

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

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**Place of Birth:** Leiden, the Netherlands

**Education**

2002	MD	Medicine	Catholic University of Leuven
2016	PhD	Medicine (S K Warfield)	Utrecht University

**Postdoctoral Training**

07/02 - 04/03	Resident	Adult Neurology (Program Director: Professor Jan J. Heimans, MD, PhD)	VU University Medical Center
04/03 - 06/06	Resident	Adult Neurology (Program Director: Sebastiaan F.T.M. de Bruijn, MD, PhD)	Haga Teaching Hospital
07/06 - 06/07	Clinical Fellow	Epilepsy and Clinical Neurophysiology (Program Director: Blaise F.D. Bourgeois, MD)	Boston Children's Hospital, Harvard Medical School
07/07 - 06/10	Resident	Child Neurology (Program Directors: Basil T. Darras, MD, David K. Urion, MD)	Boston Children's Hospital, Harvard Medical School
07/10 - 06/11	Intern	Pediatrics (Program Directors: Theodore C. Sectish, MD, Robert J. Vinci, MD)	BCRP – Boston Combined Residency Program in Pediatrics, Harvard Medical School
07/11 - 06/12	Research Fellow	Basic Neuroscience, ABPN Neuroscience Track (Program Director: Mustafa Sahin,	Boston Children's Hospital, Harvard Medical School

MD, PhD)

**Faculty Academic Appointments**

07/12 - 02/14	Instructor	Neurology	Harvard Medical School
02/14 - Present	Assistant Professor	Neurology	Harvard Medical School

**Appointments at Hospitals/Affiliated Institutions****Current**

07/12 - Present	Assistant	Neurology	Boston Children's Hospital
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**Other Professional Positions**

2018 - 2019	Consultant	Okulus LLC	Epidiolex(R) P&T simulations
2019 - 2020	Consultant	Philips Neuro Inc.	High Density EEG
2019 - Present	Consultant	Greenwich Biosciences Inc.	Phase III trial of Epidiolex(R) in infants with TSC
	Scientific Advisory Board		Epidiolex(R) in TSC
	Speakers Bureau		Epidiolex(R) in TSC
2020 - Present	Consultant	CRICO Adler, Cohen, Harvey, Wakeman and Guekguezian LLP	Medicolegal expertise
2020 - Present	Consultant	Novartis	Tuberous Sclerosis Complex Curriculum and TSC Seizure Clinical Data
2020 - Present	Consultant	Neurelis Inc.	Valtoco(R)
	Speakers Bureau		
	Scientific Advisory Board		

**Major Administrative Leadership Positions**Local

2013 - Present	Co-Director, Clinical Neurophysiology Core, Translational Neuroscience Center	Boston Children's Hospital
2014 - Present	Director, Computational Neurophysiology, Division of Epilepsy & Clinical Neurophysiology	Boston Children's Hospital
2015 - Present	Director, BIDMC/BCH Clinical Neurophysiology Fellowship Program	Boston Children's Hospital

2019 - Present Director, BCH/BIDMC Epilepsy Fellowship Program Boston Children's Hospital

#### Regional

2020 - Present President, Greater Boston Epilepsy Society (GBES) Greater Boston

### **Committee Service**

#### Local

2013 - 2016 Career Development Curriculum 2013 - 2016 Boston Children's Hospital Committee member, lecturer

2013 - 2016 Epilepsy Surgery Scheduling Improvement Committee 2013 - 2016 Boston Children's Hospital Epilepsy Representative

2019 - Present Graduate Medical Education Committee (GMEC) 2019 - Present Boston Children's Hospital Member, Annual Program Review Subcommittee

#### National

2016 - Present American Board of Clinical Neurophysiology (ABCN) 2016 - 2019 2019 - Present Member, Examination Development Committee Item Writing Panel Co-Chair, Pediatric EEG Board Exam

2018 - Present High Density EEG (hdEEG) Consortium 2018 - Present Founding Member

### **Professional Societies**

2003 - Present Dutch Association of Clinical Neurophysiology (NVKNF)

2003 - Present Dutch Association of Neurology (NVN)

2006 - Present American Epilepsy Society 2016 - 2019 Member, Student and Resident Education Subcommittee, EEG Section Workgroup

2007 - Present American Association of Neurology (AAN)

2007 - Present Child Neurology Society (CNS)

2007 - Present Massachusetts Medical Society

2011 - Present American Clinical Neurophysiology Society 2012 - 2015 2016 - 2017 Member, Membership Committee Co-Chair, Membership Committee

2012 - Present International Child Neurology Association (ICNA)

## Grant Review Activities

2014	Action Medical Research, West Sussex, United Kingdom 2014	Reviewer
2017	Nationaal Epilepsie Fonds (NEF) 2017	Reviewer
2017 - Present	Scientific Review Group, NST-1 study section 2017 - Present	National Institutes of Health/NINDS Ad-hoc member and reviewer
2018	Medical Research Council (MRC) 2018	Reviewer
2018	Tuberous Sclerosis Alliance 2018	Reviewer

## Editorial Activities

### Ad hoc Reviewer

*Acta Neurologica Belgica*

*American Journal of Case Reports*

*Annals of Neurology*

*BioMed Research International*

*BMJ Case Reports*

*Cognitive Neurodynamics*

*Developmental Neurorehabilitation*

*Developmental Science*

*Emerging Infectious Diseases*

*Epilepsia*

*Epilepsia Open*

*Epilepsy and Behavior*

*Epilepsy Research*

*European Journal of Paediatric Neurology*

*European Neurology*

*European Radiology*

*IEEE Journal of Biomedical and Health Informatics*

*IEEE Transactions on Neural Systems and Rehabilitation Engineering*

*Journal of Child Neurology*  
*Journal of Clinical Neurophysiology*  
*Journal of Neuroimaging*  
*Journal of Neurology, Neurosurgery, and Psychiatry*  
*Journal of Pediatric Neurology*  
*Journal of Pediatrics*  
*Molecular Neurobiology*  
*Neuroepidemiology*  
*NeuroImage Clinical*  
*Neuropsychiatric Electrophysiology*  
*Pediatric Neurology*  
*Pediatrics*  
 PLOS ONE  
*Seizure - European Journal of Epilepsy*

#### Other Editorial Roles

2012	Editor, Book Sims KC, Senior Editor. Peters JM, Musolino P, Elibol Ward Z, Junior Editors. Lippincott Williams & Wilkins, Nov 2013. ISBN 1451175485.	<i>Handbook of Pediatric Neurology</i>
2016 - Present	Editor, Journal Editor	<i>European Journal of Paediatric Neurology</i>

#### **Honors and Prizes**

2003	Young Scientist Scholarship	International Society for Brain Electromagnetic Topography, Santa Fe, NM
2006	TopScholar Epilepsy Fellows Scholarship	Annual Meeting of the American Epilepsy Society, San Diego, CA
2008	Von L. Meyer travel award	Boston Children's Hospital
2010	The J. Kiffin Penry Pediatric Epilepsy MiniFellowship Program	J. Kiffin Penry Pediatric Epilepsy Mini-Fellowship Network
2015	Faculty Innovated Research Award	Boston Children's Hospital Medical Staff Organization
2020	Fellow of the American Clinical Neurophysiology	American Clinical Neurophysiology Society

Society (FACNS)

## **Report of Funded and Unfunded Projects**

### **Grants and Sponsored Research**

#### **Past**

- 2012 - 2013 Faculty Development Fellowship, Department of Neurology, Boston Children's Hospital Harvard Medical School Foundation funds, the Eleanor and Miles Shore 50th Anniversary Fellowship Program for Scholars in Medicine  
PI, Direct Costs: \$25,000  
Study of implementation, accuracy and clinical impact of high density EEG in the pediatric Epilepsy Monitoring Unit
- 2012 - 2013 Development of a web-based EEG platform for remote reading, teaching, and data exchange  
World Federation of Neurology Pilot Grant  
PI, Direct Costs: \$12,000  
Development and implementation of an open-source, open-access web-based EEG platform for remote EEG reading, EEG teaching, EEG archiving, and data exchange in developing and low-resource countries.
- 2012 - 2015 Epilepsy Center Without Walls: Potential EEG biomarkers and antiepileptogenic strategies for epilepsy in TSC  
NIH/NINDS, P20 1P20NS080199  
Investigator (PI: E Bebin)  
5-center prospective study with serial imaging, EEG, clinical examination and neuropsychological assessments of your patients with TSC to explore potential EEG biomarkers and antiepileptogenic strategies for epilepsy in TSC.
- 2012 - 2019 Early Biomarkers of Autism Spectrum Disorders in Infants with TSC - Autism Centers of Excellence (ACE) 2012 Network Grant  
NIH/NINDS, 1U01NS082320  
Investigator (PI: Mustafa Sahin, PI: D Krueger)  
5-center prospective study with serial imaging, EEG, clinical examination and neuropsychological assessments of young patients with TSC to explore potential early biomarkers for Autism Spectrum Disorders in TSC.
- 2013 - 2019 MRI Biomarkers of Patients with Tuberous Sclerosis Complex and Autism  
NIH, 1R01 NS079788  
Investigator (PI: S Warfield)  
Development and validation of a set of advanced MRI measures in a longitudinal study of young children with autism from known (TSC) and unknown causes, which uniquely identify the brain changes that underlie autism, to identify infants at increased risk of autism, to allow for monitoring of response to drug therapy, and ultimately to tailor interventions to alter the developmental trajectory.
- 2015 - 2016 Functional and structural connectivity and anatomopathological correlation of epileptogenesis in Tuberous Sclerosis Complex  
Harvard Catalyst Early Clinical Data Support for Grant Submissions  
PI, Direct Costs: \$30,000  
Ex-vivo tissue imaging study with registered and quantitative neuropathological correlation to assess abnormal connectivity and disrupted microcircuitry beyond tubers,

in the vicinity of the epileptogenic focus.

### Current

- 2017 - 2022 Preventing Epilepsy Using Vigabatrin in Infants with Tuberous Sclerosis Complex (PREVeNT Trial)  
NIH/NINDS, NIH 1U01NS092595-01A1  
Investigator (PI: Martina Bebin)  
The central hypothesis of this proposal is that through early identification of electroencephalography (EEG) biomarkers we can identify at risk infants with TSC and that early treatment versus delayed treatment with vigabatrin in this population will prevent further progression of epileptogenesis and have direct favorable impact on disease severity and epilepsy-associated comorbidities.
- 2017 - 2021 Dense array image-compatible EEG for enhanced neonatal care  
NIH/NINDS, 5R01EB024343-03  
Co-Investigator (PI: Giorgio Bonmasser)  
The goal of this project is to demonstrate the feasibility and safety of developing a dense array, image-compatible, neonatal EEG net "NeoNet" (hdEEG) using novel conductive Thin Film technologies.
- 2018 - 2020 Interictal Frequency Oscillations as Non-Invasive Biomarkers of Epileptogenicity in Pediatric Patients  
NIH/NINDS, 1R21NS101373-01A1  
Co-Investigator (PI: Christos Papadelis, PI: Steven Stufflebeam)  
This R21 application aims to non-invasively detect and reliably localize HFOs from pediatric patients with refractory epilepsy using high-density scalp electroencephalography (EEG) and magnetoencephalography (MEG), identify their onset generator, and correlate the resection of this generator with patients' postsurgical outcome.
- 2020 - 2021 A Phase 2 Open-label 12-Week Trial of Adjunctive Ganaxolone Treatment (Part A) in Tuberous Sclerosis Complex-related Epilepsy followed by Long-term Treatment (Part B)  
Marinus Pharmaceuticals  
Site PI  
The goal of this study is to assess preliminary safety and efficacy of ganaxolone as adjunctive therapy for the treatment of primary seizure types in patients with genetically or clinically confirmed TSC-related epilepsy through the end of the 12 week treatment period. NCT04285346.

### Current Unfunded Projects

- 2013 - Present DTI tractography in Sclerosis Complex and non-syndromic Autism Spectrum disorder  
PI  
Study of microstructural integrity of multiple anatomical and functionally relevant major white matter pathways in TSC and ASD to identify biomarkers of neurological phenotype.
- 2014 - Present Multiple projects involving improved electrical source imaging (ESI)  
Co-investigator and PI  
Multiple projects involving improved electrical source imaging (ESI), including identifying dynamic patterns in scalp EEG of epileptic patients and applying source localization techniques to these dynamics. Responsible for analysis of clinical and

hdEEG data, and provided expertise in the clinical evaluation of epilepsy to ensure that techniques developed have direct clinical relevance for epilepsy surgery.

- 2017 - Present Serial DTI in Tuberous Sclerosis Complex and localization of the epileptogenic zone  
PI  
Study of longitudinal DTI evolution in the normal appearing white matter, the perituber region and the tubers in TSC to assess location of epileptogenic zone.

### **Report of Local Teaching and Training**

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

- |                |  |  |
|----------------|--|--|
| 2012 - Present | Inpatient service case discussions<br><br>Pediatric Neurology residents and Epilepsy fellows | Boston Children's Hospital<br>Boston, Massachusetts,<br>United States<br>4 lectures per year |
| 2013 - Present | Neuropathology lecture series<br><br>Pediatric Neurology residents                           | Boston Children's Hospital<br>Boston, Massachusetts,<br>United States<br>2 lectures per year |
| 2014 - Present | Epilepsy lecture series<br><br>Pediatric Neurology residents and Epilepsy fellows            | Boston Children's Hospital<br>Boston, Massachusetts,<br>United States<br>2 lectures per year |

#### **Clinical Supervisory and Training Responsibilities**

- |                |   |   |
|----------------|---|---|
| 2012 - Present | Inpatient service Pediatric Neurology, Epilepsy and neurological ICU consultation team / Pediatric Neurology residents and Epilepsy fellows | Boston Children's Hospital<br><br>8 weeks/year, full-time |
|----------------|---|---|

#### **Formally Mentored Harvard Medical, Dental, and Graduate Students**

- |      |   |
|------|---|
| 2010 | Danielle Pier, HMS class of 2010 / Pediatric Neurologist, Massachusetts General Hospital for Children<br>Guillain-Barre syndrome in a child with pain: lessons learned from a late diagnosis - First authorship on case report: PMID 20456276.  |
| 2012 | Jolene M Singh, Harvard University class of 2014 / Computational Radiology Laboratory, Boston Children's Hospital<br>Tubers Are Neither Static Nor Discrete: Evidence From Serial Diffusion Tensor Imaging - Epilepsy Foundation Student Fellowship. Co-author on paper on longitudinal diffusion changes in tuberous sclerosis complex: PMID 26432846. |

#### **Other Mentored Trainees and Faculty**

- |             |  |
|-------------|--|
| 2008 - 2012 | Ivan Sanchez Fernandez, MD / Clinical and Research Fellow, Boston Children's Hospital<br><i>Career Stage:</i> Clinical Fellow in Neurology <i>Mentoring Role:</i> Supervisor<br><i>Accomplishments:</i> Multiple first-author original publications in Epilepsia, Neurology, and others; Epilepsy Fellowship at Boston Children's Hospital; local, regional and national (invited) talks; Department of Child Neurology, Hospital Sant Joan de Déu, Universidad de Barcelona, Spain. PMIDs 21399511, 22532549, 22578248, 23163318, |
|-------------|--|



23445896.

- 2010 Meritxell T Fernandez, BSc / Resident in Pediatrics, Universidad de Lleida, Spain  
*Career Stage:* Undergraduate student, Quiron Hospital Group, Barcelona, Spain  
*Mentoring Role:* Supervisor *Accomplishments:* BSc at Quiron Hospital Group, Barcelona, Spain. Neurology Research elective. Second authorship on research paper on use of EEG during Wada test: PMID 22341967.
- 2011 - 2012 Jacqueline Tan, BSc  
*Career Stage:* Undergraduate student, VU University Medical Center, Amsterdam, the Netherlands  
*Mentoring Role:* Supervisor *Accomplishments:* Brain Functional Networks in Syndromic and Non-Syndromic Autism: A Graph Theoretical Study of EEG Connectivity - BSc. Co-authorship on EEG connectivity study in autism spectrum disorder: PMID 23445896.
- 2012 - 2014 Anna K Prohl, BSc / Medical Student, Quinnipiac University  
*Career Stage:* Undergraduate student, Bowdoin College, Brunswick ME  
*Mentoring Role:* Supervisor *Accomplishments:* Tuberous sclerosis complex and diffusion tensor imaging - Epilepsy Foundation Student Fellowship. Co-authorship on original research papers: PMIDs 24315019, 24489482, 26432846.
- 2012 - 2016 Archana Patel, M.D., M.P.H. / Assistant in Neurology, Instructor in Neurology, Boston Children's Hospital and Harvard Medical School  
*Career Stage:* Resident, Fellow  
*Mentoring Role:* Supervisor *Accomplishments:* Supervisory role in the development of a questionnaire-based diagnostic and therapeutic approach to pediatric epilepsy, Muhimbili National Hospital, Tanzania. First authorship of paper on the use of questionnaire for pediatric epilepsy, PMID 27088519.
- 2013 - Present Peter E Davis, MD / Assistant in Neurology, Instructor in Neurology, Boston Children's Hospital and Harvard Medical School  
*Career Stage:* Assistant in Neurology  
*Mentoring Role:* Co-mentor *Accomplishments:* Co-author in review on TSC and Autism Spectrum Disorder, PMID 25986747. PMIDs 29101226, 31297797, 31812987, 31838998.
- 2014 Merel Boom, MSc  
*Career Stage:* Graduate student, University of Amsterdam, the Netherlands  
*Mentoring Role:* Supervisor *Accomplishments:* Lesion-Constrained Electrical Source Imaging: A Novel Approach in Epilepsy Surgery for Tuberous Sclerosis Complex - MSc. Research elective on tuberous sclerosis complex and electrical source localization for epilepsy surgery. First author on review paper on TSC and epilepsy surgery. Co-author on original research paper on TSC epilepsy surgery and electrical source imaging, PMID 31261349.
- 2014 Robbert R Struyven, MD / Student, Master of Science in Data Science, Harvard University  
*Career Stage:* Medical student, Catholic University of Leuven, Belgium  
*Mentoring Role:* Supervisor *Accomplishments:* Diffusion Imaging in Tuberous Sclerosis Complex - Correlation with Neuropathology. Medical student research elective, ranked 2<sup>nd</sup> in "Abstract competition" of the Student Health Science Symposium. Co-first author on original paper on this topic: PMID 31353853.
- 2016 John J Bushman, BSc in Biomedical Engineering / Associate Research Engineer, A123 Systems  
*Career Stage:* Undergraduate student, Rochester Institute of Technology, Rochester

*NY Mentoring Role: Supervisor Accomplishments: White Matter Mean Diffusivity Correlates With Myelination in Tuberous Sclerosis Complex - Two-month summer Internship on the coregistration of tissue pathology and ex-vivo MRI. Co-authorship on TSC ex-vivo imaging paper, PMID 31353853.*

- 2016 Emma A van der Poest Clement, MSc  
*Career Stage:* Graduate student, Erasmus University, Rotterdam, the Netherlands  
*Mentoring Role: Supervisor Accomplishments:* Erasmus University, Rotterdam, the Netherlands. Vigabatrin for Epileptic Spasms and Tonic Seizures in Tuberous Sclerosis Complex - Research elective on the use of vigabatrin in tuberous sclerosis complex. First authorship on original research paper on vigabatrin in TSC, and on case report: PMIDs 31912454, 29687739
- 2017 Anne-Elise de Groen, MSc  
*Career Stage:* Graduate student, University of Amsterdam, the Netherlands  
*Mentoring Role: Supervisor Accomplishments:* The Evolution of Subclinical Seizures in Children With Tuberous Sclerosis Complex - MSc. Research elective on electrographical seizures in tuberous sclerosis complex. First author, PMID 31290714.
- 2018 Brechtie Mulder, MSc  
*Career Stage:* Graduate student, VU Free University, Amsterdam, the Netherlands  
*Mentoring Role: Supervisor Accomplishments:* Tuberous sclerosis complex lesion network mapping in infantile spasms - MSc. Six-month research elective for master's thesis. Co-author on original paper on TSC lesion network mapping in infantile spasms (in progress), and platform presentation at international meeting.
- 2019 Maaïke Nijman, MSc  
*Career Stage:* Graduate student, University of Amsterdam, the Netherlands  
*Mentoring Role: Supervisor Accomplishments:* Structural MRI markers of epileptogenic zone in tuberous sclerosis complex - MSc. Six-month research elective for master's thesis. First author on original paper on structural MRI markers of the epileptogenic zone in TSC (in progress.)

### Formal Teaching of Peers

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

- |                |  |   |
|----------------|--|---|
| 2013           | Non-epileptic events in pediatrics Seminar Series, Department of Psychiatry<br>Boston Children's Hospital  | One hour lecture<br>Boston, Massachusetts         |
| 2013 - Present | 1. Fits, faints and funny turns: Non-epileptic paroxysmal events in childhood. 2. Bayesian and conventional interpretation of diagnostic testing<br>Satellite Seminar Series (Boston Children's North)<br>Boston Children's Hospital | 2 lectures per year<br><br>Peabody, Massachusetts |
| 2014           | Advanced neurophysiology techniques<br>Michael J. Bresnan Child Neurology Course<br>Boston Children's Hospital   | One lecture per course<br>Boston, Massachusetts   |

2016	1. Seizure... or NOT? 2. Epilepsy, Boston Children's Hospital, and the WHO (International Neurology Colloquium) Michael J. Bresnan Child Neurology Course Boston Children's Hospital	Two lectures per course  Boston, Massachusetts
2018	Computational Neurophysiology Lennox-Lombroso Pediatric Epilepsy Conference Boston Children's Hospital	One lecture per course Boston, Massachusetts
2018	Seizure... or NOT? Paroxysmal non-epileptic events in pediatrics Michael J. Bresnan Child Neurology Course Boston Children's Hospital	One lecture per course  Boston, Massachusetts
2020	Paroxysmal non-epileptic events in pediatrics Michael J. Bresnan Child Neurology Course Boston Children's Hospital	One lecture per course  Boston, Massachusetts

### Local Invited Presentations

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

2009	Non-epileptic paroxysmal events in children / Grand Rounds Department of Medicine, Boston Children's Hospital	
2011	Computational EEG Analysis, a Clinician's and a Physicist's Perspective / Seminar Epilepsy Research Seminar Series Boston Children's Hospital	
2012	A graph theoretical approach to functional connectivity in autism / Oral Presentation Fetal-Neonatal Neuroimaging & Developmental Science Center, Boston Children's Hospital	
2012	Brain Functional Networks in Tuberous Sclerosis Complex and Autism: a Graph Theoretical Study of EEG Connectivity / Research Seminar Center for Pain and the Brain, Boston Children's Hospital	
2013	Brain networks and EEG functional connectivity in autism and TSC / Lab meeting Cash Lab, Massachusetts General Hospital	
2013	EEG Source Localization: Improving Diagnostics Through Advanced Engineering / Seminar Epilepsy Research Seminar Series Boston Children's Hospital	
2014	Neuroimaging and Neurophysiology correlates of autism in Tuberous Sclerosis Complex / Oral Presentation Monthly autism meeting Boston Children's Hospital	

- 2015 Rapid advances in neuroimaging, neurophysiology, and targeted treatment of Tuberous Sclerosis Complex / Oral Presentation  
Neuroradiology lecture series  
Boston Children's Hospital
- 2016 Seizure ... or NOT? Non-epileptic paroxysmal events in children / Conference  
Neurology Nursing Teaching Conference  
Boston Children's Hospital
- 2017 Localization and prediction of epilepsy in Tuberous Sclerosis Complex / Grand Rounds  
Longwood Epilepsy Grand Rounds  
Boston Children's Hospital
- 2018 Tuberous Sclerosis Complex: Towards systemic and surgical prevention of epilepsy / Lecture  
Fetal-Neonatal Neuroimaging & Developmental Science Center (FNNDSC)  
Boston Children's Hospital
- 2018 Tuberous Sclerosis Complex: Towards systemic and surgical prevention of epilepsy / Lecture  
Joint laboratory meeting of Kwiatkowski, Priolo, Henske and Sahin  
Brigham and Women's Hospital
- 2019 Tuberous Sclerosis Complex: Prevention of epileptic encephalopathy in multilesional epilepsy / Grand Rounds  
Longwood Neurology Grand Rounds  
Harvard Institutes of Medicine

### **Report of Regional, National and International Invited Teaching and Presentations**

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

#### Regional

- 2009 Jeavons syndrome: More than meets the eye? / Oral Presentation - Presenter  
Greater Boston Epilepsy Society, Fall Meeting 2009  
Boston, Massachusetts
- 2012 Brain functional networks in tuberous sclerosis complex and autism: a graph theoretical study of EEG connectivity / Oral Presentation - Presenter  
Autism Consortium 2012 Symposium  
Boston, Massachusetts
- 2016 Imaging and EEG to guide early treatment of TSC: can we improve neurological outcome? / Oral Presentation - Presenter  
TSC Medical Symposium  
University of Connecticut, Connecticut Children's Medical Center  
Hartford, Connecticut
- 2016 Tubers are neither static nor discrete: Lines of evidence and clinical implications / Oral Presentation - Presenter  
Greater Boston Epilepsy Society  
Boston, Massachusetts
- 2018 Tuberous Sclerosis Complex: Novel techniques for prediction and localization of epilepsy

/ Grand Rounds - Invited Speaker  
 Neurology Grand Rounds  
 Dartmouth Hitchcock Medical Center, Geisel School of Medicine  
 Dartmouth, New Hampshire

National

- 2000 Population study of Benign Rolandic Epilepsy: Is treatment needed? / Oral Presentation - Presenter  
 Annual Meeting of the Child Neurology Society  
 St. Louis, Missouri
- 2012 Loss of white matter microstructural integrity is associated with adverse neurological outcome in tuberous sclerosis complex / Oral Presentation - Presenter  
 64th Annual meeting of the American Academy of Neurology  
 New Orleans, Louisiana
- 2013 Brain Functional Networks in Tuberous Sclerosis Complex and Autism: a Graph Theoretical Study of EEG Connectivity / Oral Presentation - Presenter  
 65th Annual Meeting of the American Academy of Neurology  
 San Diego, California
- 2014 Advanced neuroimaging and neurophysiological measure of tuberous sclerosis complex: Pathology beyond tubers / Oral Presentation - Presenter  
 Special Interest Group (SIG) meeting, 68th Annual meeting of the American Epilepsy Society  
 Seattle, Washington
- 2014 Neuroimaging and neurophysiological correlates of autism in Tuberous Sclerosis Complex / Grand Rounds - Presenter  
 UCLA Semel Institute Grand Rounds  
 University of California, Los Angeles  
 Los Angeles, California
- 2015 Case presentation I: Implantation Strategy. Electrocorticography and intracranial EEG course / Teaching Presentation - Presenter  
 American Clinical Neurophysiology Society, Annual Meeting and Courses  
 Houston, Texas
- 2015 Electrocorticography during pediatric epilepsy surgery. Intraoperative Monitoring course, part II / Teaching Presentation - Presenter  
 American Clinical Neurophysiology Society, Annual Meeting and Courses  
 Houston, Texas
- 2015 Rapid advances in neuroimaging, neurophysiology, and targeted treatment of Tuberous Sclerosis Complex / Lecture - Invited Speaker  
 Weill Cornell Medical Center  
 New York, New York
- 2016 Targeted treatment of Tuberous Sclerosis Complex: Insights from neurophysiology and neuroimaging / Grand Rounds - Presenter  
 Neurology Grand Rounds  
 University of Connecticut, Connecticut Children's Medical Center  
 Hartford, Connecticut

- 2016 MRI biomarkers and early medical interventions in Tuberous Sclerosis Complex / Oral Presentation - Presenter  
4th Annual Flux Congress  
Washington University  
St. Louis, Missouri
- 2016 Pediatric State of the Art Symposium / Lecture - Chair  
2016 Annual Meeting of the American Epilepsy Society  
Houston, Texas
- 2017 Tuberous Sclerosis Special Interest Group (SIG): Biomarkers and Risk Factors for Epilepsy in TSC: Diagnosis, Prediction and Prevention / Oral Presentation - Author & Presenter (Selected Oral Abstract)  
2017 Annual Meeting of the American Epilepsy Society  
Washington, District of Columbia
- 2018 Technological advances in pediatric epilepsy surgery: implications for Tuberous Sclerosis Complex / Grand Rounds - Invited Speaker  
Department of Neurosurgery  
Baylor College of Medicine  
Houston, Texas
- 2018 High density EEG: Application in multilesional epilepsy / Oral Presentation - Author & Presenter (Selected Oral Abstract)  
Inaugural High Density Consortium Meeting  
Tampa, Florida
- 2018 Tuberous Sclerosis Complex: Towards preventative and targeted treatment of epilepsy / Grand Rounds - Invited Speaker  
UVM Neuroscience Grand Rounds  
University of Vermont Medical Center  
Burlington, Vermont
- 2018 Tuberous Sclerosis Complex: Novel localization techniques for early epilepsy surgery / Grand Rounds - Invited Speaker  
Epilepsy Rounds  
University of Alabama Birmingham  
Birmingham, Alabama
- 2018 Tuberous Sclerosis Complex: Towards prevention of epilepsy / Grand Rounds - Invited Speaker  
Pediatric Grand Rounds  
University of Alabama Birmingham  
Birmingham, Alabama
- 2019 Methods for HD EEG ESI and Lesion-Constrained ESI. In concurrent session "Current and Future Clinical Practice of High Density EEG and Electrical Source Imaging in Epilepsy" / Lecture - Invited Speaker  
American Clinical Neurophysiology Society Annual Meeting  
Las Vegas, Nevada
- 2019 Epilepsy in Tuberous Sclerosis Complex: Insights from advanced EEG and imaging techniques / Grand Rounds - Invited Speaker  
Epilepsy Lecture Series, Northwestern Comprehensive Epilepsy Center

Northwestern University  
Chicago, Illinois

- 2020 Tuberous Sclerosis Complex: Prevention of epileptic encephalopathy in multilesional epilepsy / Grand Rounds - Invited Speaker  
Grand Rounds, Department of Neurology  
Vanderbilt University  
Nashville, Tennessee
- 2020 Epilepsy surgery in tuberous sclerosis complex: research priorities and study design / Investigators Workshop – Chair  
2020 Annual Meeting of the American Epilepsy Society  
Virtual Event
- 2021 Prevention of epileptic encephalopathy in multilesional epilepsy / Grand Rounds - Invited Speaker  
Grand Rounds, Department of Neurology  
Columbia University  
New York, New York
- 2021 Preventative medical and early surgical treatment of epilepsy in Tuberous Sclerosis Complex / Grand Rounds – Invited Speaker  
Grand Rounds, Department of Pediatrics  
Oregon Health & Science University  
Portland, Oregon

#### International

- 2003 Benigne Rolandische Epilepsie: Is behandelend nodig? / Oral Presentation - Presenter  
Children and epilepsy: towards an individualized treatment regimen  
Utrecht, Netherlands
- 2005 Computer-assisted EEG interpretation / Oral Presentation - Author & Presenter (Selected Oral Abstract)  
Annual Meeting of the Dutch Society of Clinical Neurophysiology  
St Michelsgestel, Netherlands
- 2009 EEG and Imaging in the Diagnosis of Pediatric Epilepsy / Invited Presentation - Invited Speaker  
Symposium: Epilepsy and Stigma: How do we conquer it in Africa  
Lusaka
- 2013 Brain Functional Networks in Tuberous Sclerosis Complex and Autism: a Graph Theoretical Study of EEG Connectivity / Oral Presentation - Presenter  
International Research Conference on TSC and Related Disorders: From molecules to Medicines  
Washington, District of Columbia
- 2015 Recent advances in neuroimaging, neurophysiology, and targeted treatment of Tuberous Sclerosis Complex / Invited lecture - Invited Speaker  
Epilepsy Research rounds  
Utrecht University  
Utrecht, Netherlands

- 2016 White matter diffusivity reflects cumulative neurological comorbidity in Tuberous Sclerosis Complex / Platform Presentation - Presenter  
International Child Neurology Association (ICNA) meeting  
Amsterdam, Netherlands
- 2016 Autism spectrum disorder and tuberous sclerosis complex / Lecture - Invited Speaker  
International Scientific Symposium on Syndromic Autism (Syndromaler Autismus Interprofessionelle Tagung)  
Kork (Kehl), Germany
- 2018 Tuberous Sclerosis Complex: Towards Prevention of Epilepsy / Grand Rounds - Invited Speaker  
Pediatric Neurology Grand Rounds  
Amsterdam University Medical Center  
Amsterdam, Netherlands
- 2018 - 2018 Clinical Neuroscience Minor (elective), Computer analysis of the EEG, Peers – Lecturer  
Amsterdam University Medical Centre  
Amsterdam, Netherlands
- 2018 - 2018 Clinical Neuroscience Minor (elective), EEG and pediatric epilepsy, Peers – Lecturer  
Amsterdam University Medical Centre  
Amsterdam, Netherlands
- 2018 Computer Analysis of the EEG / Lecture - Invited Speaker  
Amsterdam University Medical Centre, Clinical Neuroscience Minor (elective)  
Amsterdam, Netherlands
- 2018 EEG and Pediatric Epilepsy / Lecture - Invited Speaker  
Amsterdam University Medical Centre, Clinical Neuroscience Minor (elective)  
Amsterdam, Netherlands
- 2019 Tubers associated with Infantile Spasms impact a common brain network in tuberous sclerosis complex / Oral Presentation - Co-Author  
2019 International Tuberous Sclerosis Complex Research Conference  
Toronto, Canada

### **Report of Clinical Activities and Innovations**

#### **Current Licensure and Board Certification**

- 2002 - Present Dutch Medical License (full)
- 2006 - Present Educational Commission for Foreign Medical Graduates certification
- 2010 - Present Registration as Neurologist in the Netherlands
- 2012 - Present Massachusetts Medical License (full)
- 2013 - Present American Board of Clinical Neurophysiology (ABCN)



- 2014 - Present American Board of Psychiatry and Neurology (ABPN), with Special Qualification in Child Neurology
- 2016 - Present Subspecialty Certification in Epilepsy, American Board of Psychiatry and Neurology (ABPN)

### Practice Activities

2012 - Present	Ambulatory care	Comprehensive Tuberous Sclerosis Program, Boston Children's Hospital	2 sessions/month
2012 - Present	Ambulatory care	Pediatric Neurology/Epilepsy (BCH Peabody), Boston Children's Hospital	4 sessions/month
2012 - Present	Electrical Source Imaging	Division of Epilepsy and Clinical Neurophysiology, Boston Children's Hospital	2-4 sessions/month
2012 - Present	Inpatient service	Epilepsy Service, Boston Children's Hospital	6 weeks/year
2012 - Present	Outpatient EEG interpretation	Division of Epilepsy and Clinical Neurophysiology, Boston Children's Hospital	1-2 sessions/month
2016 - Present	Ambulatory care	Pediatric Neurology (BCH Lexington), Boston Children's Hospital	2 sessions/month
2016 - Present	Ambulatory care	Pediatric Neurology/Epilepsy (BCH Lexington), Boston Children's Hospital	2 sessions/month

### Clinical Innovations

Continuous Spike and Wave during Sleep Syndrome (CSWS) characterization - Boston Children's Hospital (2012 - 2014)

As a member of a research group studying CSWS at BCH, we revised and outlined diagnostic criteria, characterized longitudinal clinical course of the condition, outlined techniques for spike quantification on the EEG, and provided additional etiological insights based on MR imaging.

### Report of Technological and Other Scientific Innovations

Advanced neuroimaging and neurophysiology in Tuberous Sclerosis Complex (2011 - Present)

I am the dedicated epileptologist in the multidisciplinary TSC program at Boston Children's Hospital, and TSC forms a major research focus. With my collaborators we were the first to describe decreased microstructural integrity in autism, suggesting the use of DTI as a biomarker for neurological outcome in TSC. Next, using EEG functional connectivity measures, we found alterations of brain network properties common to both idiopathic and TSC-related autism, suggesting a common biological mechanism. Based on my previous work and

expertise, I am responsible for EEG interpretation in two large NIH-funded prospective multicenter trials studying early EEG and advanced neuroimaging predictors of epilepsy and autism in TSC. In addition, I am developing a longitudinal imaging technique called Epilepsy Longitudinal Diffusion Imaging (ELoDI) which allows the visualization of diffusion changes over time associated with epileptogenicity.

Web-based EEG platform (2012 - 2013)

I designed a novel software system which is an open-source, open access, web-based EEG platform. Locally recorded EEGs can be stored on a server, and remotely and securely accessed via any internet browser without installation of software. It allows for near real-time or offline remote EEG reading, data-exchange, and teaching. Vector-based graphics adjust to screen resolution and connection speed is typically not a limiting factor as the signal gets downsampled, and an image gets generated locally on demand only. While digitized EEGs may be available now in limited resource regions, pediatric EEGs are often not interpreted properly or timely, creating a clinical deficiency in diagnosis and treatment of epilepsy. The system also allows for researchers to become less dependent on data transfer of large files, and data can be read “streaming” and nearly in real-time. The software is currently piloted in Zambia (clinical service, and teaching) and Tanzania (research).

Density Weighted Statistics (DWS) in Diffusion Tensor Imaging (DTI) tractography (2012 - 2015)

Together with my mentor, Dr. Simon K. Warfield, Ph.D., we describe a novel solution for the problem of partial volume averaging in region-of-interest (ROI) analysis with DTI tractography. When voxels associated with a fiber tract are identified, the proportion of the voxel associated with the fiber tract is important. A common strategy to select a tract-based ROI has been to threshold the streamline density to identify voxels associated with a particular white matter tract. Average DTI parameters of the region are then assessed by computing the mean value by summing the parameter over all the voxels above the threshold and dividing by the number of voxels in the region. However, partial volume effects confound the analysis. We describe the use of streamline density directly to enable an appropriate weighted average of diffusion tensor parameters. In our analysis, the diffusion tensor parameters of a region are calculated on the basis of equal weighting of each of the trajectories, rather than equal weighting of each voxel.

EEG dynamics and electrical source imaging (ESI) (2013 - Present)

As a member of the Computational Radiology Laboratory, I collaborate with Drs. Hyde, Warfield, and Erem on a number of studies identifying dynamic patterns in scalp EEG of epileptic patients. We apply novel source localization techniques to these dynamics using the DESI algorithm we developed. In these studies, I am responsible for analysis of clinical and hdEEG data, and provide expertise in the clinical evaluation of epilepsy to ensure that the techniques developed have direct clinical relevance for improving epilepsy surgery.

## **Report of Education of Patients and Service to the Community**

### **Activities**

No activities below were sponsored by 3<sup>rd</sup> parties/outside entities

2011

BNN Radio (The Netherlands) / Health Care Correspondent  
Radio interview regarding current affairs of health care in Massachusetts and USA

- 2013 Interview Dradio (Deutschlandradio), with Leonie Seng / Science Report on EEG Network Analysis
- 2015 TSC Family Day, Waltham, MA / Speaker  
Oral presentation, "Epilepsy and Tuberous Sclerosis Complex: How to optimize 12 developmental outcome"
- 2019 Journal of Child Neurology Podcast / Guest Speaker  
Electrographic Seizures in Tuberous Sclerosis Complex  
Interview for the JCN Podcast

### **Educational Material for Patients and the Lay Community**

No materials below were sponsored by 3<sup>rd</sup> parties/outside entities

#### **Books, monographs, articles and presentations in other media**

- |      |  |   |  |
|------|--|---|--|
| 2011 | Amerikaanse teamgeest inspireert Nederlandse kinderneuroloog | Full-length biographical interview for De Neuroloog, the Dutch Neurological Association's professional magazine | Maathuis M. Amerikaanse teamgeest inspireert Nederlandse kinderneuroloog. De Neuroloog 2009;16(1):11- 12   |
| 2011 | Hot topics in Pediatric Neuroradiology                       | Invited editorial on DTI and autism in TSC study  | Poussaint, T.Y. Diffusion Imaging Provides Insight into White Matter Microstructural Integrity in Tuberous Sclerosis Complex. AJNR 2011; 32(6):993-997   |
| 2012 | Autism may involve disordered white matter in the brain      | Interview for Boston Children's Hospital science and clinical innovation blog, Vector                           | Fliesler N. A view of autism: altered brain pathways, disordered white matter. <a href="http://vectorblog.org/2011/12/aview-of-autism-altered-brainpathways-disordered-white-matter">http://vectorblog.org/2011/12/aview-of-autism-altered-brainpathways-disordered-white-matter</a> . Published Dec 8, 2011. Accessed Jun 10, 2013. |
| 2013 | 'Network' analysis of brain may explain features of autism   | Interview for Boston Children's Hospital science and clinical   | Fliesler N. Could "network" analysis of the brain explain autism's features  |

		innovation blog, Vector	<a href="http://vectorblog.org/2013/03/cool-network-analysis-of-the-brain-explain-autism-features">http://vectorblog.org/2013/03/cool-network-analysis-of-the-brain-explain-autism-features</a> Published Mar 1, 2013. Accessed Jun 10, 2013.
2013	Autistische hersenen zijn fijner geweven	Coverage of autism network analysis in the Dutch newspaper	Volkskrant reporter. Autistische hersenen zijn fijner geweven. <a href="http://www.volkskrant.nl/vk/nl/2844/Archief/archief/articledetail/3401159/2013/02/28/Autistischehersenen-zijn-fijnergeweven.d.html">http://www.volkskrant.nl/vk/nl/2844/Archief/archief/articledetail/3401159/2013/02/28/Autistischehersenen-zijn-fijnergeweven.d.html</a> Published Feb 28, 2013. Accessed Jun 20, 2013
2013	Brain connectivity differs in children with autism	Interview and research summary for Neuropsychiatry "News" section.	Freeston, S. News: Brain connectivity differs in children with autism, EEG study suggests. Neuropsychiatry 2013;3(2):131-132
2013	Falsch verbunden: Hirnregionen autistischer Kinder sind auf ungewöhnliche Weise miteinander vernetzt.	Interview with "Gehirn und Geist" the German edition of Scientific American's "Brain and Mind"	Klotzbücher, L. Falsch verbunden Hirnregionen autistischer Kinder sind auf ungewöhnliche Weise miteinander vernetzt. <a href="http://www.gehirn-undgeist.de/alias/autismus/falschverbunden/1185521">http://www.gehirn-undgeist.de/alias/autismus/falschverbunden/1185521</a> . Published Feb 28, 2013. Accessed Jun 20, 2013
2013	Redondance et déconnexion	Invited	Taquet M. & Peters

		commentary to the autism network analysis study in Nouvelles magazine	J.M. Le réseau cérébral fonctionnel des enfants atteints d'autisme: Redondance et déconnexion. Article in French. Nouvelles, Med Sci (Paris) 2013; 29(6-7):567-9.
2016	A new model for detecting seizures in the neuro ICU	Press coverage in Neurology Today, the AAN's news outlet	Tailan, J. A new model for detecting seizures in the neuro ICU. Neurology Today 2016;16(1):1, 12-13
2016	Seizure or not? Nonepileptic paroxysmal events in pediatrics	Featured in Boston Children's Hospital Clinical Health Blog	<a href="https://notes.childrenshospital.org/seizure-or-not-non-epileptic-paroxysmal-events-in-pediatrics/">https://notes.childrenshospital.org/seizure-or-not-non-epileptic-paroxysmal-events-in-pediatrics/</a> Published Nov 2, 2016. Accessed Nov 8, 2016.

### Recognition

2010 - 2016 Patient's Choice Award, Compassionate Doctor Award

Rated and awarded by patients on Vitals.com

### Report of Scholarship

ORCID: 0000-0002-6725-2814

### Peer-Reviewed Scholarship in print or other media

#### Research Investigations

1. **Peters JM**, Camfield CS, Camfield PR. Population study of benign rolandic epilepsy: is treatment needed? Neurology. 2001 Aug 14; 57(3): 537-9. PubMed PMID: 11502931.
2. **Peters JM**, Waber DP, McAnulty GB, Duffy FH. Event-related correlations in learning impaired children during A hybrid go/no-go choice reaction visual-motor task. Clinical EEG (electroencephalography). 2003 Jul 1; 34(3): 99-109. PubMed PMID: 14521272.
3. van Putten MJ, **Peters JM**, Mulder SM, de Haas JA, Buijninx CM, Tavy DL. A brain symmetry index (BSI) for online EEG monitoring in carotid endarterectomy. Clinical neurophysiology : official journal of the International Federation of Clinical Neurophysiology. 2004 May 1; 115(5): 1189-94. PubMed PMID: 15066544.

4. **Peters JM**, Padberg M, Nederveen PJ, Tavy DL, van Putten MJ. Neuromonitoring met on-line qEEG tijdens carotisendarterectomie: ervaringen met de Brain Symmetry Index. *Tijdschr Neurol Neurochir*. 2005; 106(4): 143-150.
5. Depositario-Cabacar DT, **Peters JM**, Pong AW, Roth J, Rotenberg A, Riviello, Jr JJ, Takeoka M. High-dose intravenous levetiracetam for acute seizure exacerbation in children with intractable epilepsy. *Epilepsia*. 2010 Jul 1; 51(7): 1319-22. PubMed PMID: 20163437.
6. **Peters JM**, Sahin M, Vogel-Farley VK, Jeste SS, Nelson, 3rd CA, Gregas MC, Prabhu SP, Scherrer B, Warfield SK. Loss of white matter microstructural integrity is associated with adverse neurological outcome in tuberous sclerosis complex. *Academic radiology*. 2012 Jan 1; 19(1): 17-25. PubMed PMID: 22142677; PubMed Central PMCID: PMC3343770.
  - 110+ citations, proposal of “Density Weighted Statistics” in diffusion tensor imaging and tractography
7. Taquet M, Scherrer B, Commowick O, **Peters JM**, Sahin M, Macq B, Warfield SK. Registration and analysis of white matter group differences with a multi-fiber model. *Med Image Comput Comput Assist Interv*. 2012 Jan 1; 15(Pt 3): 313-20. PubMed PMID: 23286145; PubMed Central PMCID: PMC3671390.
8. **Peters JM**, Tomas-Fernandez M, van Putten MJ, Loddenkemper T. Behavioral measures and EEG monitoring using the Brain Symmetry Index during the Wada test in children. *Epilepsy & behavior : E&B*. 2012 Mar 1; 23(3): 247-53. PubMed PMID: 22341967.
9. Sánchez Fernández I, Hadjiloizou S, Eksioglu Y, **Peters JM**, Takeoka M, Tas E, Abdelmoumen I, Rotenberg A, Kothare SV, Riviello, Jr JJ, Loddenkemper T. Short-term response of sleep-potentiated spiking to high-dose diazepam in electric status epilepticus during sleep. *Pediatric neurology*. 2012 May 1; 46(5): 312-8. PubMed PMID: 22520353.
10. Akhondi-Asl A, Hans A, Scherrer B, **Peters JM**, Warfield SK. Whole Brain Group Network Analysis Using Network Bias and Variance Parameters. *Proceedings. IEEE International Symposium on Biomedical Imaging*. 2012 May 1; 2012: 1511-1514. PubMed PMID: 26539256; PubMed Central PMCID: PMC4629860.
11. Sánchez Fernández I, Takeoka M, Tas E, **Peters JM**, Prabhu SP, Stannard K, Gregas M, Eksioglu Y, Rotenberg A, Riviello, Jr JJ, Kothare SV, Loddenkemper T. Early thalamic lesions in patients with sleep-potentiated epileptiform activity. *Neurology*. 2012 May 29; 78(22): 1721-7. PubMed PMID: 22539569; PubMed Central PMCID: PMC3359583.
12. \*Fernández IS, \***Peters JM**, Hadjiloizou S, Prabhu SP, Zarowski M, Stannard KM, Takeoka M, Rotenberg A, Kothare SV, Loddenkemper T. Clinical staging and electroencephalographic evolution of continuous spikes and waves during sleep. *Epilepsia*. 2012 Jul 1; 53(7): 1185-95. PubMed PMID: 22578248.
13. Fernández IS, **Peters JM**, Takeoka M, Rotenberg A, Prabhu S, Gregas M, Riviello, Jr JJ, Kothare S, Loddenkemper T. Patients with electrical status epilepticus in sleep share similar clinical features regardless of their focal or generalized sleep potentiation of epileptiform activity. *Journal of child neurology*. 2013 Jan 1; 28(1): 83-9. PubMed PMID: 22532549.

14. Weisenfeld NI, **Peters JM**, Tsai PT, Prabhu SP, Dies KA, Sahin M, Warfield SK. A magnetic resonance imaging study of cerebellar volume in tuberous sclerosis complex. *Pediatric neurology*. 2013 Feb 1; 48(2): 105-10. PubMed PMID: 23337002; PubMed Central PMCID: PMC3763730.
15. Chavakula V, Sánchez Fernández I, **Peters JM**, Popli G, Bosl W, Rakhade S, Rotenberg A, Loddenkemper T. Automated quantification of spikes. *Epilepsy & behavior : E&B*. 2013 Feb 1; 26(2): 143-52. PubMed PMID: 23291250.
16. **Peters JM**, Taquet M, Vega C, Jeste SS, Fernández IS, Tan J, Nelson, 3rd CA, Sahin M, Warfield SK. Brain functional networks in syndromic and non-syndromic autism: a graph theoretical study of EEG connectivity. *BMC medicine*. 2013 Feb 27; 11: 54. PubMed PMID: 23445896; PubMed Central PMCID: PMC3626634.
  - Covered in national and international press, including Reuters, 160+ citations
17. Fernández IS, Chapman KE, **Peters JM**, Kothare SV, Nordli, Jr DR, Jensen FE, Berg AT, Loddenkemper T. The tower of Babel: survey on concepts and terminology in electrical status epilepticus in sleep and continuous spikes and waves during sleep in North America. *Epilepsia*. 2013 Apr 1; 54(4): 741-50. PubMed PMID: 23163318; PubMed Central PMCID: PMC5030106.
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19. Sánchez Fernández I, **Peters JM**, An S, Bergin A, Takeoka M, Rotenberg A, Kothare SV, Riviello, Jr JJ, Loddenkemper T. Long-term response to high-dose diazepam treatment in continuous spikes and waves during sleep. *Pediatric neurology*. 2013 Sep 1; 49(3): 163-170.e4. PubMed PMID: 23953953; PubMed Central PMCID: PMC6382391.
20. Taquet M, Scherrer B, **Peters JM**, Prabhu SP, Warfield SK. A fully Bayesian inference framework for population studies of the brain microstructure. *Medical image computing and computer-assisted intervention : MICCAI ... International Conference on Medical Image Computing and Computer-Assisted Intervention*. 2014 Jan 1; 17(Pt 1): 25-32. PubMed PMID: 25333097; PubMed Central PMCID: PMC4209905.
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22. Taquet M, Scherrer B, Commowick O, **Peters JM**, Sahin M, Macq B, Warfield SK. A mathematical framework for the registration and analysis of multi-fascicle models for population studies of the brain microstructure. *IEEE transactions on medical imaging*. 2014 Feb 1; 33(2): 504-17. PubMed PMID: 24235301; PubMed Central PMCID: PMC3984609.
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25. Sánchez Fernández I, Chapman K, **Peters JM**, Klehm J, Jackson MC, Berg AT, Loddenkemper T. Treatment for continuous spikes and waves during sleep (CSWS): survey on treatment choices in North America. *Epilepsia*. 2014 Jul 1; 55(7): 1099-108. PubMed PMID: 24917485.
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  44. van der Poest Clement EA, Sahin M, **Peters JM**. Vigabatrin for Epileptic Spasms and Tonic Seizures in Tuberous Sclerosis Complex. *Journal of child neurology*. 2018 Jul 1; 33(8): 519-524. PubMed PMID: 29687739.

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### **Thesis**

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### **Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings**

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2. Hyde DE, Tomas-Fernandez X, Stone S, **Peters JM**, Warfield SK: Modeling of Invasive Electrographic Measurements: Point and Complete Electrode Models. Presented at IEEE Engineering in Medicine and Biology Society (EMBC'18), Honolulu, Hawaii, July, 2018.
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## Narrative Report

My **Area of Excellence** is **Clinical Expertise and Innovation**. As an adult neurologist, a child neurologist, and clinical neurophysiologist, with specific expertise in EEG signal processing, advanced neuroimaging techniques and their clinical application to patients with intractable epilepsy, tuberous sclerosis (TSC), and autism, I spend approximately 50% of my time in clinical research and innovation—mostly in the computational radiology laboratory (CRL) and covered in full by NIH funds. I spend 45% in clinical care, in the Multidisciplinary Tuberous Sclerosis Program, in the Comprehensive Epilepsy Clinic, and in a satellite clinic (general Pediatric Neurology), and approximately 5% in teaching activities.

Throughout my career, I have operated on the boundary between clinical care and cutting edge technology, applying innovations in EEG signal processing and advanced neuroimaging.

First, for children undergoing epilepsy surgery, my collaborators and I provide tailored imaging and EEG solutions for specific clinical problems, to optimize the chances of successful surgery and minimize surgical injury to functional areas. These innovations include the clinical application of patient-specific DTI tractography, 3D-renderings of the subdural electrode grids on the MRI brain surface, quantitative validation of the use of EEG during the Wada test, examination of the clinical impact of temporal lobe spike propagation in the MEG, and novel electrical source imaging modeling approaches.

Second, I am the main epileptologist in the multidisciplinary TSC program at Boston Children's Hospital, and TSC forms a major research focus. With my collaborators, I was the first to describe an altered microstructural integrity in autism, suggesting the use of DTI as a biomarker for neurological outcome in TSC. Next, using EEG functional connectivity measures, we found alterations of brain network properties common to both idiopathic and TSC-related autism, suggesting a common biological mechanism. Recently, I published data on longitudinal changes in DTI in TSC, providing imaging evidence that tubers and their direct environment are neither static nor discrete. Based on my previous work and expertise, I am responsible for EEG interpretation in two large NIH-funded prospective multicenter trials studying early EEG and advanced neuroimaging predictors of epilepsy and autism in TSC, and receive funding through a third NIH-grant in the expansion of this work to non-syndromic autism.

Finally, again focused on the integration of technological innovation and clinical care, as the past recipient of a World Federation of Neurology Pilot Grant, I have developed a web-based EEG platform for remote EEG reading, teaching, and data exchange. The platform was piloted in two sub-Saharan African nations.

Among my **Teaching** activities, I have mentored 15 undergraduate and graduate students, residents, fellows, and visiting physicians from institutions around the world. I supervise medical students, residents and fellows in the pediatrics, child neurology and clinical neurophysiology programs, and I have been invited to talk in CME-accredited teaching sessions in the medicine, psychiatry and nursing departments. Over the past years, I have received numerous invitations to present my work on DTI, abnormal EEG connectivity and brain functional networks, autism, and tuberous sclerosis complex, including invitations to national and international conferences. This work has also been featured in numerous professional and public news outlets.

In summary, within my **Area of Excellence in Clinical Expertise and Innovation**, I have an outstanding record of successful implementation and clinical application of technological advancements in the patient setting, highlighting my unique skillset of both clinical expertise and understanding of physics and engineering. My current expertise and experience allow me to continue to interact and collaborate with both computational scientists and child neurologists, and place me in an excellent position to continue

making important contributions to the field directly and to exert future influence through the researchers I train.