

Joshua A. Cain, PhD

→ Contact ←

Cognitive Neuroscientist & Cross-Sector Research Operations Leader | PhD, UCLA
Neuromodulation · Neuroimaging · Clinical Trials · Computational Methods · Industry Leadership

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SUMMARY

Cognitive neuroscientist with uniquely broad, cross-sector leadership experience spanning basic research, clinical trials, computational/statistical methods, and neurotech industry. Led 10+ professional research programs from inception to completion, including works published in [Nature](#), [PNAS](#)^(rev.), and [PLOS ONE](#), with a track record of translating complex, cutting-edge science into high-impact, cross-functional, and successful programs at scale. Pioneered [Transcranial Focused Ultrasound](#) (tFUS; also: LIFU, LIFUP) for human neuromodulation — including 1) [leading the world's 1st clinical trial using FUS](#) to induce recovery from coma, 2) leading landmark [human studies](#), 3) publishing [field-enabling software](#), as well as 4) establishing tFUS labs & training the scientists comprising much of this, now, [rapidly-growing](#) field. Held C-suite roles at multiple early-stage neurotechnology companies, pairing deep scientific rigor with translational leadership across research, clinical, and operational environments. Operates with full independence across the complete program lifecycle — from strategic planning and stakeholder negotiation through execution, regulatory navigation, and public dissemination. Featured in [The LA Times](#), [Voice of America](#), [Scientific American](#), and 40+ international publications for pioneering work in neuromodulation and clinical neuroscience.

TOP SKILLS				
1. Neuroimaging Best At: fMRI (#1), EEG, CT, fNIRS >10 Yrs Multi-Modal Imaging Expert Exp. Paired: 1. Brain Simulation 2. Behavioral analysis 3. Physiological Data	2. Neuromodulation Best At: LIFU (#1), TMS, NeuroNav, etc. ~10 Yrs Neuromodulation Pioneer Among 1st-users of Focused Ultrasound in Humans. Led its 1st Clinical Use!	3. Clinical Research Best At: TBI & DOC (Coma) fMRI Parkinson's, ADHD >10 Yrs Led Seminal Clinical Trials Among 1st-users of Focused Ultrasound in Humans. Led its 1st Clinical Use!	4. Data Analysis Best At: Matlab (#1), Python, Bash, R >10 Yrs Broad Expertise: Everything from ML/AI to Bayesian Stats	5. Cross-Sector Leader Best At: R&D Leader (#1), Founder, BCI Thought-Leader >5 Yrs Senior Roles in: - Neurotech Industry: Founding CEO, Founding CSO, Board Member - Academia: Non-Profits, For Profits

WORK EXPERIENCE			
Founding CEO Symphony Neurosciences Inc.	A for-profit neurotech. startup building a non-invasive, ultrasound brain stimulation platform—for treating illnesses (esp. Parkinson's).	• Founded Company, Defined Mission, Built Structure • Recruited Team (4 employees, 7 advisors, 7 partners, 7 lawyers) • Raised \$500k, Protected Key IP, Designed Products & Branding	Oct 2024 – Present San Francisco, CA, USA
Founding CSO Empath Inc.	A for-profit neurotech. startup using brain stimulation to induce states of heightened empathy.	• Co-Founded Co., Helped Raise ~\$1M, Hired Tech. Staff • Authored: R&D + Compliance + IP Plan, Study IRBs • Authored Tech. Whitepapers, Designed Products	Jul 2024 – Oct 2024 San Francisco, CA, USA
Chief Scientific Officer International Brain Research Foundation (IBRF)	A Non-Profit developing and providing cutting-edge treatments for a wide range of neuropsychiatric conditions.	• Built Focused Ultrasound Lab, Trained 3 Techs • Designed R&D to Treat Parkinson's using Ultrasound • Raised \$3M (Parkinson's Foundation) for project	Jan 2024 – Sep 2024 Miami, FL, USA
Senior Research Scientist Institute for Advanced Consciousness Studies (IACS)	A Non-Profit performing top-tier cognitive neuroscience research on consciousness and spirituality.	• Built brain stimulation lab, Trained & Led Team of 10 • Led study that deepened meditation w/ brain stimulation • Funded, designed, ran, analyzed, published, publicized work	Dec 2021 – Jan 2024 Los Angeles, CA, USA
Research Neuroscientist UCLA (Monti-Lab)	World-leading academic lab in: Traumatic Brain Injury (e.g., Coma) & (Disorders of) Consciousness—esp. using (f)MRI, EEG, and/or neuromodulation.	• Led, published, & publicized frontier cog. neuro work • Published on brain stimulation & coma/consciousness • open-source software, neuroimaging analysis, clinical trials	Dec 2021 – Jul 2022 Los Angeles, CA, USA
Contract Neuroscientist University of Vienna	Contracted by Professor Julia Crone to build a Transcranial Focused Ultrasound (tFUS) lab & train her staff on its use.	• Built Focused Ultrasound Lab, Trained Scientists • Presented Lab's Capabilities to Department	May 2022 – Sep 2022 Vienna, Austria
Member of the Board Sputnik Brain Inc.	An India-based for profit startup building focused ultrasound hardware devices for improving mood.	• Regularly provide strategic and technical advice • Occasionally assist with garnering funding • Provide critical technical guidance on product design	Jan 2020 – Present New Delhi, India
Psychiatric Social Worker Everly Well Community Mental Health	A psychiatric clinic offering long-term care for those with severe cases of mental illness, especially Schizophrenia.	• Conducted Group Therapy • Managed Medications • Provided core/basic needs to patients	Nov 2016 – June 2017 Des Moines, IA, USA

SELECTED MEDIA				
Los Angeles Times (Cover) Newspaper Article Coma Clinical Trials Los Angeles Times For months, he lingered in a purgatory between wakefulness and nothingness. <i>Blink Once if you can Hear Me</i> Joanna Faryon (2019) Read Article	Voice Of America TV Documentary Coma Clinical Trials JOSHUA CAIN, PH.D. NEUROSCIENTIST <i>Breakthrough in Brain Stimulation</i> Voice Of America Team (2022) Watch Video	Wearable/BCI Youtuber Youtube Video Meditation Experiment <i>Deep Meditation in 10 Minutes</i> Cody Rall (2024) Watch Video	Wired Magazine Magazine Article Coma Clinical Trials <i>Ultrasound 'Wakes Up' Man from Coma</i> Matt Reynolds (2017) Read Article	Being The Subject Pop.Sci. Article Meditation Experiment <i>Peak Experience at the Push of a Button</i> Edward Vaisberg (2024) Read Article

AWARDS & GRANTS		
Parkinson's Foundation Research Funding - (\$ 3,365,000)	Funding for Research Proposed on using LIFU to Treat Parkinson's Disease	2023–2026
Distinguished Clinical Research Award	"Save a Soldier" Project, Partner of US DOD, for my clinical neuroscience work on DOC (e.g., Coma)	2024
(IACS) OSF Consciousness Open Science Research Grant - (\$ 50,000)	Pre-Registration of Focused US – Meditation Work	2023–24
(UCLA) Gengerelli Distinguished Dissertation Award	#1 Ranked Dissertation in UCLA Ph.D. Class of 2022	2022
(UCLA) Best Post-Doctoral Paper	#1 Publication (in 2022) by Post-Doctoral Researcher	2022
(UCLA) Ursula Mandel Fellowship - (\$ 20,000)	Innovative Clinical Work within a Dissertation Defense	2020–21
(2x) (UCLA) Graduate Research Mentorship Program - (\$ 20,000 each)	Reason for Getting it	2018, 2020
ISTU (Therapeutic US Society) Student Award	Impressive Ultrasound–Research by Graduate Student	2019
(2x) (UCLA) Graduate Summer Research Mentorship - (\$ 6,000 each)	Promising Ongoing Graduate Student Research	2018, 2019

DETAILED SKILLS	
Technical	
Neuroimaging	- MRI (fMRI, ASL, MRI + CT, FSL, SPM, FreeSurfer, ANTs, AFNI, Graph Theory, etc.) - EEG (pre-processing, frequency, ERP's, connectivity, EEGLAB, ERPLAB, Fieldtrip) - Integrating Neuromodulation, Physiological & Behavioral data
Data Analysis	- GLM, Bayesian, Non-Parametric - SPSS, SAS, JASP/R - ML Classification, Dim. Reduction
Computational	- Matlab, Python, Bash/Shell, R - Time-Series Analysis (complexity, connectivity, causality, graph theory) 3D Biophysical Simulations (esp. acoustic/ultrasound) - Neural Network Use & Architecture Design

Leadership	
Research Leadership	
Multi-site Leadership (Teams of 20+, Collective Budget > \$20M, Recruitment & Training) Partnership Management (Drafting: LOI, SRA, IAA, NDA) Public/Private Grants (\$5M+ Awarded) Regulatory Navigation (IRB, Patent, FDA Compliance)	

Clinical Leadership	
- Clinical Trial Leadership - Clinic Dev. & Leadership - Neurological/Psychiatric Patients (Coma, Parkinson's, Schizophrenia) - Personally Performing Interventions & Assessments	

Communication	
Research Impact	
8+ 1st-Authored Publications - High-Impact Publications - Multiple > 100 Citations - Nature, PNAS	

Teaching	
5 Years Teaching/Tutoring - Mentored 8 Students (Most now Earning Advanced Degrees) 40+ Hrs Lecturing UCLA Courses	

Media & Public Speaking	
15+ Invited Conference Talks - Multiple Recorded Interviews - International News Coverage (LA Times Front Page, Wired, etc.)	

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EDUCATION			
UCLA	PhD (Cog. Neuroscience) UCLA (Monti-Lab)	- Graduated #1 in Class (Distinguished Dissertation Award) - Advanced the Science of Coma, Consciousness, & Neuromodulation (Dissertation)	Sept 2017– Jan 2022 Los Angeles, CA, USA
Drake University	BSc (Neuroscience, Psychology) Drake University	- Graduated Summa Cum Laude with a 4.0 GPA - Advanced the Science of Early Life Stress under Dr. Brian Sanders	Sep 2012 – May 2016 Des Moines, IA, USA

PUBLICATIONS	
Google Scholar ← See all Publications	Citations ₍₂₀₂₆₎ : > 540 * Signifies Co-First Authorship: (Authors Share Equal First–Author Contribution)
Ultrasonic Thalamic Stimulation in Chronic Disorders of Consciousness PDF InfoGraph • Cain et al. • <i>Brain Stimulation</i> • March, 2021 • brainstim.jrnl.com/article/S1935-861X(21)00009-7/fulltext	2021
Ultrasonic Deep Brain Neuromodulation in Acute Disorders of Consciousness: A Proof-of-Concept PDF InfoGraph • Cain et al. • <i>Brain Sciences</i> • Mar 23, 2022 • mdpi.com/2076-3425/12/4/428	2022
Facilitating Meditation with Focused Ultrasound Neuromodulation: A First Investigation in Experienced Practitioners PDF InfoGraph • Cain et al. • <i>PsyArXiv</i> (Preprint – Under Review) • Feb 27, 2025 • osf.io/preprints/psyarxiv/y9b7q_v1	2024
Real Time and Delayed Effects of Subcortical Low Intensity Focused Ultrasound PDF InfoGraph • Cain et al. • <i>Scientific Reports</i> • March 17, 2021 • nature.com/articles/s41598-021-85504-y	2021
S.M.A.R.T. F.U.S.: Surrogate Model of Attenuation and Refraction in Transcranial Focused Ultrasound PDF InfoGraph • Cain et al. • <i>PLOS ONE</i> • February 10, 2022 • doi.org/10.1371/journal.pone.0264101	2022
Behavioral Effects of Targeting the Central Thalamus and Pulvinar with Transcranial Ultrasound Stimulation in Healthy Volunteers PDF InfoGraph • Cain & Hopkins et al.* • <i>bioRxiv</i> (Preprint – Under Review) • Feb 27, 2025 • doi.org/10.1101/2025.02.27.640692	2025
Neural Correlates of Behavioral Recovery Following Ultrasonic Thalamic Stimulation in Chronic Disorders of Consciousness PDF InfoGraph • Cain et al. • <i>MedArXiv</i> (Preprint – Under Review) • Feb 27, 2025 • medrxiv.org/lookup/doi/10.1101/2023.07.13.23292523	2025
Mechanisms Underlying Disorders of Consciousness: Bridging Gaps to Move Toward an Integrated Translational Science PDF InfoGraph • Cain, Luppi, Spindler and Górski et al.* • <i>Neurocritical Care</i> • July 08, 2021 • link.springer.com/article/10.1007/s12028-021-01281-6	2021
ENIGMA-Meditation: Worldwide Consortium for Neuroscientific Investigations of Meditation Practices Ganesan, ..., Cain, ..., King • <i>Biological Psychiatry: Cognitive Neuroscience and Neuroimaging</i> • October 2024 • doi.org/10.1016/j.bpsc.2024.10.015	2025
A Systematic Comparison of Structural-, Structural Connectivity-, and Functional Connectivity-Based Thalamus Parcellation Techniques PDF InfoGraph • Iglehart, Monti, Cain, Tourdias & Saranathan • <i>Brain Structure and Function</i> • May 21, 2020 • link.springer.com/article/10.1007/s00429-020-02085-8	2020
Working Memory Systems in the Rat PDF InfoGraph • Bratch, Kann, Cain, ..., Crystal • <i>Current Biology</i> • February 8, 2016 • 10.1016/j.cub.2015.11.068	2016

FIRST AUTHOR
CO-AUTHORED

MENTORSHIP			
Students Mentored (Research Assistants for > 6 Months)	Jezebel May Amir Vala Tavakoli Ninette Simonian Robin Blades Youngzie Zoe Lee Elizabeth White Bruce Oliver Mitchell Walters Cole Doolittle Christopher Haggard Katherine Jordak Geena Wang Pollyanna Esaghoolian		
Teaching Experience (Teaching UCLA Undergraduate Students)	1) fMRI Theory & Methods (6 Quarters) Collectively: Gave ~10 Full Lectures at UCLA Undergraduate Courses, Graded Work & Held Office Hours for ~ 5 Years	2) Psych Statistic Methods (3 Quarters) Intro Psychology (2 Quarters)	2017–2022
Tutoring Experience (via Lumiere Education Inc.)	Tutored: 24 International High-School Students over 2 Years Topics: Neuroscience, Philosophy of Mind, Neuroimaging, Statistics	Duties: Created lesson plans, graded assignments, guided students through final projects, secured publications in student journals.	2020 – 2022
Student Publications	Chan, B., & Cain, J. (2022). <i>MRI and PET Imaging for the Early Diagnosis of Alzheimer's Disease</i> terra-docs3us-east-2amazonaws.com/UHSR/Articles/volume4-issue6/2022.46_p6_Chan.pdf Nguyen, P., & Cain, J. (2022). <i>Cutting Edge Magnetic Resonance Imaging Techniques</i> terra-docs3us-east-2amazonaws.com/UHSR/Articles/volume4-issue6/2022.46_p6_Nguyen-Cain_mri-techniques.pdf		

EXAMPLE CODE	
MRI Imaging Analysis DOI: github.com/josh-a-cain/MRI_code_examples	
EEG Imaging Analysis DOI: github.com/josh-a-cain/EEG_code_examples	
Ultrasound Simulations DOI: github.com/josh-a-cain/tFUS_code_example	

DESIGN SKILLS	
3D Design & Modelling 1. 3D Printing/CAD Prototyping Multi-Material Printing (FDM, SLA, TPU) 2. 3D Modeling, Visualization Product Mock-Ups, Ad Materials Programs Blender Fusion 360 Meshmixer Ultimaker Cura SolidWorks 3D Slicer PrusaSlicer Custom Adapters Critical for Pioneering Work	Examples:

2D Design & Storytelling 1. Branding & Product Assets Logos, Letterheads, Ad Copy & Design 2. Website, Presentation Design Design systems, Layout for Web / Apps AI Image Generation, AI Video Generation 3. Scientific Visualizations Bio-physical Simulations, Infographics Programs Figma Canva Photoshop Framr Sider.ai Claude Opus GPT-5.5 Lumalabs.ai Example:

SELECTED TALKS	
Human Brain Stimulation with Focused Ultrasound: Conducting First Clinical Trial & a Take on its Future J. Cain 2024 (Santa Barbara & Streamed Online)	Guest Lecture Broadcast Live (90m) School of Neurotherapy
Neuromodulation with Transcranial Focused Ultrasound ... and what you can do with it! J. Cain, MM Monti, C. Schnakers, N. Spivak, PM Vespa: 2019 (Vienna)	Invited Talk to Faculty (2 hours) University of Vienna, Psychology Department, Private Meeting
Focused Ultrasound for Inducing Deep Meditation in Experts. J. Cain, T. Brandmeyer, N. Simonian, J. Sanguinetti, S. Young, M. Sachet, N. Reggente: 2023 (Italy)	Oral Conference Presentation (30m) Science of Consciousness (TSC)
Ultrasonic Deep Brain Neuromodulation in Acute and Chronic Disorders of Consciousness. J. Cain, MM Monti, C. Schnakers, N. Spivak, PM Vespa: 2023 (Seattle)	Oral Conference Presentation (45m) Allen Institute, Tiny Blue Dot (TBD) Foundation Meeting
Recovering consciousness: Thalamic sonication in chronic post-coma recovery. J. Cain, MM Monti, C. Schnakers, N. Spivak, PM Vespa: 2022 (Orlando, Florida)	Oral Conference Presentation (25m) North American Neuromodulation Society (NANS)
Recovering consciousness: Thalamic sonication in chronic post-coma recovery. J. Cain, MM Monti, C. Schnakers, N. Spivak, PM Vespa: 2019 (Barcelona)	Oral Conference Presentation (10m) International Society for Therapeutic Ultrasound (ISTU)
Thalamic Low-Intensity-Focused-Ultrasound-Pulsation on Cortical BOLD and Blood Perfusion. J. Cain, MM Monti, C. Schnakers, N. Spivak, PM Vespa: 2019 (Vancouver)	Oral Conference Presentation (20m) International Brain Stimulation Conference
Focused Ultrasound Neuromodulation, a Decade of Progress and Ongoing Work J. Cain, N. Reggente: 2024 (Los Angeles)	Oral Conference Presentation (20m) World Congress, Society for Brain Mapping and Therapeutics (SBMT)
Focused Ultrasound for Inducing Deep Meditation in Experts. J. Cain, T. Brandmeyer, N. Simonian, J. Sanguinetti, S. Young, M. Sachet, N. Reggente: 2023 (San Francisco)	Oral Conference Presentation + Poster (Oral – 15m) Focused Ultrasound Neuromodulation (FUN)
Focused Ultrasound for Inducing Deep Meditation in Experts. J. Cain, T. Brandmeyer, N. Simonian, J. Sanguinetti, S. Young, M. Sachet, N. Reggente: 2023 (Italy)	Oral Conference Presentation (30m) Science of Consciousness (TSC)
Focused Ultrasound Neuromodulation. J. Cain: 2022 (Seattle)	Oral Conference Presentation (35m) Allen Institute, Tiny Blue Dot (TBD) Foundation Meeting
Recovering consciousness: Thalamic sonication in chronic post-coma recovery. J. Cain, MM Monti, C. Schnakers, N. Spivak, PM Vespa: 2019 (Barcelona)	Oral Conference Presentation (10m) International Society for Therapeutic Ultrasound (ISTU)
Thalamic Low-Intensity-Focused-Ultrasound-Pulsation on Cortical BOLD and Blood Perfusion. J. Cain, MM Monti, C. Schnakers, N. Spivak, PM Vespa: 2019 (Los Angeles)	Oral Conference Presentation (20m) World Congress, Society for Brain Mapping and Therapeutics (SBMT)
Focused Ultrasound Neuromodulation. J. Cain: 2018 (Los Angeles)	Invited Private Talk to Faculty (10m) UCLA Cognitive Forum

This document was created in whole by Dr. Joshua Alan Cain, who testifies to the validity of its contents

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