

## CURRICULUM VITAE

**Devin K. Binder, M.D., Ph.D.**

*Laboratory office:*

Division of Biomedical Sciences  
School of Medicine  
University of California, Riverside  
Riverside, CA 92521  
[www.binderlab.com](http://www.binderlab.com)

*Clinical office:*

Brain & Elective Spine Treatment (B.E.S.T.) Center  
9940 Talbert Avenue, Suite 201  
Fountain Valley, CA 92708  
(949) 829-2378 (-BEST) (phone) (714) 769-6121 (fax)  
[www.bestcenteroc.com](http://www.bestcenteroc.com)

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### EDUCATION/PROFESSIONAL POSITIONS

**UNIVERSITY OF CALIFORNIA** Riverside, CA  
Professor, Center for Glial-Neuronal Interactions, Division of Biomedical Sciences, School of Medicine. Director, Translational Neuroscience Laboratory. Member, Neuroscience Graduate Program. Member, Bioengineering Interdepartmental Graduate (BIG) Program. January 2010–June 2013 (Assistant Professor), July 2013–June 2018 (Associate Professor), July 2018–present (Professor).

**BRAIN AND ELECTIVE SPINE TREATMENT (B.E.S.T.) CENTER** Fountain Valley, CA  
Neurosurgeon specializing in minimally-invasive spine surgery and functional neurosurgery (deep brain stimulation and MR-guided focused ultrasound). January 2010–present.

**UNIVERSITY OF CALIFORNIA** Irvine, CA  
Assistant Professor, Departments of Neurological Surgery and Anatomy & Neurobiology. Director, Epilepsy and Functional Neurosurgery Service. Director, Epilepsy Research Laboratory. Co-Director, Neuro ICU. Member, Interdisciplinary Neuroscience Program. August 2006–December 2009.

**UNIVERSITY OF BONN** Bonn, Germany  
William P. Van Wagenen Fellow, University of Bonn, Germany. Studied epilepsy neurosurgery and neuroscience with Dr. Johannes Schramm and colleagues. July 2005–July 2006.

**UNIVERSITY OF CALIFORNIA** San Francisco, CA  
Resident, Department of Neurological Surgery, University of California, San Francisco. July 2000–June 2005.

**UNIVERSITY OF CALIFORNIA** San Francisco, CA  
Intern, Department of General Surgery, University of California, San Francisco. June 1999–June 2000.

**DUKE UNIVERSITY** Durham, NC  
M.D./Ph.D. Program, Duke University School of Medicine. Ph.D. in Neurobiology awarded June 1998. M.D. awarded May 1999. 1991–1999.

**HARVARD UNIVERSITY** Cambridge, MA  
A.B. *magna cum laude* with highest honors in Biological Anthropology awarded March 1991. 1986–1991.

**HOSPITAL APPOINTMENTS**

**ORANGE COAST MEMORIAL MEDICAL CENTER**  
May 2010–present.

Fountain Valley, CA

**HOAG MEMORIAL HOSPITAL PRESBYTERIAN**  
May 2010–present.

Newport Beach, CA

**HONORS**

Physician of Excellence Award, Orange County Medical Association, 2023  
 Southern California Super Doctors 2023  
 Southern California Super Doctors 2022  
 Outstanding Achievement in Physician-Patient Communication Award, Department of Surgery, Orange Coast Memorial Medical Center, June 2018  
 Best Lecturer—Seminar Series Award, Graduate Program of Biomedical Sciences, School of Medicine, University of California, Riverside, 2018  
 Physician of Excellence Award, Orange County Medical Association, 2018  
 Physician of Excellence Award, Orange County Medical Association, 2014  
 Outstanding Achievement in Physician-Patient Communication Award, Department of Surgery, Orange Coast Memorial Medical Center, June 2013  
 Highly Commended award, Basic and Clinical Sciences category of the 2011 British Medical Association Medical Book Awards for *Cranial Nerves: Anatomy, Pathology, Imaging*  
 Excellence in Teaching Award, UCI School of Medicine, 2009  
 Gold Star Award, UCI Chapter of the Gold Humanism Honor Society, 2009  
 First place prize, poster “Friedrich Nietzsche: syphilitic madness or a meningioma”, American Association of Neurological Surgeons, 2008  
 Research Associates Dean's Junior Physician/Scientist Award, University of California, Irvine, 2007  
 Faculty Career Development Award, University of California, Irvine, 2007  
 Vesalius Award, American Association of Neurological Surgeons, 2007  
 American Epilepsy Society/Milken Family Foundation Early Career Physician Scientist Award, 2006  
 William P. Van Wagenen Fellowship, American Association of Neurological Surgeons, 2005  
 American Society for Stereotactic and Functional Neurosurgery Resident Award, 2003  
 UCSF Teaching to Teach award, graduating medical school class of 2002  
 Pharos Editor's Prize, 2001  
 Red Ribbon Poster Prize, Annual Meeting of the Congress of Neurological Surgeons, September 2001  
 Most Valuable Intern Award, San Francisco General Hospital, 2000  
 Merck Manual Award (1<sup>st</sup> in class), Duke University School of Medicine, May 1999  
 Invited speaker, American Epilepsy Society Investigators' Workshop, December 1997  
 Poster Prize, N.C. Society for Neuroscience, May 1997  
 Alpha Omega Alpha (ΑΩΑ) medical honor society, Duke University (President 1994-1995)  
 NIH Medical Scientist Training Program (MSTP) grant (1991-1999)  
 Hoopes prize, Harvard University  
*Summa cum laude* undergraduate thesis Serotonin and behavioral state  
 John Harvard Scholarship  
 Ford Foundation grant for undergraduate research (1988, renewed 1989)  
 Certificate for Distinction in Teaching, Harvard Derek Bok Center for Teaching and Learning  
 National Merit Finalist

**BOARD CERTIFICATION**

- United States Medical Licensing Examination, Step I: September, 1995
- United States Medical Licensing Examination, Step II: March, 1999
- United States Medical Licensing Examination, Step III: June, 2000
- American Board of Neurological Surgery Primary Examination passed March 2003
- American Board of Neurological Surgery Oral Examination passed May 2012

## LICENSURE

- California Medical License issued 5/24/01
- Drug Enforcement Administration certificate
- California Department of Public Health Fluoroscopy Permit RHC164792
- Cyberknife course certification, Orange County Cyberknife and Radiation Oncology Center, 7/31/10

## POSTGRADUATE CLINICAL EXPERIENCE

- Brain and Elective Spine Treatment (B.E.S.T.) Center and independent neurosurgical practice. January 2010–present.
- Staff neurosurgeon, University of California, Irvine. August 2006–December 2009.
- Fellow, Neurosurgery, University of Bonn, Germany. July 2005–July 2006.
- Chief Resident, Neurosurgery, University of California, San Francisco. July 2004–June 2005.
- Chief Resident, Neurosurgery, San Francisco Veteran’s Affairs Medical Center, San Francisco. January–March 2005.
- Chief Resident, Neurosurgery, San Francisco General Hospital. July–December 2002.
- Resident, Neurosurgery, University of California, San Francisco. July 2000–June 2004.
- Intern, General Surgery, University of California, San Francisco. July 1999–June 2000.

## RESEARCH EXPERIENCE

**PRINCIPAL INVESTIGATOR**, Center for Glial-Neuronal Interactions, Division of Biomedical Sciences, University of California, Riverside. Studying glial cell contributions to epilepsy and spinal cord injury, aquaporin physiology, translational neurophotronics, and Fragile X syndrome electrophysiology. August 2006–December 2009 (UCI), January 2010–present (UCR).

**POSTDOCTORAL RESEARCHER/NEUROSURGERY FELLOW**, laboratory of Dr. Christian Steinhäuser, University of Bonn, Germany. Examined distribution and role of glial water and ion channels in identified hippocampal astrocyte subpopulations. July 2005–June 2006.

**POSTDOCTORAL RESEARCHER/NEUROSURGERY RESIDENT**, laboratory of Dr. Alan S. Verkman, Cardiovascular Research Institute and Department of Medicine, University of California, San Francisco. Developed novel fluorescent method for measurement of brain extracellular space *in vivo* and applied it to study seizures, brain tumors and brain edema. July 2003–June 2005.

**POSTDOCTORAL RESEARCHER/NEUROSURGERY RESIDENT**, laboratory of Dr. Geoffrey T. Manley, Department of Neurological Surgery, University of California, San Francisco. Studied the role of aquaporins in seizure susceptibility and nonsynaptic mechanisms of epileptogenesis. Set up *in vivo* electrophysiology system for quantitative EEG recording. Also examined aquaporin expression in human pathology (gliomas, meningiomas, and epilepsy tissue). July 2002–June 2005.

**GRADUATE STUDENT**, laboratory of Dr. James O. McNamara, Department of Neurobiology, Duke University. Implicated neurotrophins, in particular brain-derived neurotrophic factor, in the molecular etiology of kindling development using immunohistochemical and electrophysiological techniques. 1994–June 1998. Ph.D. dissertation: The functional role of neurotrophins in the kindling model of epilepsy.

**GRADUATE LABORATORY ROTATION**, laboratory of Dr. Dale Purves, Department of Neurobiology, Duke University. Wrote interactive computer software and carried out experiments designed to examine temporal properties of human vision. 1994.

**GRADUATE LABORATORY ROTATION**, laboratory of Dr. William Matthew, Department of Neurobiology, Duke University. Demonstrated ability of anti-idiotypic antibodies to GM1 ganglioside to protect against free radical toxicity *in vitro*. 1993-1994.

**RESEARCH ASSOCIATE**, Laboratory of Neurophysiology, Department of Psychiatry, Harvard Medical School. With Dr. J. Allan Hobson, studied serotonergic modulation of REM sleep parameters as part of research on neurophysiology and pharmacology of sleep. Spring 1988-1991. Resulting undergraduate honors thesis Serotonin and behavioral state awarded *summa cum laude* and Hoopes Prize, Harvard University.

**INDEPENDENT RESEARCHER**, subsidized by Ford Foundation grant, Autonomic Function Laboratory, New England Deaconess Hospital, Boston. Investigated relationship of inspiratory resistive loading to heart rate variability. 1988-1989.

## TEACHING EXPERIENCE

**FACULTY**, 1<sup>st</sup> and 2<sup>nd</sup> year medical student neuroscience lectures, School of Medicine, University of California, Riverside. 2010-present.

**COURSE DEVELOPER AND FACULTY**, Resident Neuroscience course, Department of Neurological Surgery, University of California, Irvine. July 2008-December 2009.

**FACULTY**, Medical Neuroscience Course, School of Medicine, University of California, Irvine. 2008-2009.

**LECTURER**, Nurse Practitioner Program, University of California, Irvine. 2006, 2007.

**CREATOR AND DEVELOPER**, Neurosurgery Resident Education website, Department of Neurological Surgery, University of California, San Francisco, CA. Developed comprehensive neurosurgery written boards study material for use on a password-protected departmental website. 2004-2005.

**TEACHING FELLOW**, University of California, San Francisco, CA. Taught neuroanatomy and neurophysiology to UCSF medical students in Brain, Mind and Behavior course. 2004.

**UCSF TEACHING TO TEACH PROGRAM**, University of California, San Francisco, CA. Led small group sessions on teaching medical students how to teach as first-year residents. Awarded UCSF Teaching to Teach award, graduating medical school class of 2002.

**CO-FOUNDER AND PARTNER**, Triangle MCAT Review, Durham, NC. Organized, wrote materials, and taught biology and organic chemistry for MCAT preparation course. Spring 1996-1999.

**TEACHING ASSISTANT**, Medical School Neurobiology Course, Dept. of Neurobiology, Duke University. 1996, 1997.

**TEACHING FELLOW** for introductory organismic and evolutionary biology, Harvard University. Taught laboratory methods in biology, graded lab reports, led review sessions, and tutored students. Fall 1988-Summer 1990. Awarded Certificate for Distinction in Teaching, Harvard Derek Bok Center for Teaching and Learning.

## GRANT SUPPORT

- Ford Foundation grant for undergraduate research (1988, renewed 1989)
- NIH Medical Scientist Training Program (MSTP) grant (1991-1999)
- William P. Van Wagenen Fellowship, American Association of Neurological Surgeons, 2005-2006
  - \$60,000 stipend
  - \$15,000 research expenses
- University of Bonn, BONFOR Intramural Grant Program, 2005-2006
  - Grant title: “Functional role of astrocyte inwardly-rectifying potassium channels and water channels in mouse and human epileptic hippocampus”
  - €8,000 research expenses awarded November 2005
- University of California, San Francisco. Co-investigator, RO1 grant, PI: Geoffrey T. Manley, M.D., Ph.D.
  - Grant title: “Role of aquaporin water channels in cerebral edema”
  - R01NS050173-01A1, May 2005-April 2010
- American Epilepsy Society/Milken Family Foundation Early Career Physician Scientist Award
  - Grant title: “Aquaporin-4 and epileptogenesis”
  - \$50,000 research expenses awarded January 2007
- New York Spinal Cord Research Program Award
  - Co-PI (with Helen E. Scharfman, Nathan Kline Institute for Psychiatric Research)
  - Grant title: “Aquaporin-4 water channels in spinal cord injury”
  - \$160,000 research expenses awarded April 2007
- Faculty Career Development Award, University of California, Irvine
  - \$1,000 research support awarded April 2007
- Research Associates Dean's Junior Physician/Scientist Award, University of California, Irvine
  - \$5,000 research support awarded June 2007
- Principal Investigator, National Institutes of Health K08 award NS059674
  - Grant title: “Aquaporin water transport, extracellular space and epilepsy”
  - \$135,000/year research support awarded July 2007
  - July 2007-June 2012
- Principal Investigator, Epilepsy Foundation of America Research Grant
  - Grant title: “Optical detection of the pre-seizure state”
  - \$50,000/year research support awarded January 2009

- January 2009-December 2011
- Co-investigator, Cancer Research Coordinating Committee Research Grant
  - PI: Monica Carson, Director, Center for Glial-Neuronal Interactions, Division of Biomedical Sciences, University of California, Riverside
  - Grant title: “Cellular localization of aquaporin water channels in human glial tumors”
  - \$50,000/year research support awarded May 2010
  - July 2010-June 2011
- Principal Investigator, Pilot Support for Innovative Collaborative Research (PIC) Grant
  - Co-PI: B. Hyle Park, Assistant Professor of Bioengineering, University of California, Riverside
  - Grant title: “Early optical detection of cerebral edema”
  - \$15,000 research support awarded May 2011
- Principal Investigator, Pilot Support for Innovative Collaborative Research (PIC) Grant
  - Co-PI: Todd Fiacco, Assistant Professor of Cell Biology and Neuroscience, University of California, Riverside
  - Grant title: “Role of astrocyte swelling in epilepsy”
  - \$15,000 research support awarded May 2011
- Principal Investigator, UC Discovery Grant—Proof of Concept (award #213073)
  - Co-PI: B. Hyle Park, Department of Bioengineering, University of California, Riverside
  - Grant title: “Early optical detection of cerebral edema”
  - \$248,298 research support awarded September 2011
- Principal Investigator, National Institutes of Health R01 award NS082570
  - Co-PI: Todd Fiacco, Department of Cell Biology & Neuroscience, University of California, Riverside
  - Grant title: “Astrocyte volume-regulated control of neuronal excitability”
  - \$1,749,204 research support awarded June 2013
  - June 2013-May 2018
- Principal Investigator, UCR seed grant
  - Co-PIs: B. Hyle Park, Department of Bioengineering, and Maxim Bazhenov, Department of Cell Biology & Neuroscience, University of California, Riverside
  - Grant title: “Brain mapping with optical coherence tomography”
  - \$60,000 research support awarded July 2013
- Principal Investigator, UCR seed grant
  - Co-PIs: Iryna Ethell, Division of Biomedical Sciences, and Khaleel Razak, Department of Cell Biology & Neuroscience, University of California, Riverside
  - Grant title: “Mechanisms and treatment of sensory deficits in Fragile X syndrome”
  - \$60,000 research support awarded August 2013
- Principal Investigator, National Institutes of Health R01 award NS081243
  - Grant title: “Optical detection of the pre-seizure state”
  - \$1,304,295 research support awarded September 2013
  - September 2013-August 2016
- Co-Principal Investigator, National Institutes of Health U54 award 1U54HD082008
  - Grant title: “Mechanisms of neocortical and sensory hyperexcitability in fragile X syndrome”
  - \$8,707,214 research support awarded September 2014 (UCR subaward total \$2,678,250)

- UCR Co-PIs: Iryna Ethell, Division of Biomedical Sciences, School of Medicine; and Khaleel Razak, Department of Psychology, University of California, Riverside
  - September 2014-May 2020
- Co-Principal Investigator, CalBRAIN Award #349330
    - Grant title: “4-dimensional label-free optical detection of neural activity”
    - \$120,000 research support awarded June 2015
    - UCR Co-PIs: B. Hyle Park, Department of Bioengineering, and Maxim Bazhenov, Department of Cell Biology & Neuroscience, University of California, Riverside
    - June 2014-May 2016
  - Co-Principal Investigator, National Institutes of Health R21 award R21EY026441
    - Grant title: “Label-free 4D optical detection of neural activity”
    - \$231,250 research support awarded September 2015
    - UCR Co-PIs: B. Hyle Park, Department of Bioengineering, and Maxim Bazhenov, Department of Cell Biology & Neuroscience, University of California, Riverside
    - September 2015-August 2016
  - Co-Principal Investigator, Department of Defense Congressionally Directed Medical Research Programs (CDMRP) Grant W81XWH-15-1-0436
    - Grant title: “Mechanisms of auditory hypersensitivity in Fragile X syndrome”
    - \$860,264 research support awarded September 2015
    - UCR Co-PIs: Iryna Ethell, Division of Biomedical Sciences, School of Medicine; and Khaleel Razak, Department of Psychology, University of California, Riverside
    - September 2015-August 2018
  - Co-Investigator, National Science Foundation PIRE award #1545852
    - NSF PIRE program (Partnerships in International Research and Education)
    - Grant title: “Synthesis of Optical Materials for Bioapplications: Research, Education, Recruitment and Outreach (SOMBRERO)”
    - \$3.6M research support awarded October 2015
    - UCR Co-PIs: Guillermo Aguilar, Masaru Rao, Javier Garay, Lorenzo Mangolini, Department of Mechanical Engineering, University of California, Riverside
    - October 2015-September 2020
  - Principal Investigator, Craig H. Neilsen Foundation Grant Award
    - Spinal Cord Injury Research on the Translational Spectrum (SCIRTS) Grant
    - Grant title: “Treatment of spinal cord injury with an osmotic treatment device”
    - \$300,000 research support awarded September 2016
    - September 2016-September 2018
  - Co-Investigator, UC Multicampus Research Award
    - Grant title: “Next generation noninvasive magnetic neuroimaging”
    - \$444,635 research support awarded January 2017
    - January 2017-December 2020
  - Co-Investigator, National Institutes of Health R01 award R01NS104026
    - Grant title: “Regulation of neural migration during brain development”
    - June 2018-February 2023
  - Principal Investigator, Takeda contract 19082740
    - Grant title: “Effect of TAK-063 on Fragile X syndrome electrophysiology”

- June 2019-June 2020
- Co-Principal Investigator, Department of Defense grant W81XWH1910521
  - Grant title: “Developmental acoustic exposure as a novel approach to treat Fragile X Syndrome”
  - UCR Co-PIs: Iryna Ethell, Khaleel Razak
  - July 2019-June 2022
- Co-Principal Investigator, National Institutes of Health R01 award R01NS111552
  - Grant title: “Demyelination is coupled to neuronal hyperexcitability leading to seizures”
  - UCR Co-PIs: Seema Tiwari-Woodruff
  - February 2020-January 2025
- Co-Investigator, National Institutes of Health R37 award NS114516
  - Grant title: “Sex-specific mechanisms of cortical circuit dysfunction in a mouse ASD model”
  - PI: Kimberly Huber, University of Texas
  - UCR Co-I: Khaleel Razak
  - August 2020-June 2024 (1<sup>st</sup> period of Javits award)
- Co-Principal Investigator, National Institutes of Health U54 award 1U54HD104461
  - Grant title: “Translational medicine and mechanistic studies of brain neurophysiology in Fragile X Syndrome”
  - PI: Craig Erickson (Cincinnati Children’s Hospital Medical Center)
  - September 2020-June 2025
- Co-Principal Investigator, Eurosemillas Technology Acceleration Program Proof of Concept award
  - Grant title: “Device to treat acute edema in spinal cord injury”
  - PI: Victor Rodgers (Bioengineering, UCR)
  - March 2021-February 2022
- Co-Investigator, National Institutes of Health award 2R44MH115529-03
  - Grant title: “Novel therapy for Fragile X Syndrome”
  - PI: Fabio Tucci (Epigen Biosciences) and Alysson Muotri (UCSD)
  - April 2021-March 2022

## PATENTS/INVENTIONS

1. **D.K. Binder**, C. Owen and M. Mathews. *Optical detection of seizure, a pre-seizure state, and cerebral edema and optical fiber detection of the same*. U.S. PTO application #20090312646.
2. V.G.J. Rodgers, **D.K. Binder**, D. McBride, M. Hsu and B.H. Park. *Composition and methods for reducing cerebral edema*. U.S. Provisional Serial No. 61/355,792 (filed June 17, 2010). UC Case No. 2010-962-1. Published May 9, 2013 (USPTO #20-130-115-267).
3. **D.K. Binder**, M. Hsu and B.H. Park. *Optical coherence tomography system for detection and monitoring of brain swelling*. UC Case No. 2011-693-1 (filed April 12, 2011).
4. **D.K. Binder**, M.S. Hsu and B.H. Park. *Products of manufacture and methods using optical coherence tomography to detect seizures, pre-seizure states and cerebral edemas*. U.S. PTO provisional application #61/619,071, date of filing 4/2/2012; and U.S. PTO utility patent application #13/855,491, date of filing 4/2/2013.



5. B.H. Park, M.S. Hsu, **D.K. Binder**, C.L. Rodriguez, J.I. Szu. *Method and apparatus for detection of traumatic brain injury using polarization-sensitive optical coherence tomography*. U.S. PTO provisional application #61/903,347, date of filing 11/12/13; UC Case No. 2014-371-1.
6. V.G.J. Rodgers, **D.K. Binder**, C. Hale and J. Yonan. *Therapy for spinal cord edema reduction*. UC Case No. 2016-349 (filed November 13, 2015).
7. C.R. Jonak and **D.K. Binder**. *Multielectrode array technique for electroencephalography*. U.S. PTO provisional application #62/747,819, date of filing 10/19/18; UC Case No. 2018-544.
8. V.G.J. Rodgers and **D.K. Binder**. *Composition and methods for reducing traumatic edema of the central nervous system*. U.S. Patent 10420918 issued 9/24/19.

## COMMITTEE SERVICE AND GRANT REVIEW PANELS

### *Grant review panels*

- DOD Epilepsy Research Program August 2022 (Chair)
- Citizens United for Research in Epilepsy (CURE) grant review panel (February 2022)
- DOD Epilepsy Research Program September 2021 (Chair)
- Citizens United for Research in Epilepsy (CURE) grant review panel (February 2021)
- Citizens United for Research in Epilepsy (CURE) grant review panel (February 2020)
- NIH NST-2 October 2019 (Washington) (phone reviewer)
- DOD Epilepsy Research Program September 2019 (Washington)
- NIH NST-2 June 2019 (Washington)
- NIH BTSS June 2019 (Los Angeles)
- NIH NST-2 March 2019 (San Francisco)
- NIH BTSS February 2019 (Washington)
- Citizens United for Research in Epilepsy (CURE) grant review panel (February 2019)
- University of California President's Postdoctoral Fellowship Program (January 2019) grant review panel
- NIH ZNS1 SRB-L October 2018 (Washington)
- NIH NST-2 October 2018 (Washington)
- NIH NST-2 June 2018 (Washington)
- NIH BTSS June 2018 (San Francisco)
- NIH ZRG1 BDCN-W (06) M April 2018 (virtual meeting)
- NIH NST-2 March 2018 (San Francisco)
- NIH BTSS February 2018 (Washington)
- NIH NST-2 October 2017 (Washington)
- University of California Cancer Research Coordinating Committee (CRCC) (June 2017) (Oakland)
- NIH NST-2 June 2017 (Chicago)
- NIH BTSS June 2017 (San Francisco)
- NIH NST-2 March 2017 (Washington)
- NIH BTSS February 2017 (phone reviewer)
- NIH NST-2 October 2016 (phone reviewer)
- NIH BTSS October 2016 (phone reviewer)
- NIH ZNS1 SRB-L (07) June 2016 (Epilepsy Centers without Walls Special Emphasis Panel) (Washington)
- Oregon Partnership for Alzheimer's Research Grant Review (June 2016)

- University of California Cancer Research Coordinating Committee (CRCC) (June 2016) (Oakland)
- NIH BTSS June 2016 (San Francisco)
- NIH NST-2 March 2016 (San Francisco)
- NIH CNNT February 2016 (San Francisco)
- NIH BTSS February 2016 (phone reviewer)
- NIH CNNT October 2015 (Washington)
- NIH NST-2 October 2015 (Washington)
- Citizens United for Research in Epilepsy (CURE) Challenge award grant reviews (May 2015)
- University of California Cancer Research Coordinating Committee (CRCC) (April 2015) (San Francisco)
- Wings for Life Spinal Cord Research Foundation Grant Review (November 2014)
- University of California Cancer Research Coordinating Committee (CRCC) (April 2014) (San Francisco)
- Oregon Partnership for Alzheimer's Research Grant Review (April 2013)
- Citizens United for Research in Epilepsy (CURE) grant reviews (February 2011)

*UCR committee service*

- M.D./Ph.D. Program Steering Committee
- Neuroengineering Search Committee
- Neuroimaging Cluster Hire Search Committee
- Clinical Institutional Review Board (IRB) Committee
- Center for Glial-Neuronal Interactions steering committee
- Organizer, CGNI annual colloquium
- Division of Clinical Sciences faculty search committee
- School of Medicine Faculty Executive Committee (FEC)
- M.D./Ph.D. Program steering committee
- Search Committee for Director of Medical Education
- Medical Student Progress and Promotions Committee (chair 10/19 to present)

*UCI committee service*

- Medical School Admissions committee interviewer (2007-2009)
- Co-Director, Neuro ICU (2008-2009)
- Neuroscience Steering Committee (2008-2009)

*National committee service*

- International League Against Epilepsy (ILAE)
  - ILAE/AES Joint Translational Task Force for common data elements (CDEs)
- American Epilepsy Society (AES)
  - Chair, Epileptogenesis subcommittee, AES/NINDS Epilepsy Research Benchmarks Stewards (2017-present)
  - AES/NINDS Epilepsy Research Benchmarks Stewards Committee (2014-present)
  - Research Infrastructure Award Committee (2011-present, co-chair 2012-2013, chair 2013-2015)
  - Student and Resident Education Committee (2007-2010, 2009-2010 as surgery section chair)
  - Scientific Program Committee (2007-2009)
- American Association of Neurological Surgeons
  - Van Wagenen Fellowship Committee, (2010-2013, chair 2011-2012)
  - Publications Committee (2007-2009)

**ORIGINAL PUBLICATIONS**

1. J.J. Quattrochi, A. Mamelak, **D.K. Binder**, J. Williams, C. Rittenhouse, and J.A. Hobson. 1992. Dynamic suppression of REM sleep by parenteral administration of the serotonin-1 agonist eltoprazine. *Sleep* 15(2):125-132.
2. J.J. Quattrochi, A.N. Mamelak, **D. Binder**, J. Williams, and J.A. Hobson. 1993. Dose-related suppression of REM sleep and PGO waves by the serotonin-1 agonist eltoprazine. *Neuropsychopharmacology* 8(1):7-13.
3. T.J. Andrews, L.E. White, **D. Binder**, and D. Purves. 1996. Temporal events in cyclopean vision. *Proc. Natl. Acad. Sci. USA* 93:3689-3692.
4. Y. Watanabe, R.S. Johnson, L.S. Butler, **D.K. Binder**, B.M. Spiegelman, V.E. Papaioannou, and J.O. McNamara. 1996. Null mutation of *c-fos* impairs structural and functional plasticities in the kindling model of epilepsy. *J. Neurosci.* 16(12):3827-3836.
5. **D.K. Binder**, M.J. Routbort, T.E. Ryan, G.D. Yancopoulos, and J.O. McNamara. 1999. Selective inhibition of kindling development by intraventricular administration of trkB receptor body. *J. Neurosci.* 19:1424-1436.
6. **D.K. Binder**, M.J. Routbort and J.O. McNamara. 1999. Immunohistochemical evidence of seizure-induced activation of trk receptors in the mossy fiber pathway of adult rat hippocampus. *J. Neurosci.* 19:4616-4626.
7. **D.K. Binder** and B.J. Iskandar. 2000. Modern neurosurgery for psychiatric disorders. *Neurosurgery* 47:9-23.
8. **D.K. Binder**, C.M. Gall, S.D. Croll and H.E. Scharfman. 2001. BDNF and epilepsy: too much of a good thing? *Trends Neurosci.* 24:47-53.
9. **D.K. Binder** and B.J. Iskandar. 2001. Modern neurosurgery for psychiatric disorders (letter; comment). *Neurosurgery* 48:1193-1194.
10. **D.K. Binder**, C.M. Gall, S.D. Croll and H.E. Scharfman. 2001. Response: BDNF and epilepsy—the bad could turn out to be good (letter; comment). *Trends Neurosci.* 24:319.
11. **D.K. Binder**. 2001. The medical history of chocolate. *The Pharos* 64:22-26.
12. **D.K. Binder** and M.S. Berger. 2001. Molecular factors associated with invasiveness of malignant gliomas. *Advances in Clinical Neurosciences* 11:25-37.
13. **D.K. Binder**, W.P. Dillon, R.A. Fishman, and M.H. Schmidt. 2002. Intrathecal saline infusion in the treatment of obtundation associated with spontaneous intracranial hypotension: technical case report. *Neurosurgery* 51:830-837.
14. **D.K. Binder** and M.S. Berger. 2002. Proteases and the biology of glioma invasion. *J. Neurooncol.* 56:149-158.
15. **D.K. Binder**, M.H. Schmidt, and P.R. Weinstein. 2002. Lumbar spinal stenosis. *Sem. Neurol.* 22:157-165.
16. M.H. Schmidt and **D.K. Binder**. 2002. Spontaneous intracranial hypotension. *Contemporary Neurosurgery* 24:1-4.
17. **D.K. Binder**. 2002. Mechanisms of drug resistance in epilepsy: lessons from oncology. *Drug Discovery Today* 24:1205.
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41. M.S. Mathews, D. Abookasis, C. Lay, D. Cuccia, **D.K. Binder**, R.D. Frostig, B.J. Tromberg and M.E. Linskey. 2007. Modulated imaging: shedding light on quantifying cerebral ischemia. Abstract, 2007 International Stroke Conference.
42. **D.K. Binder**, X. Yao, Z. Zador, T.J. Sick, C. Steinhäuser, A.S. Verkman and G.T. Manley. Increased seizure duration and altered potassium kinetics in mice lacking aquaporin-4 water channels. Abstract, 2007 NIH Curing Epilepsy Meeting.
43. **D.K. Binder**. Potential role of glial water channels in epilepsy. Abstract, 2007 VIII Annual Meeting on Glial Cells in Health and Disease. Published as *Neuron Glia Biology* 3(S1):S9-S10.
44. G. Seifert, C. Hartmann, **D. Binder**, K. Hüttmann, A. Wyczynski, C. Steinhäuser. Developmental regulation of Kir4.1 expression in hippocampal astrocytes: molecular and functional analyses. Abstract, 2007 VIII Annual Meeting on Glial Cells in Health and Disease. Published as *Neuron Glia Biology* 3(S1):S166.
45. C.M. Owen, M.S. Mathews, D. Abookasis, J.G. Kim, A. Durkin, D. Cuccia, B.J. Tromberg and **D.K. Binder**. 2007. Imaging optical absorption and scattering in a mouse model of seizures. Select Abstract, 2007 Congress of Neurological Surgeons meeting.
46. M.S. Mathews, C.M. Owen, J.G. Kim, D. Abookasis, H. Hirschberg, **D.K. Binder**, Y.-H. Zhou, B.J. Tromberg and M.E. Linskey. Quantitative optical spectroscopic mapping of brain tumors. Abstract, 2007 Meeting of the Society for Neuro-oncology.
47. D. Abookasis, C. Lay, M.S. Mathews, **D.K. Binder**, R.D. Frostig and B.J. Tromberg. Modulated imaging: a novel method for quantifying tissue chromophores in evolving cerebral ischemia. Abstract, International Society for Optical Engineering (SPIE), Medical Imaging Conference, February 2007.
48. M.S. Hsu, V.H. Alfonso and **D.K. Binder**. Expression of the glial water channel aquaporin-4 in the mouse brain. Abstract, 2007 Meeting of the Society for Neuroscience.
49. C.M. Owen, M.S. Mathews, J. Weber, D. Abookasis, A. Durkin, D. Cuccia, B.J. Tromberg and **D.K. Binder**. Shedding light on the pre-seizure state: preictal reduction in optical scattering coefficient in mouse models of seizures. Abstract, 2007 American Epilepsy Society Meeting.
50. J.R. Weber, C.M. Owen, D.J. Lee, D.J. Cuccia, **D.K. Binder**, W.R. Johnson, G.H. Bearman, A.J. Durkin and B.J. Tromberg. Noncontact imaging of multispectral absorption and scattering changes *in vivo* using spatially modulated illumination. Abstract, Photonics West meeting, January 2008.
51. C.M. Owen, A.S. Gill and **D.K. Binder**. Early detection of cerebral edema through an implanted optical probe. Abstract, 2008 Annual Meeting of the American Association of Neurological Surgeons.
52. A.S. Gill, C.M. Owen, M.S. Mathews, D. Abookasis, A. Durkin, D. Cuccia, B.J. Tromberg and **D.K. Binder**. Optical detection of the pre-seizure state. Abstract, 2008 Annual Meeting of the American Association of Neurological Surgeons.

53. M.S. Mathews, M.E. Linskey and **D.K. Binder**. William P. Van Wagenen and the first corpus callosotomies for epilepsy. Abstract, 2008 Annual Meeting of the American Association of Neurological Surgeons.
54. **D.K. Binder**. Toward optical detection of the pre-seizure state. Abstract, Epilepsy Innovation Summit, May 2008. Published as Schachter SC *et al.* Advances in the Application of Technology to Epilepsy: The CIMIT/NIO Epilepsy Innovation Summit. *Epilepsy Behav* (2009), doi:10.1016/j.yebeh.2009.06.028.
55. D. Abookasis, M.S. Mathews, C.M. Owen, **D.K. Binder**, M.E. Linskey, R.D. Frostig and B.J. Tromberg. Using NIR spatial illumination for mapping chromophore changes during cerebral edema. Abstract, 2008 Photonics West Meeting. Published as Proceedings of SPIE, 2008; vol 6842: 68422U1-6.
56. **D.K. Binder**, M. Podlogar, H. Clusmann, C.G. Bien, H. Urbach, T. Kral and J. Schramm. Surgical treatment of parietal lobe epilepsy. Abstract, 2008 American Society for Stereotactic and Functional Neurosurgery (ASSFN) Meeting.
57. G. Seifert, C. Hartmann, **D.K. Binder**, K. Hüttmann, A. Wyczynski, C. Steinhäuser. Quantitative analysis of Kir4.1 channel expression in developing hippocampal astrocytes. Abstract, 2008 Annual Meeting of the Society for Neuroscience.
58. D.J. Lee, M.S. Hsu, M. Seldin, A. Nanduri and **D.K. Binder**. The functional role of aquaporin-4 in epileptogenesis. Abstract, 2008 Annual Meeting of the American Epilepsy Society.
59. M.S. Hsu, D.J. Lee, M. Amini and **D.K. Binder**. Alterations in tissue specific gravity following status epilepticus. Abstract, 2008 Annual Meeting of the American Epilepsy Society.
60. J.D. Riley, V. Choi, **D.K. Binder**, S.C. Cramer and J.J. Lin. Alterations in white matter integrity in temporal lobe epilepsy: association with cognitive functioning and histopathology. Abstract, 15<sup>th</sup> Annual Meeting of the Organization for Human Brain Mapping, San Francisco, June 18-23, 2009.
61. C.M. Owen, M.S. Mathews, D. Abookasis, A.S. Gill, B.J. Tromberg and **D.K. Binder**. Pre-ictal optical changes in rodent hippocampus detected with an implanted optical probe. Abstract, 2009 Annual Meeting of the American Association of Neurological Surgeons.
62. D.J. Lee, K.F. Rajneesh, E.H. Reynolds and **D.K. Binder**. Ceneritious nerve vesicles and ganglion globules: did Robert Bentley Todd anticipate the neuron doctrine? Abstract, 2009 Annual Meeting of the American Association of Neurological Surgeons.
63. K.F. Rajneesh, J.J. Yeh, M. Hsu and **D.K. Binder**. Optical detection of cerebral edema. Abstract, Western Neurosurgical Society Meeting, September 2009. *Awarded Best Basic Science Abstract*.
64. K.F. Rajneesh, J.J. Yeh, M. Hsu and **D.K. Binder**. Early optical detection of cerebral edema. Neurosurgical Forum Abstract, 2009 Annual Meeting of the Congress of Neurological Surgeons (October 26, 2009).
65. K.F. Rajneesh, M.M. Seldin, M. Hsu and **D.K. Binder**. Changes in angiogenic factors following status epilepticus. Digital Poster Abstract, 2009 Annual Meeting of the Congress of Neurological Surgeons.
66. M.M. Seldin, K.F. Rajneesh, M.S. Hsu and **D.K. Binder**. Regulation of angiogenic factors in the mouse intrahippocampal kainic acid model of epileptogenesis. Abstract, 2009 Annual Meeting of the Society for Neuroscience.
67. K.F. Rajneesh, A.J. Lin, J.J. Yeh, M.S. Hsu and **D.K. Binder**. Optical detection of the pre-seizure state *in vivo*. Abstract, 2010 Annual Meeting of the American Association of Neurological Surgeons.

68. K.F. Rajneesh, A.J. Lin, D.N. Tukaye, J.J. Yeh, H. Hakimuddin and **D.K. Binder**. Sushruta: surgeon of ancient India. Abstract, 2010 Annual Meeting of the American Association of Neurological Surgeons.
69. G. Seifert, K. Hüttmann, C. Hartmann, **D.K. Binder**, A. Wyczynski and C. Steinhäuser. Analysis of K<sup>+</sup> channel expression in developing hippocampal astrocytes. Abstract, 2010 Annual Meeting of the Federation of European Neuroscience Societies (FENS).
70. A. Halim, L. Baumgartner and **D.K. Binder**. Effect of deep brain stimulation on autonomic dysfunction in patients with Parkinson's disease. Abstract, 2010 Annual Meeting of the Congress of Neurological Surgeons.
71. D.W. McBride, M.S. Hsu, B.H. Park, **D.K. Binder** and V.G.J. Rodgers. Traumatic brain injury: development of non-invasive imaging and therapies to prevent cerebral edema. Abstract, 2010 TATRC/UC Systemwide Bioengineering Symposium.
72. V.A. Skucas, I.B. Mathews, A.K. Treister, Q. Cheng, M.J. Schaner, A.S. Verkman, M.A. Wood, **D.K. Binder** and H.E. Scharfman. Altered synaptic plasticity and behavior in mice deficient in the glial water channel aquaporin-4. Abstract, 2010 Annual Meeting of the Society for Neuroscience.
73. D.S. Davis, S. Sloniowski, M.S. Hsu, M. Colonna, **D.K. Binder**, I.M. Ethell and M.J. Carson. Murine model of Nasu-Hakola disease reveals TREM2 dependent neuroprotective synaptic responses to systemic inflammation in the developing hippocampus. Abstract, 2011 Annual Meeting of the International Society for Neurochemistry (ISN).
74. C. Reynolds, M. Eberle, M. Hsu, Y. Wang, C. Oh, **D.K. Binder** and H. Park. Imaging cerebral edema using optical coherence tomography. Abstract, 2011 Bioengineering Systemwide Symposium, Santa Barbara, CA.
75. A.M. Fukuda, L. Hirt, K. Ambadipudi, D. Sorensen, **D.K. Binder**, A.S. Verkman, A. Obenaus and J. Badaut. Aquaporin-4 knockout mice have improved outcomes after transient ischemia. Abstract, 2011 Annual Meeting of the Society for Neuroscience.
76. D.W. McBride, M.S. Hsu, B.H. Park, V.G.J. Rodgers and **D.K. Binder**. Development of a novel device for the direct reversal and treatment of cerebral edema. Abstract, 2011 Annual Meeting of the Society for Neuroscience.
77. M. Eberle, C. Reynolds, M.S. Hsu, Y. Wang, C. Oh, **D.K. Binder** and B.H. Park. *In vivo* identification of brain morphology using optical coherence tomography. Abstract, 2011 SPIE Meeting.
78. D.S. Davis, S. Sloniowski, M. Hsu, T. Butts, A. Hernandez, V. Senechal, M. Colonna, **D.K. Binder**, I.M. Ethell and M.J. Carson. Murine model of Nasu-Hakola disease reveals neuroprotective synaptic responses to systemic inflammation are TREM2-dependent in the developing hippocampus. Abstract, 2012 Annual Meeting of the American Society for Neurochemistry.
79. D.W. McBride, M.S. Hsu, V.G.J. Rodgers and **D.K. Binder**. Improving survival following cerebral edema using a hollow fiber-hydrogel device. Abstract, 2012 Annual Meeting of the National Neurotrauma Society.
80. D.W. McBride, M.S. Hsu, V.G.J. Rodgers and **D.K. Binder**. Improving survival following cerebral edema using a hollow fiber-hydrogel device. Abstract 2012 UC Neurotrauma Meeting.
81. **D.K. Binder**, M.M. Eberle, C.L. Reynolds, J.I. Szu, Y. Wang, M.S. Hsu and B.H. Park. Optical coherence tomography detects cortical optical changes associated with PTZ-induced seizure activity. Abstract, 2012 Annual Meeting of the American Epilepsy Society.

82. C. David, **D.K. Binder**, T.A. Fiacco and E.H. Wilson. Aquaporin-4 in the immune response to *Toxoplasma gondii* infection. Abstract, 2013 6<sup>th</sup> Annual Symposium on Glial-Neuronal Interactions in Health and Disease, Riverside, CA.
83. K. Lauderdale, M. Hsu, **D.K. Binder** and T.A. Fiacco. Role of astrocytic swelling and release of glutamate in the initiation and generation of epileptiform type activity. Abstract, 2013 6<sup>th</sup> Annual Symposium on Glial-Neuronal Interactions in Health and Disease, Riverside, CA.
84. T.R. Murphy, M. Hsu, **D.K. Binder** and T.A. Fiacco. Astrocytic glutamate and epileptiform activity in hippocampal slices. Abstract, 2013 6<sup>th</sup> Annual Symposium on Glial-Neuronal Interactions in Health and Disease, Riverside, CA.
85. Y. Otani, D.S. Davis, S. Sloniowski, A. Hernandez, **D.K. Binder**, I.M. Ethell and M.J. Carson. TREM2 deficiency increases microglial neurotoxicity while promoting M2 (alternative) microglial activation states. Abstract, 2013 6<sup>th</sup> Annual Symposium on Glial-Neuronal Interactions in Health and Disease, Riverside, CA.
86. M.J. Carson, C. Ploix, S. Noor, Y. Otani, **D.K. Binder**, D.D. Lo and E.H. Wilson. CNS-immune interactions: a busy two-way street. Abstract, 2013 6<sup>th</sup> Annual Symposium on Glial-Neuronal Interactions in Health and Disease, Riverside, CA.
87. M.M. Eberle, C.L. Reynolds, J.I. Szu, Y. Wang, M.S. Hsu, B.H. Park and **D.K. Binder**. Optical coherence tomography detects cortical optical changes associated with PTZ-induced seizure activity. Abstract, 2013 6<sup>th</sup> Annual Symposium on Glial-Neuronal Interactions in Health and Disease, Riverside, CA.
88. J.A. Hubbard, M. Hsu and **D.K. Binder**. Regulation of glial transporters in an epilepsy model. Abstract, 2013 6<sup>th</sup> Annual Symposium on Glial-Neuronal Interactions in Health and Disease, Riverside, CA.
89. Y. Damestani, B.H. Park, **D.K. Binder**, J.E. Garay, M.P. Rao and G. Aguilar. Windows to the brain: novel concept for providing non-invasive, chronic access to brain for optical diagnostics and therapeutics. Abstract, 2013 SPIE Meeting.
90. A.M. Fukuda, L. Hirt, K. Ambadipudi, **D.K. Binder**, A.S. Verkman, A. Obenaus and J. Badaut. Improved motor activity, decreased lesion volume, and astrocyte network changes in aquaporin-4 knockout mice following transient cerebral ischemia. Abstract, 2013 International Stroke Conference.
91. J.A. Hubbard, M.S. Hsu and **D.K. Binder**. Regulation of glial transporters in an epilepsy model. Abstract, 2013 Annual Meeting of the American Society for Neurochemistry/International Society for Neurochemistry.
92. J.I. Szu, C.L. Reynolds, M.M. Eberle, M.S. Hsu, B.H. Park and **D.K. Binder**. Continuous real-time monitoring of water homeostasis and blood flow in the nervous system with optical coherence tomography. Abstract, 2013 Annual Meeting of the American Society for Neurochemistry/International Society for Neurochemistry.
93. M.R. Haque, M. Oliveira, M.S. Islam, G.N. Filatov, M.S. Hsu, **D.K. Binder**, M. Bazhenov and B.H. Park. Identification of optical changes preceding seizure activation using optical coherence tomography. Abstract, 2013 Biomedical Engineering Society Conference.
94. C.L. Reynolds, M.M. Eberle, J.I. Szu, M.S. Hsu, **D.K. Binder** and B.H. Park. *In vivo* imaging of cerebral edema with optical coherence tomography. Abstract, 2013 Biomedical Engineering Society Conference.
95. Y. Damestani, B.H. Park, **D.K. Binder**, J.E. Garay, M.P. Rao and G. Aguilar. Transparent calvarium prosthesis for enhanced optical therapy and imaging of brain tumor. Abstract, 2013 Biomedical Engineering Society Conference.

96. J.A. Hubbard, J.I. Szu, M.S. Hsu and **D.K. Binder**. Changes in expression of glutamate transporter-1 (GLT1) in an intrahippocampal kainic acid model of epileptogenesis and treatment by  $\beta$ -lactam drugs. Abstract, 2013 Annual Meeting of the Society for Neuroscience.
97. M.M. Eberle, C.L. Reynolds, J.I. Szu, Y. Wang, M.S. Hsu, **D.K. Binder** and B.H. Park. The localization of changes in optical backscattering during seizure progression *in vivo* with optical coherence tomography. Abstract, 2013 Annual Meeting of the Society for Neuroscience.
98. M.R. Haque, M.C. Oliveira, M.S. Islam, G.N. Filatov, M.S. Hsu, **D.K. Binder**, M. Bazhenov and B.H. Park. Changes in backscattered OCT intensity precede seizure onset. Abstract, 2013 Annual Meeting of the Society for Neuroscience.
99. C.L. Reynolds, M.M. Eberle, J.I. Szu, M.S. Hsu, **D.K. Binder** and B.H. Park. Detection of cerebral edema using optical coherence tomography. Abstract, 2013 Annual Meeting of the Society for Neuroscience.
100. J. Szu, C. Reynolds, M. Hsu, B. Park and **D.K. Binder**. Monitoring of traumatic brain injury using optical coherence tomography. Abstract, 2013 Annual Meeting of the Society for Neuroscience.
101. J.A. Hubbard, J.I. Szu, M.S. Hsu and **D.K. Binder**. Characterization of glutamate transporter-1 (GLT1) expression in the intrahippocampal kainic acid model of epilepsy and treatment by distinct  $\beta$ -lactam drugs. Abstract, 2014 Annual Meeting of the American Society of Neurochemistry.
102. J.I. Szu, C.L.R. Rodriguez, B.H. Park and **D.K. Binder**. Monitoring mild traumatic brain injury with polarization-sensitive optical coherence tomography. Abstract, 2014 Annual Meeting of the National Neurotrauma Society.
103. D.W. McBride, M.S. Hsu, V.G.J. Rodgers and **D.K. Binder**. A novel treatment for reduction of cerebral edema using an osmotic transport device. Abstract, 16<sup>th</sup> International Conference on Brain Edema and Cellular Injury, 2014.
104. D.W. McBride, V. Donovan, M.S. Hsu, V.G.J. Rodgers, A. Obenaus and **D.K. Binder**. Reduction of cerebral edema via an osmotic transport device improves functional outcome after traumatic brain injury in mice. Abstract, 16<sup>th</sup> International Conference on Brain Edema and Cellular Injury, 2014.
105. **D.K. Binder**. Aquaporins in brain and spinal cord edema. Abstract, 16<sup>th</sup> International Conference on Brain Edema and Cellular Injury, 2014.
106. C.L.R. Rodriguez, J.I. Szu, M.M. Eberle, M.S. Hsu, **D.K. Binder** and B.H. Park. Change in optical attenuation of the cerebral cortex during cerebral edema detected using optical coherence tomography. Abstract 16<sup>th</sup> International Conference on Brain Edema and Cellular Injury, 2014.
107. J.A. Hubbard, J.I. Szu and **D.K. Binder**. Regulation of hippocampal glutamate transporter-1 (GLT1) expression in the intrahippocampal kainic acid model of epileptogenesis. Abstract, 2014 Annual Meeting of the American Epilepsy Society.
108. J.I. Szu, M.M. Eberle, C.L. Rodriguez, M.S. Hsu, B.H. Park and **D.K. Binder**. *In vivo* optical signal changes observed with optical coherence tomography in a focal cortical seizure model. Abstract, 2014 Annual Meeting of the American Epilepsy Society.
109. C.L.R. Rodriguez, J.I. Szu, M.M. Eberle, M.S. Hsu, **D.K. Binder** and B.H. Park. Decrease of optical attenuation in the cerebral cortex during cerebral edema detected using optical coherence tomography. Abstract, 2015 Optics and the Brain Meeting (Optical Society of America).

110. M.M. Eberle, C.L. Rodriguez, M.S. Hsu, J.I. Szu, **D.K. Binder** and B.H. Park. Localization and visualization of depth-resolved changes in attenuation coefficient during focal seizure propagation with optical coherence tomography. Abstract, 2015 Optics and the Brain Meeting (Optical Society of America).
111. M.M. Hasan, M.R. Haque, T. Myers, O. Gonzalez, M. Oliveira, G. Filatov, M. Bazhenov, **D.K. Binder** and B.H. Park. Detection of seizure induced transient structural changes in the mouse hippocampus using optical coherence tomography. Abstract, 2015 Optics and the Brain Meeting (Optical Society of America).
112. Y.Y. Grinberg, B. Lopez-Bayghen, **D.K. Binder**, D.D. Lo, C.C. Ploix and M.J. Carson. Progressive seizures following microglial activation and influx of professional antigen presenting cells in autoimmune targeting of astrocytes. Abstract, 2015 National Neurotrauma Society Meeting.
113. T.L. Myers, O.C. González, M. Eberle, **D.K. Binder**, B.H. Park and M. Bazhenov. Properties of 4-aminopyridine-induced epileptiform activity: multichannel electrophysiology and optical coherence tomography *in vitro*. Abstract, 2015 Society for Neuroscience Meeting.
114. Y.Y. Grinberg, B. López-Bayghen, Z.M. Rivas, L.A. Navarro, **D.K. Binder**, D.D. Lo, C.C. Ploix and M.J. Carson. Autoimmune targeting of astrocytes results in progressive seizures: Th1 signaling and brain infiltration of professional antigen presenting cells. Abstract, 2015 Society for Neuroscience Meeting.
115. T. Wen, S. Reinhard, H. Sidhu, K. Tapia, M. Hsu, J. Lovelace, K. Razak, **D.K. Binder** and I. Ethell. Developmental deficits in auditory cortex of a Fragile X syndrome mouse model. Abstract, 2015 Society for Neuroscience Meeting.
116. J.A. Hubbard, J.I. Szu, J. Yonan and **D.K. Binder**. Time course of glutamate transporter-1 (GLT1) expression in the intrahippocampal kainic acid model of epilepsy. Abstract, 2015 Annual Meeting of the American Epilepsy Society.
117. A. Lapato, J. Szu, J. Hasselmann, **D.K. Binder** and S. Tiwari-Woodruff. Chronic demyelination-induced seizures. Abstract, 2016 Annual Meeting of the American Society for Neurochemistry.
118. J. Hubbard, J. Szu, J. Yonan and **D.K. Binder**. Regulation of astrocyte glutamate transporter-1 (GLT1) and aquaporin-4 (AQP4) expression in a model of epilepsy. Abstract, 2016 Annual Meeting of the American Society for Neurochemistry.
119. J. Lovelace, T. Wen, S. Reinhard, M. Hsu, H. Sidhu, I. Ethell, **D.K. Binder** and K. Razak. Matrix metalloproteinase-9 deletion rescues auditory evoked potential habituation deficit in a mouse model of Fragile X syndrome. Abstract, 2016 Annual Meeting of the Association for Research in Otolaryngology.
120. J.I. Szu, D.N. Ornelas, S. Chaturvedi, B.H. Park and **D.K. Binder**. Development and characterization of a new model of posttraumatic epilepsy. Abstract, 2016 Annual Meeting of the National Neurotrauma Society.
121. J. Lovelace, I.M. Ethell, **D.K. Binder** and K.A. Razak. Electrophysiological biomarkers of Fragile X syndrome in awake, freely moving mice. Abstract, 2016 Gordon Research Conference on Fragile X Syndrome and other Autism Spectrum Disorders.
122. J.A. Hubbard and **D.K. Binder**. Lack of interaction between aquaporin-4 (AQP4) and glutamate transporter-1 (GLT1). Abstract, 2016 Annual Meeting of the Society for Neuroscience.
123. J.I. Szu, D.N. Ornelas, S. Chaturvedi, B.H. Park and **D.K. Binder**. Development and characterization of a new model of posttraumatic epilepsy. Abstract, 2016 Annual Meeting of the Society for Neuroscience.

124. J.I. Szu, D.N. Ornelas, M.M. Hasan, K. Hirota, S. Chaturvedi, B.H. Park and **D.K. Binder**. Development and characterization of a new model of posttraumatic epilepsy. Abstract, 2016 Annual Meeting of the American Epilepsy Society.
125. J. A. Hubbard, J.I. Szu, J. Yonan and **D.K. Binder**. The regulation of glutamate transporter-1 (GLT1) and aquaporin-4 (AQP4) expression in an epilepsy model. Abstract, 2016 Annual Meeting of the American Epilepsy Society.
126. **D.K. Binder**. Role of astrocyte channels and transporters in epileptogenesis. Abstract, 2017 Annual Meeting of the American Society for Neurochemistry.
127. J.M. Yonan, C. Hale, V.G.J. Rodgers and **D.K. Binder**. Direct osmotherapy for the reduction of edema following spinal cord injury. Abstract, 2017 Annual Meeting of the Society for Neuroscience.
128. C. Hale, J.M. Yonan, **D.K. Binder** and V.G.J. Rodgers. Osmotic transport device to alleviate tissue swelling following spinal cord injury. Abstract, 2017 Biomedical Engineering Society Annual Meeting.
129. J.I. Szu, S. Chaturvedi, D. Ornelas, J. Liu, D. Patel, B.H. Park and **D.K. Binder**. Altered optical and electrographic changes in the posttraumatic epileptic brain in wild-type and aquaporin-4 knockout mice. Abstract, 2017 Annual Meeting of the American Epilepsy Society.
130. N. Davoodzadeh, D. Halaney, C. Jonak, N. Cuando, A. Aminfar, **D.K. Binder** and G. Aguilar. Laser speckle imaging of brain blood flow through a transparent nanocrystalline yttria-stabilized-zirconia cranial implant. Abstract, 2018 conference on Dynamics and Fluctuations in Biomedical Photonics XV, part of SPIE BiOS.
131. D.L. Halaney, C.R. Jonak, N. Davoodzadeh, J. Liu, J. Shah, P. Ehtiyatkar, B.H. Park, **D.K. Binder** and G. Aguilar. Optical coherence tomography and laser speckle imaging of the brain through a transparent cranial implant in a chronic mouse model. Abstract, 2018 ASLMS meeting.
132. T.R. Murphy, T.A. Fiacco and **D.K. Binder**. Examining the contribution of astrocyte volume change to seizure models *in vitro* and *in vivo*. Abstract, 2018 Annual Meeting of the American Society for Neurochemistry.
133. J.I. Szu, S. Chaturvedi, D. Patel, J. Liu, D. Ornelas, B.H. Park and **D.K. Binder**. Optical and electrographic changes in the posttraumatic epileptic brain in wild-type and aquaporin-4 knockout mice. Abstract, 2018 Annual Meeting of the American Society for Neurochemistry.
134. P.S. Pirbhoy, I. Ethell and **D.K. Binder**. Targeted inhibition of hyperexcitable networks contributing to auditory hypersensitivity in Fragile X Syndrome. Abstract, 2018 Annual Meeting of the American Society for Neurochemistry.
135. J.I. Szu, D. Patel, C.R. Jonak, S. Chaturvedi, J.W. Lovelace and **D.K. Binder**. Electrographic changes in the brain after trauma in wild-type and aquaporin-4 knockout mice. Abstract, 2018 Annual Meeting of the Society for Neuroscience.
136. P.S. Pirbhoy, J.W. Lovelace, K.A. Razak, **D.K. Binder** and I.M. Ethell. Inhibition of matrix metalloproteinase-9 activity to correct auditory hypersensitivity in Fragile X Syndrome. Abstract, 2018 Annual Meeting of the Society for Neuroscience.
137. W. Wong, Y. Wong, C. Jonak, **D.K. Binder**, E. Zaghera and M. Riccomagno. Developmental and physiological defects in a mouse model of cobblestone lissencephaly. Abstract, 2018 Annual Meeting of the Society for Neuroscience.



138. J.W. Lovelace, K. Espinoza, I.M. Ethell, **D.K. Binder** and K.A. Razak. Pharmacological rescue of translation-relevant EEG phenotypes in a mouse model of Fragile X Syndrome. Abstract, 2018 Annual Meeting of the Society for Neuroscience.
139. T.R. Murphy, T.A. Fiacco and **D.K. Binder**. Astrocyte volume changes associated with cortical seizures *in vivo*. Abstract, 2018 Annual Meeting of the Society for Neuroscience.
140. A.R. Peterson and **D.K. Binder**. Hippocampal GLT1 regulation in the intrahippocampal kainic acid model of epilepsy. Abstract, 2018 Annual Meeting of the Society for Neuroscience.
141. A.S. Lapato, C.R. Jonak, K. Lauderdale, **D.K. Binder** and S.K. Tiwari-Woodruff. Remodeling of GABAergic innervation may contribute to cortical hyperexcitability and seizures in chronically demyelinated mice. Abstract, 2018 Annual Meeting of the Society for Neuroscience.
142. J.I. Szu, S. Chaturvedi, D.D. Patel and **D.K. Binder**. Mislocalization of AQP4 in a controlled cortical impact model of posttraumatic epilepsy. Abstract, 2019 Annual Meeting of the National Neurotrauma Society.

### INVITED PRESENTATIONS/SEMINARS

1. Insightec Seminar, “Magnetic resonance-guided focused ultrasound treatment of tremor”, Fountain Valley, CA (online webinar). March 28, 2023.
2. Colloquium Chair and Speaker, Annual Meeting of the American Society for Neurochemistry. *Invited lecture*: “Glutamate uptake regulation as a therapeutic strategy in epilepsy”. Lexington, KY. March 20, 2023.
3. Keynote Speaker, Neurosurgery Research Symposium, Department of Neurosurgery, Rutgers University. *Invited lecture*: “Role of astrocytes in epilepsy”. New Brunswick, NJ. March 17, 2023.
4. Grand Rounds, Department of Neurological Surgery, University of California, Irvine. *Invited lecture*: “Magnetic resonance-guided focused ultrasound (MRgFUS) treatment of tremor” (Zoom). February 3, 2023.
5. Insightec Seminar, “Magnetic resonance-guided focused ultrasound treatment of tremor”, Riverside, CA. December 16, 2022.
6. Insightec Seminar, “Magnetic resonance-guided focused ultrasound treatment of tremor”, Costa Mesa, CA. July 26, 2022.
7. Gordon Research Conference “Fragile X and Autism-Related Disorders”, Barga, Italy. *Invited lecture*: “Translational EEG biomarkers derived using multielectrode array EEG in mice”. May 17, 2022.
8. MemorialCare Community Lecture, Fountain Valley, CA. *Invited lecture*: “Breakthrough essential tremor treatment.” January 25, 2022.
9. Long Beach VA Parkinson’s Disease Support Group, Long Beach, CA. *Invited lecture*: “Improvement in quality of life following deep brain stimulation.” February 27, 2021.
10. Fragile X (FRAXA) Research Foundation Webinar. *Invited lecture*: “Network mechanisms of neurophysiology and behavior in mouse models of Fragile X Syndrome”. December 15, 2020.
11. Fragile X (FRAXA) Research Foundation Webinar. *Invited lecture*: “Multielectrode array (MEA) analysis of EEG biomarkers in a mouse model of Fragile X Syndrome”. August 18, 2020.

12. Parkinson & Movement Disorder Alliance, Fullerton, CA. *Invited lecture*: “Improvement in quality of life following deep brain stimulation.” September 13, 2019.
13. Huntington Beach Senior Center, Huntington Beach, CA. *Invited lecture*: “Lumbar stenosis treatment options.” June 25, 2019.
14. UC Riverside School of Medicine Faculty Retreat, Temecula, CA. *Lecture*: “Toward translational EEG biomarkers in mouse models of neurological disorders.” February 8, 2019.
15. Invited visiting lecturer, Department of Radiology, West China School of Medicine/Sichuan University, Chengdu, Sichuan, China. *Invited visiting lecture*: “Toward translational EEG biomarkers in a mouse model of Fragile X Syndrome.” September 27, 2018.
16. Invited visiting lecturer, Department of Neurosurgery, West China School of Medicine/Sichuan University, Chengdu, Sichuan, China. *Invited visiting lecture*: “Cellular and molecular changes in astrocytes during epileptogenesis.” September 25, 2018.
17. Invited visiting lecturer, Department of Neurosurgery, West China School of Medicine/Sichuan University, Chengdu, Sichuan, China. *Invited visiting lecture*: “New approaches to diagnosis and treatment of brain and spinal cord edema.” September 25, 2018.
18. EpiCenter seminar invited speaker, Irvine, CA. *Invited seminar speaker*: “Alterations in astrocyte water channels and glutamate transporters during epileptogenesis.” September 18, 2018.
19. Orange Coast Memorial Medical Center, Fountain Valley, CA. *Invited lecture*: “Improvement in quality of life following deep brain stimulation”. July 18, 2018.
20. 16<sup>th</sup> National Fragile X Foundation International Fragile X Conference, Cincinnati, OH. *Invited plenary lecture*: “Toward translational EEG biomarkers in mouse models of Fragile X syndrome.” July 13, 2018.
21. Fragile X Centers Meeting, National Institutes of Health, Bethesda, MD. *Invited lecture*: “Toward translational EEG biomarkers in mouse models of Fragile X syndrome”. May 1, 2018.
22. Mayo Clinic Jacksonville, Neuroscience-Neurological Surgery Lecture Series, Jacksonville, FL. *Invited lecture*: “New concepts for detection and treatment of brain and spinal cord edema.” April 2, 2018.
23. Annual Meeting of the American Society for Neurochemistry (ASN), Public Forum, Riverside, CA. *Lecture*: “Traumatic brain injury.” March 24, 2018.
24. Annual UC Riverside School of Medicine Faculty Retreat, Palm Springs, CA. *Lecture*: “New approaches to translational discoveries in epilepsy, edema, and Fragile X syndrome”. February 9, 2018.
25. Annual Meeting of the American College of Neuropsychopharmacology (ACNP), Palm Springs, CA. *Invited lecture*: “Toward translational EEG biomarkers in a mouse model of Fragile X syndrome.” December 7, 2017.
26. Annual Meeting of the American Society for Neurochemistry, Little Rock, AS. *Invited lecture*: “Role of astrocyte channels and transporters in epileptogenesis.” March 20, 2017.
27. Invited speaker, Investigators’ Workshop, American Epilepsy Society Annual Meeting, Houston, TX. *Invited lecture*: “Regulation of glial water channels and glutamate transporters in epilepsy.” December 4, 2016.

28. Moderator, Investigators' Workshop, American Epilepsy Society Annual Meeting, Houston, TX. *Invited lecture*: "Neurovascular unit in seizures and epilepsy." December 4, 2016.
29. 3<sup>rd</sup> Annual UC Riverside School of Medicine Faculty Retreat, Riverside, CA. *Lecture*: "Posttraumatic epilepsy: overview and new directions". October 7, 2016.
30. Yale University, New Haven, CT. *Invited lecture*: "Regulation of glial water channels and glutamate transporters in a rodent model of epileptogenesis." September 21, 2016.
31. Synthesis of Optical Materials for Bioapplications: Research, Education, Recruitment and Outreach (SOMBRERO) meeting, Riverside, California. *Invited lecture*: "Window to the Brain: translational aspects." September 12, 2016.
32. Loma Linda University Medical Center Parkinson's Disease Patients and Caregivers Symposium, Newport Beach, CA. *Invited lecture*: "Improvement in quality of life following deep brain stimulation." July 22, 2016.
33. RTI Surgical 3<sup>rd</sup> Annual Winter Biologics Spine Symposium, New York, NY. *Invited lecture*: "Surface coatings: do they make a difference?" December 12, 2015.
34. Legacy Research Institute, Portland, OR. *Invited lecture*: "Regulation of glial water channels and glutamate transporters in a rodent model of epileptogenesis." November 19, 2015.
35. Synthesis of Optical Materials for Bioapplications: Research, Education, Recruitment and Outreach (SOMBRERO) meeting, Ensenada, Mexico. *Invited lecture*: "Window to the Brain: translational aspects." October 23, 2015.
36. 2<sup>nd</sup> Annual UC Riverside School of Medicine Faculty Retreat, Lake Arrowhead, CA. *Lecture*: "Novel optical methods for detection of brain edema and seizures." October 9, 2015.
37. Loma Linda University Medical Center Parkinson's Disease Annual Symposium 2015, Loma Linda, CA. *Invited lecture*: "Improvement in quality of life following deep brain stimulation." September 18, 2015.
38. National Spasmodic Torticollis Association (NSTA) Symposium 2015, San Diego, CA. *Invited lecture*: "Surgical treatment of spasmodic torticollis." June 13, 2015.
39. Spring Hippocampal Research Conference, Taormina, Italy. *Invited lecture*: "Potential role of aquaporin-4 in epilepsy." June 8, 2015.
40. Neurology Grand Rounds Presentation, University of Utah, Salt Lake City, UT. *Invited lecture*: "Astrocyte water homeostasis in epilepsy and CNS injury". April 1, 2015.
41. 1<sup>st</sup> Annual UC Riverside School of Medicine Faculty Retreat, Lake Arrowhead, CA. *Lecture*: "Astrocyte glutamate and water homeostasis as novel targets for epilepsy detection and treatment." October 11, 2014.
42. 16<sup>th</sup> International Conference on Brain Edema and Cellular Injury, Huntington Beach, CA. *Invited lecture*: "Aquaporins in brain and spinal cord edema." September 28, 2014.
43. American Parkinson's Disease Association Annual Seminar, Orange Coast Memorial Medical Center, Fountain Valley, CA. *Invited lecture*: "Improvement in quality of life following deep brain stimulation." September 27, 2014.
44. National Spasmodic Torticollis Association (NSTA) Symposium 2014, Las Vegas, NV. *Invited lecture*: "Surgical treatment of spasmodic torticollis." September 21, 2014.

45. 15<sup>th</sup> Annual University of California Neurotrauma Symposium, Carmel, CA. *Invited lecture*: “Posttraumatic epilepsy: overview and new directions.” September 15, 2014.
46. 8<sup>th</sup> World Congress on Controversies in Neurology, Berlin, Germany. *Invited lecture*: “When should deep brain stimulation for Parkinson’s disease be initiated?” May 10, 2014.
47. The Winery Restaurant, Tustin, CA. *Lecture*: “Spinal stenosis: rational treatment with modern minimally-invasive techniques.” April 9, 2014.
48. American Parkinson’s Disease Association Annual Seminar, Orange Coast Memorial Medical Center, Fountain Valley, CA. *Invited lecture*: “Improvement in quality of life following deep brain stimulation.” September 14, 2013.
49. 7<sup>th</sup> World Congress on Controversies in Neurology, Istanbul, Turkey. *Invited lecture*: “Is deep brain stimulation better than botulinum toxin in primary dystonia?” April 12, 2013.
50. 7<sup>th</sup> World Congress on Controversies in Neurology, Istanbul, Turkey. *Invited lecture*: “When should deep brain stimulation for Parkinson’s disease be initiated?” April 12, 2013.
51. Center at Founders Village Senior and Community Center, Fountain Valley, CA. *Invited lecture*: “Essential tremor: there is hope!” October 15, 2012.
52. University of California Neurotrauma Annual Meeting, Sonoma, CA. *Invited lecture*: “Posttraumatic epilepsy.” September 10, 2012.
53. American Parkinson’s Disease Association Annual Seminar, Saddleback Memorial Medical Center, Laguna Hills, CA. *Invited lecture*: “Improvement in quality of life following deep brain stimulation.” September 8, 2012.
54. Orange Coast Memorial Medical Center, Fountain Valley, CA. *Invited lecture*: “Spinal stenosis: there is hope!” June 28, 2012.
55. Biomedical Sciences Seminar Series, University of California, Riverside, CA. *Invited lecture*: “Molecular changes in astrocytes after status epilepticus.” June 8, 2012.
56. Grand Rounds, Loma Linda Department of Neurological Surgery, Loma Linda, CA. *Invited lecture*: “New optical methods for detection of brain edema and seizures.” May 30, 2012.
57. Pediatric Neurology Conference, Loma Linda University Medical Center, Loma Linda, CA. *Invited lecture*: “Hemispheric disconnection procedures.” May 30, 2012.
58. Grand Rounds, Department of Neurological Surgery, University of California, Davis, CA. *Invited lecture*: “New approaches to diagnosis and treatment of cerebral edema.” April 10, 2012.
59. System-wide University of California Technology Transfer Forum, Burlingame, CA. *Invited lecture*: “Early optical detection of cerebral edema.” April 5, 2012.
60. Center for Glial-Neuronal Interactions Annual Symposium, Riverside, CA. *Invited lecture*: “Novel optical approaches to monitoring seizure activity.” January 27, 2012.
61. Orange Coast Memorial Medical Center Deep Brain Stimulation Program event, Costa Mesa, CA. *Lecture*: “Deep brain stimulation for movement disorders.” January 26, 2012.

62. Department of Bioengineering, University of California, Riverside. *Invited lecture*: “New approaches to detection and treatment of brain edema and seizures.” January 11, 2012.
63. Neural Plasticity seminar series, University of California, Los Angeles. *Invited lecture*: “Unexpected roles of aquaporin water channels in the central nervous system.” December 2, 2011.
64. Department of Biochemistry, University of California, Riverside. *Invited lecture*: “Unexpected roles of aquaporin water channels in the central nervous system.” November 22, 2011.
65. Center for Glial-Neuronal Interactions, Division of Biomedical Sciences, University of California, Riverside. *Research seminar*: “Astrocyte glutamate and water homeostasis as novel targets for epilepsy detection and treatment.” November 18, 2011.
66. XSpine course, Axle Interspinous spacer, Las Vegas, NV (*Course director*). October 21, 2011.
67. Monarch Orange County Neurology Group, Costa Mesa, CA. *Lecture*: “Deep brain stimulation for movement disorders.” June 8, 2011.
68. Parkinson’s disease support group, Claremont Club, Claremont, CA. *Invited lecture*: “Deep brain stimulation for Parkinson’s disease.” February 24, 2011.
69. Young-onset Parkinson’s disease support group, Claremont Club, Claremont, CA. *Invited lecture*: “Deep brain stimulation for Parkinson’s disease.” February 19, 2011.
70. 2010 Annual Meeting of the Congress of Neurological Surgeons, San Francisco, CA. *Poster presentation*: “Effect of deep brain stimulation on autonomic dysfunction in patients with Parkinson’s disease.” October 18, 2010.
71. Dystonia Medical Research Foundation (DMRF) Regional Symposium, Pasadena, CA. *Invited lecture*: “Deep brain stimulation for dystonia.” October 2, 2010.
72. Epilepsy Special Interest Group, 135th Annual Meeting of the American Neurological Association, San Francisco, CA. *Invited lecture*: “Optical detection of the pre-seizure state.” September 12, 2010.
73. Mt. San Antonio Gardens, Pomona, CA. *Invited lecture*: “Deep brain stimulation for movement disorders.” July 21, 2010.
74. Indian Medical Association of Southern California, Artesia, CA. *Invited lecture*: “Deep brain stimulation for movement disorders.” June 6, 2010.
75. Obenaus and Badaut Laboratory Groups, Loma Linda University, Loma Linda, California. *Invited lecture*: “Protective role of aquaporin-4 water channels following contusion spinal cord injury.” April 12, 2010.
76. Verkman Laboratory Group, University of California, San Francisco. *Invited lecture*: “Protective role of aquaporin-4 water channels following contusion spinal cord injury.” April 2, 2010.
77. American Society for Neurochemistry Pre-meeting Workshop, Imaging neuro-glial interactions in health and disease, Santa Fe, NM. *Invited lecture*: “Toward optical detection of the pre-seizure state.” March 6, 2010.
78. Annual Symposium, UCI Comprehensive Epilepsy Program, Irvine, CA. *Invited lecture*: “Corpus callosotomy.” January 23, 2010.
79. 2009 American Epilepsy Society meeting, Boston, MA. *Invited lecture*: “Toward optical detection of the pre-seizure state.” December 6, 2009.

80. California Parkinson's Group, Tustin, CA. *Invited lecture*: "Deep brain stimulation for Parkinson's disease." December 1, 2009.
81. UC Irvine School of Medicine 16<sup>th</sup> Annual Student-Faculty Retreat. *Invited seminar*: "Brain surgery: a hands-on introduction." September 5, 2009.
82. 2009 Annual Meeting of the American Association of Neurological Surgeons, Chicago, IL. *Invited practical course lecture*: "Hemispheric disconnection procedures." May 3, 2009.
83. CME event, Laguna Niguel, CA. *Lecture*: "Deep brain stimulation for essential tremor." April 15, 2009.
84. Annual Symposium, UCI Comprehensive Epilepsy Program, Irvine, CA. *Invited lecture*: "Curing complicated epilepsy: epilepsy surgery in dual pathology." January 31, 2009.
85. CME event, Costa Mesa, CA. *Lecture*: "Deep brain stimulation for essential tremor." January 21, 2009.
86. International Essential Tremor Foundation support group meeting, Tustin, CA. *Invited lecture*: "Deep brain stimulation for essential tremor." January 14, 2009.
87. 2008 Annual Meeting of the American Epilepsy Society, Seattle, WA. *Poster presentation*: "Alterations in tissue specific gravity following status epilepticus." December 8, 2008.
88. 2008 Annual Meeting of the American Epilepsy Society, Seattle, WA. *Poster presentation*: "The functional role of aquaporin-4 in epileptogenesis." December 7, 2008.
89. UC Irvine Brain Tumor Research Retreat, Laguna Beach, California. *Invited lecture*: "Water and brain tumors." October 6, 2008.
90. 8<sup>th</sup> European Congress on Epileptology, Berlin, Germany. *Invited lecture*: "Aquaporins, water balance and epilepsy—studies in animal models." September 24, 2008.
91. 2008 Annual Sales Meeting, Integra Corporation, Long Beach, California. *Invited lecture*: "Operating with confidence in epilepsy surgery." July 17, 2008.
92. 2008 American Society for Stereotactic and Functional Neurosurgery (ASSFN) Meeting, Vancouver, Canada. *Platform presentation*: "Surgical treatment of parietal lobe epilepsy." June 2, 2008.
93. Hot Topics in Critical Care symposium, University of California, Irvine. *Invited lecture*: "Seizure classification and management." May 30, 2008.
94. Epilepsy Association of Orange County patient support group. *Invited lecture*: "Surgical treatment of epilepsy." May 23, 2008.
95. John Kusske Annual Symposium, Department of Neurological Surgery, University of California, Irvine. *Invited lecture*: "Posttraumatic epilepsy." May 10, 2008.
96. Epilepsy Innovation Summit, Westin Copley Place Hotel, Boston, MA. *Invited lecture*: "Toward optical detection of the pre-seizure state." May 7, 2008. Published in September 2008 issue of *Epilepsy & Behavior*.
97. Dystonia Medical Research Foundation patient symposium, Marriott Hotel, Irvine. *Invited lecture*: "Deep brain stimulation therapy for dystonia." May 4, 2008.

98. 2008 Annual Meeting of the American Association of Neurological Surgeons, Chicago, IL. *Platform presentation*: “Optical detection of the pre-seizure state.” April 29, 2008.
99. 2008 Annual Meeting of the American Association of Neurological Surgeons, Chicago, IL. *Platform presentation*: “Early detection of cerebral edema through an implanted optical probe.” April 29, 2008.
100. 2008 Annual Meeting of the American Association of Neurological Surgeons, Chicago, IL. *E-poster presentation*: “Friedrich Nietzsche: syphilitic madness or a meningioma? April 28, 2008. *First place prize, History Section*.
101. 2008 Annual Meeting of the American Association of Neurological Surgeons, Chicago, IL. *Invited practical course lecture*: “Hemispheric disconnection procedures.” April 27, 2008.
102. UCI Epilepsy Research Center Symposium “Hot Topics in Epilepsy Research”, Newport Beach, CA. *Invited lecture*: “Potential role of the glial water channel aquaporin-4 in epilepsy.” Session Convener, Glial Cells and Epilepsy. March 14, 2008.
103. 21<sup>st</sup> Annual Neurosurgery in the Rockies Meeting, Beaver Creek, CO. *Invited lecture*: “Surgical treatment of parietal lobe epilepsy.” February 25, 2008.
104. Annual Retreat, UCI Medical Scientist Training Program, Lake Arrowhead, CA. *Invited lecture*: “The M.D./Ph.D. lifestyle: one ‘quixotic’ journey.” February 22, 2008.
105. Annual Symposium, UCI Comprehensive Epilepsy Program, Irvine, CA. *Invited lecture*: “Surgical and emerging treatments for epilepsy.” January 26, 2008.
106. 2007 Annual Meeting of the American Epilepsy Society, Philadelphia, PA. *Poster presentation*: “Shedding light on the pre-seizure state: preictal reduction in optical scattering coefficient in mouse models of seizures.” December 2, 2007.
107. 37<sup>th</sup> Annual Meeting of the Society for Neuroscience, San Diego, CA. *Poster presentation*: “Expression of the glial water channel aquaporin-4 in the mouse brain.” November 6, 2007.
108. 1<sup>st</sup> Annual Symposium on Glial-Neuronal Interactions, University of California, Riverside, CA. *Invited lecture*: “Potential role of glial water channels in epilepsy and other neurological diseases.” October 26, 2007.
109. European Meeting on Glial Cells in Health and Disease (Euroglia), London, UK. *Invited lecture*: “Potential role of glial water channels in epilepsy.” September 5, 2007.
110. John Kusske Annual Symposium, Department of Neurological Surgery, University of California, Irvine. *Invited talk*: “Brain mapping and awake craniotomy for brain tumor resection.” May 19, 2007.
111. American Association of Neurological Surgeons, Washington, DC. *Platform presentation*: “The surgeon and anatomist Friedrich-Christian Rosenthal.” April 17, 2007.
112. American Association of Neurological Surgeons, Washington, DC. *Platform presentation*: “Surgical treatment of occipital lobe epilepsy.” April 16, 2007.
113. National Institutes of Health, Curing Epilepsy 2007 Meeting, Bethesda, MD. *Poster presentation*: “Increased seizure duration and altered potassium kinetics in mice lacking aquaporin-4 water channels.” March 28, 2007.

114. UCI EpiCenter Symposium, University of California, Irvine, CA. *Invited lecture*: “How does surgery cure epilepsy?” March 6, 2007.
115. Annual Symposium, UCI Comprehensive Epilepsy Program, Irvine, CA. *Invited lecture*: “How epilepsy surgery impacts cognition.” January 27, 2007.
116. COSIGN (College Student Interest Group in Neurology) chapter, University of California, Irvine, CA. *Invited lecture*: “Workup and surgery for intractable epilepsy.” October 2, 2006.
117. Riverside Medical Group, Riverside, CA. *Invited lecture*: “Workup and surgery for intractable epilepsy.” October 2, 2006.
118. Epilepsy Alliance of Orange County. *Invited lecture*: “Surgical approaches to mesial temporal lobe epilepsy.” September 15, 2006.
119. Departments of Medicine and Physiology, University of California, San Francisco. *Invited lecture*: “Aquaporin-4, seizures, and water regulation.” July 2006.
120. Federation of European Neuroscience Societies, Vienna, Austria. *Poster presentation*: “Laminar-specific expression of AQP4 in the mouse hippocampus and co-expression with  $K_{i4.1}$  in subtypes of hippocampal astrocytes.” July 2006.
121. Seventh European Congress on Epileptology, Helsinki, Finland. *Platform presentation*: “Surgical treatment of occipital lobe epilepsy.” July 2006.
122. Seventh European Congress on Epileptology, Helsinki, Finland. *Platform presentation*: “Surgical treatment of parietal lobe epilepsy.” July 2006.
123. American Association of Neurological Surgeons, San Francisco, CA. *Poster presentation*: “Increased seizure duration and slowed potassium kinetics in mice lacking aquaporin-4 water channels.” April 2006.
124. American Association of Neurological Surgeons, New Orleans, LA. *Poster presentation*: “*In vivo* measurement of brain extracellular space diffusion by cortical surface photobleaching.” April 2005.
125. American Association of Neurological Surgeons, New Orleans, LA. *Poster presentation*: “Expression of aquaporin water channels in epilepsy tissue specimens.” April 2005.
126. AANS/CNS Joint Section on Tumors, San Francisco, CA. *Poster presentation*: “Expression of aquaporin-1 and aquaporin-4 water channels in meningiomas.” October 2004.
127. Congress of Neurological Surgeons, San Francisco, CA. *Poster presentation*: “Primary brachial plexus tumors: imaging, surgical and pathologic findings in 25 patients.” October 2004.
128. Congress of Neurological Surgeons, San Francisco, CA. *Poster presentation*: “The wine press of Herophilus and his other contributions to neuroanatomy.” October 2004.
129. American Society of Stereotactic and Functional Neurosurgery (ASSFN), Cleveland, OH. *Poster presentation*: “Increased seizure duration in mice lacking aquaporin-4 water channels.” October 2004.
130. American Association of Neurological Surgeons, Orlando, FL. *Poster presentation*: “Expression of aquaporin-1 membrane water channels in human meningiomas.” May 2004.
131. Department of Neurology, Columbia University, New York, NY. *Invited lecture*: “Aquaporins, seizures, and brain extracellular space.” March 2004.



132. American Epilepsy Society, Boston, MA. *Poster presentation*: “Characteristics of auras in patients undergoing temporal lobectomy.” December 2003.
133. Congress of Neurological Surgeons, Denver, CO. *Poster presentation*: “Spontaneous intracranial hypotension associated with transdural thoracic osteophyte reversed by primary dural repair.” October 2003.
134. Congress of Neurological Surgeons, Denver, CO. *Poster presentation*: “Clinical, radiologic and electrophysiologic correlation in a case of Kernohan’s notch syndrome.” October 2003.
135. American Society of Stereotactic and Functional Neurosurgery, New York, NY. *Slide presentation*: “Hemorrhagic complications of microelectrode-guided DBS.” May 2003.
136. Neurotrauma Symposium, UCSF, San Francisco, CA. *Slide presentation*: “Posttraumatic epilepsy.” May 2003.
137. American Association of Neurological Surgeons, San Diego, CA. *Slide presentation*: “A history of Todd and his paralysis.” April 2003.
138. European Society of Pediatric Neurosurgery, Kiruna, Sweden. *Slide presentation*: “Cortical organization of language in children revealed by electrical stimulation mapping.” June 2002.
139. American Association of Neurological Surgeons, Chicago, IL. *Slide presentation*: “Ondine’s curse: history, neurosurgery, and molecular biology.” April 2002.
140. American Association of Neurological Surgeons, Chicago, IL. *Poster presentation*: “Impact of surgical navigation systems (SNS) on extent of resection (EOR) of glial tumors.” April 2002.
141. Society for Neuroscience, San Diego, CA. *Slide presentation*: “Altered seizure susceptibility in mice deficient in the aquaporin-4 membrane water channel.” November 2001.
142. Society for Neurotrauma, San Diego, CA. *Poster presentation*: “Expression of the aquaporin-4 membrane water channel is transiently increased following spinal cord injury.” November 2001.
143. Congress of Neurological Surgeons, San Diego, CA. *Poster presentation*: “Radiosurgical treatment of brain metastases from primary breast cancer.” September 2001.
144. Congress of Neurological Surgeons, San Diego, CA. *Oral poster presentation*: “Expression of aquaporins in glioblastoma and meningioma suggests a potential novel therapeutic target for tumor-associated edema.” September 2001. Awarded red ribbon prize.
145. American Association of Neurological Surgeons, Toronto, Canada. *Poster presentation*: “Reduced seizure susceptibility in mice deficient in the aquaporin-4 membrane water channel.” April 2001.
146. American Epilepsy Society, Boston, MA. *Invited lecture*, Investigators’ Workshop: “Neurotrophic factors and kindling.” December 1997.
147. Society for Neuroscience, New Orleans, LA. *Slide presentation*: “Selective inhibition of kindling development by trkB receptor body.” October 1997.
148. N.C. Society for Neuroscience, Durham, NC. *Poster presentation*: “Selective inhibition of kindling development by trkB immunoadhesin.” May 1997.

149. Society for Neuroscience, Washington, DC. *Poster presentation*: “Intraventricular administration of trkB immunoadhesin delays kindling development in the rat.” November 1996.
150. Society for Neuroscience, San Diego, CA. *Poster presentation*: “Is there a ‘final common pathway’ for the two monocular views?” November 1995.
151. Society for Neuroscience, St. Louis, MO. *Poster presentation*: “Dynamic suppression of REM sleep by the serotonin-1 agonist eltoprazine.” November 1990.
152. Eastern Meeting of the American Federation for Clinical Research (AFCR), New York, NY. *Slide presentation*: “Effect of inspiratory resistive loading on heart rate variability: implications for autonomic testing.” September 1989.

## **COURSE TEACHING AND GRAND ROUNDS**

1. School of Medicine, University of California, Riverside. Course lecture: “Antiepileptic drugs.” March 27, 2023.
2. School of Medicine, University of California, Riverside. Course lecture: “Epilepsy, seizures, and syncope.” March 27, 2023.
3. School of Medicine, University of California, Riverside. Course lecture: “The autonomic nervous system.” March 27, 2023.
4. School of Medicine, University of California, Riverside. Course lecture: “Antiepileptic drugs.” April 1, 2022.
5. School of Medicine, University of California, Riverside. Course lecture: “Epilepsy, seizures, and syncope.” April 1, 2022.
6. School of Medicine, University of California, Riverside. Course lecture: “The autonomic nervous system.” October 22, 2021.
7. School of Medicine, University of California, Riverside. *Course lecture*: “Temporal lobe.” May 10, 2021.
8. School of Medicine, University of California, Riverside. *Course lecture*: “Limbic system.” May 10, 2021.
9. School of Medicine, University of California, Riverside. *Course lecture*: “Introduction to cranial nerves.” May 3, 2021.
10. School of Medicine, University of California, Riverside. *Course lecture*: “Brainstem reticular formation.” May 3, 2021.
11. School of Medicine, University of California, Riverside. Course lecture: “Antiepileptic drugs.” April 2, 2021.
12. School of Medicine, University of California, Riverside. Course lecture: “Epilepsy, seizures, and syncope.” April 2, 2021.
13. School of Medicine, University of California, Riverside. Course lecture: “The autonomic nervous system.” October 16, 2020.

14. School of Medicine, University of California, Riverside. *Course lecture:* “Temporal lobe.” May 11, 2020.
15. School of Medicine, University of California, Riverside. *Course lecture:* “Limbic system.” May 11, 2020.
16. School of Medicine, University of California, Riverside. *Course lecture:* “Introduction to cranial nerves.” May 4, 2020.
17. School of Medicine, University of California, Riverside. *Course lecture:* “Brainstem reticular formation.” May 4, 2020.
18. School of Medicine, University of California, Riverside. *Course lecture:* “Antiepileptic drugs.” April 3, 2020.
19. School of Medicine, University of California, Riverside. *Course lecture:* “Epilepsy, seizures, and syncope.” April 3, 2020.
20. School of Medicine, University of California, Riverside. *Course lecture:* “The autonomic nervous system.” October 18, 2019.
21. School of Medicine, University of California, Riverside. *Course lecture:* “Temporal lobe.” May 6, 2019.
22. School of Medicine, University of California, Riverside. *Course lecture:* “Limbic system.” May 6, 2019.
23. School of Medicine, University of California, Riverside. *Course lecture:* “Introduction to cranial nerves.” April 29, 2019.
24. School of Medicine, University of California, Riverside. *Course lecture:* “Brainstem reticular formation.” April 26, 2019.
25. School of Medicine, University of California, Riverside. *Course lecture:* “The autonomic nervous system.” March 25, 2019.
26. School of Medicine, University of California, Riverside. *Course lecture:* “Antiepileptic drugs.” March 25, 2019.
27. School of Medicine, University of California, Riverside. *Course lecture:* “Epilepsy, seizures, and syncope.” March 25, 2019.
28. School of Medicine, University of California, Riverside. *Course lecture:* “Temporal lobe.” May 7, 2018.
29. School of Medicine, University of California, Riverside. *Course lecture:* “Limbic system.” May 7, 2018.
30. School of Medicine, University of California, Riverside. *Course lecture:* “Brainstem reticular formation.” April 27, 2018.
31. School of Medicine, University of California, Riverside. *Course lecture:* “Introduction to cranial nerves.” April 23, 2018.
32. School of Medicine, University of California, Riverside. *Course lecture:* “The autonomic nervous system.” March 26, 2018.
33. School of Medicine, University of California, Riverside. *Course lecture:* “Antiepileptic drugs.” March 23, 2018.

34. School of Medicine, University of California, Riverside. *Course lecture:* “Epilepsy, seizures, and syncope.” March 23, 2018.
35. School of Medicine, University of California, Riverside. *Course lecture:* “Temporal lobe.” May 8, 2017.
36. School of Medicine, University of California, Riverside. *Course lecture:* “Limbic system.” May 8, 2017.
37. School of Medicine, University of California, Riverside. *Course lecture:* “Brainstem reticular formation.” April 28, 2017.
38. School of Medicine, University of California, Riverside. *Course lecture:* “Introduction to cranial nerves.” April 24, 2017.
39. School of Medicine, University of California, Riverside. *Course lecture:* “The autonomic nervous system.” April 3, 2017.
40. School of Medicine, University of California, Riverside. *Course lecture:* “Antiepileptic drugs.” January 30, 2017.
41. School of Medicine, University of California, Riverside. *Course lecture:* “Epilepsy, seizures, and syncope.” January 30, 2017.
42. School of Medicine, University of California, Riverside. *Course lecture:* “Temporal lobe.” May 9, 2016.
43. School of Medicine, University of California, Riverside. *Course lecture:* “Limbic system.” May 9, 2016.
44. School of Medicine, University of California, Riverside. *Course lecture:* “Introduction to cranial nerves.” April 29, 2016.
45. School of Medicine, University of California, Riverside. *Course lecture:* “Brainstem reticular formation.” April 25, 2016.
46. School of Medicine, University of California, Riverside. *Course lecture:* “The autonomic nervous system.” April 1, 2016.
47. School of Medicine, University of California, Riverside. *Course lecture:* “Antiepileptic drugs.” February 1, 2016.
48. School of Medicine, University of California, Riverside. *Course lecture:* “Epilepsy, seizures, and syncope.” February 1, 2016.
49. School of Medicine, University of California, Riverside. *Course lecture:* “Temporal lobe.” May 11, 2015.
50. School of Medicine, University of California, Riverside. *Course lecture:* “Limbic system.” May 11, 2015.
51. School of Medicine, University of California, Riverside. *Course lecture:* “Introduction to cranial nerves.” May 1, 2015.
52. School of Medicine, University of California, Riverside. *Course lecture:* “Brainstem reticular formation.” May 1, 2015.
53. School of Medicine, University of California, Riverside. *Course lecture:* “The autonomic nervous system.” April 3, 2015.

54. School of Medicine, University of California, Riverside. *Course lecture*: “Antiepileptic drugs.” February 2, 2015.
55. School of Medicine, University of California, Riverside. *Course lecture*: “Epilepsy, seizures, and syncope.” February 2, 2015.
56. Department of Biochemistry, University of California, Riverside. *Course lecture*: “Brain neurochemistry and epilepsy: a primer.” November 17, 2014.
57. School of Medicine, University of California, Riverside. *Course lecture*: “Temporal lobe.” May 12, 2014.
58. School of Medicine, University of California, Riverside. *Course lecture*: “Limbic system.” May 12, 2014.
59. School of Medicine, University of California, Riverside. *Course lecture*: “Introduction to cranial nerves.” May 2, 2014.
60. School of Medicine, University of California, Riverside. *Course lecture*: “Brainstem reticular formation.” May 2, 2014.
61. School of Medicine, University of California, Riverside. *Course lecture*: “The autonomic nervous system.” March 31, 2014.
62. School of Medicine, University of California, Riverside. *Course lecture*: “Antiepileptic drugs.” February 3, 2014.
63. School of Medicine, University of California, Riverside. *Course lecture*: “Epilepsy, seizures, and syncope.” February 3, 2014.
64. Department of Biochemistry, University of California, Riverside. *Course lecture*: “Brain neurochemistry and epilepsy: a primer.” December 2, 2013.
65. School of Medicine, University of California, Riverside. *Course lecture*: “Temporal lobe.” May 13, 2013.
66. School of Medicine, University of California, Riverside. *Course lecture*: “Limbic system.” May 10, 2013.
67. School of Medicine, University of California, Riverside. *Course lecture*: “Brainstem reticular formation.” May 3, 2013.
68. School of Medicine, University of California, Riverside. *Course lecture*: “The autonomic nervous system.” April 1, 2013.
69. School of Medicine, University of California, Riverside. *Course lecture*: “Antiepileptic drugs.” February 4, 2013.
70. School of Medicine, University of California, Riverside. *Course lecture*: “Epilepsy, seizures, and syncope.” February 4, 2013.
71. School of Medicine, University of California, Riverside. *Course lecture*: “Temporal lobe.” May 7, 2012.
72. School of Medicine, University of California, Riverside. *Course lecture*: “Limbic system.” May 7, 2012.
73. School of Medicine, University of California, Riverside. *Course lecture*: “Brainstem reticular formation.” April 27, 2012.

74. School of Medicine, University of California, Riverside. *Course lecture*: “The autonomic nervous system.” March 26, 2012.
75. School of Medicine, University of California, Riverside. *Course lecture*: “Cranial trauma, intracranial hemorrhage, and coma.” January 30, 2012.
76. School of Medicine, University of California, Riverside. *Course lecture*: “Epilepsy, seizures, and syncope.” January 30, 2012.
77. School of Medicine, University of California, Riverside. *Course lecture*: “Temporal lobe.” May 9, 2011.
78. School of Medicine, University of California, Riverside. *Course lecture*: “Limbic system.” May 9, 2011.
79. Pomona Valley Hospital Medical Center, Pomona, CA. *Invited lecture*: “Deep brain stimulation for movement disorders.” May 6, 2011.
80. School of Medicine, University of California, Riverside. *Course lecture*: “Brainstem: reticular formation.” April 29, 2011.
81. Orange Coast Memorial Medical Center, Fountain Valley, CA. *Invited lecture*: “Deep brain stimulation for movement disorders.” April 7, 2011.
82. School of Medicine, University of California, Riverside. *Course lecture*: “The autonomic nervous system.” March 28, 2011.
83. T32 training grant graduate student lecture, University of California, Irvine. *Lecture*: “Epilepsy surgery: state of the art.” February 25, 2011.
84. School of Medicine, University of California, Riverside. *Course lecture*: “Cranial trauma, intracranial hemorrhage, and coma.” January 31, 2011.
85. School of Medicine, University of California, Riverside. *Course lecture*: “Epilepsy, seizures, and syncope.” January 31, 2011.
86. Pomona Valley Hospital, Pomona, CA. *Invited lecture*: “Deep brain stimulation for movement disorders.” June 29, 2010.
87. Pomona Valley Hospital, Pomona, CA. *Invited lecture*: “Neurological surgery: introduction and patient assessment for spine and cranial procedures.” June 7, 2010.
88. Pomona Valley Hospital, Pomona, CA. *Invited lecture*: “Intracranial hemorrhage.” May 18, 2010.
89. Arrowhead Regional Medical Center, Colton, CA. *Invited lecture*: “Deep brain stimulation for movement disorders.” May 10, 2010.
90. School of Medicine, University of California, Riverside. *Invited lecture*: “Introduction to neurological surgery.” May 10, 2010.
91. Department of Anesthesiology & Perioperative Care, University of California, Irvine. *Grand rounds lecture*: “Deep brain stimulation for movement disorders.” October 22, 2009.
92. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Modern neurosurgery for psychiatric disorders.” September 9, 2009.

93. 2009 Department of Neurology, University of California, Irvine. *Grand rounds lecture*: “Spinal cord injury.” August 12, 2009.
94. 2009 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Neurotrauma.” August 5, 2009.
95. Department of Neurology, University of California, Irvine. *Grand rounds lecture*: “Intracranial hemorrhage.” August 5, 2009.
96. 2009 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Modern neurosurgery for psychiatric disorders.” July 22, 2009.
97. Department of Psychiatry, University of California, Irvine. *Grand rounds lecture*: “Modern neurosurgery for psychiatric disorders.” June 30, 2009.
98. 2009 Clinical Neuroscience Course, School of Medicine, University of California, Irvine. *Clinical correlate lecture*: “Cranial nerves.” April 17, 2009.
99. 2009 Clinical Neuroscience Course, School of Medicine, University of California, Irvine. *Clinical correlate lecture*: “Hydrocephalus and brain tumors.” April 17, 2009.
100. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Deep brain stimulation for epilepsy: the SANTE trial.” March 25, 2009.
101. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Case presentation: spontaneous intracranial hypotension.” March 25, 2009.
102. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Case presentations: complicated epilepsy.” February 18, 2009.
103. 2009 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Membrane potentials and action potentials.” February 11, 2009.
104. 2009 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Synapses, neurotransmitters, and receptors.” January 14, 2009.
105. 2009 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Structural organization of the nervous system.” January 7, 2009.
106. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Anatomy of surgical approaches: cranial.” December 10, 2008.
107. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Meninges, blood-brain barrier, CSF, ventricle anatomy and cistern anatomy.” December 3, 2008.
108. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Deep brain stimulation for dystonia.” November 19, 2008.
109. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Thalamus.” November 5, 2008.
110. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Case conference.” October 29, 2008.

111. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Limbic system/amygdala/hippocampus/mesial temporal lobe.” October 22, 2008.
112. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Cervical and brachial plexi.” October 1, 2008.
113. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Basal ganglia.” August 20, 2008.
114. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Cerebellum.” August 13, 2008.
115. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Cerebral cortex.” August 6, 2008.
116. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Cranial nerves VII-XII.” July 23, 2008.
117. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Cranial nerves I-VI.” July 16, 2008.
118. 2008 Department of Neurological Surgery Resident Neuroscience Course. *Lecture*: “Introduction and brainstem anatomy.” July 9, 2008.
119. 2008 Clinical Neuroscience Course, School of Medicine, University of California, Irvine. *Clinical correlate lecture*: “Cranial nerves and deep brain stimulation for Parkinson’s disease.” May 14, 2008.
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120. T32 training grant graduate student lecture, University of California, Irvine. *Lecture*: “Epilepsy surgery: state of the art.” May 2, 2008.
121. 2008 Clinical Neuroscience Course, School of Medicine, University of California, Irvine. *Clinical correlate lecture*: “Hydrocephalus and brain tumors.” April 11, 2008.
122. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Deep brain stimulation therapy for Parkinson’s disease.” April 9, 2008.
123. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Essential tremor.” November 7, 2007.
124. Acute Care Nurse Practitioner Program, University of California, Irvine. *Invited lecture*: “Neurological examination.” October 25, 2007.
125. Department of Neurology, University of California, Irvine, *Grand rounds lecture*: “Intracranial hemorrhage.” July 18, 2007.
126. Department of Neurology, University of California, Irvine, *Grand rounds lecture*: “Motor cortex stimulation for intractable neuropathic pain.” June 6, 2007.
127. Department of Neurological Surgery, University of California, Irvine. *Research lecture*: “Aquaporin-4 and spinal cord injury.” May 4, 2007.
128. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Case conference.” March 21, 2007.



129. Department of Surgery, University of California, Irvine. *Grand rounds lecture*: “Workup and surgery for intractable epilepsy.” February 15, 2007.
130. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Case conference.” January 10, 2007.
131. Department of Physical Medicine and Rehabilitation, University of California, Irvine. *Grand rounds lecture*: “Spinal cord injury.” November 29, 2006.
132. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Aquaporin water channels and clinical neuroscience.” November 1, 2006.
133. Advanced Care Nurse Practitioner Program, University of California, Irvine. *Invited lecture*: “Neurological examination.” October 27, 2006.
134. Department of Neurological Surgery, University of California, Irvine. *Grand rounds lecture*: “Spinal cord injury.” August 2006.
135. Department of Neurological Surgery, University of Pittsburgh, Pittsburgh, PA. *Grand rounds lecture*: “Surgical approaches to mesial temporal lobe epilepsy.” March 2006.
136. Department of Neurological Surgery, University of California, Irvine, CA. *Grand rounds lecture*: “Surgical approaches to mesial temporal lobe epilepsy.” February 2006.
137. Department of Neurosurgery, University of Wisconsin, Madison, WI. *Grand rounds lecture*: “Aquaporins, seizures, and brain extracellular space.” January 2006.
138. San Francisco General Hospital, San Francisco, CA. *Slide presentation*: “Cerebral salt wasting.” December 2002, repeated March 2003.
139. San Francisco General Hospital, San Francisco, CA. *Slide presentation*: “Posttraumatic epilepsy.” November 2002.
140. San Francisco General Hospital, San Francisco, CA. *Slide presentation*: “Modern neurosurgery for psychiatric disorders.” August 2002.
141. San Francisco General Hospital, San Francisco, CA. *Trauma Grand rounds lecture*: “Spinal cord injury.” July 2002.
142. Department of Neurological Surgery, University of California, San Francisco, CA. *Grand rounds lecture*: “Modern neurosurgery for psychiatric disorders.” May 2002.
143. Seminar, Department of Neurobiology, University of California, San Francisco, CA. “The functional role of neurotrophins in the kindling model of epilepsy.” August 2001.
144. Department of Neurological Surgery, University of California, San Francisco, CA. *Grand rounds lecture*: “Role of neurotrophic factors in the kindling model of epilepsy.” November 1998.
145. Symposium speaker and organizer, “Spinal Cord Regeneration.” Department of Neurobiology, Duke University. Retreat, 1994.

## **MEDIA APPEARANCES**

1. Saigon TV interview re deep brain stimulation. March 29, 2012.
2. Orange County Register article “Stimulating treatment” re DBS for essential tremor patient. September 24, 2011.
3. Little Saigon TV interview re deep brain stimulation. April 28, 2011.
4. KFI-AM 640 interview re posttraumatic epilepsy. August 1, 2010.
5. KFI-AM 640 interview re back strain treatment. May 30, 2010.
6. Orange County Register article “She isn’t just surviving—she’s living” re ACDF patient. May 25, 2010.
7. KFI-AM 640 interview re ibuprofen and Parkinson’s disease. February 28, 2010.

## **MENTORING EXPERIENCE**

*Mentoring at UCR (January 2010-present)*

- Terese Garcia (undergraduate)
- Manbir Sandhu (undergraduate)
- Samantha Assad (undergraduate)
- Jacqueline Barbosa (undergraduate)
- Manolia Ghouli (graduate student)
- Carrie Jonak (scientific research associate)
- Allison Peterson (graduate student)
- Patricia Pirbhoy (postdoctoral fellow)
- Thomas Murphy (graduate student, postdoctoral fellow)
- Jonny Lovelace (postdoctoral fellow)
- Jennifer Yonan (graduate student)
- Jenny Szu (graduate student)
- Jacqueline Hubbard (graduate student, postdoctoral fellow)
- Andrew Nakla (undergraduate)
  - Won Chancellor’s Research Fellowship 2015
- Som Chaturvedi (undergraduate)
- Adam Basiago (medical student)
- Michael Hsu (research associate)
- Devin McBride (graduate student)
- Carissa Reynolds (graduate student)
- Melissa Eberle (graduate student)
- Gi-Eun Yang (graduate student)
  - Master’s thesis: “Altered water diffusivity in mouse AQP4<sup>-/-</sup> brain during development using diffusion tensor imaging”
- José Sarmiento (medical student)
- Josh Karam (undergraduate)
  - Won UC LEADS fellowship 2014
- Michael Zaki (medical student)
- Gina Valiente (undergraduate)
- José Aliaga (undergraduate)
- Ilona Kravtsova (undergraduate)
  - Won Chancellor’s Research Fellowship 2012
- Akash Shah (Duke undergraduate student)

*Mentoring at UCI (August 2006-December 2009)*

- All 4 neurosurgery residents
- Michael Hsu (research associate)
- Kiran Rajneesh (postdoctoral fellow)
  - Best Abstract, Western Neurosurgical Society Meeting, 2009
- Alexander Lin (M.D./Ph.D. student)
- Laurie Baumgartner (nurse practitioner)
- Katherine Held (postdoctoral fellow, fellowship committee)
- Jessie Weber (graduate student, Beckman Laser Institute)
- Rosie Santos (graduate student, thesis committee)
- Caren Armstrong (graduate student)
- James Yeh (undergraduate)
  - Won ID-SURE
  - Won SURP award 2007
- Alex Halim (UCLA undergraduate)
- Huzaifa Hakimuddin (undergraduate)
  - Won ID-SURE fellowship 2009
- David Abookasis (postdoctoral fellow)
- Atsushi Kimura (postdoctoral fellow)
- Marlon Mathews (research fellow, now neurosurgery resident at SUNY)
- Christopher Owen (research fellow, now neurosurgery resident at UCI)
- Amandip Gill (medical student, now UCI neurosurgery resident)
  - Won American Association of Neurological Surgeons Medical Student Summer Research Fellowship (MSSRF)
- Darrin Lee (medical student, now UC Davis neurosurgery resident)
  - Won Howard Hughes Medical Institute (HHMI) research fellowship
- Allyson Howard (M.D./Ph.D. student, now Stanford neurosurgery resident)
- Andrea Sato (pharmacy resident)
- Anish Nanduri (undergraduate)
- Andy Treister (undergraduate)
  - Won SURP award 2007
  - UROP fellow 2007-2008
  - Won Dean's Award for Excellence in Research June 2009
- Marcus Seldin (undergraduate, now graduate student in neuroscience at John Hopkins)
  - Won SURP award 2007
  - UROP fellow 2007-2008
- Christina Hoang (undergraduate)
  - Won SURP award 2007
  - UROP fellow 2007-2008
- Janetta Arellano (undergraduate)
  - Won SURP award 2007
  - UROP fellow 2007-2008
- Kaivan Salehpour (undergraduate)
  - Won SURP award 2007
  - UROP fellow 2007-2008
- Mariam Amini (undergraduate)
- Vivian Alfonso (undergraduate)
  - UROP fellow 2007-2008
- Ijang Ngando (undergraduate)
  - Clinic shadowing

- Rohit Pidaparathi (UCSD undergraduate)

*Mentoring previous to UCI*

- Ganesh Elangovan (Duke medical student, now UCLA resident)
- Xiaoming Yao (UCSF postdoc)
- Orin Bloch (UCSF medical student, now UCSF neurosurgery resident)
- Shinie Lee (UC Berkeley undergraduate, now UC Davis medical student)

**PROFESSIONAL MEMBERSHIPS**

- Society for Neuroscience
  - American Society for Neurochemistry
  - American Epilepsy Society
    - Scientific Program Committee (2007-2009)
    - Student and Resident Education Subcommittee (2007-2010)
    - Chair, Surgery Section (2009-2010)
    - Research Infrastructure Award Review Committee (2012-2015)
    - Co-Chair (2012-2013)
    - Chair (2013-2015)
    - AES/NINDS Epilepsy Research Benchmarks Stewards Committee (2013-present)
- American Association of Neurological Surgeons
  - Member, Section on History of Neurological Surgery
  - Member, Joint Section on Stereotactic and Functional Neurosurgery
  - Member, Joint Section on Tumors
  - Member, Publications Committee (2007-2009)
  - Member, Van Wagenen Selection Committee (2010-present)
  - Chair, Van Wagenen Selection Committee (2011-2012)
- Congress of Neurological Surgeons
- American Society for Stereotactic and Functional Neurosurgery

**INVITED REVIEWER**

- *Annals of Neurology*
- *ASN Neuro*
- *Biophysical Journal*
- *Brain and Language*
- *Brain Research*
- *Brain Research Bulletin*
- *Brain Structure and Function*
- *Cell and Tissue Research*
- *Cell Calcium*
- *Central European Neurosurgery*
- *Cerebral Cortex*
- *Cerebrovascular Diseases*
- *Clinical Neurology and Neurosurgery*
- *Current Medicinal Chemistry*
- *Epilepsia*
- *Epilepsy & Behavior*

- *Epilepsy Research*
- *Epilepsy Research and Treatment*
- *European Journal of Neuroscience*
- *Experimental Neurology*
- *Glia*
- *International Journal of Developmental Neuroscience*
- *Journal of the American Aging Association*
- *Journal of Biomedical Optics*
- *Journal of Cerebral Blood Flow and Metabolism*
- *Journal of Clinical Oncology*
- *Journal of Molecular Biology*
- *Journal of Neurochemistry*
- *Journal of Neurology, Neurosurgery and Psychiatry*
- *Journal of Neuroscience*
- *Journal of Neuroscience Methods*
- *Journal of Neuroscience Research*
- *Journal of Neuro-oncology*
- *Journal of Neurosurgery*
- *Journal of Neurosurgical Anesthesiology*
- *Journal of Neurotrauma*
- *Journal of the Neurological Sciences*
- *Lancet Neurology*
- *Mayo Clinic Proceedings*
- *Molecular Neurobiology*
- *Nature*
- *Nature Neuroscience*
- *Nature Reviews Neuroscience*
- *Neurochemistry International*
- *Neuropsychopharmacology*
- *Neuroscience*
- *Neuroscience Letters*
- *Neurosurgery*
- *Trends in Neurosciences*
- *Zentralblatt für Neurochirurgie*

## **CLINICAL/RESEARCH INTERESTS**

- Minimally-invasive spine surgery
- Epilepsy surgery
- Deep brain stimulation surgery
- General neurosurgery
- Epilepsy research
- Astrocyte physiology
- Fragile X Syndrome
- Translational neuroimaging
- Neurotrauma (brain and spinal cord injury)
- Psychiatric neurosurgery
- Neuro-oncology
- Neuroprosthetics

- History of neurology and neurosurgery