ray and MRI-Does Position Matter - Guest Lecturer

12/1/05: City Club on Bunker Hill-LA Topic: Advantages of Outsourcing your AMA Impairment Ratings – Keynote Speaker

1/14/06: ACOEM & AMA Impairment System-Tri-City Regional Medical Center, Hawaiian Gardens. Topic: General Overview of SB 899 and SB 228 and AMA Guidelines – Guest Lecturer

2/18/06: ACOEM & AMA Impairment Rating System-Tri-City Regional Medical Center, Hawaiian Gardens, Topic: Introduction to the Upright MRI – Technical Advantages and Disadvantages – Keynote Speaker

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4/21/06: California Orthopedic Annual Meeting-Carlsbad, CA-Co Speaking w/ Dr Gerhardt-
Topic: Proper Application of Inclinometers and Lasers for Objective, Evidence-Based
Measurements and Recording of Range of Motion – Guest Lecturer

5/17/06: CAAA Greater Inland Empire Chapter Meeting-Ontario-“HOW TO GIVE OPTIMAL AMA
RATINGS AND WHAT QUESTIONS TO ASK ABOUT THE AMA RATINGS IN A DEPOSITION” – Keynote
Speaker

5/23/06: CAAA Harbor Area Chapter Meeting-Long Beach- Co-speaker Topic: “Are Your 2006
Cases Getting the Maximum Value Under the AMA Guides” – Keynote Speaker

6/17/06: CALIFORNIA HEALTHCARE NETWORKS, INC. / PROSPICE GROUP, INC. Present:
Introduction to CHN Statewide Medical Provider Network-Tustin Hospital and Medical Center-
Topic: The Advantages and Disadvantages of Positional Imaging – Guest Lecturer

9/19/06: Pacific Practice Networks, Inc Topic: Proper Use of the AMA Guides 5th Edition &
Commonly Missed Ratable Factors – Guest Speaker

10/26/06: Life Chiropractic College West Presents: The New World Order for Building Successful
Workers' Compensation Practices – Keynote Speaker

3/20/08: Patient's Choice Network for Workers' Compensation, Topic: Super Training Day –
Speaker/Panelist

5/16/08: The American College of Spine Surgery, Contemporary Concepts in Spine Surgery –
Kinetic MRI and its relevance in spinal surgery - Keynote Speaker

3/30/09: California Applicant Attorneys Association Annual Maui Seminar – Radiologists – an
often ignored but important physician in worker's compensation – Speaker/Panelist

9/12/09: Dordulian Law Group, Topic: Don't Ignore the Diagnosticians – Objective findings are
critical for treatment and AMA Ratings. – Speaker/Panelist

1/19/12: Doctor's Continuing Education Program, Topic: Patient Education, Examination,
Technique, X-ray, Ethics and Law, Radiology, and Philosophy – Lecturer

2/23/12: Doctor's Continuing Education Program, Topic: Patient Education, Examination,
Technique, X-ray, Ethics and Law, Radiology, and Philosophy – Lecturer

5/03/12: Doctor's Continuing Education Program, Topic: Patient Education, Examination,
Technique, X-ray, Ethics and Law, Radiology, and Philosophy – Lecturer

6/28/12: Doctor's Continuing Education Program, Topic: Patient Education, Examination,
Technique, X-ray, Ethics and Law, Radiology, and Philosophy – Lecturer

8/23/12: Doctor's Continuing Education Program, Topic: Patient Education, Examination,
Technique, X-ray, Ethics and Law, Radiology, and Philosophy – Lecturer

9/29/12: AMARC Seminar series, Topic: How Will SB 863 Affect Your Practice - Lecturer

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11/01/12: Doctor's Continuing Education Program, Topic: Patient Education, Examination, Technique, X-ray, Ethics and Law, Radiology, and Philosophy – Lecturer

2/02/13: AMARC Seminar series, Topic: Senate Bill (SB) 863, Finer Points – Lecturer

4/30/13: Voters Injured At Work, Topic: How to Succeed After SB 863 – Keynote Speaker

ASSOCIATIONS & ACTIVITIES

National Academy for the Advancement of Science

American Medical Association

California Medical Association

Los Angeles County Medical Association

Society for Neuroscience

Judeo-Christian-Islamic Academy, Board of Director

Radiological Society of North America

911 (Newspaper for UCLA School of Medicine), Editor

Substance Abuse Committee, UCLA School of Medicine, Member

Student Affairs Committee, UCLA School of Medicine, Member

Curriculum Working Group on Substance Abuse, Student Representative

Curriculum Working Group on Neuroscience, Student Representative

Search Committee Member for Dean of the UCLA School of Medicine

UCLA School of Medicine Admissions Committee, Member