The Faculty of Medicine of Harvard University

Curriculum Vitae

Date Prepared:	June 26, 2025
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Education:

09/2002 - 10/2005	B.Sc.	Biomedical Engineering	Politecnico di Torino Torino, Italy
09/2005 - 05/2008	M.Sc.	Biomedical Engineering	Politecnico di Torino Torino, Italy
01/2009 - 08/2013	Ph.D.	Neuroscience Advisors: Philippe Maeder, MD, and Eleonora Fornari, PhD	Lemanic Neuroscience Doctoral School, University of Lausanne Lausanne, Switzerland

Postdoctoral Training:

01/2014 - 07/2017	Postdoctoral Fellow	Neuroimaging of dystonia PI: Kristina Simonyan, MD, PhD, DrMed	Department of Neurology, Icahn School of Medicine at Mount Sinai New York City
07/2017 - 07/2020	Postdoctoral Fellow	Neuroimaging of neurodegenerative and developmental language disorders PI: Maria Luisa Gorno-Tempini, MD, PhD	Memory and Aging Center, University of California San Francisco San Francisco

Faculty Academic Appointments:

04/2022 - Present	Instructor	Otolaryngology-Head and Neck Surgery	Harvard Medical School

Appointments at Hospitals/Affiliated Institutions:

07/2020 - 02/2022	Research Scientist	Department of Neurology, Memory and Aging Center	University of California San Francisco
04/2022 - Present	Investigator	Otolaryngology- Heard and Neck Surgery	Massachusetts Eye and Ear

Other Professional Positions:

2024	Consultant	Istituto Neurologico Nazionale Casimiro Mondino, Pavia, Italy	40 hours

Committee Service:

Local

2012 - 2013	Center for Biomedical Imaging evaluation committee	University Hospital Lausanne, Switzerland Member of the committee that evaluates research proposal requiring access to the imaging facilities of the hospital
2024 - Present	OHNS digital committee	Massachusetts Eye and Ear Enhance IT infrastructure for Massachusetts Eye and Ear research investigators

Professional Societies

2010 - 2013	Organization for Human Brain Mapping	Member
2012 - 2016	Society for Neuroscience	Member
2016	Organization for Human Brain Mapping	Member
2018 - 2020	Organization for Human Brain Mapping	Member
2019 - 2020	International Society for Frontotemporal Dementia	Member
2019 - 2020	Society for Neuroscience	Member
2024 - Present	International Parkinson and Movement Disorder Society	Member

Grant Review Activities:

2023 – Present	ESF-Science Connect Grant Evaluation Services	European Science Foundation
2024	Graduate Research Fellowship Program	National Science Foundation Ad hoc member

Editorial Activities:

- **Ad hoc Reviewer**

Addiction Biology
Brain
Brain and Behavior
Behavioral and Brain Functions
Brain Communications
Brain Imaging and Behavior
Brain Topography
Brain Sciences
Cerebral Cortex
Computers in Biology and Medicine
Dystonia
Drug and Alcohol Dependence
Experimental Brain Research
Human Brain Mapping
Journal of Alzheimer's Disease
Journal of Neuroscience
Movement Disorders
Neuropsychologia
Neuroimage
Neuroimage: Clinical
Parkinsonism and Related Disorders
PNAS
Scientific Report

- **Other Editorial Roles**

2024 - Present	Guest Editor "Treatment options in dystonia"	Dystonia - Frontiers Publishing Partnerships

Honors and Prizes:

2003 - 2005	Award	European Union and Piedmont Region	Award to the 20 best Biomedical Engineering students
2005 - 2007	Scholarship	Hospital Azienda Sanitaria Locale 3 (Torino, ITA).	Procedures of acceptance of biomedical technologies: review of CEI 62-122 technical norm, execution and integration in the software TOP-DOC. Execution and review of a technological inventory.

2016	Travel Award	American Neurological Association	141st Annual Meeting October 16-18, 2016, Baltimore ($500)
2019	Visiting Junior Scientist	Regione Emilia Romagna and Italian Scientists and Scholars in North America Foundation (ISSNAF)	One of the four researchers to have been selected to foster collaborations between the USA and Italy ($5K)

Report of Funded and Unfunded Projects

Past

2021 - 2022	Unravelling the neurobiological basis of developmental dyslexia using ultra-high field MRI Schwab Center for Dyslexia and Cognitive Diversity Innovation Fund PI ($50,000 – total costs) The goal of this proposal is to grant a level of in-vivo neuroanatomical description of myeloarchitecture, layer-specific functional connectivity within perisylvian regions, and cortical abnormalities never provided before in developmental dyslexia.
2021 - 2022	Chinese language assessment in Primary Progressive Aphasia NIH - NIA R21 5R21AG068757 Co-Investigator (PI: Maria Luisa Gorno-Tempini, MD, PhD) This research project focuses on Chinese-speaking patients suffering from Primary Progressive Aphasia (PPA), a debilitating and fatal neurodegenerative disease that manifests predominantly with speech and language deficits. The proposed work aims to improve the clinical diagnosis of this currently underserved population, provide novel insights into the neural basis of speech and language, and ultimately facilitate treatment development for this devastating disorder.

Current

2014 – 2017 2022 – 2027	Imaging genetics of spasmodic dysphonia/laryngeal dystonia NIH - NIDCD R01 5R01DC011805 Co-Investigator (PI: Kristina Simonyan, MD, PhD, DrMed) The proposed research aims to identify the neural and genetic markers of spasmodic dysphonia or laryngeal dystonia, which is a task-specific form of isolated focal dystonia characterized by involuntary spasms in the laryngeal muscles during speaking.
2022 – 2026	Next-generation clinical phenotyping and pathophysiology of laryngeal dystonia and voice tremor NIH - NIDCD P50 Clinical Research Center Grant 1P50DC019900 Co-Investigator, involved in Project 2 and Research Core (PI: Kristina Simonyan, MD, PhD, DrMed) The goal of Project 2 is to unravel shared and distinct neural pathophysiological markers of laryngeal dystonia and voice tremor, which will provide scientific rationale for the future development of accurate diagnostic biomarkers and efficacious therapies.

	The Research Core aims to develop predictive analytics using machine learning and deep learning techniques for automated discovery of objective markers of differential diagnosis of laryngeal dystonia and voice tremor.
2023 – 2025	Spatial and temporal imaging biomarkers of tinnitus Seth Robbins Mass General Neuroscience Transformative Scholar in Tinnitus PI ($150,000 – total costs) This proposal utilizes a multimodal imaging approach of resting-state functional Magnetic Resonance Imaging (MRI) and Magnetoencephalography (MEG) to provide a comprehensive understanding of the neural correlates of the disorder. The overall objective is to identify imaging biomarkers of tinnitus that can inform the design of novel non-invasive neurostimulation approaches.
2024 – 2030	Imaging markers of successful voice therapy for voice feminization in male-to-female transgender individuals Shore Faculty Development Awards Program PI ($30,000 – total costs) The research aims identify brain imaging markers of voice feminization therapy outcome in male-to-female transgender individuals. The project will use advanced experimental protocols based on MRI to pinpoint the biological bases of voice feminization outcome variability, offering theoretical knowledge and the scientific framework to guide future novel translational applications for increasing the success rate of voice feminization treatments.
2024 – 2026	Structural and functional brain networks in voice feminization therapy. American Academy of Otolaryngology – Head and Neck Surgery Percy Memorial Research Award Multi-PI (Other PI: Matthew R Naunheim, MD, MBA); $25,000 – total costs The research seeks to identify structural and functional neural markers contributing to the outcome of standard voice feminization voice therapy in transgender individuals, which would allow pinpointing the biological bases of voice feminization outcome variability. This research aims to establish foundational knowledge to develop evidence-based treatment options for voice feminization in transgender individuals.
2025 – 2026	Classically trained singing and the Parkinson's brain. Renée Fleming NeuroArts Investigator Award PI ($25,000 – total costs) The research seeks to identify the brain network organization associated with intensive voice training in classically trained singers with and without Parkinson's disease (PD). Findings will provide novel insights into brain reorganization in PD singers, laying the foundation for future research into vocal training's potential neuroprotective effects.

Projects Submitted for Funding

11/1/25 – 10/31/26	The influence of age and biological sex on the organization of the brain networks for speech motor control American Speech-Language-Hearing Foundation independent clinical research grant PI ($50,000 – total costs) The goal of this proposal is to investigate how age and biological sex influence the properties of brain networks involved in speech motor control using functional and structural Magnetic Resonance Imaging data.

Status: Pending study section review

4/1/26 – 3/31/31	Age- and sex-specific organization of the structural and functional connectome of speech production NIH – NIDCD R01 PI ($2,518,861 – total costs) The goal of this proposal is to provide a comprehensive understanding of the differences in the organization of structural and functional networks controlling speech motor production in health individuals. We expect to establish fundamental knowledge that will enhance our understanding of the neurobiology of speech motor control and lay the groundwork for understanding the neurobiological processes underlying sex- and age-related susceptibilities to neurological voice and speech disorders. *Status:* Pending resubmission on 7/5/25
4/1/26 – 3/31/28	Tinnitus risk factors and associated imaging biomarkers NIH – NIDCD R21 PI ($467,500 – total costs) The goal of this proposal is to address the absence of objective and quantitative biomarkers to support diagnosis, prognosis, and treatment stratification in tinnitus. We expect to identify the main risk factors associated with tinnitus onset and to determine how these factors shape brain network connectivity and neural oscillatory dynamics, providing a foundation for developing personalized treatment targets in future research. *Status:* Pending study section review
4/1/26 – 3/31/28	Brain networks in task-specific focal dystonia NIH – NINDS R01 Key Co-Investigator (PI: Kristina Simonyan, MD, PhD, DrMed) The goal of this proposal is to determine the contribution of abnormal iron metabolism to task-specific focal dystonia pathophysiology and functional properties of neural network alterations contributing to task-specificity in dystonia. *Status:* Pending study section review
4/1/26 – 3/31/28	Understanding suicide in dystonia NIH – NIMH R21 Key Co-Investigator (PI: Kristina Simonyan, MD, PhD, DrMed) The goal of this proposal is to determine the neural signature of suicidal ideations and behavior in dystonia and predict suicidality risk by using non-invasive brain imaging data and machine learning. *Status:* Pending study section review

Report of Local Teaching and Training

Teaching of Students in Courses:

2024	Speech and Hearing: From Neuroscience to Perception - SHBT 205 PhD students	Harvard University - Speech and Hearing Bioscience and Technology (SHBT) Graduate Program, Boston, MA 3 hours

2025	Panelist at the National Collegiate Research Conference (NCRC)	Harvard University - Harvard College Undergraduate Research Association, Boston, MA 1 hour

Formal Teaching of Residents, Clinical Fellows and Research Fellows:

2011	"Imaging brain function in animals and humans" summer school organized by FENS-IBRO society Graduate course	University of Lausanne, Lausanne, Switzerland 4 hours/week for one week
2021	Functional imaging in language-related neurological disorders Graduate course in Neuroscience	Università Vita-Salute San Raffaele, Milan, Italy 1 hour

Research Supervisory and Training Responsibilities:

2012 - 2013	Research supervisor One graduate student and one research assistant	Department of Radiology, University Hospital, Lausanne, Switzerland 3-4 hr/week
2014 - 2017	Research supervisor Five research assistants and one postdoc	Icahn School of Medicine at Mount Sinai, New York City, NY 3-4 hr/week
2017 - 2022	Research supervisor Seven postdocs, four research coordinators, three neurology fellows	University of California San Francisco, San Francisco, CA 5-6 hr/week
2022 - Present	Research supervisor Two graduate students	Harvard University/MIT - Speech and Hearing Bioscience and Technology (SHBT) Graduate Program, Boston, MA 5-6 hr/week
2024	Research supervisor and instructor Two graduate students	Istituto Neurologico Nazionale Casimiro Mondino, Pavia, Italy

Other Mentored Trainees and Faculty:

2012 - 2013	Elena Najdenovska, MSc / R&D collaborator in signal processing and machine learning, Haute école d'ingénierie et de gestion du canton de Vaud *Career stage:* graduate student in Neuroscience, University of Lausanne. *Mentoring role:* research supervision and training in MRI neuroimaging techniques — data acquisition and analysis — and manuscript writing. *Accomplishments:* multiple first-author scholarships on mentored research.
2012 - 2013	Naghmeh Ghazaleh, MSc / Senior Data scientist, Pharma Development, Personalized Health Care (PHC) at Roche *Career stage:* research assistant, University Hospital Lausanne. *Mentoring role:* research supervision and training in MRI neuroimaging techniques - data acquisition and analysis. *Accomplishments:* multiple scholarships on mentored research.
2015 - 2016	Hailey Huddleston, BA / Orthopedic Surgery Resident, Hospital for Special Surgery, New York City, NY

	Career stage: research assistant at Icahn School of Medicine at Mount Sinai. *Mentoring role:* research supervision and training in neuroimaging data processing with Freesurfer. *Accomplishment:* one scholarship of mentored research.
2015 - 2016	Rebecca Scharf, BSc / Patient Care Coordinator, Weill Cornell Medical *Career stage:* research assistant at Icahn School of Medicine at Mount Sinai. *Mentoring role:* research supervision and training in neuroimaging data processing with Freesurfer. *Accomplishment:* one scholarship of mentored research.
2018 - 2020	Sara Cirillo, Ph.D. / Postdoctoral fellow, Functional Neuroradiology Unit, San Raffaele Hospital, Milan, Italy *Career stage:* postdoctoral fellow at San Raffaele Hospital. *Mentoring role:* research supervision and training in task-based functional MRI data analysis for presurgical mapping of brain tumor patients and manuscript writing. *Accomplishments:* one scholarship of mentored research.
2018 - 2022	Boon Lead Tee, MD / Assistant Professor, University of California San Francisco *Career stage:* Research Specialist / Assistant Professor, University of California San Francisco. *Mentoring role:* research supervision and training in neuroimaging data analysis of structural brain data, and inferential statistics. *Accomplishments:* two scholarships of mentored research.
2019 - 2023	Maxime Montembeault, Ph.D. / Assistant Professor, McGill University, Montreal, Canada *Career stage:* postdoctoral fellow at University of California San Francisco. *Mentoring role:* research supervision and training in MRI neuroimaging data analysis techniques and imaging related research projects. *Accomplishments:* first-author scholarship and multiple conference proceedings of mentored research.
2022 - 2023	Alexander Jin / Undergraduate student at MIT, Boston, MA *Career stage:* High school intern from Boston University Academy / undergraduate student at MIT. *Mentoring role:* research supervision and training in neuroimaging data formats and analysis; basic data processing of task-based and resting-state functional MRI data. *Accomplishments:* neuroimaging data analysis training.
2022 - 2023	Stefan Ehrlich, Ph.D. / Lead Researcher - Head of Healthcare Technologies, SETLabs Research GmbH *Career stage*: postdoctoral fellow in the Dystonia and Speech Motor Control Laboratory at Massachusetts Eye and Ear. *Mentoring role*: research supervision and training in effective connectivity methods and Dynamic Causal Modeling for EEG data analysis, inferential statistics, manuscript writing. *Accomplishments*: one first-author scholarship published of mentored research.
2022 - Present	Dongren Yao, Ph.D. / Postdoctoral fellow, Dystonia Speech and Motor Control Laboratory, Massachusetts Eye and Ear *Career stage:* postdoctoral fellow in the Dystonia and Speech Motor Control Laboratory at Massachusetts Eye and Ear. *Mentoring role:* research supervision and training in brain MRI data acquisition protocols and data processing of morphometric data, grant and manuscript writing. *Accomplishments:* neuroimaging training, one scholarship currently in preparation.

2023 - Present	Xiuyu Huang, Ph.D. / Postdoctoral fellow, Dystonia Speech and Motor Control Laboratory, Massachusetts Eye and Ear *Career stage:* postdoctoral fellow in the Dystonia and Speech Motor Control Laboratory at Massachusetts Eye and Ear. *Mentoring role:* research supervision and training in functional brain MRI data processing, Dynamic Causal Modeling and graph theoretical analysis of electroencephalography data, analysis of intracranial electrocorticography and local field potential recordings. *Accomplishments:* neuroimaging data analysis training, one first-author scholarship currently in preparation.
2023 - Present	Mikayla Day, B.A. / Research assistant, Dystonia Speech and Motor Control Laboratory, Massachusetts Eye and Ear, Boston, MA *Career stage:* research assistant. *Mentoring role:* research supervision and training in brain MRI data acquisition, processing of task-based functional MRI data. *Accomplishments:* one first-author scholarship currently in preparation

Local Invited Presentations:

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

☐ *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

2018	*The earliest applications of Statistical Parametric Mapping (SPM)* Behavioral Neurology Special Lecture Memory and Aging Center, University of California San Francisco, San Francisco, CA
2018	*In-vivo myelin imaging* Neuroimaging weekly meetings Memory and Aging Center, University of California San Francisco, San Francisco, CA
2019	*Intrinsic language functional connectivity networks in healthy controls and primary progressive aphasia patients* Biomagnetic Imaging Laboratory, Department of Radiology, University of California San Francisco, San Francisco, CA
2020	*The task-free functional pipeline* Imaging core meeting Memory and Aging Center, University of California San Francisco, San Francisco, CA
2022	*Imaging markers of laryngeal dystonia* Precision Neuroscience and Neuromodulation Program, Gordon Center for Medical Imaging, Massachusetts General Hospital, Boston, MA
2022	*fMRI signatures in laryngeal dystonia and voice tremor* NIDCD P50 Clinical Research Center – 2022 Annual Meeting, Department of Otolaryngology, Massachusetts Eye and Ear, Boston, MA
2023	*fMRI signatures in symptomatic and asymptomatic tasks in* LD NIDCD P50 Clinical Research Center – 2023 Annual Meeting, Department of Otolaryngology, Massachusetts Eye and Ear, Boston, MA
2024	*Spatial and temporal imaging markers of tinnitus* 7th Annual Mass General Neuroscience Day

Massachusetts General Hospital, Boston, MA

2025 *Frontiers in laryngology research*
OHNS Grand Rounds
Massachusetts Eye and Ear, Boston, MA

Report of Regional, National and International Invited Teaching and Presentations

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

☐ *Those presentations below sponsored by outside entities are so noted and the sponsor(s) is (are) identified.*

Regional

2013 *Investigation of cannabis effects by functional Magnetic Resonance Imaging*
ARTOG Center for Biomedical Engineering Research, Berne, Switzerland

National

2017 *Connectivity profiles of the insular network for speech control*
Cognitive Neuroscience Society Satellite Symposium: Neural bases of speech production, San Francisco, CA

International

2013 *fMRI investigations of driving skills in light and heavy cannabis smokers*
University of Maastricht, Maastricht, The Netherlands.

2017 *Functional language networks in primary progressive aphasia*
*Abstract selected for Data Blitz talk
International Society for Frontotemporal Dementia annual meeting, Sydney, Australia

2019 *Neuroimaging approaches to investigate neurological disorders affecting language*
IRCCS Hospital, Reggio Emilia, Italy

2023 *Increased brain functional connectivity of the auditory network after lidocaine infusion in tinnitus*
International Federation of ORL Societies Meeting, Dubai, UAE

2025 *Brain connectivity in dystonia*
International symposium in Neurodevelopmental Syndromes and Movement Disorders, Barcelona, Spain

Report of Scholarship

* denotes equal authorship contribution; ** denotes mentored trainee

Peer-Reviewed Scholarship in print or other media:

Research Investigations

1. **Battistella G***, Fornari E*, Thomas A, Mall JF, Chtioui H, Appenzeller M, Annoni JM, Favrat B, Maeder P, Giroud C. Weed or wheel! FMRI, behavioural, and toxicological investigations of

how cannabis smoking affects skills necessary for driving. PLoS One (2013) 8(1):e52545. PMID: 23300977.

2. **Battistella G***, Niederhauser J*, Fornari E, Hippolyte L, Gronchi Perrin A, Lesca G, Forzano F, Hagmann P, Vingerhoets FJ, Draganski B, Maeder P, Jacquemont S. Brain structure in asymptomatic FMR1 premutation carriers at risk for fragile X-associated tremor/ataxia syndrome. Neurobiology of Aging (2013) Jun;34(6):1700-7. PMID: 23298734.
3. Fabritius M, Chtioui H, **Battistella G**, Annoni JM, Dao K, Favrat B, Fornari E, Lauer E, Maeder P, Giroud C. Comparison of cannabinoid concentrations in oral fluid and whole blood between occasional and regular cannabis smokers prior to and after smoking a cannabis joint. Analytical and Bioanalytical Chemistry (2013) Dec;405(30):9791-803. PMID: 24202191.
4. Fabritius M, Favrat B, Chtioui H, **Battistella G**, Annoni JM, Appenzeller M, Dao K, Fornari E, Lauer E, Mall JF, Maeder P, Mangin P, Staub C, Giroud C. THCCOOH concentrations in whole blood: are they useful in discriminating occasional from heavy smokers? Drug Testing and Analysis (2014) Jan-Feb;6(1-2):155-63. PMID: 24173827.
5. Romoli M, Allais G, Airola G, Benedetto C, Mana O, Giacobbe M, Pugliese AM, **Battistella G***, Fornari E*. Ear acupuncture and fMRI: a pilot study for assessing the specificity of auricular points. Neurological Sciences (2014) May;35 Suppl 1:189-93. PMID: 24867864.
6. **Battistella G***, Fornari E*, Annoni JM, Chtioui H, Dao K, Fabritius M, Favrat B, Mall JF, Maeder P, Giroud C. Long-Term Effects of Cannabis on Brain Structure. Neuropsychopharmacology (2014) Aug;39(9):2041-8. PMID: 24633558.
7. Hippolyte L*, **Battistella G***, Perrin AG, Fornari E, Cornish KM, Beckmann JS, Niederhauser J, Vingerhoets FJ, Draganski B, Maeder P, Jacquemont S. Investigation of memory, executive functions, and anatomic correlates in asymptomatic FMR1 premutation carriers. Neurobiology of Aging (2014) Aug;35(8):1939-46. PMID: 24612675.
8. Termsarasab P, Ramdhani RA, **Battistella G**, Rubien-Thomas E, Choy M, Farwell IM, Velickovic M, Blitzer A, Frucht SJ, Reilly RB, Hutchinson M, Ozelius LJ, Simonyan K. Neural correlates of abnormal sensory discrimination in laryngeal dystonia. Neuroimage Clinical (2015) Oct 30;10:18-26. PMID: 26693398.
9. Putzel GG, Fuchs T, **Battistella G**, Rubien-Thomas E, Frucht SJ, Blitzer A, Ozelius LJ, Simonyan K. GNAL Mutation in Isolated Laryngeal Dystonia. Movement Disorders (2016) May; 31(5): 750–755. PMID: 27093447.
    - Tisch S: Faculty Opinions Recommendation of [Putzel GG et al., Movement Disorders 2016 31(5):750-755]. In Faculty Opinions, 17 Jul 2018; 10.3410/f.726307193.793548340
10. **Battistella G**, Fuertinger S,Fleysher L, Ozelius LJ, Simonyan K. Cortical sensorimotor alterations classify clinical phenotype and putative genotype of spasmodic dysphonia. European Journal of Neurology (2016) Oct; 23(10):1517-27. PMID: 27346568.
11. Kirke DN, **Battistella G**, Kumar V, Rubien-Thomas E, Choy M, Rumbach A, Simonyan K. Neural correlates of dystonic tremor: a multimodal study of voice tremor in spasmodic dysphonia. Brain Imaging and Behavior (2016) Feb; 11(1): 166–175. PMID: 26843004.
    - Berardelli A and Belvisi D: Faculty Opinions Recommendation of [Kirke DN et al., Brain Imaging and Behavior 2017 11(1):166-175]. In Faculty Opinions, 20 Jan 2020; 10.3410/f.730069851.793569957

12. **Battistella G**, Termsarasab P, Ramdhani RA, Fuertinger S, Simonyan K. Isolated Focal Dystonia as a Disorder of Large-Scale Functional Networks. Cerebral Cortex (2015) Feb 1;27(2):1203-1215. PMID: 26679193.

    - Berardelli A and Belvisi D: Faculty Opinions Recommendation of [Battistella G et al., Cerebral Cortex 2017 27(2):1203-1215]. In Faculty Opinions, 20 Jan 2020; 10.3410/f.726023059.793569954

13. **Battistella G***, Najdenovska E*, Ghazaleh N, Thiran JP, Jacquemont S, Maeder P, Bach-Cuadra M, Fornari E. Robust Thalamic Nuclei Segmentation Method Based on Local Diffusion Magnetic Resonance Properties. Brain Structure and Function (2016) Jul;222(5):2203-2216. PMID: 27888345.

14. Bianchi S*, **Battistella G***, Huddleston H**, Scharf R**, Fleysher L, Rumbach A, Simonyan K. Structural neuroanatomical correlates of putative genotype and distinct clinical phenotypes in spasmodic dysphonia. Movement Disorders (2017) Apr; 32(4): 560–568. PMID: 28186656.

    - Tisch S: Faculty Opinions Recommendation of [Bianchi S et al., Movement Disorders (2017) 32(4):560-568]. In Faculty Opinions, 17 Jul 2018; 10.3410/f.727294952.793548342
    - Berardelli A and Belvisi D: Faculty Opinions Recommendation of [Bianchi S et al., Movement Disorders 2017 32(4):560-568]. In Faculty Opinions, 20 Jan 2020; 10.3410/f.727294952.793569956

15. Putzel GG*, **Battistella G***, Rumbach A, Ozelius LJ, Sabuncu MR, Simonyan K. Polygenic risk of spasmodic dysphonia is associated with vulnerable sensorimotor connectivity. Cerebral Cortex (2018) Jan 1;28(1):158-166. PMID: 29117296.

16. **Battistella G**, Kumar V, Simonyan K. Connectivity of the insula language network in healthy volunteers and spasmodic dysphonia patients. Brain Structure and Function (2018) Jun;223(5):2489-2498. PMID: 2952048.

17. Najdenovska E**, Alemán-Gómez Y, **Battistella G**, Descoteaux M, Hagmann P, Jacquemont S, Maeder P, Thiran JP, Fornari E, Bach Cuadra M. In-vivo probabilistic atlas of human thalamic nuclei based on diffusion-weighted magnetic resonance imaging. Scientific Data (2018) Nov 27;5:180270. PMID: 30480664.

18. Mandelli ML, Vilaplana E, Welch AE, Watson C, **Battistella G**, Brown JA, Possin KL, Hubbard HI, Miller ZA, Henry ML, Marx GA, Santos-Santos MA, Bajorek LP, Fortea J, Boxer A, Rabinovici G, Lee S, Deleon J, Rosen HJ, Miller BL, Seeley WW, Gorno-Tempini ML. Altered topology of the functional speech production network in non-fluent/agrammatic variant of PPA. Cortex (2018) Nov;108:252-264. PMID: 30292076.

19. **Battistella G**, Henry M, Gesierich B, Wilson SM, Borghesani V, Shwe W, Miller Z, Deleon J, Miller BL, Jovicich J, Papinutto N, Dronkers NF, Seeley WW, Mandelli ML, Gorno-Tempini ML. Differential intrinsic functional connectivity changes in semantic variant primary progressive aphasia. Neuroimage Clinical (2019) 2019:22:101797. PMID: 31146321.

20. Protopapa F, Hayashi MJ, Kulashekhar S, van der Zwaag W, **Battistella G**, Murray MM, Kanai R, Bueti D. Chronotopic maps in human supplementary motor area. PLoS Biology (2019) Mar;17(3):e3000026. PMID: 30897088.

21. **Battistella G**, Simonyan K. Top-down alteration of functional connectivity within the sensorimotor network in focal dystonia. Neurology (2019) Apr 16;92(16):e1843-e1851. PMID: 30918091.

- Selected for the journal cover

22. Borghesani V, Narvid J, **Battistella G**, Shwe W, Watson C, Binney RJ, Sturm V, Miller Z, Mandelli ML, Miller B, Gorno-Tempini ML. "Looks familiar, but I do not know who she is": The role of the anterior right temporal lobe in famous face recognition. Cortex (2019) Jun;115:72-85. PMID: 30772608.

23. Caverzasi E*, **Battistella G***, Chu SA, Rosen HL, Zanto TP, Karydas AM, Shwe W, Coppola G, Geschwind DH, Rademakers R, Miller BL, Gorno-Tempini ML*, Lee SE*. Gyrification abnormalities in presymptomatic c9orf72 expansion carrier. Journal of Neurology, Neurosurgery, and Psychiatry (2019) Sep;90(9):1005-1010. PMID: 31079065.

24. Borghesani V, **Battistella G**, Mandelli ML, Welch A, Weis E, Younes K, Neuhaus J, Grinberg LT, Seeley WM, Spina S, Miller B, Miller Z, Gorno-Tempini ML. Regional and hemispheric susceptibility of the temporal lobe to FTLD-TDP type C pathology. Neuroimage Clinical (2020) Aug 6;28:102369. PMID: 32798912.

25. **Battistella G**, Borghesani V, Henry M, Shwe W, Lauricella M, Miller Z, Deleon J, Miller BL, Dronkers N, Brambati SM, Seeley WW, Luisa Mandelli M, Luisa Gorno-Tempini M. Task-free functional language networks: reproducibility and clinical application. Journal of Neuroscience (2019) Feb 5; 40(6): 1311–1320. PMID: 31852732.

26. Canu E, Agosta F, **Battistella G**, Spinelli EG, DeLeon J, Welch AE, Mandelli ML, Hubbard HI, Moro A, Magnani G, Cappa SF, Miller BL, Filippi M, Gorno-Tempini ML. Speech production differences in English and Italian speakers with nonfluent variant PPA. Neurology (2020) Mar 10;94(10):e1062-e1072. PMID: 31924679.

27. Pasquini L, Toller G, Staffaroni A, Brown JA, Deng J, Lee A, Kurcyus K, Shdo SM, Allen I, Sturm VE, Cobigo Y, Borghesani V, **Battistella G**, Gorno-Tempini ML, Rankin KP, Kramer J, Rosen HH, Miller BL, Seeley WW. State and trait characteristics of anterior insula time-varying functional connectivity. Neuroimage (2019) Mar:208:116425. PMID: 31805382.

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Non-peer-reviewed scholarship in print or other media:

Reviews, chapters, and editorials

1. Lukic, S., Borghensani, V., Gorno-Tempini, M.L., **Battistella, G**. Voxel-based Brain-Behavior Mapping in Neurodegenerative Diseases. Book chapter in *Lesion-to-symptom mapping: Principles and tools. Edited by Dorian Pustina and Daniel Mirman. The Springer neuromethods.*
2. **Battistella G**, Simonyan K. Clinical Implications of Dystonia as a Neural Network Disorder. Adv Neurobiol (2023) 31:223-240. PMID: 37338705

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1. **Battistella G**, Maeder P, Thomas A, Chtioui H, Appenzeller M, Favrat B, Buclin T, Staub C, Mangin P, Giroud C, Fornari E. Mapping the impact of cannabis on driving skills in occasional smokers. *Proceedings of the 16th Annual meeting of the Organization on Human Brain Mapping*, Barcelona, June 6-10, 2010.
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3. **Battistella G**, Niderhauser J, Fornari E, Isidor N, Gronchi A, Draganski B, Hippolyte L, Vingerhoets F, Jacquemont S, Maeder P. Assessment of white matter abnormalities in men predisposed to FXTAS. *Proceedings of the 6th edition of the Alpine Brain Imaging Meeting*, Champéry, January 9-13, 2011.
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20. **Battistella G**, de Lima Xavier L, Vortmeyer AO, Simonyan K. Abnormal brain iron metabolism influences neural function in isolated laryngeal dystonia. *Proceedings of the International Congress of Parkinson's Disease and Movement Disorders,* Philadelphia, USA, September 28 – October 1 2024.

Thesis:

2013 *Multimodal MRI analysis of structural and functional networks in the human brain. Application to two clinical studies: driving abilities under THC intoxication and early white matter changes in FXTAS.*

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Abstracts, Poster Presentations, and Exhibits Presented at Professional Meetings:
(selected from the last three years that have not yet been published as full-length manuscripts)

1. **Battistella G**, Simonyan K, Welling D B. Increased brain functional connectivity of the auditory network after lidocaine infusion in tinnitus. International Federation of ORL Societies Meeting, Dubai, UAE, 17-21 January, 2023
2. **Battistella G**, Simonyan K. Interaction between dopaminergic and GABAergic striatal neurotransmission during speech production. XIV Meeting of the International Basal Ganglia Society, Stockholm, Sweden, June 13-16, 2023
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Narrative Report

The overarching goal of my research is to understand the neural basis of communication disorders using *in vivo* brain imaging techniques (Magnetic Resonance Imaging – MRI, Positron Emission Tomography - PET, and Magnetoencephalography – MEG), advanced analytical methods, and machine learning tools. My past work has contributed to identifying brain alterations in patients with laryngeal dystonia, primary progressive aphasia, and developmental dyslexia. Since joining Mass Eye and Ear in 2022, my research has expanded into investigating age- and sex-specific brain organization during speaking in healthy individuals, the neural effects of successful voice feminization therapy in transgender individuals, and therapeutic neuromodulation of tinnitus with and without hearing loss. I am also involved in developing novel MRI protocols to enhance the spatial and temporal resolution of simultaneous image acquisitions of the brain and vocal tract structures during speaking.

My studies in dystonia have helped define dystonia as a neural network disorder, paving the way for the development of novel diagnostics and therapeutic interventions. My studies in primary progressive aphasia have identified imaging markers of brain morphology and white matter integrity associated with the cognitive profile and clinical presentation of the three variants of this condition. I developed a novel research program using high-resolution 7 Tesla MR imaging to identify fine alterations in structural and functional networks in developmental dyslexia and offer new perspectives on the neural substrate of the condition. In addition, I designed a novel framework for segmenting the nuclei of the thalamus, which

surpasses existing methods by providing a parcellation that can help precisely identify targets for neurosurgical interventions. This research, along with efforts to make study codes and a probabilistic atlas of thalamic nuclei widely accessible, underscores my commitment to reproducible neuroscience and collaborative research practices.

At Mass Eye and Ear, I continue studying dystonia while also leading projects that focus on communication and hearing. My studies investigate the spatial and temporal imaging markers of tinnitus using a multimodal approach combining MRI, MEG, novel analytical methods, and machine learning. With no current quantitative diagnostic tools or effective treatments available for this condition, this research aims to provide translational insights to improve the management of this debilitating disorder. This work is supported by my independent funding as the Mass General Transformative Scholar on Tinnitus.

Moreover, I spearheaded the first translational research effort with the Mass Eye and Ear's Transgender Voice and Speech Modification Program to investigate imaging markers of the outcome of current voice feminization treatments for transgender individuals. This project addresses a historically underserved and understudied population with a novel clinical and research outlook. By combining brain activity, real-time MRI of vocal tract structures while speaking, and acoustic measures, this innovative design will provide fundamental insights for the development of novel strategies to reduce voice-associated gender dysphoria, ultimately advancing the clinical care of transgender and gender-diverse individuals. The Eleanor and Miles Shore Faculty Development Award and the American Academy of Otolaryngology – Head and Neck Surgery Percy Memorial Research Award support this work. In addition, from a methodological standpoint, only a few centers in the USA can perform real-time MRI of vocal tract structures while speaking. My work to establish this technique at HMS research institutions will allow the use of this novel procedure across several voice and language disorders and foster productive translational efforts to improve clinical care.

I am a member of the OHNS Digital Committee, which aims to enhance the IT infrastructure of Mass Eye and Ear research investigators. I help mentor and supervise postdoctoral fellows, graduate students, and research assistants in the Dystonia and Speech Motor Control Laboratory at Mass Eye and Ear and Harvard Medical School and teach a graduate course on speech motor control and neurological voice disorders in the Speech and Hearing Bioscience and Technology Harvard Graduate Program. I am the guest editor for a special issue of the *Dystonia* journal focused on neuromodulation-based treatment options in dystonia, and I serve as a grant reviewer for the National Science Foundation and the European Science Foundation. I am dedicated to pursuing independent, impactful, and translational research by engaging the joint efforts of scientists and clinician collaborations. I am passionate about continuing to teach and mentor junior researchers at Harvard Medical School.