

**The Faculty of Medicine of Harvard University
Curriculum Vitae**

Date Prepared: July 21, 2021
Name: Catherine J. Chu, MD
Office Address: 175 Cambridge Street, Suite 340, Rm 352, Boston, MA 02114
Home Address: 30 Locke Street, Cambridge, MA 02140
Work Phone: 617-726-6540
Work Email: cjchu@hms.harvard.edu
Place of Birth: San Francisco, CA

Education:

1999	B.S. summa cum laude	Biological Psychology (top graduating student, natural sciences)	University of Washington
2004	M.D.	Medicine	Harvard Medical School
2004	M.A.	Social Anthropology	Harvard University
2013	M.M.Sc.	Clinical Investigation	Harvard Medical School

Postdoctoral Training:

07/04-06/05	Intern	Pediatrics	Massachusetts General Hospital Harvard Medical School
07/05-06/09	Resident	Child Neurology	Massachusetts General Hospital Brigham and Women's Hospital Harvard Medical School
07/08-06/09	Research Fellow	Tuberous Sclerosis Complex	Massachusetts General Hospital Harvard Medical School
07/09-06/10	Clinical Fellow	Clinical Neurophysiology	Massachusetts General Hospital Harvard Medical School
07/10-06/13	Research Fellow	Neurophysiology	Massachusetts General Hospital Harvard Medical School

Faculty Academic Appointments:

07/08-01/12	Instructor	Neurology	Harvard Medical School
-------------	------------	-----------	------------------------

02/12-07/21	Assistant Professor	Neurology	Harvard Medical School
02/21-present	Faculty Member	Division of Sleep Medicine	Harvard Medical School
07/21-present	Associate Professor	Neurology	Harvard Medical School

Appointments at Hospitals/Affiliated Institutions:

07/07-06/08	Chief Resident	Child Neurology	Massachusetts General Hospital
07/08-06/15	Staff Physician	Pediatric Neurology	Cambridge Health Alliance
07/08-03/17	Assistant in Neurology	Neurology	Massachusetts General Hospital
05/11-06/12	Associate Staff	Neurology	New England Medical Center
03/17-present	Assistant Neurologist	Neurology	Massachusetts General Hospital
09-18-present	Associate Staff	Neurophysiology	Cooley Dickenson Hospital

Other Professional Positions:

2010-2020	Physician Consultant	SleepMed Inc.	<1% effort
2018-2019	Physician Consultant	Alliance Family of Companies	<1% effort
2018-present	Physician Consultant	Biogen Inc.	<1% effort

Major Administrative Leadership Positions:

Local

2010-2013	Associate Director, Child Neurology Residency Program	Massachusetts General Hospital Harvard Medical School
2012-present	Director, Clinical High-Density EEG Program	Massachusetts General Hospital
2012-present	Director, Neonatal & Pediatric EEG Brain Monitoring Program	Massachusetts General Hospital Harvard Medical School
2014-2016	Director, Child Neurology Residency Program	Massachusetts General Hospital Harvard Medical School

Committee Service:

Local

2009-present	Neurophysiology Fellowship Program Evaluation Committee	Massachusetts General Hospital Harvard Medical School
2009-present	Neurophysiology Fellowship Program	Massachusetts General Hospital

	Curriculum Content Committee	Harvard Medical School
2009-2018	Child Neurology Residency Admissions	Massachusetts General Hospital Harvard Medical School
	2014-2016	Committee Chair
2013-2016	Neurology Education Committee	Massachusetts General Hospital Harvard Medical School
2013-2016	R25 Steering Committee	Massachusetts General Hospital
2014-2018	Child Neurology Curriculum Content Committee	Harvard Medical School Massachusetts General Hospital
	2014-2016	Committee Chair
2014-2018	Child Neurology Program Evaluation Committee	Harvard Medical School Massachusetts General Hospital
	2014-2016	Committee Chair
2015-present	Epilepsy Fellowship Program Evaluation Committee	Harvard Medical School Massachusetts General Hospital
2015-present	Epilepsy Fellowship Curriculum Content Committee	Harvard Medical School Massachusetts General Hospital
2017-present	Neurology Residency Program, Ad-Hoc Women in Science Interview Committee	Harvard Medical School Massachusetts General Hospital
2020-present	Invasive Human Neuroscience Steering Committee	Massachusetts General Hospital
2021-present	Harvard Medical School T32 Neurorecovery Executive Committee	Massachusetts General Hospital
Regional		
2010-present	Greater Boston Epilepsy Society	Massachusetts General Hospital Brigham and Women's Hospital Beth Israel Deaconess Medical Center, Children's Hospital Boston
2016-present	Physician Advisory Board	Epilepsy Foundation New England
National		
2010-2018	Pediatric Content Committee	American Epilepsy Society
2013-present	Pediatric Epilepsy Research Consortium	American Epilepsy Society
2010-2016	Professors of Child Neurology	Child Neurology Foundation

2016-2018	Special Interest Group Committee	American Epilepsy Society
2016-2018	Junior Investigator Special Interest Group	American Epilepsy Society, co-chair
2017-present	High Density EEG Consortium	American Clinical Neurophysiological Society Member, Executive Committee
2019-present	Program Content Committee	American Clinical Neurophysiological Society, Member
2021-present	Coalition to Cure CHD2	Scientific Advisory Board, Member

Professional Societies:

1997-1999	Society for Neuroscience	Member
2005-2006	American Academy of Pediatrics	Member
2006-2010	American Academy of Neurology	Member
2007-2016	Child Neurology Society	Member
2008-present	American Epilepsy Society	Member
2010-2015	Society for Neuroscience	Member
2018-present	American Clinical Neurophysiology Society	Member

Grant Review Activities:

2011-2012	Selection Committee	Epilepsy Foundation
2012-present	Selection Committee <i>Susan Spencer Fellowship in Epilepsy Clinical Research Training Fellowship</i> <i>Neurology Research Training Scholarships</i> <i>Clinical Research Training Scholarships</i> <i>Practice Research Training Scholarship</i> <i>Disease specific awards (Alzheimers, Parkinson's Disease, Tourette's syndrome, ataxia, amyotrophic lateral sclerosis, muscular dystrophy)</i>	American Brain Foundation Amer Acad of Neurology Permanent Member
2018	Scientific Review Committee	Charles Hood Foundation
2019	Scientific Review Committee	

Editorial Activities:

- **Ad hoc Reviewer**

Nature Medicine
Journal of Neuroscience
Brain
Scientific Reports
Annals of Neurology
Neurology
Pediatrics
Neuroimage
Epilepsia
Clinical Neurophysiology
Human Brain Mapping
Journal of Clinical Neurophysiology
Annals of Clinical and Translational Neuroscience
Journal of Neurophysiology
EEG and Clinical Neuroscience
Seizure
Journal of Pediatric Neurology
Neuroimage Clinical
Epilepsy Research

- **Other Editorial Roles**

2017-2019 Editorial Board Member *Clinical Neurophysiology*

Honors and Prizes:

1996-1999	Mary Gates Prizes	University of Washington	Academic Achievement
1996-1999	Bonderman Honors Fellowship	University of Washington	Academic Achievement
1996-1999	Early Identification Scholarship	University of Washington	Academic Achievement
1997-1999	Barry Goldwater Scholarship	U.S. Congress	Academic Achievement
1999	Guthrie Prize for Outstanding Thesis	University of Washington	Academic Achievement
1999	Presidential Award	University of Washington	Academic Achievement
2002-2003	U.S. William Fulbright Research Fellowship	U.S. Department of State	Research
2002-2004	Social Medicine Scholarship	Harvard University	Research
2002-2005	NSF Graduate Research Fellowship	National Science Foundation	Research
2003	Freeman Foundation Fellowship	Harvard University	Research

2007-2009	Scientific Travel Awards	National Epifellows Society, TopScholar, Epilepsy Program, Virginia Commonwealth University	Research
2011-2013	Clinical Investigator Training Program	The Harvard Catalyst Clinical and Translational Science Center Harvard University Harvard Medical School	Research
2013	Above and Beyond Award	MGH Child Neurology Residents	Teaching
2013-2015	Claflin Distinguished Scholar Award	MGH Executive Committee of Research	Research
2014	Participant	HMS Leadership Development For Physicians & Scientists Course	Leadership

Report of Funded and Unfunded Projects

Past

- 2010-2011 Functional network connectivity in infantile spasms
Child Neurology Foundation Infantile Spasms Award
PI (\$30,000 – total direct costs)
The major goal of this project was to develop techniques for EEG-based functional connectivity analysis, establish a normal infantile EEG database, and evaluate for dynamic biomarkers for cognitive outcome in a small group of infants with cryptogenic infantile spasms.
- 2011-2012 Functional network connectivity in infantile spasms
Child Neurology Foundation Infantile Spasms Award
PI (\$31,000 – total direct costs)
This award was provided to continue the above project to develop techniques for EEG-based functional connectivity analysis, establish a normal infantile EEG database, and evaluate for dynamic biomarkers for cognitive outcome in a small group of infants with cryptogenic infantile spasms.
- 2011-2012 Altered functional networks and cognitive outcome in infantile spasms
American Brain Foundation / American Academy of Neurology Fellowship
PI (\$130,000 – total direct costs [this funding was ended prematurely due to overlap with an NIH K12 Career Development Award])
The major goal of this project is to develop techniques for EEG based functional connectivity analysis to evaluate for dynamic biomarkers for cognitive outcome in a small group of children with infantile spasms
- 2013-2015 Identification of novel surgical targets using multimodal network analysis in pediatric epilepsy
Executive Committee on Research, MGH, Claflin Distinguished Scholar Award
PI (\$100,000 – total direct costs)
The primary goal of this project is to develop advanced neuroimaging techniques using high density EEG and high-resolution MRI to isolate the seizure onset zone in non-lesional pediatric epilepsy

- 2015-2016 Hitting the spot: non-invasive targeting in intractable childhood epilepsy
MGH for Children Pilot Award
PI (\$17,391—total direct costs)
The primary goal of this project was to evaluate several leading non-invasive measurements of excitability and connectivity to localize the seizure onset zone in children with refractory epilepsy.
- 2015-2016 Early Onset Epilepsy Consortium
Pediatric Epilepsy Research Foundation 05292013 (PI: Berg)
Site PI (\$18,210 – total direct costs)
The primary goal of this multi-institutional project is to characterize epidemiological characteristics and treatment patterns in epilepsy in children less than 3 years of age at diagnosis
- 2016-2020 Continued anticonvulsants after resolution of neonatal seizures: a patient-centered comparative effectiveness study
Patient Centered Outcome Research Institute, CER-1507-31187 (PI: Shellhaas)
Site PI (\$100,466 – total direct costs)
This multicenter study is designed to assess the impact of short versus prolonged treatment with phenobarbital after acute symptomatic seizures on neurodevelopmental outcome, the incidence of epilepsy, and parent/family well-being
- 2017-2019 Spasm Prediction after Symptomatic Neonatal Seizures the SPASM study
Pediatric Epilepsy Research Foundation, 3004656768 (PI: Shellhaas)
Site PI (\$9000 – total direct costs)
The primary goal of this multi-institutional project is to characterize EEG and MRI biomarkers that predict the development of infantile spasms
- Current**
- 2015-2021 Identification of cortical biomarkers for seizure risk in childhood epilepsy
NIH NINDS, K23NS092923
PI (\$916,395 – total direct costs)
The primary goal of this project is to evaluate for non-invasive biomarkers of cortical excitability in a cohort of children with childhood epilepsy.
- 2018-2023 Multimodal network connectivity architecture (MOCA) of the brain and its role in the recovery of consciousness in comatose cardiac arrest patients
NIH NINDS, R01NS102574-02 (PI: Wu)
Co-I (\$6,358 – total direct costs)
- 2020-2024 Neonatal Seizure Registry Developmental Functional Evaluation (NSR-DEV)
NIH NINDS, R01NS111166 (PI: Glass)
Site PI (\$87,906 – total direct costs)
The primary goal of this hypothesis is to test the central hypothesis that risk factors for developmental disability can be identified in infancy and modified by parental well-being.
- 2020-2025 Focal thalamocortical circuit dysfunction mediates motor and cognitive deficits in developmental epilepsy
NIH NINDS, R01NS115868
PI (\$2,110,922 – total direct costs)
The primary goal of this project is to investigate whether focal thalamocortical circuit dysfunction mediates the motor and cognitive deficits in the most common idiopathic focal epilepsy syndrome, childhood epilepsy with centrottemporal spikes (CECTS).

- 2020-2025 Targeting pathologic spike-ripples to isolate and disrupt epileptic dynamics
NIH NINDS R01NS119483
PI (\$2,643,872 –total direct costs)
The primary goal of this project is to combine clinical data from human patients, experiments in animal models, and simulations of brain activity to develop an improved biomarker for epilepsy treatment, and to develop a deeper understanding of the mechanisms driving the pathological brain dynamics in epilepsy.
- 2020-2024 Optimizing sleep spindle measurements as a translational assay of memory consolidation
NIH-NIMH UG3MH125273 (PI: Manoach)
Co-I (\$53,271 – total direct costs)
The primary goal of this project is to develop novel physiological assays of sleep-dependent memory consolidation in humans and rodents that can be used to predict the efficacy of newly emerging treatments for neuropsychiatric disorders.

Training Grants and Mentored Trainee Grants

- 2017-2021 Linking dynamic functional connectivity with structural connectivity
National Science Foundation Graduate Research Fellowship
Co-mentor to Elizabeth Spence
The primary goal of this project is to predict abnormalities in functional connectivity using microstructural white matter structural connectivity in a cohort of patients with multimodal imaging and focal epilepsy
- 2020-2022 Identifying and increasing coordinated sleep oscillations to improve memory
American Academy of Neurology / American Brain Foundation, McKnight Clinical Translational Research Scholarship in Cognitive Aging and Age-Related Memory Loss
Co-Mentor of Bryan Baxter, PhD
The primary goal of this project is to test close-loop stimulation to strengthen the neurophysiological processes known to support sleep-dependent memory consolidation
- 2020-2022 Coordination of neural oscillations and sleep dependent memory consolidation
The Program for Training in Sleep, Circadian and Respiratory Neurobiology in the Division of Sleep Medicine at Harvard Medical School and Brigham & Women's Hospital T32 Training Award, 5T32HL007901-22
Co-mentor for Megan Thompson, PhD
The major goals of this project are to determine the relationship between ripples, spindles, and slow oscillations in sleep-dependent memory consolidation
- Honorable mention for the category of Memory, Cognition, and EEG: “Coordination of Neural Oscillations in Patients with Hippocampal Intracranial Electrodes in Relation to Sleep-Dependent Memory Consolidation” (poster presentation), December 7, 2020, Harvard Medical School Annual Division of Sleep Medicine and Health Benefit, Boston, USA
- Submitted Detecting gamma bursts using optically pumped magnetometer sensors
NIH NIMH K99
Co-mentor for Mainak Jas, PhD
The major goal of this project is to use optically pumped magnetometer sensors for MEG to detect transient gamma bursts with improved temporal and spatial resolution compared to conventional SQUID sensors.

Unfunded Current Projects

2012- Feasibility and utility of high-density EEG in clinical care.
The major goal of this project is to develop and apply source localization algorithms and quantitative EEG analysis to high density EEG to localize seizure onset in the inpatient setting.

Report of Local Teaching and Training

Teaching of Students in Courses:

2007	The Human Nervous System and Behavior 1 st year medical students	Harvard Medical School, lab instructor 3-hr sessions per week for 8 weeks
------	--	--

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs):

2008	Evaluation and management of a pediatric patient with first seizure 1 st -3 rd year pediatric residents and faculty	Massachusetts General Hospital Ellison 17 One Hour Lecture
2010-2011	Lennox Gastaut Syndrome 3 rd -5 th year pediatric and adult neurology residents and faculty	Massachusetts General Hospital Wang 7 One Hour Lecture
2010-2012	New Drugs in Pediatric Epilepsy 3 rd -5 th year pediatric and adult neurology residents and faculty	Massachusetts General Hospital Wang 7 One Hour Lecture
2010-2018	Pediatric Epilepsy EEG Conference 3 rd -5 th year pediatric and adult neurology residents and faculty	Massachusetts General Hospital Wang 7 One Hour Conference weekly
2010-present	Adult Epilepsy Surgery Conference 1 st -2 nd year pediatric and adult epilepsy and neurophysiology fellows, rotating neurosurgery and neuroradiology residents, and faculty from epilepsy, neurosurgery, psychiatry, and radiology	Massachusetts General Hospital Wang 7 2 Hour Conference weekly Faculty Participant
2010-present	Pediatric Epilepsy Surgery Conference 1 st -2 nd year pediatric and adult epilepsy and neurophysiology fellows, rotating neurosurgery and neuroradiology residents, and faculty from epilepsy, neurosurgery, psychiatry, and radiology	Massachusetts General Hospital Wang 7 2 Hour Conference biweekly Faculty Participant Director (2014, 2016; 2020-present)
2011-present	Outpatient child neurology conference 3 rd -5 th year pediatric and adult neurology residents and faculty	Massachusetts General Hospital Wang 7 1 Hour Conference weekly Director
2011-present	EEG conference 1 st -2 nd year pediatric and adult epilepsy and neurophysiology fellows	Massachusetts General Hospital Wang 7 1 Hour Conference weekly Faculty Participant

2011-present	Pediatric EEG summer stock 3 rd -5 th year pediatric and adult neurology residents and faculty	Massachusetts General Hospital Wang 7 One Hour lecture annually
2011-2013	Benign Focal Epilepsy Syndromes 1 st -2 nd year pediatric and adult epilepsy and neurophysiology fellows	Massachusetts General Hospital Wang 7 One Hour lecture annually
2012-2014	Functional Network Analysis 3 rd -5 th year pediatric and adult neurology residents and faculty	Massachusetts General Hospital Wang 7 One Hour lecture annually
2013	Navigating a career in academic child neurology 3 rd -5 th year pediatric and adult neurology residents	Massachusetts General Hospital Wang 7 One Hour lecture
2011	Functional connectivity network analysis in EEG	Cambridge Hospital Dept of Pediatrics Grand Rounds
2012	Functional connectivity network analysis in EEG	Lurie Center for Autism Research Presentation
2013	Quantitative biomarkers in childhood absence epilepsy	Boston University Data Analysis Lab Research Presentation
2014	Electrical source imaging	Boston University Data Analysis Lab Research Presentation
2013 - 2014	Pediatric EEG 2 rd -4 th year adult neurology residents and faculty	Massachusetts General Hospital Wang 7 One Hour lecture
2013 - 2015	High Density EEG and source localization 3 rd -5 th year pediatric and adult neurology residents and faculty	Massachusetts General Hospital Wang 7 One Hour lecture
2013-present	Neonatal EEG 3 rd -5 th year pediatric and adult neurology residents and faculty	Massachusetts General Hospital Wang 7 One Hour lecture annually
2013-2018	Required Neurophysiology Rotation 3 rd -5 th year pediatric neurology residents	Massachusetts General Hospital Wang 7 Course Director, One Month rotation
2015	Biomarker discovery in Rolandic epilepsy	Martinos Center for Biomedical Imaging Stufflebeam and Hamalainen labs Research presentation
2016	Early Onset Epilepsy of Childhood	Massachusetts General Hospital

	3 rd -5 th year pediatric and adult neurology residents and faculty	Wang 7 One Hour lecture
2017-present	Pediatric EEG Adult and pediatric neurology nurses	Massachusetts General Hospital 175 Cambridge Street Three lectures annually
2017-present	Epilepsy surgery evaluation 3 rd -5 th year pediatric and adult neurology residents and faculty	Massachusetts General Hospital Wang 7 One Hour lecture
2017-present	Neonatal EEG technical considerations Neurophysiology lab EEG techs	Massachusetts General Hospital Wang 8 One Hour lecture
2017-present	Neonatal EEG Summer Stock 1 st -2 nd year pediatric and adult epilepsy and neurophysiology fellows	Massachusetts General Hospital Wang 8 One Hour lecture
2018	Sleep spindles over development	Martinos Center for Biomedical Imaging Manoach and Stickgold labs
2019	Electrical source imaging	Massachusetts General Hospital Edlow and Rosenthal labs Research presentation
2019	Automated spindle detection	Massachusetts General Hospital Clinical Neuroscience Meeting Research presentation
2019	Circuits panel	Massachusetts General Hospital Neurology Research Retreat
2020	Biomarker discovery in developmental epilepsy	Children's Hospital Boston Epilepsy Grand Rounds
2020	Disrupted sleep spindles and memory consolidation in epilepsy	Martinos Center for Biomedical Imaging Manoach and Stickgold labs
2020	EEG Biomarker discovery	Massachusetts General Hospital Edlow lab meeting Research presentation
2020	Updates in neonatal brain monitoring	Massachusetts General Hospital Divisions of Neonatology and Child Neurology
2020	Electrophysiological biomarker discovery in epilepsy	Massachusetts General Hospital Department of Neurology Grand Rounds
2020-present	Sleep spindles and thalamocortical circuits in Epilepsy	Massachusetts General Hospital Wang 8

1st-2nd year pediatric and adult epilepsy and neurophysiology fellows One Hour lecture

Clinical Supervisory and Training Responsibilities:

2009-2011	General Child Neurology Clinic Clinic Attending Harvard Medical Students	Harvard Medical School 4 hours per week
2010-2016	Adult Inpatient Neurophysiology Attending 1 st - 2 nd year epilepsy and neurophysiology fellows	Massachusetts General Hospital 10 hours per week for 16-18 weeks per year
2010-present	Inpatient Child Neurology Consult Attending 3 rd - 5 th year child neurology residents	Massachusetts General Hospital 60 hours per week for 1-2 weeks per year
2010-present	Pediatric Epilepsy Outpatient Clinic 1 st -2 nd year epilepsy and neurophysiology fellows and 3 rd -5 th year child neurology residents	Massachusetts General Hospital 4 hours every other week
2010-present	Neonatal and Pediatric EEG Brain Monitoring Attending Clinical Service Director 1 st -2 nd year epilepsy and neurophysiology fellow	Massachusetts General Hospital 1-2 hours daily for 4 months per year On call as back up for 12 months per year
2011-2016	Pediatric Neurology Resident Clinic Supervisor 1 st -5 th year child and adult neurology and psychiatry residents	Massachusetts General Hospital 4 hours every other week
2011-present	Neurophysiology EEG lab Supervisor 1 st -2 nd year epilepsy and neurophysiology fellows	Massachusetts General Hospital 3 hours every other week
2016-present	Adult Inpatient Neurophysiology Attending 1 st -2 nd year epilepsy and neurophysiology fellows	Massachusetts General Hospital 10 hours per week for 9-11 weeks per year

Research Supervisory and Training Responsibilities:

2010-present	Supervisor Undergraduates, research assistants, medical students, graduate students, data scientists, residents, and post-doctoral fellows (6 per year)	Massachusetts General Hospital 1:1 meetings 1-2 hours per week per student Weekly 2-3 hour lab meeting
--------------	--	--

Formally Mentored Harvard Medical, Dental and Graduate Students:

- 2013-2015 Amy Armstrong, M.D. Child Neurology Resident at MGH
Authored one publication under my mentorship; currently faculty at MGH/ Harvard Medical School.
Children's Hospital Boston / Harvard Medical School.
- 2015-2016 Aline Herlopian, M.D., Epilepsy Fellow at MGH
Mentored and co-mentored on 2 publications; currently faculty at Yale University, Department of Neurology.
- 2015-2016 Kyla Cordrey, B.S., M.D. Candidate, Harvard University
Mentored her Honors Thesis (Thesis: Benign Epilepsy with Centrottemporal Spikes); transitioned to Johns Hopkins Medical School
- 2016-2017 Gina Deck, MD, MGH Epilepsy Fellow.
Mentored on 1 publication; currently faculty at Brown University, Department of Neurology.
- 2016-2018 Marjan Dohlashahi, M.D., MGH Epilepsy Fellow.
Co-mentored on one publication; currently faculty William Osler Hospital, Toronto, CA
- 2017- Grace Xiao, B.S., M.D. Candidate, Harvard University.
Mentored her Honors Thesis (Thesis: Spike characteristics in resolving epilepsy), and one publication; transitioned to Johns Hopkins Medical School.
- 2017-2019 Lila Worden, M.D., Child Neurology Resident.
Mentored her on one poster (*selected for platform session at a National Meeting, *received a Travel Award and a Young Investigator Award) and one publication (*highlighted in 2020 Epilepsy Currents Editorial); transitioned to an epilepsy fellowship at Children's Hospital Philadelphia.
- 2018- Bryan Baxter, Ph.D., Post-doctoral Research Fellow in Psychiatry at MGH.
Co-mentor on 2 projects and 1 training award.
- 2019- David Lin, M.D., ICU Fellow in Neurology at MGH.
Scientific advisor on his training awards; transitioned to faculty at MGH and Harvard Medical School
- 2019- John McLaren, M.D., Child Neurology Resident at MGH.
Currently mentoring on one project in my lab.
- 2019- Yancheng Luo, M.D., Child Neurology Resident at MGH.
Currently mentoring on one project in my lab.
- 2020- Melanie McNally, M.D., Clinical Fellow in Neurology, Harvard Medical School.
Scientific advisor for her training award.
- 2020- Mainak Jas, Ph.D., Research Fellow in Neuroradiology, Harvard Medical School.
Co-mentor for his training award.
- 2020- Jonanlis Ramirez, M.D. Clinical Fellow in Pediatrics, Harvard Medical School
Member of his Scholarly Oversight Committee

2020- Wen Shi, Ph.D. Research Fellow in Neurology, Harvard Medical School
Post-doctoral supervisor

2020- Hunki Kwon, Ph.D. Research Fellow in Neurology, Harvard Medical School
Post-doctoral supervisor

Other Mentored Trainees and Faculty:

2011-2011 Lauren Wizon, B.S. / Boston University

Co-mentored her undergraduate Honors Thesis in Math and Statistics (Thesis: Stability of functional networks derived from human EEG) and she contributed to 1 publication.

2010-2012 Jennifer Leahy, PhD, University of Massachusetts / Clinical Psychologist

Worked as a research technician and performed independent research in my lab, where she authored / coauthored 2 publications and successfully matriculated to a graduate program in Child Psychology.

2011-2016 Sean Matlis, Ph.D. / Boston University

Served as his experimental mentor and on his Dissertation Committee Member in Neuroscience (Thesis: Functional network and spectral analysis of clinical EEG data to identify quantitative biomarkers and classify brain disorders) where he authored one publication.

2013-2014 Rayna Trietsch, M.D. / University of Massachusetts Medical School

Worked as a research technician and performed independent research in my lab where she co-authored one poster and successful matriculated to medical school.

2013-2015 Katica Boric, Ph.D / Decision Lab Manager

Worked as a research coordinator and performed independent research in my lab contributing to 2 publications and transition to industry.

2013-2015 Juan Diaz, M.Eng, M.B.A / Dartmouth Business School / Philips Product and Innovation

Worked as a research technician and performed independent research in my lab. Contributed to a poster and a publication and successfully matriculated to a top graduate program in Health Industry.

2013-2015 Sara Parvin-Nejad, B.S.

Co-mentored her undergraduate Honors Thesis in Math and Statistics, Boston University (Thesis: Power differences in spike and non-spike intervals for EEG study of continuous spike and wave during slow wave sleep: a case report.)

2015-2018 Wenting Xie, B.S., M.S. Candidate / Cornell University Graduate Program in Computer Science.

Worked as a research technician and performed independent research in my lab, where she authored / co-authored 3 posters, 2 papers, and successfully matriculated to a top graduate program in computer science.

2015-2018 Daniel Song, M.Eng., Ph.D Candidate / Northwestern University Graduate Program in Biomedical Engineering.

Worked as a research technician and performed independent research in my lab where he authored / co-authored 3 posters and 2 papers and successfully matriculated to a top graduate program in biomedical engineering.

- 2015-2020 Emily Thorn, B.S., M.S., M.D. Candidate / Washington State University Elson S. Floyd College of Medicine.
Worked as a research coordinator, performed independent research in my lab, and transitioned to graduate school where I served as her primary mentor (Thesis: A quantitative analysis of thalamocortical white matter development in childhood epilepsy with centrottemporal spikes, Boston University), authored / co-authored 2 posters presented at national meetings (*one selected for platform presentation), 1 book chapter, 3 papers, and successfully transitioned to medical school.
- 2016-2017 Erin Ross, B.S., MD Candidate / University of Southern California Keck Medical School
Initially rotated as a Northeastern Univ Coop student and then worked as a research technician and performed independent research in my lab where she authored/co-authored 2 posters presented at National Meetings (one chosen for a walking tour) and 3 papers and successfully matriculated to medical school.
- 2016-2020 Lauren Ostrowski, B.S., MD/PhD Candidate / University of San Diego MD/PhD MSTP
Mentored her undergraduate Honors Thesis in Computational Neuroscience (Thesis: Dysmature white matter microstructure in developmental childhood epilepsy), Brown University, then she worked as a data analyst in my lab where she authored/co-authored 5 posters, 3 papers, and 3 further in progress, received a second place prize for her undergraduate thesis, and successfully matriculated to a top Medical Scientist Training Program.
- 2017 Suhina Srivastav
Northeastern coop student rotator for 6 months in the lab and co-authored 1 poster.
- 2017 Stockton Sheehan
Northeastern coop student rotator for 6 months in the lab where he co-authored 1 poster and 1 publication.
- 2017-2018 McKenna Parnes, PhD Candidate / Suffolk University / Brown University
Suffolk University Neuropsychology graduate student rotator in the lab where she authored / coauthored four posters, co-authored one publication and successfully matriculated to a residency program at Brown University
- 2017-2020 Sally Stoyell, B.S., PhD Candidate / University of Minnesota Graduate Program in Psychology.
Served as a research coordinator in my lab where she authored / co-authored 11 posters presented at national meetings, 6 papers, and successfully matriculated to a top graduate program in developmental psychology with a Provost scholarship.
- 2017- Dhinakaran Chinappen, M.Eng, PhD Candidate / Boston University
Served as a research coordinator in my lab where he authored / co-authored 9 posters presented at national meetings, 4 papers, and successfully matriculated to a top graduate program in computational neuroscience for which I serve as his experimental advisor and on his Dissertation Committee
- 2017- Elizabeth Spencer, PhD Candidate / Boston University
Experimental mentor, Dissertation Committee Member for PhD in Neuroscience, where she has thus far received a NSF Fellowship, a third place university award for her research, presented 3 posters, published 1 paper and has 2 papers in progress.

2019- Aliceson Nicole Dusang, Ph.D. Candidate Computer Science and Electrical Engineering, Brown University.
Member of her dissertation committee.

2020- Erin Berja, B.S.
Research coordinator and pursuing two independent projects in my lab

2020-2021 Anehitia Oribabor, B.S., M.M.Eng.
Research coordinator and pursuing two independent projects in my lab

Formal Teaching of Peers (e.g., CME and other continuing education courses):

No presentations below were sponsored by 3rd parties/outside entities

Fall, 2011	“New Drugs in Pediatric Epilepsy” Harvard/MGH Pediatric Neurology CME Course	One talk Boston, MA
Fall, 2013	“Benign Focal Childhood Epilepsy Syndromes” Harvard/MGH Pediatric Neurology CME Course	One talk Boston, MA
Fall, 2015	“Benign Focal Childhood Epilepsy Syndromes” Harvard/MGH Pediatric Neurology CME Course	One talk Boston, MA
Fall, 2017	“Benign Focal Childhood Epilepsy Syndromes” Harvard/MGH Pediatric Neurology CME Course	One talk Boston, MA
Fall, 2018	“Advanced topics in neonatal and pediatric EEG” American Clinical Neurophysiology Society CME Course	One talk Boston, MA
Winter, 2019	“Neonatal EEG Cases” American Clinical Neurophysiology Society CME Course	One talk Las Vegas, NV
Winter, 2021	“Abnormal Neonatal and Pediatric EEG” American Clinical Neurophysiology Society CME Course	One talk Virtual meeting

Report of Regional, National and International Invited Teaching and Presentations

Regional Invited Presentations:

Those presentations below sponsored by 3rd parties/outside entities are so noted and the sponsor(s) is (are) identified

3/2019 “EEG Biomarker Discovery”
Biogen, Inc (sponsored by Biogen, Inc investigator-initiated award)

- 5/2019 “EEG Biomarker Discovery”
Biogen, Inc (sponsored by Biogen, Inc investigator-initiated award)
- 5/2020 “Biomarker Discovery in Angelman Syndrome”
Ionis Pharma and Biogen Inc.,
(Virtual presentation, sponsored by Biogen, Inc investigator-initiated award)
- 6/2020 “Delta power as a reliable biomarker for cognitive dysfunction in Angelman Syndrome”
UCSD Investigators and Biogen Inc.,
(Virtual presentation, sponsored by Biogen, Inc investigator-initiated award)
- 9/2020 “Individualized longitudinal statistical model to predict treatment response in Angelman Syndrome”
UCSD Investigators and Biogen Inc.,
(Virtual presentation, sponsored by Biogen, Inc investigator-initiated award)
- 1/2021 “Delta power predicts treatment response and correlates to UBE3A expression in Angelman Syndrome”
Biogen Inc.
(Virtual presentation, sponsored by Biogen, Inc investigator-initiated award)

National

No presentations below were sponsored by 3rd parties/outside entities

- 1/2010 “Functional Network Analysis in Infantile Spasms”
Child Neurology Faculty job talk, University of Washington Children’s Hospital
Seattle, WA
- 4/2010 “Functional Network Analysis in Infantile Spasms”
Biomedical Engineering Faculty job talk, University of Washington
Seattle, WA
- 11/2012 “EEG based functional networks: a robust biomarker across time”
American Neurological Association Annual Meeting, Epilepsy Special Interest Group
Boston, MA
- 10/2014 “Source-space EEG networks partially reflect underlying white matter connectivity”
Child Neurology Society Annual Meeting, NSADA Special Interest Group
Columbus, OH
- 10/2014 “EEG functional connectivity is partially predicted by underlying white matter connectivity”
Child Neurology Society Annual Meeting, NSADA retreat
Columbus, OH
- 12/2014 “EEG functional networks: temporal stability and structural relationships”
American Epilepsy Society Annual Meeting, Investigators Workshop
Seattle WA

- 12/2017 American Epilepsy Society “Starting a laboratory”, speaker
Washington DC
- 2/2018 “Biomarker Discovery in Developmental Epilepsy”
University of Cincinnati Neuroscience Graduate Program
Cincinnati, OH
- 3/2018 “Spike ripple events: identification and application in high density EEG”
High-Density EEG Consortium Meeting
Tampa, FL
- 3/2018 “Open source versus Commercial Software”
High-Density EEG Consortium Meeting
Tampa, FL
- 9/2018 “Sleep phenotyping: applications for studying neurodevelopment”
NIH NIMH Sleep and Neurodevelopment Consortium Meeting
Bethesda, MD
- 2/2019 “Identification and Significance of Spike Ripple Events in Scalp HD EEG”
American Clinical Neurophysiology Society Annual Meeting
Las Vegas, NV
- 12/2019 “Focusing on fast oscillations: new insights and controversies”
American Epilepsy Society Engineering SIG
New Orleans, LO
- 2/2020 “Spike Ripples Case Report”
American Clinical Neurophysiology Society Annual Meeting New Orleans, LA
- 4/2020 “The Maturation of Sleep Rhythms over Development”
NIH NIMH Sleep and Neurodevelopment Consortium Meeting,
Houston, TX
- 2/2021 “Electrophysiological biomarkers for cognitive function”
Northwestern University Seizure Focus Lecture Series
Chicago, IL
- 2/2021 “Introduction of Keith Chiappa”
American Clinical Neurophysiological Society Pierre Gloor Award Introduction
2021 Annual Meeting (Virtual)
- 5/2021 “Electrophysiological biomarker discovery in epilepsy”
University of Washington Seattle Children’s Hospital Neurology Department
Seattle, WA
- 8/2021 “Deviations from the natural history of delta power in Angelman Syndrome
reflect treatment effect size and correlate with UBE3A expression”
Angelman Syndrome Foundation Annual Symposium
Virtual Meeting

9/2021 “Focal thalamocortical circuit dysfunction in sleep-activated developmental epilepsy in epileptic encephalopathies”
Longwood Epilepsy Grand Rounds
Boston, MA

10/2021 “Focal thalamocortical circuit dysfunction in sleep-activated developmental epilepsy”
Harvard Medical School, Division of Sleep Medicine, Grand Rounds

Report of Clinical Activities and Innovations

Current Licensure and Certification

2008 Massachusetts Medical License

2009, 2019 Board Certified, American Board of Psychiatry and Neurology with Special Qualifications in Child Neurology

2011 Board Certified, American Board of Psychiatry and Neurology, Neurophysiology

2018 Board Certified, American Board of Psychiatry and Neurology, Epilepsy

Practice Activities:

2008-2011	Ambulatory Care	Child Neurology Clinic, Cambridge Health Alliance	1-2 half days per week
2010-present	Neurophysiology	Pediatric Epilepsy Clinic, Massachusetts General Hospital	1-2 half days every other week
2010-2017	Inpatient Care	General Child Neurology Consults, Massachusetts General Hospital	1-2 weeks per year
2010-2016	Neurophysiology	Inpatient Adult Epilepsy Monitoring Unit Attending	6-10 weeks per year
2010-2016	Neurophysiology	Inpatient Adult Neurophysiology Attending	6-8 weeks per year
2010-present	Neurophysiology	Inpatient Neonatal and Brain Monitoring Attending	18 weeks per year
2010-present	Epilepsy	Inpatient Pediatric Epilepsy Monitoring Unit Attending	10-20 weeks per year
2011-2016	Ambulatory Care	Child Neurology Resident Clinic Preceptor Massachusetts General Hospital	1 half day every other week
2016-present	Neurophysiology	Inpatient Adult Epilepsy Monitoring Unit Neurophysiology Attending	7-9 weeks per year
2016-present	Neurophysiology	Inpatient Adult ICU Neurophysiology Attending	4-5 weeks per year

Report of Teaching and Educational Innovations

Pediatric Neurology Clinical Cards 2007-2015	Set of 20 laminated cards used by rotating adult neurology residents during pediatric neurology rotation at MGH to help with clinical evaluation and differential diagnosis of children
MGH Inpatient and Outpatient High Density EEG and Electrical Source Imaging Program 2010-present	Developed the MGH inpatient high-density EEG and clinical EEG source localization program at MGH (with Matti Hamalainen, PhD, Professor of Radiology, Director of the MEG Core, Martinos Center for Biomedical Imaging)
Neonatal ICU Brain Monitoring Protocol 2010-present	Developed the EEG brain monitoring protocol used at MGH
Pediatric ICU Brain Monitoring Protocol 2012-present	Developed the EEG brain monitoring protocol used at MGH (co-created with Sarah Murphy, Pediatric ICU neurointensivist)
Neonatal EEG Template 2016-present	Template for reporting followed by epilepsy fellows and neurophysiology attendings on the neonatal LTM service.
Creation of MGH Child Neurology Residency website 2014-2016	Created first draft of comprehensive MGH Child Neurology residency website (http://neuroeducation.massgeneral.org/childneurologyresidents/)
Child Neurology Residency Materials 2014-2016	First draft of core Child Neurology Residency materials in response to the major ACGME Common Program Requirement changes approved in 2014
Neonatal Seizure Management Pathway 2021	Created MGHfC Neonatal Seizure Management Pathway with Emily Herzberg, MD and Sergei Roumiantsev, MD, PhD

Report of Scholarship

Peer-Reviewed Scholarship in print or other media:

Research Investigations

1. Jones TA, **Chu CJ**, Grande LA, Gregory AD. Motor skills training enhances lesion-induced structural plasticity in the motor cortex of adult rats. *J Neuroscience* 1999; 19(22): 10153-63.
2. **Chu CJ**, Jones TA. Experience-dependent structural plasticity in cortex heterotopic to focal sensorimotor cortical damage. *Experimental Neurology*. 2000; 166: 403-414.
3. **Chu CJ**, Major P, Montenegro M, Thiele E. Cyst-like cortical tubers are associated with TSC2, infantile spasms, and epilepsy in patients with Tuberous Sclerosis Complex. *Neurology*. 2009;72:1165-69.
4. **Chu CJ***, Gallagher A*, Montenegro MA, Major P, Costello DJ, Lyczkowski BA, Muzykewicz D, Doherty C, Thiele EA. (***joint first-authors**) Associations between electroencephalographic and magnetic resonance imaging findings in Tuberous Sclerosis Complex. *Epilepsy Research*. 2009;87(2-3):197-202.
5. **Chu CJ**, Major P, Camposano S, Muzykewicz, D, Thiele EA. The natural history of epilepsy in

- tuberous sclerosis complex. *Epilepsia* 2010;51(7):1236-41.
6. Xin W, Mullen TE, Kiely R, Min J, Feng X, Cao Y, O'Malley L, Shen Y, **Chu CJ**, Mole SE, Goebel HH, Sims K. CLN5 mutations are surprisingly frequent in both juvenile and late-onset non-Finnish NCL patients. *Neurology* 2010;74(7):565-71.
 7. Numis AL, Yellen MB, **Chu CJ**, Pfeifer HH, Thiele EA. The relationship of ketosis and growth to the efficacy of the ketogenic diet in infantile spasms. *Epilepsy Res* 2011;96(1-2):172-5.
 8. Van Eeghan AM, **Chu CJ**, Pulsifer MB, Camposano SE, Thiele EA. Cognitive and adaptive development of patients with tuberous sclerosis complex: A retrospective, longitudinal investigation. *Epilepsy Beh* 2012;23(1):10-5.
 9. Kramer MA, Truccolo W, Eden UT, Lepage KQ, Hochberg LR, Eskandar EN, Madsen JR, Lee JW, Maheshwari A, Halgren E, **Chu CJ**, Cash SS. Spontaneous seizure termination across spatial scales via a critical transition. *Proc Natl Acad Sci USA* 2012;109(51):21116-21.
 10. **Chu CJ**, Kramer MA, Pathmanathan J, Bianchi MT, Westover MB, Wison L, Cash SS. Emergence of stable functional networks in long-term human EEG. *J Neurosci* 2012. 32(8):2703-2713.
 11. Shore JC, **Chu CJ**, Bianchi MT. Spontaneous power law degree distributions and turbulent dynamics in flow networks. *Social Networks* 2013;35:116-123.
 12. Boland T, McGuone D, Jindal J, **Chu CJ**, Cole AJ, Hedley-Whyte ET, Rosenthal ES. Phylogenetic and epidemiologic evidence of multi-year incubation in human rabies. *Ann Neurol* 2013; PMID: 24034855
 13. **Chu CJ**, Leahy JT, Pathmanathan J, Kramer MA, Cash SS. The maturation of cortical sleep rhythms and networks over early development. *Clin Neurophys* 2014; 125(7):1360-70.
 14. Lepage KQ, Kramer MA, **Chu CJ**. A statistically robust EEG re-referencing procedure to mitigate reference effect. *J Neurosci Methods*. 2014;235:101-116.
 15. Westover MB, Shafi MM, Bianchi MT, Veras Rocha Moura LM, O'Rourke D, Rosenthal E, **Chu CJ**, Hoch DB, Kilbride R, Cole AJ, Cash SS. The probability of seizure detection among critically ill adults. *Clin Neurophysiol* 2014; 126:463-71
 16. Yaffe RB, Borger P, Megevand P, Groppe DM, Kramer MA, **Chu CJ**, Santaniello S, Meisel C, Mehta A, Sarma SV. Physiology of functional and effective networks in epilepsy. *Clin Neurophysiol*. 2015;126(2):227-236.
 17. Shafi M, Vernet M, Klooster D, Barnard M, Romatoski K, Westover MB, **Chu CJ**, Boric K, Christodoulou J, Gabrieli J, Whitfield-Gabrieli S, Pascuel-Leone A, Chang B. Physiological consequences of abnormal connectivity in a developmental epilepsy. *Annals of Neurology* 2015;7793: 487-503.
 18. **Chu CJ**, Tanaka N, Diaz J, Edlow B, Wu O, Hamalainen M, Stufflebeam S, Cash SS, Kramer MA. EEG functional connectivity is partially predicted by underlying white matter connectivity. *Neuroimage* 2015; 108:23-33.
 19. Ng MC, Gaspard N, Cole AJ, Hoch DB, Cash SS, Bianchi M, O'Rourke DA, Rosenthal ES, **Chu CJ**, Westover MB. The standardization debate: a conflation trap in critical care electroencephalography. *Seizure* 2015;24:52-58.
 20. Matlis S, Kramer K, **Chu CJ**. Disruptions in cortical oscillations and large-scale functional networks in autism *BMC Neurology* 2015;15(1):97-105.
 21. Shafi M, **Chu CJ**, Whitfield-Gabrieli S, Pascuel-Leone A, Chang B. A multimodal imaging- and stimulation-based method of evaluating connectivity-related brain excitability in patients with epilepsy. *JoVE*, 2016;117.
 22. Glass HC, Shellhaas RA, Wusthoff CJ, Chang T, Abend NS, **Chu CJ**, Cilio RC, Glidden DV, Bonafacio SL, Massey S, Tsuchida TN, Silvertein FS, Soul JS. Contemporary profile of seizures in neonates: A prospective cohort study of the Neonatal Seizure Registry *J Pediatrics* 2016;174:98-103
 23. Knupp KG, et al and the **Pediatric Epilepsy Research Consortium**. Response to treatment in a prospective national infantile spasms cohort. *Annals of Neurology* 2016; 79: 475-84
 24. Herlopian A, Rosenthal E, **Chu CJ**, Cole AJ, Struck AF. Extreme delta brushes evolving into status epilepticus in patients with anti-NMDA encephalitis. *Epilepsy and Beh Case Report* 2016;7:69-71.
 25. Knupp KG, Leister E, Coryell J, Nickels KC, Ryan N, Juarez-Colunga E, Gaillard WD, Mytinger JR, Berg AT, Millichap J, Nordi DR, Joshi S, Shellhaas RA, Loddenkemper T, Dlugos D, Wirrell E, Sullivan J, Hartman AL, Kossoff EH, Grinspan ZM, Hamikawa L, and the **Pediatric Epilepsy**

- Research Consortium.** Response to second treatment after initial failed treatment in a multicenter prospective infantile spasms cohort. *Epilepsia* 2016 Nov;57(11):1834-1842
26. Shellhaas RA, Wusthoff CJ, Tsuchida T, Glass JC, **Chu CJ**, Massey S, Soul JS, Wiwattanadittakun N, Abend N, Cilio MR. Management variability for treatment of seizures in neonates: a multi-center cohort study. *J Pediatrics* 2017; 181:298-301.
 27. **Chu CJ**, Chan A, Song D, Staley KJ, Stufflebeam SM, Kramer MA. A semi-automated method for rapid detection of ripple events on interictal voltage discharges in the scalp electroencephalogram. *J Neurosci Methods* 2017; 277:46-55.
 28. Shellhaas RA, Chang T, Wusthoff CJ, Soul JS, Massey SL, **Chu CJ**, Cilio MR, Bonifacio SL, Abend NS, Tsuchida TN, Glass HC; Neonatal Seizure Registry Study Group. Treatment Duration After Acute Symptomatic Seizures in Neonates: A Multicenter Cohort Study. *J Pediatr* 2017;181:298-301
 29. Shellhaas RA, Wusthoff CC, Tsuchida T, Glass HC, **Chu CJ**, Massey S, Soul JS, Wiwattanadittakun N, Abend N, Cilio MR. Profile of neonatal epilepsies: characteristics of a prospective US cohort. *Neurology* 2017;89: 893-899.
 30. Glass HC, Shellhaas RA, Tsuchida TN, Chang T, Wusthoff CJ, **Chu CJ**, Cilio MR, Bonifacio SL, Massey SL, Abend NS, Soul JS; Neonatal Seizure Registry study group. Seizures in Preterm Neonates: A Multicenter Observational Cohort Study. *Pediatr Neurol* 2017;72:19-24
 31. Shellhaas RA, Berg AT, Grinspan ZM, Wusthoff CJ, Millichap JJ, Loddenkemper T, Coryell J, Saneto RP, **Chu CJ**, Joshi SM, Sullivan JE, Knupp KG, Kossoff EH, Keator C, Wirrell EC, Mytinger JR, Valencia I, Massey S, Gaillard WD. Initial Treatment for Nonsyndromic Early-Life Epilepsy: An Unexpected Consensus. *Pediatr Neurol* 2017;75:73-79.
 32. Berg AT, Coryell J, Saneto RP, Grinspan ZM, Alexander JJ, Kekis M, Sullivan JE, Wirrell EC, Shellhaas RA, Mytinger JR, Gaillard WD, Kossoff EH, Valencia I, Knupp KG, Wusthoff C, Keator C, Dobyns WB, Ryan N, Loddenkemper T, **Chu CJ**, Novotny EJ Jr, Koh S. Early-Life Epilepsies and the Emerging Role of Genetic Testing. *JAMA Pediatr* 2017;171(9):863-871
 33. Edlow BL, Chatelle C, Spencer-Salmon CC, Bodien YG, Hirschberg RE, Hochberg L, **Chu CJ**, Giacino JT, ES Rosenthal ES. Detecting consciousness in ICU patients with severe traumatic brain injury. *Brain* 2017; 140;9: 2399-2414.
 34. Sidorov MS, Deck GM, Dolatshahi M, Thibert RL, Bird LM, **Chu CJ***, Philpot BD* (co-last authors). Delta rhythmicity is a reliable EEG biomarker in Angelman syndrome. *J Neurodev Disord.* 2017; 9:17.
 35. Demarest ST, Shellhaas RA, Gaillard WD, Keator C, Nickels KC, Hussain SA, Loddenkemper T, Patel AD, Saneto RP, Wirrell E, Sánchez Fernández I, **Chu CJ**, Grinspan Z, Wusthoff CJ, Joshi S, Mohamed IS, Stafstrom CE, Stack CV, Yozawitz E, Bluvstein JS, Singh RK, Knupp KG; Pediatric Epilepsy Research Consortium. The impact of hypsarrhythmia on infantile spasms treatment response: Observational cohort study from the National Infantile Spasms Consortium. *Epilepsia* 2017;58(12):2098-2103
 36. Grinspan ZM, Shellhaas RA, Coryell J, Sullivan JE, Wirrell EC, Mytinger JR, Gaillard WD, Kossoff EH, Valencia I, Knupp KG, Wusthoff C, Keator C, Ryan N, Loddenkemper T, **Chu CJ**, Novotny EJ Jr, Millichap J, Berg AT. Comparative Effectiveness of Levetiracetam vs Phenobarbital for Infantile Epilepsy. *JAMA Pediatr* 2018; 172: 352-360.
 37. Berg AT, Chakravorty S, Joh S, Grinspan ZM, Shellhaas RA, Saneto RP, Poduri A, Wirrell EC, Coryell J, **Chu CJ**, Mytinger JR, Gaillard WD, Valencia I, Knupp KG, Loddenkemper T, Sullivan JE, Millichap JJ, Keator C, Wusthoff C, Ryan N, Dobyns WB, Hegde M. Why West? A comparative analysis of the clinical, genetic, and biological features in infants with and without infantile spasms. *PlosOne* 2018;13(3):e0193599.
 38. Coryell J, Gaillard WD, Shellhaas RA, Grinspan ZM, Wirrell EC, Knupp KG, Wusthoff CJ, Keator C, Sullivan JE, Loddenkemper T, Patel A, **Chu CJ**, Massey S, Novotny EJ Jr, Saneto RP, Berg AT. Neuroimaging of Early Life Epilepsy. *Pediatrics* 2018 Sep;142(3)
 39. Spencer E, Martinet LE, Eskandar EN, **Chu CJ**, Kolaczyk ED, Cash SS, Eden UT, Kramer MA. A procedure to increase the power of Granger-causal analysis through temporal smoothing. *J Neurosci Methods* 2018; 308:48-61
 40. Xie W, Ross EE, **Chu CJ**. Timing matters: impact of anticonvulsant drug treatment and spikes on seizure risk in benign epilepsy with centrotemporal spikes. *Epilepsia Open.* 2018;3:409-417.

41. den Bakker H, Sidorov MS, Fan Z, Lee DJ, Bird LM, **Chu CJ**, Philpot BD. Abnormal coherence and sleep composition in children with Angelman syndrome: a retrospective EEG study. *Mol Autism* 2018;9:32.
42. Glass HC, Soul JS, **Chu CJ**, Massey SL, Wusthoff CJ, Chang T, Cilio MR, Bonifacio SL, Abend NS, Thomas C, Lemmon M, McCulloch CE, Shellhaas RA; Neonatal Seizure Registry study group. Response to antiseizure medications in neonates with acute symptomatic seizures. *Epilepsia* 2019 Mar;60(3):e20-e24.
43. Kramer MA, Ostrowski LM, Song DY, Thorn EL, Stoyell SM, Parnes M, Xiao G, Staley KJ, Stufflebeam SM, **Chu CJ**. Scalp recorded spike ripples predict seizure risk in childhood epilepsy better than spikes. *Brain* 2019; 142(5):1296-1309.
44. Song D, Ross EE, Xie W, Ostrowski LM, Thorn EL, Sheehan S, Stufflebeam SM, Kramer MA, **Chu CJ**. Beta rhythm power in the perirolandic region correlates with time from seizure. *Brain and Behavior* 2019;9(3):e01237
45. Peters JM, Hyde DE, **Chu CJ**, Boom M, Scherrer B, Madsen JR, Stone SS, Ouaalam H, Prabhu SP, Sahin M, Warfield SK. Lesion-Constrained Electrical Source Imaging: A Novel Approach in Epilepsy Surgery for Tuberous Sclerosis Complex. *J Clin Neurophysiol.* 2020;37(1):79-86.
46. Berg AT, Wusthoff C, Shellhaas RA, Loddenkemper T, Grinspan ZM, Saneto RP, Knupp KG, Patel A, Sullivan JE, Kossoff EH, **Chu CJ**, Massey S, Valencia I, Keator C, Wirrell EC, Coryell J, Millichap JJ, Gaillard WD. Immediate outcomes in early life epilepsy: A contemporary account. *Epilepsy Behav* 2019; 97:44-50.
47. Ostrowski LM, Song DY, Thorn EL, Ross EE, Stoyell SM, Eden UT, Kramer MA, Emerton BC, Morgan AK, Stufflebeam SM, **Chu CJ**. Dysmature superficial white matter microstructure in developmental focal epilepsy. *Brain Commun.* 2019;1(1):fcz002. doi:10.1093/braincomms/fcz002
48. Jing J, Herlopian A, Karakis I, Ng M, Halford JJ, Lam A, Maus D, Chan F, Dolatshahi M, Muniz C, **Chu C**, Sacca V, Pathmanathan J, Ge W, Sun H, Dauwels J, Cole AJ, Hoch DB, Cash SS, Westover MB. Interrater Reliability of Experts in Identifying Interictal Epileptiform Discharges in Electroencephalograms *JAMA Neurol.* 2019;77(1):49-57.
49. Ross EE*, Stoyell SM*, Kramer MA, Berg AT, **Chu CJ**. The natural history of seizures and neuropsychiatric symptoms in childhood epilepsy with centrotemporal spikes (CECTS). *Epilepsy Behav.* 2020;103(Pt A):106437.
50. Jing J, Sun H, Kim JA, Herlopian A, Karakis I, Ng M, Halford JJ, Maus D, Chan F, Dolatshahi M, Muniz C, **Chu C**, Sacca V, Pathmanathan J, Ge W, Dauwels J, Lam A, Cole AJ, Cash SS, Westover MB. Development of Expert-Level Automated Detection of Epileptiform Discharges During Electroencephalogram Interpretation. *JAMA Neurol.* 2019;77(1):103-108.
51. Worden L, Chinappen DK, Gold J, De Carvalho Paixao LC, Kramer MA, Westover MB, **Chu CJ**. The probability of seizures during continuous EEG monitoring in high-risk neonates. *Epilepsia* 2019; 60(12): 2508-2518.
Highlighted in the Editorial:
Kotagal, P. (2020) 'Continuous EEG Monitoring in Neonates: One Size Does Not Fit All', *Epilepsy Currents*. <https://doi.org/10.1177/1535759720923292>
52. Franck LS, Shellhaas RA, Lemmon M, Sturza J, Soul JS, Chang T, Wusthoff CJ, **Chu CJ**, Massey SL, Abend NS, Thomas C, Rogers EE, McCulloch CE, Grant K, Grossbauer L, Pawlowski K, Glass HC. Associations between Infant and Parent Characteristics and Measures of Family Well-Being in Neonates with Seizures: A Cohort Study. *J Pediatr.* 2020;221:64-71.e4.
53. Rubin DB, Angelini B, Shoukat M, **Chu CJ**, Zafar SF, Westover MB, Cash SS, Rosenthal ES. Electrographic predictors of successful weaning from anaesthetics in refractory status epilepticus. *Brain.* 2020;143(4):1143-1157.
54. Martinet LE*, Kramer MA*, Viles W, Perkins N, Spencer E, **Chu CJ**, Cash SS, Kolaczyk ED. Robust dynamic community tracking with applications in human brain functional networks *Nat Comm* 2020; 131(8):1782-1797.
55. Lemmon M, Glass H, Shellhaas RA, Barks MC, Bailey B, Grank K, Grossbauer L, Pawlowski K, Wusthoff CJ, Chant T, Soul J, **Chu CJ**, Thomas C, Massey SL, Abend NS, Rogers EE, Franck LS. Parent experience of caring for neonates with seizures. *Arch Dis Child Fetal Neonatal Ed* 2020;

105:634-39.

56. Thorn EL, Ostrowski LM, Chinappen DM, Jing J, Westover MB, Stufflebeam SM, Kramer MA, **Chu CJ**. Persistent abnormalities in Rolandic thalamocortical white matter circuits in childhood epilepsy with centrotemporal spikes. *Epilepsia* 2020;61(11):2500-2508.
57. Glass HC, Grinspan ZM, Li Y, McNamara NA, Chang T, **Chu CJ**, Massey SL, Abend NS, Lemmon ME, Thomas C, McCulloch CE, Shellhaas RA. Risk for infantile spasms after acute symptomatic neonatal seizures. *Epilepsia* 2020; 61(12):2774-2784.
58. Lemmon ME, Bonifacio SL, Shellhaas RA, Wusthoff CJ, Greenberg RG, Souls JS, Chang T, **Chu CJ**, Bates S, Massey SL, Abend NS, Cilio MR, Glass HC. Characterization of death in infants with neonatal seizures. *Pediatr Neurol* 2020; 113:21-25.
59. Kramer MA, Stoyell SM, Chinappen D, Ostrowski LM, Spencer ER, Morgan AK, Emerton BC, Jing J, Westover MB, Eden UT, Stickgold R, Manoach DS, **Chu CJ**. Focal sleep spindle deficits reveal focal thalamocortical dysfunction and predict cognitive deficits in sleep activated developmental epilepsy. *J Neuroscience*. 2021; 41(8): 1816-1829.
60. Crocker B, Ostrowski L, Williams ZM, Dougherty DD, Eskandar E, Widge AS, **Chu CJ**, Cash SS, Paulk AC. Local and distant responses to single pulse electrical stimulation reflect different forms of connectivity. *Neuroimage* 2021;237:118094.
61. Zhu X, Shappell H, Kramer MA, **Chu CJ**, Kolaczyk E. Inferring the type of phase transitions undergone in epileptic seizures using random graph hidden Markov models for percolation in noisy dynamic networks. *arXiv*: 2021.
62. Ostrowski LM, Spencer ER, Bird LM, Thibert R, Komorowski RW, Kramer MA, **Chu CJ**. Delta power robustly predicts cognitive function in Angelman syndrome. *Annals of Clinical and Translational Neurology*, 2021;8(7): 1433-1445.
63. Qiang L, Westover MB*, Zhang R*, **Chu CJ***. Computational evidence for a competitive thalamocortical model of spikes and spindle activity in Rolandic epilepsy. *Front Comput Neurosci* 2021: 15:680549.
64. Wusthoff CJ, Sundaram V, Abend NS, Massey SL, Lemmon ME, Thomas C, McCulloch CE, Chang T, Soul JS, **Chu CJ**, Rogers EE, Bonifacio SL, Cilio MR, Glass HC, Shellhaas RA. Seizure control in neonates undergoing screening versus confirmatory EEG monitoring. *Neurology* 2021 (in press)
65. Glass HC, Soul JS, Chang T, Wusthoff CJ, **Chu CJ**, Massey SL, Abend NS, Lemmon M, Thomas C, Numis AL, Guillet R, Sturza J, McNamara NA, Rogers EE, Franck LS, McCulloch CE, Shellhaas RA. Safety of early discontinuation of antiseizure medication after acute symptomatic neonatal seizures. *JAMA Neurology* 2021;78(7):817-825.
Highlighted in the Editorial:
Payne ET and Wirrell EC. (2021) ‘Discontinuing antiseizure medication in neonates with acute symptomatic seizures—primum non nocere (in press).
66. Shellhaas R, Wusthoff C, Numis A, Chu CJ, Massey S, Abend N, Soul J, Change T, Lemmon M, McNamara N, Guillet R, Franck L, Sturza J, Glass H. Early-life epilepsy after acute symptomatic neonatal seizures: a prospective multicenter study. *Epilepsia* (in press).
67. Nadalin JK, Eden UT, Han X, Richardson RM, Chu CJ*, Kramer MA*. Application of a convolutional neural network for fully-automated detection of spike ripples in the scalp electroencephalogram. *J Neurosci Methods* 2021 (in press)
68. Grinspan ZM, Knupp KG, Patel AD, Yozawitz EG, Wusthoff CJ, Wirrell E, Valencia I, Singhal NS, Nordlii DR, Mytinger JR, Mitchell W, Keator CG, Loddenkemper T, Hussain SA, Harini C, Gaillard WD, Fernandez IS, Coryell J, **Chu CJ**, Berg AT, Shellhaas RA. Comparative effectiveness of initial treatment for infantile spasms in a contemporary US cohort. *Neurology* 2021 (in press).
69. Stoyell S*, Baxter BS*, McLaren J, Kwon H, Chinappen DM, Ostrowski L, Zhu L, Grieco JA, Kramer MA, Morgan AK, Emerton BC, Manoach DS, **Chu CJ**. Diazepam induced sleep spindle increase correlates with cognitive recovery in a child with epileptic encephalopathy: case report. *BMC Neurol* (in press).

Other peer-reviewed scholarship

1. **Chu CJ**, Frosch M, Grant PE, Thiele EA. Progressive cyst-like tubers in TSC: clinical and

- neuropathological findings. *Epilepsia*. 2009;50(12):2648-51. (Case Series)
2. **Chu CJ** and Thiele EA. Tumor growth in patients with tuberous sclerosis complex on the ketogenic diet. *Brain & Development*. 2010;32(4):318-22. (Case series)
 3. **Chu CJ** and Thiele EA. New drugs for pediatric epilepsy. *Seminars in Pediatric Neurology* 2010;17(4): 214-223. (Review paper)
 4. **Chu CJ**, Kramer MA, Bianchi MT, Caviness VS, and Cash SS. Network analysis: applications for the developing brain. *J Child Neurol* 2011 26(4):488-500. (Review paper)
 5. Leahy JT, **Chu CJ**, Fisher JL. Clobazam as an adjunctive therapy in treating seizures associated with Lennox-Gastaut Syndrome. *Neuropsychiatr Dis Treat* 2011;7:673-81. (Review paper)
 6. Cormier J and **Chu CJ**. Safety and efficacy of levetiracetam for the treatment of partial onset seizures in children from one month of age. *Neuropsychiatr Dis Treat* 2013;9:295-306. (Review paper)
 7. Armstrong-Javors A, **Chu CJ**. Child neurology: Exaggerated dermal melanocytosis in a hypotonic infant: a harbinger of GM1 gangliosidosis. *Neurology*. 2014;83(17):e166-e168.
 8. **Chu CJ**. High density EEG-what do we have to lose?. *Clin Neurophysiol*. 2015;126(3):433-434. (Invited editorial.)
 9. Ng MC, Gaspard N, Cole AJ, Hoch DB, Cash SS, Bianchi M, O'Rourke DA, Rosenthal ES, **Chu CJ**, Westover MB. The standardization debate: a conflation trap in critical electroencephalography. *Seizure* 2015; 24;52-58 (Review paper)
 10. **Chu CJ**. Quick and accurate quantification of the premature brain. *Clin Neurophysiol* 2016; 127:2908-2909. (Invited editorial)
 11. **Chu CJ**. Targeting high frequency oscillations in epilepsy. *Clin Neurophysiol* 2018;129;6:1307-1308 (Invited editorial)
 12. Stoyell SM, Wilmskoetter J, Dobrota M, Chinappen DM, Bonilha L, Mintz M, Brinkmann B, Herman ST, Peters J, Vulliemoz S, Seeck M, Hamalainen M, **Chu CJ**. High density EEG in current clinical practice and opportunities for the future. *J Clin Neurophysiol* 2021;38(2): 112-123.
 13. McLaren JR, Shi W, Misko AL, Emerton BC, **Chu CJ**. Hippocampal sharp wave ripples during invasive monitoring: a physiologic finding. *Clin Neurophysiol* 2021; 132(5)1077-1079.
 14. Manzano, GS, Husain H.D., **Chu, CJ**. Kimchi EY. Intractable epilepsy and transient deficits in a patient with a history of HSV encephalitis. *Neurology* 2021; 96(14):679-681.
 15. Nascimento F, Cochran RL, Zhou DZ, Scott JA, **Chu CJ**. Increasing SPECTations—ictal SPECT as a helpful tool in epilepsy surgery evaluation. *Neurology* 2021 (in press).

Non-peer reviewed scholarship in print or other media:

Reviews, chapters, monographs and editorials

1. Plotkin S and **Chu CJ**. (2007) The Phakomatoses. (Chapter in: *The Molecular and Genetic Basis of Neurological and Psychiatric Disease*, 4th edition)
2. **Chu CJ** and Thiele EA. (2011) Tuberous Sclerosis. (Chapter in: *The Causes of Epilepsy*. Cambridge University Press).
3. **Chu CJ**, Caviness VS, Cash SS (2011) Neural networks in the developing brain. (Chapter in: *Network Approaches to Diseases of the Brain*, Bentham e-book).
4. Larson A, **Chu CJ** and Thiele EA. (2018) Tuberous Sclerosis. (Chapter in: *The Causes of Epilepsy*. Cambridge University Press)
5. Thorn EL, Matlis S, **Chu CJ**. (2018) Neuroimaging Methods. (Chapter in: *The SAGE Encyclopedia of Intellectual and Developmental Disorders*. Sage Publishing.)

Professional educational materials or reports, in print or other media:

1. 2008. First Seizure: Pediatric Perspective. **Chu CJ**, Tseng, BS, Stead SM. <http://www.emedicine.com/neuro/topic527.htm>
Chapter providing evidence-based diagnosis, treatment information online for practitioners
2. 2009-2012. First Seizure: Pediatric Perspective **Chu CJ** and Tseng, BS.

<http://www.emedicine.com/neuro/topic527.htm>

Chapter providing evidence-based diagnosis, treatment information online for practitioners

3. 2013-2014. First Seizure: Pediatric Perspective Waite S and **Chu CJ**.

<http://www.emedicine.com/neuro/topic527.htm>

Chapter providing evidence-based diagnosis, treatment information online for practitioners

Thesis:

“A sub-altern study of the SARS epidemic from the perspective of Traditional Chinese Medicine” Harvard University, Department of Social Anthropology
2003 Thesis Master’s of Arts

Harvard Medical School

2013 Thesis, Master of Medical Science

Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings:

Spencer E, **Chu CJ**, Kramer MA. Characterizing the relationship between functional connectivity and neurocognitive deficits in benign epilepsy with centrotemporal spikes. Society for Neuroscience Annual Meeting, 2019, October 19-23, Chicago IL

Massey SL, Glass HC, Chang TC, Wusthoff CJ, **Chu CJ**, Bonifacio SL, Cilio MR, Shellhaas RA, and Abend NS for the *Neonatal Seizure Registry*. EEG Monitoring and Seizure Characteristics of the Neonatal Seizure Registry Cohort of Neonates with Severe Cardiopulmonary Disease. Poster presented at: Child Neurology Society Annual Meeting; 2019 October 23-26; Baltimore, MD.

Massey SL, Shellhaas RA, Chang TC, Wusthoff CJ, **Chu CJ**, Bonifacio SL, Cilio MR, Glass HC, and Abend NS for the *Neonatal Seizure Registry*. Seizure Management and Medication Efficacy in the Neonatal Seizure Registry Cohort of Neonates with Severe Cardiopulmonary Disease. Poster presented at: Child Neurology Society Annual Meeting; 2019 October 23-26.

Herzberg EM, Machie M, Landers J, **Chu CJ**, Massey SL, Wusthoff CJ, Cange T, Cilio MR, Bonafacio SL, Abend NS, Shellhaas RA, Glass HC, Soul JS on behalf of the *Neonatal Seizure Registry* Characteristics of neonatal seizures related to intracranial hemorrhage in term neonates: a study of the *Neonatal Seizure Registry*. Poster presented at: Child Neurology Society Annual Meeting; 2019 October 23-26.

Lemmon ME, Glass HC, Shellhaas RA, Barks M, Bailey B, Grant K, Grossbauer L, Pawlowski K, Wusthoff CJ, Chang T, Soul JS, **Chu CJ**, Thomas C, Massey SL, Abend NS, Rogers EE, Frank LS; on behalf of the Neonatal Seizure Registry. Parent experience of caring for neonates with seizures. Poster presented at: Child Neurology Society Annual Meeting; 2019 October 23-26. Chinappen D, Hamalainen M, **Chu CJ**. Abnormal somatosensory evoked potentials suggest abnormal focal thalamocortical structural connectivity in benign epilepsy with centrotemporal spikes (BECTS). Poster presented at: AES Annual Meeting; 2019 Dec 6-10; Baltimore, MD.

Xiao G, Stoyell SM, Chinappen DM, Ostrowski LM, Parnes M, **Chu CJ**. Spike frequency, height, and duration decrease over disease resolution in benign epilepsy with centrotemporal spikes (BECTS). Poster presented at: AES Annual Meeting; 2019 Dec 6-10; Baltimore, MD.

Kramer MA, Stoyell SM, Chinappen D, Mylonas D, Morgan AK, Emerton BC, Manoach DS, **Chu CJ**. Children with benign epilepsy with centrotemporal spikes have a focal spindle deficit that recovers with epilepsy resolution. Poster presented at: AES Annual Meeting; 2019 Dec 6-10; Baltimore, MD.

Stoyell SM*, Baxter B*, Chinappen DM, Zhu L, McLaren J, Grieco JA, Morgan AM, Emerton BC, Kramer MA, Manoach DS, **Chu CJ**. Increased spindle density coincides with cognitive recovery in a child

with an epileptic encephalopathy. Poster presented at: AES Annual Meeting; 2019 Dec 6-10; Baltimore, MD.

Osman M, Luo Y, Budhu J, Chu C, Swoboda K. Rapid improvement of Sydenham chorea (SC) after concurrent single dose of high dose steroids and IVIG. Poster session to be presented at: Child Neurology Society - International Child Neurology Association Conjoint Meeting; 2020 October 19-23; San Diego, CA.

Narrative Report

Summary:

I am a physician-scientist with expertise in epilepsy, neurophysiology and advanced imaging analysis. After completing Child Neurology Residency, Epilepsy Fellowship, and a Neuroscience research year at Massachusetts General Hospital (MGH), I joined the Child Neurology and Neurophysiology divisions at MGH, where I am the founding Director of the Neonatal and Pediatric Long-Term EEG Monitoring Program and the Epilepsy Monitoring Unity High Density EEG Program.

Area of Excellence:

I have an established national and international reputation for the development and translation of data analysis tools for biomarker discovery in epilepsy based upon impactful contributions that my lab has made to these fields. In quantitative electrophysiology, we were the first to identify stable functional brain networks in human EEG (J Neurosci, 2012); the first to show that human brain rhythms and functional brain networks mature in a stereotyped pattern over development (Clin Neurophys, 2014); and the first to show that EEG functional brain networks correspond to underlying brain structural networks (Neuroimage, 2015). Our methods to reliably infer EEG functional brain networks with confidence measures have been used by our lab to identify pathological brain states in disorders of consciousness (Brain, 2017), autism (BMC Neurology, 2015; Molecular Autism, 2018), refractory status epilepticus (Brain, 2020), and the published techniques replicated and applied to numerous other projects. In the field of epilepsy, we have contributed several significant discoveries, including, the identification of concordant spike and ripple oscillations (spike ripple events) as a novel and improved electrophysiological biomarker for seizure risk (J Neurosci Methods, 2017; Brain, 2020); delta power as a biomarker for Angelman syndrome across human and mouse models (J Neurodev Dis, 2017); the discovery that the most common focal childhood epilepsy syndrome, Rolandic epilepsy, is a focal thalamocortical circuit disorder (Brain Comm, 2019; Epilepsia, 2020; J Neurosci 2020); the discovery that sleep spindles provide an improved biomarker for cognitive dysfunction in epilepsy (J Neurosci 2020); in addition to contributions to numerous large prospective multicenter projects to characterize neonatal seizures (e.g., Neurology, 2017; Epilepsia, 2019a; Epilepsia 2019b) and rare developmental epilepsies (e.g., JAMA Pediatrics, 2017; Pediatrics, 2018). I am the Principal Investigator on a multimodal imaging and interventional clinical trial to target sleep spindles as a mechanistic biomarker for cognitive dysfunction in Rolandic epilepsy and related epileptic encephalopathies (NIH R01); I am the Principal Investigator on a translational mouse to human clinical trial to optimize stimulation parameters to improve epilepsy control in patients with refractory epilepsy, targeting spike ripples (NIH R01), the Principal Investigator on a Sponsored Research Award to characterize and optimize electrophysiological biomarkers for cognitive function in Angelman Syndrome as a surrogate endpoint for upcoming first-in-human antisense oligonucleotide clinical trials (Biogen IIA), a co-investigator leading electrophysiological analysis to characterize cortical-hippocampal oscillations involved in memory (UG3), and the site Principal Investigator for the Neonatal Seizure Registry to characterize long-term developmental and epilepsy outcomes after neonatal seizures (NIH R01). My lab's research has been funded continuously since 2010 by the NIH in addition to multiple foundations, including the Child Neurology Foundation and the American Academy of Neurology. As a sign of my national recognition, I have served on the Editorial Board for the journal *Clinical Neurophysiology*, have contributed multiple invited editorials on emerging topics in our field (e.g., Clin Neurophys 2015, 2016, 2018), have served as the organizing chair for multiple research interest groups and symposia, am routinely invited to participate in multicenter research collaborations, and am regularly invited to present our

research findings at national meetings.

Teaching:

As a member of the teaching faculty, I regularly supervise students, residents, and fellows on the wards, in clinic, in EEG interpretation, and in translational and clinical research. I served as the MGH Child Neurology *Associate Program Director* and *Program Director* for 5 years, during which I received the Above and Beyond Award for supporting resident education, and continue to contribute as a core teaching faculty member in the child and adult neurology residencies, and the neurophysiology and epilepsy fellowships at MGH. I provide annual didactic lectures on neonatal EEG, pediatric EEG, adult EEG, and epilepsy surgery to the child neurology residents and epilepsy fellows. I lead the biweekly pediatric epilepsy surgery conference at MGH and routinely participate in the weekly adult epilepsy surgery and EEG core teaching conferences. In my laboratory, I trained undergraduate, post-baccalaureate, graduate, and post-doctoral students who have pursued careers ranging from medicine to clinical psychology to biomedical engineering.

Significant Supporting Activities:

My major supporting activity is Clinical Expertise for my major roles in electrophysiology and epilepsy surgery. These are demonstrated by my attending duties on the neonatal, pediatric, and adult long term EEG services, the pediatric and adult epilepsy monitoring units, and the outpatient EEG laboratory; my leadership role at MGH as the Founding Director of the neonatal and pediatric long term EEG monitoring service; my leadership role at MGH as the Founding Director of the high density EEG program for patients undergoing epilepsy surgery evaluations; and my leadership role directing the multidisciplinary pediatric epilepsy surgery conference. I routinely receive requests from physicians at MGH and outside hospitals to provide consultations to assist with challenging EEG interpretations and epilepsy surgery consultations. I have developed protocols for the hospital to guide neonatal and pediatric brain monitoring, brain monitoring for patients undergoing extracorporeal membrane oxygenation, and inpatient chronic pediatric invasive brain monitoring. As evidence of my national reputation in these clinical areas, I have been invited to speak at national meetings on the clinical topics of neonatal EEG, pediatric EEG, and advanced EEG techniques. In addition, I am an invited member of the American Clinical Neurophysiology Society High Density EEG Consortium Executive Committee and have been invited to speak, organize symposia, and organize special interest groups on this clinical topic at national meetings.

Summary

Since my appointment at Harvard Medical School, I have led research investigations and implemented clinical initiatives aimed at improving care for patients with seizures. My long-term goal is to advance MGH's leadership role in understanding the cause and advancing treatments for epilepsy.