



ILHAMI KOVANLIKAYA, M.D.

CURRICULUM VITAE

**Date of Preparation:** November, 2016

**A. GENERAL INFORMATION**

1. Name: Ilhami Kovanlikaya
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6. Citizenship: USA

**B. EDUCATIONAL BACKGROUND**

1. Degree	Institution name and location	Dates attended	Year awarded
M.D.	Hacettepe University Ankara, Turkey	1971	1978

**C. PROFESSIONAL POSITIONS AND EMPLOYMENT**

Post-doctoral training

Internship	Hacettepe University, Ankara, Turkey	1977-1978
Residencies	Dept. of Radiology Hacettepe University	1978-1982

School of Medicine  
Ankara, Turkey

Fellowship	MRI Research Fellow Massachusetts General Hospital, Harvard University Boston, Mass. USA	1992-1993
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Academic positions

Assistant Professor of Radiology	Dokuz Eylul University, Turkey,	1988-1990
Associate Professor of Radiology	Dokuz Eylul University, Turkey	1990–1996
Professor of Radiology,	Dokuz Eylul University, Turkey,	1996-2004
Instructor in Radiology	Neuroradiology, Department of Radiology, University of Southern California, Keck School of Medicine CA	2002-2004
Professor and Chairman	Department of Radiology, Yeditepe University, School of Medicine Istanbul, Turkey	2004-2007
Associate Research Professor of Radiology	Weill Cornell Medical College New York, NY	2007-

**D. LICENSURE, BOARD CERTIFICATION, MALPRACTICE**

1. Licensure

The Medical Board of California “Physician`s Certificate of Registration” Certificate Number F 5042 University of Southern California. Keck School of Medicine Los Angeles CA	2002-2004
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2. Board Certification

Turkish Board of Radiology	1982
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**E. PROFESSIONAL MEMBERSHIPS**

Member	Turkish Magnetic Resonance Society	1994-
	Founder and Executive Committee Member	1994-2002
Member	American Society of Neuroradiology	2008-

**F. CURRENT AND PAST INSTITUTIONAL RESPONSIBILITIES**

1. Clinical care

Professor of Radiology	Dokuz Eylul University, Turkey Director of MRI, Neuroradiology	1996-2001
Professor of Radiology	Yeditepe University Hospital, Turkey Neuroradiology, Radiologist in Chief	2004-2007

2. Administrative duties

Member,	Educational Committee of Medical School, Dokuz Eylul University, Turkey	1994-1996
Vice Medical Director,	Dokuz Eylul University Hospital, Turkey	1996-1998
Medical Director,	Dokuz Eylul University Hospital, Turkey	1998-1999
Dean,	School of Medicine, Dokuz Eylul University, Turkey	1999-2000
Chairman,	Department of Radiology, Yeditepe University Hospital, Turkey	2004- 2007

3. Research

Major areas of research interest:

Neuroradiology

Brain Tumors

Advanced MRI Techniques; Diffusion, DTI and Tractography, Perfusion MRI

MR Spectroscopy

## Ongoing Research Projects

1- Evaluation of magnetic susceptibility imaging techniques in MRI

Sponsor: National Institutes of Health | Investigator Role: Co-Investigator

2- Normative Data from Advanced MR Techniques of the Brain

Sponsor: WCMC Department of Radiology | Investigator Role: PI

3- Advanced Magnetic Resonance Imaging for the Study of Normal Pressure Hydrocephalus

Sponsor: Hydrocephalus Association, Leon Levy Foundation | Investigator Role: Co-Investigator

4- Using quantitative susceptibility mapping to differentiate between brain tumor grades

Sponsor: WCMC Department of Radiology | Investigator Role: Co-Investigator

5- Retrospective analysis of quantitative imaging biomarkers as predictors for clinical outcome and pathology in brain tumors

Sponsor: WCMC Department of Radiology | Investigator Role: PI

## Machine Learning:

“Assessment of Brain Tumor Heterogeneity with Quantitative MR Imaging Biomarkers”

The hypothesis of this project is “Quantitative Imaging biomarkers obtained from advanced MRI techniques including Diffusion MRI, MR Perfusion (MRP), Quantitative Susceptibility Map (QSM) and volumetric information incorporated automatically into a conventional MRI report will improve treatment planning and overall survival of patients with brain tumors”. The purpose of this study is to explore the role of histogram and/or texture analysis of ADC, DCE MRP and QSM maps based on entire tumor volumes for distinguishing brain tumor types, tumor grades, assessment of early response to treatment and differentiating treatment effects (pseudo progression) from tumor progression. Although most of these imaging sequences are done routinely, their quantitative analysis has not been utilized in daily clinical practice yet. The goal of this study is having this information with the relevant statistical results automatically incorporated into an MRI report. First, imaging sequences, post processing, image segmentation, registration and statistical methods should be optimized and standardized. Then, meaningful information needs to be extracted from this large scale of data where Machine Learning will play a key role.

## **G. RECENT PUBLICATIONS**

1: Wernicke AG, Lazow SP, Taube S, Yondorf MZ, **Kovanlikaya I**, Nori D, Christos P,

Boockvar JA, Pannullo S, Stieg PE, Schwartz TH. Surgical Technique and Clinically Relevant Resection Cavity Dynamics Following Implantation of Cesium-131 (Cs-131) Brachytherapy in Patients With Brain Metastases. *Oper Neurosurg*. 2016 Mar;12(1):49-60.

2: Chiang GC, Galla N, Ferraro R, **Kovanlikaya I**. The Added Prognostic Value of Metabolic Tumor Size on FDG-PET at First Suspected Recurrence of Glioblastoma Multiforme. *J Neuroimaging*. 2016 Aug 12.

3: Singh R, Kesavabhotla K, Kishore SA, Zhou Z, Tsiouris AJ, Filippi CG, Boockvar JA, **Kovanlikaya I**. Dynamic Susceptibility Contrast-Enhanced MR Perfusion Imaging in Assessing Recurrent Glioblastoma Response to Superselective Intra-Arterial Bevacizumab Therapy. *AJNR Am J Neuroradiol*. 2016 May 26.

4: Chang S, Zhang J, Liu T, Tsiouris AJ, Shou J, Nguyen T, Leifer D, Wang Y, **Kovanlikaya I**. Quantitative Susceptibility Mapping of Intracerebral Hemorrhages at Various Stages. *J Magn Reson Imaging*. 2016 Aug;44(2):420-5.

5: Bander ED, Jones SH, **Kovanlikaya I**, Schwartz TH. Utility of tubular retractors to minimize surgical brain injury in the removal of deep intraparenchymal lesions: a quantitative analysis of FLAIR hyperintensity and apparent diffusion coefficient maps. *J Neurosurg*. 2016 Apr;124(4):1053-60.

6: Deh K, Nguyen TD, Eskreis-Winkler S, Prince MR, Spincemaille P, Gauthier S, **Kovanlikaya I**, Zhang Y, Wang Y. Reproducibility of quantitative susceptibility mapping in the brain at two field strengths from two vendors. *J Magn Reson Imaging*. 2015 Dec;42(6):1592-600.

7: Ivkovic M, Reiss-Zimmermann M, Katzen H, Preuss M, **Kovanlikaya I**, Heier L, Alperin N, Hoffmann KT, Relkin N. MRI assessment of the effects of acetazolamide and external lumbar drainage in idiopathic normal pressure hydrocephalus. *Fluids Barriers CNS*. 2015 Apr 2;12:9. doi: 10.1186/s12987-015-0004-z. PubMed PMID: 25928394; PubMed Central PMCID: PMC4432506.

8: **Kovanlikaya I**, Heier L, Kaplitt M. Treatment of chronic pain: diffusion tensor imaging identification of the ventroposterolateral nucleus confirmed with successful deep brain stimulation. *Stereotact Funct Neurosurg*. 2014;92(6):365-71.

9: Wernicke AG, Yondorf MZ, Peng L, Trichter S, Nedialkova L, Sabbas A, Kulidzhanov F, Parashar B, Nori D, Clifford Chao KS, Christos P, **Kovanlikaya I**, Pannullo S, Boockvar JA, Stieg PE, Schwartz TH. Phase I/II study of resection and intraoperative cesium-131 radioisotope brachytherapy in patients with newly diagnosed brain metastases. *J Neurosurg*. 2014 Aug;121(2):338-48.

- 10: Alperin N, Oliu CJ, Bagci AM, Lee SH, **Kovanlikaya I**, Adams D, Katzen H, Ivkovic M, Heier L, Relkin N. Low-dose acetazolamide reverses periventricular white matter hyperintensities in iNPH. *Neurology*. 2014 Apr 15;82(15):1347-51.
- 11: George E, Heier L, **Kovanlikaya I**, Greenfield J. Diffusion tensor imaging of pyramidal tract reorganization after pediatric stroke. *Childs Nerv Syst*. 2014 Jun;30(6):1135-9.
- 12: Chen W, Zhu W, **Kovanlikaya I**, Kovanlikaya A, Liu T, Wang S, Salustri C, Wang Y. Intracranial calcifications and hemorrhages: characterization with quantitative susceptibility mapping. *Radiology*. 2014 Feb;270(2):496-505.
- 13: Ivkovic M, Liu B, Ahmed F, Moore D, Huang C, Raj A, **Kovanlikaya I**, Heier L, Relkin N. Differential diagnosis of normal pressure hydrocephalus by MRI mean diffusivity histogram analysis. *AJNR Am J Neuroradiol*. 2013 Jun-Jul;34(6):1168-74.
- 14: Jeon JY, **Kovanlikaya I**, Boockvar JA, Mao X, Shin B, K Burkhardt J, Kesavabhotla K, Christos P, Riina H, Shungu DC, Tsiouris AJ. Metabolic response of glioblastoma to superselective intra-arterial cerebral infusion of bevacizumab: a proton MR spectroscopic imaging study. *AJNR Am J Neuroradiol*. 2012 Dec;33(11):2095-102.
- 15: Moore DW, **Kovanlikaya I**, Heier LA, Raj A, Huang C, Chu KW, Relkin NR. A pilot study of quantitative MRI measurements of ventricular volume and cortical atrophy for the differential diagnosis of normal pressure hydrocephalus. *Neurol Res Int*. 2012;2012:718150.
- 16: Boockvar JA, Tsiouris AJ, Hofstetter CP, **Kovanlikaya I**, Fralin S, Kesavabhotla K, Seedial SM, Pannullo SC, Schwartz TH, Stieg P, Zimmerman RD, Knopman J, Scheff RJ, Christos P, Vallabhajosula S, Riina HA. Safety and maximum tolerated dose of superselective intraarterial cerebral infusion of bevacizumab after osmotic blood-brain barrier disruption for recurrent malignant glioma. Clinical article. *J Neurosurg*. 2011 Mar;114(3):624-32.
- 17: Cihangiroglu M, Citci B, Kilickesmez O, Firat Z, Karlikaya G, Uluğ AM, Bingol CA, **Kovanlikaya I**. The utility of high b-value DWI in evaluation of ischemic stroke at 3T. *Eur J Radiol*. 2011 Apr;78(1):75-81.
- 18: **Kovanlikaya I**, Firat Z, Kovanlikaya A, Uluğ AM, Cihangiroglu MM, John M, Bingol CA, Ture U. Assessment of the corticospinal tract alterations before and after resection of brainstem lesions using Diffusion Tensor Imaging (DTI) and tractography at 3T. *Eur J Radiol*. 2011 Mar;77(3):383-91.

## **2-Book Chapters:**

### **1- Head and Neck Imaging (2011)**

Editor in Chief: Peter SOM

Chapter 32: Tumors of the Temporal Bone and the Cerebellopontine Angle

Marcel Maya M.D., William W.M. Lo M.D., **Ilhami Kovanlikaya M.D.**

### **2- MR Imaging in White Matter Diseases of the Brain and Spinal Cord (2005)**

Editors: Massimo Filippi, Nicola De Stefano, Vincent Dousset and Joseph C. McGowan

Springer Berlin Heidelberg

Chapter 6: Head Trauma

Zee Chi-Shing, Marcel Maya, John L. Go, Paul E. Kim and **Ilhami Kovanlikaya**