# CURRICULUM VITAE

**Isabelle Buard, PhD**

## 1. *Personal history or biographical sketch*

Personal Statement

I am a neurophysiologist and clinical researcher with a unique scientific trajectory from lab bench to preclinical and clinical research. I have studied brain correlates of neural development, function and dysfunction using diverse models, ranging from single brain cells to neuronal networks, in both animals and humans with or without neurologic disorders. Since my PhD I have been successful obtaining funding for my own research though a series of mentored awards (Autism Speaks, Clinical and Translational Science Institute Co-Pilot), local research grants (Thorkildsen Research Funds, Developmental Psychobiology Research Funds, Movement Disorders Center Research Funds and Center for Integrative Medicine small grants program) and a current NIH Career Development Award (NCCIH – K01). The focus of my ongoing research is to create a music therapy research program for movement disorders using symptomatic and mechanistic approaches. The goal is to enhance our understanding of the underlying neuropathophysiology associated with motor and non-motor symptoms, and to test novel therapeutic methods, such as music, rhythms or magnetic pulses to modify cortical networks and restore lost or diminished function. For this endeavor, I leverage my expertise in multimodal brain imaging, such as magnetoencephalography (MEG), electroencephalography (EEG) and magnetic resonance imaging. Additionally, I have forged collaborations with colleagues, leading to funded projects involving MEG and EEG in various neurological populations. Last, my team has actively contributed in the development and implementation of state-of-the-art room temperature MEG technology, through an industry-academia collaboration with Fieldline Medical, Inc.

Current Position

**University of Colorado Denver Anschutz Medical Campus**
Assistant Research Professor
Department of Neurology

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## 2. *Education*

| | | |
|---|---|---|
| **2001** | B.S. in Biochemistry | Univ of Paris XI, France |
| **2002** | M.S. in Neurosciences | Univ of Strasbourg, France |
| **2006** | PhD in Neurosciences | Univ of Strasbourg, France |

## 3. *Academic appointments*

| | | |
|---|---|---|
| **2007** | Post-doctoral fellow | CU, Dept. of Pharmacology, CO USA |
| **2010** | Post-doctoral fellow | CU, Dept. of Psychiatry, CO USA |
| **2014** | Research Instructor | CU, Dept. of Neurology, CO USA |
| **2019** | Assistant Research Professor | CU, Dept. of Neurology, CO USA |

## 4. *Hospital, government or other professional positions*

N/A

## 5. *Honors, special recognitions and awards*

**2001** Louis Pasteur University grant of Excellence for Master of Research (France)
**2004** Retina France Pre-doctoral Fellowship
**2009** Thorkildsen Research Fund Postdoctoral Fellowship
**2012** Autism Speaks Postdoctoral Fellowship
**2012** CCTSI Mentored Scientist Award
**2013** Developmental Psychobiology Endowment Award
**2017** Movement Disorders Center Award
**2018** UCH TCFIM/CAMPUS Award
**2019** NIH Career Development Award

## 6. *Membership in professional organizations*

**2007-** CU Anschutz Neuroscience Program
**2011-** Colorado Clinical and Translational Science Institute
**2016-** Movement Disorders Society
**2019-** American Congress for Rehabilitative Medicine
**2021-** COMIRB Panel A Member
**2021-** CU Anschutz Neuroscience Innovation Initiative

## 7. *Major Committee and Service Responsibilities*

### *International*

| | | |
|---|---|---|
| **2020-2023** | Member | American Congress for Rehabilitative Medicine<br>1.Neurodegenerative Diseases Networking Group - Parkinson's Disease and Related Disorders Task Force<br>2.Arts and Neuroscience Networking Group - Movement and Journal Club Task Forces |
| **2020-** | Review Editor | Frontiers journal – Movement Disorders |

### *Local*

| | | |
|---|---|---|
| **2017-** | Member | CU Anschutz Complementary and Alternative Medicine Practitioners United with Scientists |
| **2019-** | Research Director | CU NeuroMagnetic Laboratories |
| **2020-** | Associate Director of Research | CU Anschutz Movement Disorders Center (MDC) |
| **2020-** | Director | Director, CU MDC Pilot Grant Program |
| **2021-** | Member | COMIRB Panel A |

## 8. *Licensure and board certification*

N/A

## 9. *Inventions, intellectual property and patents held or pending*

N/A

## 10. *Review and referee work*

**Reviewer for national and international research funding institutes**

| Research Institute | 2012 | 2013 | 2015 | 2016 | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| CU CCTSI Pilot grants, USA | 6 | 5 | 4 | 5 | | 2 | | 1 | 1 | 24 |
| CU CCTSI Nexus Program, USA | | | | | | | | 2 | | 2 |
| Brain Foundation Netherlands | | | | | 1 | | | | | 1 |
| University of Rochester Del Monte Institute for Neuroscience | | | | | | | 1 | | | 1 |
| CU MDC Pilot Grant Program | | | | | | 2 | 2 | 2 | 2 | 8 |
| Parkinson's Foundation UK | | | | | | | | | 2 | 2 |
| NIH -SBIR | | | | | | | | | 2 | 2 |
| **Total** | **6** | **5** | **4** | **5** | **1** | **2** | **3** | **5** | **7** | **40** |

## Ad-hoc reviewer for peer-reviewed scientific journals

| Journal | 2013 | 2014 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Psychiatry Journal | 1 | | | | | | | | | | 1 |
| American Journal of Neuroradiology | | 1 | | | | | | | | | 1 |
| Parkinsonism and related disorders | | | 1 | | | | | | 2 | | 3 |
| Cerebellum | | | | 1 | | | 1 | 1 | 1 | | 4 |
| Cortex | | | | 1 | | | | | | | 1 |
| Clinical Neurophysiology | | | | 1 | | | | | | | 1 |
| Neuroscience and Biobehavioral Reviews | | | | 1 | | | | | | | 1 |
| Journal of the Neurological Sciences | | | | | 1 | | | | | | 1 |
| International Medical Research | | | | | | 1 | | | | | 1 |
| Journal of Psychosomatic Research | | | | | | 1 | | | | | 1 |
| Brain Imaging and Behavior | | | | | | 1 | | | | | 1 |
| Journal of Integrative Neuroscience | | | | | | | 1 | | | | 1 |
| Frontiers in Neuroscience | | | | | | | 1 | | | | 1 |
| Frontiers in Neurology | | | | | | | | | 1 | 2 | 3 |
| Brain Stimulation | | | | | | | 1 | | | | 1 |
| Neuropsychiatric Disease and Treatment | | | | | | | 1 | | | | 1 |
| Clinical Research: Open Access | | | | | | | 1 | | | | 1 |
| Nature Partner Journals | | | | | | | | 1 | | | 1 |
| Archives of Rehabilitation Research and Clinical Translation | | | | | | | | 1 | | | 1 |
| Disability and Rehabilitation | | | | | | | 1 | 1 | | | 1 |
| Neurobiology of Aging | | | | | | | | | 1 | | 1 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PNAS | | | | | | | | | 1 | | 1 |
| Life Science | | | | | | | | | | 1 | 1 |
| Computers in Biology & Medicine | | | | | | | | | | 1 | 1 |
| **Total** | **1** | **1** | **1** | **4** | **1** | **3** | **7** | **4** | **6** | **4** | **32** |

### Organization of scientific events

**2020-** Chair — CU Movement Disorders Center Pilot Grant Program 2020, 2021, 2022, 2023

**2020-** Chair — CU Movement Disorders Center Annual Research Retreats (May 13th, 2020, June 6th, 2021, May 17th, 2023)

**2020** — International Training Institute in Neurologic Music Therapy (February 2020, CU Anschutz, Aurora, CO)

## 11. *Invited extramural lectures, presentations and visiting professorships*

### Invited lectures in plenary sessions – National & International Conferences

Buard I. Role of NPC1 on cholesterol shuttle from glia to neurons. 2nd Meeting of the Doctoral Network between Charles University (Prague) & Louis Pasteur University (Strasbourg), October 24-27, 2004, Prague, Czech Republic

Buard I., Brown M.S., Steinmetz S., Singel D. and Rojas D.C. MEG-Measured Post-Movement Beta Rebound During Finger Imitation Correlates With Glutamate Levels Measured Via 1H MRS. ISMRM Workshop on dynamic MR imaging & spectroscopy of psychiatric illness, September 7-10, 2013, Lisbon, Portugal

Buard I., Stewart R., Thompson S. Neurologic Music Therapy for enhancing fine motor function in Parkinson's disease. American Congress for Rehabilitative Medicine 2019, November 4-8, 2019, Chicago, Illinois, USA

Buard I. Modulation of frontal beta and gamma rhythms via Neurologic Music Therapy to slow progression of cognitive decline in Parkinson's disease - Special Symposium "Interplay between cognition and exercise in Parkinson's disease" American Congress for Rehabilitative Medicine September 26-29, 2021, Online

Buard I. Music Therapy for Fine Motor Rehabilitation in Parkinson's and Huntington's Diseases - Special Symposium "Current Perspectives on Exercise in People with Neurodegenerative Conditions" American Congress for Rehabilitative Medicine November 8-11, 2022, Chicago, Illinois, USA

Buard I. Internal vs External Cueing; Fine Motor and Music Outcomes - Special Symposium "State of the Science: Arts-Based Medicine for Parkinson's Disease" American Congress for Rehabilitative Medicine November 8-11, 2022, Chicago, Illinois, USA

Buard I., Hirsch M., Shelton J., Goldman J., Ewing V. Special Symposium "A glimpse into Parkinson's disease through arts" American Congress for Rehabilitative Medicine November 8-11, 2022, Chicago, Illinois, USA

Buard I. Neurologic Music Therapy for fine motor rehabilitation in adults with Parkinson's and Huntington's diseases. NMT Clinical Consensus Symposium - November 18, 2022, Online

### Invited lectures – Seminars and equivalent

Buard I. Glia-induced synaptogenesis in cerebellar Purkinje cells. Department of Pharmacology summer seminar series, July 30th, 2007, UC Denver, Colorado, USA

Buard I. Inhibiting CaMKII activity. Department of Pharmacology annual retreat, October 3rd, 2008, UC Denver, Colorado, USA

Buard I. CaMKII autonomy: from biochemistry to behaviour. Department of Pharmacology summer seminar series, September 14th, 2009, UC Denver, Colorado, USA

Buard I. The role of glial cells during development. Guest lecturer. Neuroscience Topics: Neurodevelopment and Synaptic Plasticity, April 1st, 2010, Regis University, Denver, Colorado, USA

Buard I. Translational studies of motor development and dysfunction. Faculty Candidate Presentation, Dept of Psychiatry, December 8, 2014, UC Denver, Colorado, USA

Buard I. Auditory entrainment of motor responses in Parkinson's patients. Movement Disorders Center Research Retreat, June 13, 2018, UC Denver, Colorado, USA

Buard I. Auditory entrainment of motor responses in older adults with Parkinson's disease. Movement Disorders Center Research Conference, October 24, 2018, UC Denver, Colorado, USA

Buard I. Neurologic Music Therapy for enhancing fine motor function in Parkinson's disease. CAMPUS Meeting, November 7, 2018, UC Denver, Colorado, USA

Buard I. Auditory entrainment of motor responses in older adults with Parkinson's disease. Boulder Campus – Enoka Laboratory Research Conference, April 15, 2019, UC Boulder, Colorado, USA

Buard I. Prefrontal glutamate is associated with cognitive impairment in Parkinson's disease. Movement Disorders Center Research Conference, June 12, 2019, UC Denver, Colorado, USA

Buard I. Transcranial magnetic stimulation for enhancing cognitive functioning. Guest lecturer. Neuroscience Topics: Intersection of technology and neurosciences, January 31st, 2020, Regis University, Denver, Colorado, USA

Buard I., Neurophysiologic characteristics of Parkinson's disease cognitive phenotypes: A resting-state magnetoencephalography study. CU Anschutz Department of Neurology Research Retreat. June 2nd, 2021

Buard I., State of the current research at the Colorado Movement Disorders Center. Parkinson's Larimer support group. August 2nd, 2023.

## 12. Teaching/Mentoring record

Post-doctoral fellows (2)

1. Olivier Simon, PhD, CU Anschutz Department of Biostatistics and Informatics (2019-2020). Two publications from this mentorship (published – Scientific Reports 2021, Journal of Neurophysiology 2021).

2. Korey Wyllie, MD, CU Anschutz Department of Psychiatry (2019-2020). One publication under review at the Journal of Neuroscience Research.

3. Hamada Alzhoubi, PhD, CU Anschutz Department of Neurology (2023-present).

Undergrad, Master and preMed students (9)

1. Corey Allen, Undergrad student, Regis University, CO (2014-2015). One review published from this mentorship (Pediatric Neurology, 2017). Corey pursued a PhD thesis at the University of Atlanta, Georgia, in which I served in his thesis review committee. He then joined (2021) the MIND Research Network for Neurodiagnostic Discovery and the University of New Mexico as a postdoctoral fellow.

2. William Dewispelaere, PreMed student, CU Denver, CO (2015-2016). Will pursued his internship into a part-time data analyst paid position within our lab for one year. Two original research papers were published in 2019 as products from this mentorship (Frontiers in Neuroscience and Neuroscience Letters). William is now a Resident at Denver Health emergency medicine.

3. David Sciacca, Undergrad student, Regis University, CO (2017). One original research paper published from this mentorship (Movement Disorders, 2018). David is now a Data Engineer at GoGuardian.

4. Stefanie Schoeneberger, Undergrad student, CU Denver, CO. One original research paper published from this mentorship (Cognitive and Behavioral Neurology, 2020). Stefanie is now a Graduate student at the university of Groningen, Netherlands.

5. Natalie Lopez-Esquibel, Undergrad student, Regis University, CO (2019). Natalie pursued her internship into a part-time research paid position within our lab for 3 months. Two original research papers arose from this mentorship (one published in Cognitive and Behavioral Neurology in 2020, one currently under review at Frontiers in Human Neuroscience). Natalie is now holding a Clinical Research Recruitment Specialist & Coordinator in the Department of Neurology at CU Anschutz and is planning on pursuing graduate studies in clinical psychology.

6. Rawan Jarrar, Master Student in the Human Anatomy Program at CU Anschutz, CO (2020-2023). Rawan is now in medical school. The results from her work were accepted for publication in July 2023 in the Cognitive Neuroscience journal.

7-8. Lucas Lattanzio and Alexander Seames, current lab research assistant and previous MEG technician, CU Anschutz, CO (2020-2021). Lucas and Alex expressed interest in writing a review manuscript and asked for mentorship during this process. The review was published in the Journal of Neuroscience Research (2021).

9. Zenetta Zepeda, Undergrad student, Summer Research Training Program, CU Anschutz, CO (2021). Zenetta obtained a "first place poster award" during her work presentation to her peers. She is now pursuing a preMed track at the CU Denver College of Liberal Arts & Sciences.

10. Zachary Brittingham, DO research intern, CU Anschutz, CO (2021-2023). One original paper arising from this mentorship is currently under a second round of reviews at the Movement Disorders Clinical Practice journal. Zack is now a Neurology Fellow, University of New Jersey, NJ

11. April Fineberg, Undergrad student, Neuroscience Program, Regis University, CO (2021-2022). April studied modulation of MEG gamma power in people with Parkinson's. A manuscript arising from April's work is under preparation and will be submitted for publication in the Winter of 2022.

12. Woro George, Med student, CU Medical School, (2022-present). Woro is conducting a research project investigating the relationship between the evoked-related potential P300 collected using EEG and mild cognitive impairment in patients with Parkinson's disease. Funding was obtained for this project that started in the Fall 2022. I serve as MSA mentor for Woro.

13. Matthew Kennis, Med student, CU Medical School, (2022-present). Matt is conducting a research project investigating the relationship between P50 gating collected via EEG and freezing of gait in patients with Parkinson's disease. Funding was obtained for this project that started in the Fall 2022.

14. Bryant So, preMed student, (2022-present). Bryant is writing a brief communication report to Parkinson and Related Disorders on the relationship between music reward and changes in quality of life after a music therapy intervention.

15. Chetan Giduturi, Med student, (2022-present). Chetan is writing a case series on the relationship between dopamine, art and creativity in artists with Parkinson's disease.

## Advising

PhD Thesis Defense Committees

Corey Allen – Georgia State University, College of Arts & Science 2018-2021
Mentor: Eyal Aharoni

Master Thesis Committees

Rawan Jarrar – Human Anatomy Program 2020-2021

## 13. Grant support

04/04-03/05 Retina France doctoral fellowship.
Role: Principal Investigator
*Role of glia-derived cholesterol in the development and function of the retina*
The main goal of this project was to dissect the role of cholesterol in survival, axon/dendrite differentiation and synaptogenesis in retinal neurons. This contributed to understand the role of cholesterol homeostasis during retinal development and the link between deficient cholesterol shuttle and retinal pathologies.

01/09-03/10 Thorkildsen Research Fund postdoctoral fellowship.
Role: Principal Investigator
*CaMKII inhibition in stroke and epilepsy*
The major goal of this project was to study the effects of CaMKII inhibition on excitability of cultured rat hippocampal neurons and on seizure activity in vivo.

02/12-01/14 Autism Speaks postdoctoral fellowship
Role: Principal Investigator
*Multimodal neuroimaging of motor dysfunction in autism spectrum disorders*
The goal of this project was to investigate motor dysfunction associated with imitation deficits in autism using MEG and MRI, spectroscopy and clinical assessments.

04/12-12/13 Colorado Clinical & Translational Sciences Institute pilot grant $30,000 (direct costs)
Role: Principal Investigator
*Multimodal neuroimaging of motor dysfunction in autism spectrum disorders*
This project aimed to establish a correlation between impaired motor dysfunction and altered brain neurotransmitters levels in autism. The methods will then be used to define motor-based biomarkers that can translate to early detection of ASD risk.

February 2013 Developmental Psychobiology Endowment Fund Grant
Role: Principal Investigator
*Investigation of motor dysfunction in autism spectrum disorders and childhood onset psychosis*

01/17-06/17 Movement Disorders Center Pilot Grant $7,500 (direct costs)
*Neurologic Music Therapy for enhancing fine motor control in Parkinson's disease*
Role: Principal Investigator
The goal of this project is to test the feasibility and impact of Neurologic Music Therapy on fine motor skills and to understand the underlying brain mechanisms.

01/18-12/18 UCH TCFIM/CAMPUS $10,000 (direct costs)
*Neurologic Music Therapy for enhancing fine motor control in Parkinson's disease*
Role: Principal Investigator
The goal of this award is to optimize the current study including data collection, storage and analysis as well as collect preliminary data on participants undergoing OT sessions.

07/18-08/21 (NCE 08/23) NIH – National Institute for Mental Health. Research Enhancement Award (R15MH117690) – (PI: Kimberley Chiew, PhD) $55,175 (direct costs)
Role: Co-Investigator
*Beyond Reward: Approach and avoidance motivation generate functional contexts for cognitive control and adaptive memory*
The goal of this Academic Research Enhancement Award proposal is to support student research training in neuroimaging and neurostimulation (TMS) measures characterizing the mechanism by which approach versus avoidance motivation adaptively influence cognitive control and subsequent episodic memory. Our team in the

CUNeuroMag TMS laboratory is providing guidance and training on the use of TMS equipment and software for the neurostimulation aspect of the project. I also served as a TMS mentor for Dr. Chiew's postbac graduate student to ensure the completion of this proposal.

07/18-08/21 (NCE 08/23) NIH – National Institute for Neurological Disorders and Stroke. Research Award (R01NS094604) – (PI: Svenja Knappe, PhD) $88,196 (direct costs)
Role: Co-Investigator
*A Room Temperature Atomic Magnetrode System for Telemetry of Epileptic Seizures*
The goal of this project is to develop a practical non-cryogenic microfabricated atomic magnetometer based on laser spectroscopy of rubidium vapor and similar in size and flexibility to scalp EEG electrodes, in order to obtain long-term measurements of seizures and interictal spikes in outpatients with epilepsy. Our team in the CUNeuroMag MEG laboratory is currently collecting data with both our current MEG-SQUID system and the room temperature magnetometer to compare sensory-evoked (somatomotor and auditory) potentials and interictal spikes localization and spectral analysis.

02/19-01/24 NIH – National Center for Complementary and Integrative Health. Career Development Award (K01). $641,405 (direct costs)
Role: Principal Investigator
*Auditory-motor entrainment of fine motor function via Neurologic Music Therapy*
The goal of this award is (1) to provide necessary training in order to further investigate alternative and complementary medicines to improve fine motor control across neuropsychiatric disorders and (2) to conduct a randomized, controlled clinical trial which aims to unravel the auditory-motor oscillatory pathways targeted by Neurologic Music Therapy and to investigate the potential rehabilitative benefit in Parkinson's disease.

05/21-04/23 CU-AMC – Department of Neurology; Intradepartmental Grant. $40,000 (direct costs)
Role: Principal Investigator
*Investigating cortical sleep patterns disruption after traumatic brain injury*
The goal of this grant is to investigate slow oscillations patterns during sleep and wake in people with TBI and assess potential correlations with sleep quality and memory abilities. This is also an initiative to launch a new line of investigation of neurophysiological sleep features using MEG.

09/21-08/23 NIH – National Institute of Biomedical Imaging and Bioengineering Exploratory/Developmental Research Grant Program (R21) – (PI: Shu-Wei Huang, PhD) $6,490 (direct costs)
Role: Co-Investigator
*Nanoparticle-based optical magnetometer for room-temperature magnetoencephalography*
This project will apply new technologies to develop a novel room-temperature magnetometer that addresses the bandwidth and dynamic range limitations of optically-pumped magnetometers, making it much more applicable to frontline diagnostics and wide-spread hospital usage.

09/22-08/24 Mowry Research Funds Award. $30,000 (direct costs) + $5,000 added in October 2023
Role: Co-Principal Investigator (with Alexander Baumgartner, MD)
*P300 as a Biomarker for Visuospatial Working Memory in Parkinson's Disease*
The aim of this study is to investigate P300 as a biomarker for detecting working memory impairments in PD.

09/22-08/24 Mowry Research Funds Award. $29,000 (direct costs) + $5,000 added in October 2023
Role: Co-Principal Investigator (with Alexander Baumgartner, MD)
*P50 as a Biomarker for Freezing of Gait in Parkinson's Disease*
The aim of this study is to investigate the utility of P50 as a biomarker in detecting freezing of gait in PD.

09/15/2022-08/14/2025 DoD CDMRP - W81XWH-22-1-0566. (PI: Jeffrey Hebert, PhD) $489,394 (direct costs)
Role: Co-Investigator
*Emotional Dyscontrol in Veterans with Extended History of Mild Traumatic Brain Injury and Upright Balance Control and Auditory Sensory Processing Contributions*

The objective is to conduct a novel, rigorously designed 2-arm, cross-sectional study to measure posttraumatic irritability, upright balance control based on computerized technology and auditory processing based on behavioral and neurophysiological metrics in military Veterans with and without history of mTBI.

## 14. Bibliography

### Articles published in peer-reviewed journals

*Note: [M]Mentees (students or post-doctoral fellows), *1st co-authors*


1. Steinmetz, C.C., **Buard, I.**, Claudepierre, T., Nagler, K. and Pfrieger, F.W. (2006) Regional variations in the glial influence on synapse development in the mouse CNS. J Physiol., Nov 15;577(Pt 1):249-61.

2. Goritz, C., Thiebaut, R., Tessier, L.-H., Nieweg, K., Moehle, C., **Buard, I.**, Dupont, J.-L., Surgers, L.-J., Schmitz, G. and Pfrieger, F.W. (2007) Glia-induced neuronal differentiation by transcriptional regulation. Glia, Aug 15;55(11):1108-22.

3. Claudepierre T., Paques M., Simonutti M., **Buard I.**, Sahel J., Maue R.A., Picaud S., Pfrieger F.W. (2010) Lack of Niemann-Pick type C1 induces age-related degeneration in the mouse retina. Mol Cell Neurosci., Jan 43(1):164-76.

4. **Buard I.**, Steinmetz C.C., Claudepierre T., Pfrieger F.W. (2010) Glial cells promote dendrite formation and the reception of synaptic input in Purkinje cells from postnatal mice. Glia, Apr 58(5):538-45.

5. Coultrap S.J., **Buard I.**, Kulbe J.R., Dell'Acqua M.L., Bayer K.U. (2010) CaMKII autonomy is substrate-dependent and further stimulated by Ca2+/calmodulin. J Biol Chem., Jun 4;285(23):17930-7.

6. ***Buard I.**, *Coultrap S.J., *Freund R.K., *Lee Y.S., Dell'Acqua M.L., Silva A.J., Bayer K.U. (2010) CaMKII "autonomy" is required for initiating but not for maintaining neuronal long-term information storage. J Neurosci., Jun 16;30(24):8214-20.

7. **Buard I.**, Rogers S.J., Hepburn S., Kronberg E., Rojas D.C. (2013) Altered oscillation patterns and connectivity during picture naming in autism. Front Hum Neurosci., Nov 8;7:742. doi: 10.3389/fnhum.2013.00742.

8. *Barcomb K., ***Buard I.**, Coultrap S.J., Kulbe J.R., O'Leary H., Benke T.A., Bayer K.U. (2014) Autonomous CaMKII requires further stimulation by Ca2+/calmodulin for enhancing synaptic strength. FASEB Journal, Aug;28(8):3810-9. doi: 10.1096/fj.14-250407.

9. **Buard I.**, Pfrieger F.W. (2014) Relevance of neuronal and glial NPC1 for synaptic input to cerebellar Purkinje cells. Mol Cell Neurosci., Jun 7;61C:65-71. doi: 10.1016/j.mcn.2014.06.003.

10. **Buard I.**, Martin C.S., Kluger B.M. (2016) Cortical physiology as a therapeutic target in Parkinson's disease related dementia and cognitive dysfunction: study protocol for a randomized controlled trial. Clin Transl Degener Dis 1(3):91-98.

11. [M]Allen C., Kluger B.M., **Buard I.** (2017) Safety of Transcranial Magnetic Stimulation in Children: A Systematic Review of the Literature. Pediatr Neurol. Jan 4. pii: S0887-8994(16)30504-5. doi: 10.1016/j.pediatrneurol.2016.12.009.

12. **Buard I.**, [M]Sciacca D.M., Martin C.S., Rogers S., Sillau S.H., Greher M.R., Chen R., Kluger B.M. (2018) Repetitive transcranial magnetic stimulation does not improve mild cognitive impairment in Parkinson's disease. Mov Disord. Mar;33(3):489-491. doi: 10.1002/mds.27246.

13. **Buard I.**, Berliner J.M. and Kluger B.M. (2018) Low Frequency Repetitive Transcranial Magnetic Stimulation: Potential Role in Treatment of Patients with Hemispheric Cerebellar Strokes. Brain Stimulation May - Jun;11(3):653-655. doi: 10.1016/j.brs.2018.02.012.

14. Jones W., Silkworth W., Dusto N., Pelak V.S., Berliner J., **Buard I.**, Kluger B. (2018) Central Visual Oscillopsia: Case Report and Review of the Literature. Cogn Behav Neurol. Jun;31(2):86-95. doi: 10.1097/WNN.0000000000000151.

15. **Buard I.**, Steinmetz S., Kronberg E., Hepburn S., Rojas D.C. (2018) Impaired neuromagnetic beta-band oscillations during motor imitation in youth with autism. Autism Res Treat. Jul 25;2018:9035793. doi: 10.1155/2018/9035793. eCollection 2018.

16. *Braunlich K., *Seger C.A., Jentink K.G., **Buard I.**, Kluger B.M., Thaut M.H. (2018) Rhythmic auditory cues shape neural network recruitment in Parkinson's disease during repetitive motor behavior. Eur J Neurosci. Oct 29. doi: 10.1111/ejn.14227.

17. **Buard I.**, [M]Dewispelaere W.D., Thaut M. and Kluger B.M. (2019) Preliminary Neurophysiological Evidence of Altered Cortical Activity and Connectivity with Neurologic Music Therapy in Parkinson's Disease. Frontiers in Neuroscience. Feb 19;13:105.

18. **Buard I.**, [M]Dewispelaere W.D., Teale P., Rojas D.C., Kronberg E., Thaut M. and Kluger B.M. (2019) Auditory entrainment of motor responses in older adults with and without Parkinson's disease: an MEG study. Neuroscience Letters. Aug 24;708:134331.

19. **Buard I.**, [M]Lopez-Esquibel N.T., [M]Schoeneberger S., Berliner J.M. and Kluger B.M. (2020) Mal de debarquement syndrome and transcranial magnetic stimulation as treatment: Case Report and systematic review of the literature. Cogn Behav Neurol. Jun;33(2):145-153.

20. [M]Lattanzio L., [M]Seames A., Holden S.K., **Buard I.** (2021) The Emergent Relationship Between the Temporoparietal Junction and Anosognosia in Alzheimer's Disease. J Neurosci Res. Jun 15. doi: 10.1002/jnr.24904.

21. **Buard I.**, Lattanzio L., Stewart R., Thompson S., Sjoberg K., Hookstadt K., Morrow M., Holden S.K., Sillau S., Thaut M.H., Kluger B.M. (2021) Randomized controlled trial of neurologic music therapy in Parkinson's disease: research rehabilitation protocols for mechanistic and clinical investigations. Trials Aug 28;22(1):577. doi: 10.1186/s13063-021-05560-7.

22. Grande M., Lattanzio L., **Buard I.**, McKendrick A., Chan Y.M., Pelak V.S. (2021) A study protocol for an open-label feasibility treatment trial of visual snow syndrome with transcranial magnetic stimulation. Frontiers in Neurology – Neuro-Opthalmology. Sep 24;12:724081. doi: 10.3389/fneur.2021.724081. eCollection 2021.

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24. [M]Simon OB, Rojas D, Ghosh D, Yang X, Rogers SE, Martin CS, Holden SK, Kluger BM, **Buard I.** (2021) Profiling Parkinson's disease cognitive phenotypes via resting-state magnetoencephalography. J Neurophysiol. Dec 22. doi: 10.1152/jn.00316.2021.

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## Article published in non-peer-reviewed journals

1. **Buard I.**, Shattuck J., Kluger B.M. (2016, conference paper) Does repetitive transcranial magnetic stimulation (rTMS) affect cognitive function in Parkinson's disease by modulating high-frequency brain oscillations: A magnetoencephalography (MEG) study. Movement Disorders Vol. 31, Suppl 2, pp. S1–S697

2. Lattanzio L, **Buard I**, McKendrick AM, Chan YM, Pelak V. (2023) Repetitive pilot trial for visual snow syndrome. Adverse event report. Brain Stimulation 16(4):5-6 July 2023. Doi: 10.1016/j.brs.2023.07.020.

## Abstracts at national and international conferences

1. Steinmetz C. C., **Buard I.**, Claudepierre T., Naegler K. and Pfrieger F.W. Isolation and cultivation of CNS neurons from postnatal mice, 5th Meeting of the German Neuroscience Society, June 12-15, 2003, Goettingen, Germany
2. Steinmetz C. C., **Buard I.**, Claudepierre T., Naegler K. and Pfrieger F.W. Isolation and cultivation of CNS neurons from postnatal mice, SFN 33rd Annual Meeting, November 8-12, 2003, New Orleans, LA, USA
3. Steinmetz C. C., **Buard I.**, Claudepierre T., Naegler K. and Pfrieger F.W. Glial influence on synapse development in different brain regions, 6th Meeting of the German Neuroscience Society, February 17-20, 2004, Goettingen, Germany
4. Steinmetz C. C., **Buard I.**, Claudepierre T., Naegler K. and Pfrieger F.W. Isolation and cultivation of CNS neurons from postnatal mice, Neurex Annual Meeting, April 2004, Freiburg, Germany
5. Goritz C., Steinmetz C. C., **Buard I.**, Claudepierre T., Mauch D., Naegler K. and Pfrieger F. W. Glial influence on synapse development in different brain regions, SFN 34rd Annual Meeting, October 23-27, 2004, San Diego, CA, USA
6. **Buard I.**, Steinmetz C.C., Claudepierre T., Naegler K. and Pfrieger F.W. Requirement for synaptogenic factors is neuron-specific, Neurex Annual Meeting, April 4th, 2005, Strasbourg, France
7. **Buard I.**, and Pfrieger F.W. A new culture model to study the relevance of glia for Purkinje cell development and degeneration, SFN 35rd Annual Meeting, November 12-16, 2005, Washington DC, USA
8. Steinmetz, C.C., **Buard I.**, and Pfrieger F.W. Dendritogenesis and formation of excitatory synaptic input to Purkinje cells require glia, but not Npc1. SFN 37th Annual Meeting, November 3-7, 2007, San Diego, CA, USA
9. **Buard, I.**, Vest, R.S., Davies, K.D., O'Leary, H. and Bayer, K.U. Mechanism of a natural CamKII inhibitor. SFN 37th Annual Meeting, November 3-7, 2007, San Diego, CA, USA
10. Coultrap, S.J., **Buard, I.**, Vest, R.S., Freund, R.K. and Bayer, K.U. Optimization of a neuroprotective CaMKII inhibitor peptide. SFN 38th Annual Meeting, November 15-19, 2008, Washington DC, USA
11. Coultrap, S.J., **Buard, I.**, Freund, R.K., Lee, Y-S., Horne, E.A., Kulbe, J.R., Dell'Acqua, M.L., Silva, A.J. and Bayer, K.U. "Autonomous" CaMKII activity is further stimulated by Ca2+/CaM and is required for neuronal memory formation but not storage. SFN 39th Annual Meeting, October 17-21, 2009, Chicago, IL, USA
12. Coultrap, S.J., **Buard, I.**, Freund, R.K., Lee, Y-S., Vest, R.S., O'Leary, H., Dell'Acqua, M.L., Silva, A.J. and Bayer, K.U. "Autonomous" CaMKII activity in memory and neuronal death. FASEB meeting: "Protein Kinases and Phosphorylation", 2009, Snowmass, CO, USA

13. Coultrap, S.J., **Buard, I.**, Freund, R.K., Lee, Y-S., Vest, R.S., O'Leary, H., Dell'Acqua, M.L., Silva, A.J. and Bayer, K.U. "Autonomous" CaMKII activity in memory and neuronal death. Gordon Research Conference: "Excitatory Synapses & Brain Function", September 6-11, 2009, Les Diablerets, Switzerland
14. Coultrap, S.J., **Buard, I.**, Freund, R.K., Lee, Y-S., Sanhueza, M., O'Leary, H., Hell, J., Lisman, J., Benke, T.A., Dell'Acqua, M.L., Silva, A.J. and Bayer, K.U. CaMKII "Autonomy" in processing and storage information. Gordon Research Conference: "Excitatory Synapses & Brain Function", June 26 - July 1, 2011, Stonehill College Easton, MA, USA
15. **Buard, I.**, Kronberg, E., Rogers, S.J., Hepburn, S. and Rojas, D.C. An MEG study of high-frequency brain oscillations in autism and first-degree relatives during picture naming. Postdoctoral Research Day poster session, March 2nd, 2012, CU Denver, Aurora, CO, USA
16. **Buard, I.**, Kronberg, E., Rogers, S.J., Hepburn, S. and Rojas, D.C. An MEG study of high-frequency brain oscillations in autism and first-degree relatives during picture naming. Department of Psychiatry, Junior faculty poster session, March 14th, 2012, CU Denver, Aurora, CO, USA
17. **Buard, I.**, Kronberg, E., Rogers, S.J., Hepburn, S. and Rojas, D.C. An MEG study of high-frequency brain oscillations in autism and first-degree relatives during picture naming. International Meeting for Autism Research, May 17-19, 2012, Toronto, Canada
18. Coultrap, S.J., **Buard, I.**, Freund R.K., Lee Y-S., Sanhueza M., O'Leary H., Hell J., Lisman J., Benke T.A., Dell'Acqua M.L., Silva A.J. and Bayer K.U. CaMKII "Autonomy" in processing and storage information. Gordon Research Conference: "Cell Biology of the Neuron", June 24-29, 2012, Waterville Valley, NH, USA
19. **Buard, I.**, Kronberg, E., Rogers, S.J., Hepburn, S. and Rojas, D.C. An MEG study of high-frequency brain oscillations in autism and first-degree relatives during picture naming. Biomag 2012, August 26-30, 2012, Paris, France
20. **Buard, I.**, Arciniegas D.B. and Rojas, D.C. An MEG study of motor-related beta oscillations during imitation of hand movements. Postdoctoral Research Day poster session, March 22nd, 2013, CU Denver, Aurora, CO, USA
21. **Buard, I.**, Arcieniegas D.B. and Rojas, D.C. An MEG study of motor-related beta oscillations during imitation of hand movements. Department of Psychiatry, Junior faculty poster session, March 20th, 2013, CU Denver, Aurora, CO, USA
22. Barcomb, K., **Buard, I.**, Coultrap S.J. and Bayer, K.U. CaMKII activity and GluN2B binding in the regulation of synaptic strength. Gordon Research Conference: "Excitatory Synapses & Brain Function", June 9-14, 2013, Les Diablerets, Switzerland
23. **Buard, I.**, Arcieniegas D.B. and Rojas, D.C. An MEG study of motor-related beta oscillations during imitation of hand movements. Human Brain Mapping 2013, June 16-20, 2013, Seattle, USA
24. **Buard, I.,** Steinmetz, S., Hepburn, S. and Rojas, D.C. An MEG study of motor-related beta oscillations during motor imitation in autism. International Meeting for Autism Research 2014 May 14-17, Atlanta (GA, USA)
25. **Buard, I.**, Steinmetz, S., Hepburn, S. and Rojas, D.C. An MEG study of motor-related beta oscillations during motor imitation in autism. Biomag 2014 August 24-28, Halifax (Canada).
26. Coultrap, S., Freund, R., Barcomb, K., **Buard, I.**, Deng, G., Benke, T., Dell'Acqua, M., Herson, P., Bayer, K.U., "Autonomous" CaMKII mediates NMDAR-dependent LTP, LTD and cell death. Winter Conference on Brain Research 2015 January 24–29, Big Sky, Montana, USA
27. **Buard I.**, Shattuck J., Kluger B.M. Does repetitive transcranial magnetic stimulation (rTMS) affect cognitive function in Parkinson's disease by modulating high-frequency brain oscillations: A magnetoencephalography (MEG) study. International Congress of Parkinson's Disease and Movement Disorders 2016 June 19-23, Berlin, Germany
28. Lattanzio, L., Kluger, B.M., Thaut, M., **Buard, I.** University of Colorado Anschutz Medical Campus, Department of Neurology. Neurologic Music Therapy for Enhancing Fine Motor Control in Parkinson's Disease. Department of Neurology Research Retreat 2020 June 3rd, AMC, Aurora
29. Lopez-Esquibel N., Carey F., Brown M., Medina L., Greher M.R., Martin C.S., Rogers S., Kluger B.M., **Buard I.** Prefrontal is reduced in Parkinson's disease dementia. Department of Neurology Research Retreat 2021 June 2nd, AMC, Aurora
30. **Buard I.**, Simon O.B., Rojas D.C., Gosh D., Rogers S., Martin C.S., Holden S.K., Kluger B.M. Neurophysiologic characteristics of Parkinson's disease cognitive phenotypes: A resting-state magnetoencephalography study. Department of Neurology Research Retreat 2021 June 2nd, AMC, Aurora

31. [#]Zepeda Z., Lattanzio L., **Buard I.** Neurological Music Therapy for Enhancing Fine Motor Control in Parkinson's Disease. CU Summer Research Training Program 2021 September 30th, AMC, Aurora [#]Best Poster award[#]
32. **Buard I**, Lattanzio L, Hardin K, Thaut M, Kluger B. Music-based fine motor rehabilitation in Parkinson's patients: feasibility, efficacy and neural correlates. MEG North America Workshop 2023. NIH/NIMH, Bethesda, Nov 8-9, 2023
33. **Buard I**, Lattanzio L, Hardin K, Thaut M, Kluger B. Music-based fine motor rehabilitation in Parkinson's patients: feasibility, efficacy and neural correlates. Parkinson's Foundation/PSG, Nov 30-Dec 3, 202. Austin, TX

## Newsletters/Interviews

1. Smith T., **Buard I**. A new tune for managing Parkinson's disease symptoms. April 6th, 2018: https://www.uchealth.org/today/a-new-tune-for-managing-parkinsons-disease-symptoms/

2. Ruder K., **Buard I.** A Local Singing Group Is Helping Patients with Parkinson's Find Their Voices. November 20th, 2019: https://www.5280.com/2019/11/a-local-singing-group-is-helping-patients-with-parkinsons-find-their-voices/

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