Kai Hwang Ph.D.

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ACADEMIC APPOINTMENT

2024 - **Associate Professor**
2018 – 2024 Assistant Professor
Department of Psychological and Brain Sciences
Department of Psychiatry
Iowa Neuroscience Institute
DeLTA Center
The University of Iowa

EDUCATION

2014 – 2018 **Postdoctoral Fellow in Neuroscience**
University of California, Berkeley

2013 – 2014 **Postdoctoral Associate in Psychiatry**
University of Pittsburgh Medical Center

2007 – 2012 **Ph.D. in Cognitive Psychology and Cognitive Neuroscience**
Graduate Trainee of the Center for the Neural Basis of Cognition
University of Pittsburgh

2004 – 2007 **M.A. in Experimental Psychology**
San Diego State University

2000 – 2004 **B.Sc. in Psychology**
National Chung-Cheng University, Taiwan

PUBLICATIONS

Peer Reviewed Journal Articles

1. Karoam, H.A., Bruss, J., Champoux, K., Lemos, M.D., Faillenot, I., de Andrade, D.C., **Hwang, K.,** Geerling, J.C., Bayman, E., Vaidya, J., Gordon, E.M., Tranel, D.T., Boes, A.D., (2025). Central post-stroke pain lesions disrupt the nociceptive pain pathway. *Pain*.
2. Chen, X., Leach, S.C., Hollis, J., Cellier, D., **Hwang, K.** (2024). The thalamus encodes and updates context representations during hierarchical cognitive control. *PLoS Biology,* 22(12) e3002937. [Link]
3. Hallquist, M.N., **Hwang, K.,** Luna, B., Dombrovski, A.Y. (2024). Reward-based option competition in human dorsal stream and transition from stochastic exploration to exploitation in continuous space. *Science Advances* 10(8), eadj2219. [Link]

4. Shine, J.M., Lewis, L.D., Garrett, D., **Hwang K.** (2023). The impact of the human thalamus on brain-wide information processing. *Nature Reviews Neuroscience* 24(7), 416-430 [Link]
5. Gallen, C.L., **Hwang, K.,** Chen, A.J.W., Jacobs, E.G., Lee, T.G., D'Esposito, D. (2023). Influence of goals on modular brain network organization during working memory. *Frontiers in Behavioral Neuroscience,* 2023:17 [Link]
6. Chen X., Sorenson, E., **Hwang, K.** (2023). Thalamocortical contributions to working memory processes during the n-back task. *Neurobiology of Learning and Memory, 197(107701)* [Link]
7. **Hwang, K.,** Shine, J.M., Cole, M.W., Sorenson, E. (2022). Thalamocortical contributions to cognitive task activity. *eLife.* 2022;11:e81282 * *peer reviewed before the new editorial model* [Link]
8. Yeager B.E., Bruss J., Duffau H., Herbet G., **Hwang, K.,** Tranel D.T., Boes A.D. (2022). Central precuneus lesions are associated with impaired executive function. *Brain Structure and Function,* 227(9), 3099-3108 [Link]
9. Cellier, D., Petersen, I.T., **Hwang, K**. (2022). Dynamics of hierarchical task representations. *Journal of Neuroscience,* 42(38), 7276-7284. [Link]
10. Iyer, K.K., **Hwang, K**., Hearne, L. J., Muller, E., D'Esposito, M., Shine, J.M., Cocchi, L. (2022). Focal neural perturbations reshape the low-dimensional brain activity flow supporting task performance. *Nature Communications*. 13(4) [Link]
11. **Hwang, K**., Shine, J.M., Bruss, J., Tranel, D., Boes, A.D. (2021). Neuropsychological evidence of multi-modal network hubs in the human thalamus. *eLife.* 2021;10:e69480 * *peer reviewed before the new editorial model* [Link]
12. Cellier, D., Riddle, J., Petersen, I.T., **Hwang, K.** (2021). The development of theta and alpha neural oscillations from ages 3 to 24. *Developmental Cognitive Neuroscience*, *100969* [Link]
13. Reber, J., **Hwang, K.,** Bowren, M.A., Bruss, J., Tranel, D., Boes, A.D (2021). Cognitive impairment after focal brain damage is associated damages to structural, but not functional network hubs. *Proceedings of the National Academy of Sciences, 118(19)* [Link]
14. Hsu, H. M., Yao, Z. F., **Hwang, K.,** & Hsieh, S. (2020). Between-module functional connectivity of the salient ventral attention network and dorsal attention network is associated with motor inhibition. *PloS one*, 15(12), e0242985.
15. **Hwang, K.,** Bruss, J., Tranel, D., Boes, A.D. (2020). Network localization of executive function deficits in patients with focal thalamic lesions. *Journal of Cognitive Neuroscience*, 32(12), 2303-2319. [Link]
16. Uitermarkt, B.D., Bruss, J., **Hwang, K.,** Boes, A.D. (2020). Patterns of brain activation and deactivation during REM sleep occur within functionally segregated networks. *Human Brain Mapping*, 41(14), 2984-3992.

17. Yao, Z-F., Yang, M-H., **Hwang, K.,** Hsieh, S. (2020). Frontoparietal network mediates adult life span differences in executive function. *Scientific Repo*rt, 10(1), 1-14.
18. Riddle, J., Vogelsang, D.A., **Hwang, K.,** Cellier, D., D'Esposito, M. (2020). Delta and beta oscillations have dissociable roles for hierarchical cognitive control. *Journal of Neuroscience*, 40(26), 4945-4953. [Link]
19. **Hwang, K**., Shine, J. M., Cellier, D., & D'Esposito, M. (2020). The Human Intraparietal Sulcus Modulates Task-Evoked Functional Connectivity. *Cerebral Cortex*, 30(3), 875-887. [Link]
20. Shine, J. M., Hearne, L. J., Breakspear, M., **Hwang, K.,** Müller, E. J., Sporns, O., & Cocchi, L. (2019). The low-dimensional neural architecture of cognitive complexity is related to activity in medial thalamic nuclei. *Neuron*, 104(5), 849-855. [Link]
21. Riddle, J., **Hwang, K.,** Cellier, D., Dhanani, S., & D'Esposito, M. (2019). Causal Evidence for the Role of Neuronal Oscillations in Top–Down and Bottom–Up Attention. *Journal of cognitive neuroscience*, 31(5), 768-779. [Link]
22. **Hwang, K.,** Shine, J. M., & D'Esposito, M. (2019). Frontoparietal activity interacts with task-evoked changes in functional connectivity. *Cerebral Cortex*, 29(2), 802-813. [Link]
23. Zhang, Y., Chen, K., Sampson, A., **Hwang, K.,** Luna, B. (2019). Node features adjusted stochastic block model. *Journal of Computational and Graphical Statistic*, 1-29.
24. **Hwang, K.,** Bertolero, M. A., Liu, W. B., & D'esposito, M. (2017). The human thalamus is an integrative hub for functional brain networks. *Journal of Neuroscience*, 37(23), 5594-5607. [Link]
25. **Hwang, K.,** Ghuman A.S., Manoach, D.S., Jones, S.R., Luna, B. (2016). Frontal preparatory neural oscillations associated with cognitive control: a developmental study comparing young adults and adolescents. *NeuroImage*, 136:139-48. [Link]
26. Marek, S.A., **Hwang, K.,** Foran, W.W., Luna, B. (2015). The contribution of network organization and integration in the development of cognitive control. *PLOS Biology*, 13(12): e1002328. [Link]
27. **Hwang, K.,** Ghuman A.S., Manoach, D.S., Jones, S.R., Luna, B. (2014). Cortical Neurodynamics of Inhibitory control. *Journal of Neuroscience*, 34(29):9551:9561. [Link]
28. Hallquist, M.N., **Hwang, K.,** Luna, B. (2013). The nuisance of nuisance regression: spectral misspecification in a common approach to resting-state fMRI preprocessing reintroduces noise and obscures functional connectivity. *NeuroImage*, 82:208-225. [Link]
29. **Hwang, K.,** Hallquist, M.N., Luna, B. (2013). The development of hub architecture in the human functional brain network. *Cerebral Cortex*, 23(10):2380-2393. [Link]
30. **Hwang, K.,** Velanova, K., Luna, B. (2010). Strengthening of top-down frontal cognitive control networks underlying the development of inhibitory control: an fMRI effective connectivity study. *Journal of Neuroscience*, 30(46):15535-15545. [Link]

31. **Hwang, K.,** Palmer, E.D., Basho, S., Zandra, J.R., Müller, R.-A. (2009). Category-specific activations in word generation reflect experiential sensorimotor modality. *NeuroImage*, 48(4):717-25.

32. Tsai, L.L., Tsai, Y.C., **Hwang, K.,** Huang, Y.W., Tzeng, J.E. (2005). Repeated light-dark shifts speed up body weight gain in male F344 Rat. *American Journal of Physiology-Endocrinology and Metabolism*, 289(2):212-7.

Conference Papers

33. Chen, X., Jiang, J., **Hwang, K.** (2024). Working memory constructs joint probabilistic task representations for decision-making. *Cognitive Computational Neuroscience 2024.* Boston, MA

34. Leach, S.C., Morrow, H., Jiang, J., **Hwang, K.** (2024). Cognitive integration – How task representations integrate information from multiple sources. *Cognitive Computational Neuroscience 2024.* Boston, MA

Book Chapters

1. Miller, J.A., **Hwang, K.** (In Press). The macrocircuitry of working memory. In M. D'Esposito (Ed), *The Neural Architecture of Human Working Memory*. New York: Oxford University Press.

2. **Hwang, K.,** Shine, J.M. (2023). Thalamic regulation of human cortical dynamics. In M. Sherman, and W. M. Ursey (Ed), *The Cerebral Cortex and Thalamus*. New York: Oxford University Press.

3. **Hwang, K.,** D'Esposito, M. (2022). Cognitive control functions of the human thalamus. In M.M. Halassa (Ed), *The Thalamus* (pp. 307-323). Cambridge: Cambridge University Press.

4. **Hwang, K.,** Luna, B. (2012). The development of brain connectivity supporting prefrontal cortical functions. D.T. Stuss & R.T. Knight (Eds.) *Principle of frontal lobe functions* (2nd Ed). New York: Oxford University Press.

Manuscripts

1. Huynh, K., **Hwang, K.,** Boes, A.D., Keller, C.J., Wessel, J.R. (Under review). Measuring changes to cortical excitation and inhibition in humans via the TMS-evoked potential. *Stage-1 pre-registration report

2. Leach, S.C., Morrow, H., Jiang, J.*, **Hwang, K*.** (Under Review). How task representations integrate information from multiple sources. [Preprint Link] **Senior authors that contributed equally.*

3. Leach, S.C., Chen, X., **Hwang, K.** (In preparation). Hierarchical reconfiguration of task set representations mediates cognitive flexibility.

RESEARCH SUPPORT

Current

R01 MH122613, National Institute of Mental Health
Cognitive Control Functions of the Human Thalamus
3/10/2020 – 12/31/2024, NCE to 12/31/2025
Role: Principal Investigator (33% effort)
Co-Investigators: Aaron Boes, Dan Tranel
Total cost: $2,414,329

P50 HD103556, National Institute of Human Development
University of Iowa Hawkeye Intellectual and Developmental Disabilities Research Center (Hawk-IDDRC)
04/01/2021 – 03/30/2026
Role: Co-Investigator (10% effort)
M-PIs: Lane Strathearn and Ted Abel
Total cost: $6,159,147

Iowa Neuroscience Institute Research Program of Excellence
Mechanisms for Neuroplasticity in the Human Brain: From Molecules and Cells to Circuits and Systems
06/2022 – 06/2025
Role: Co-Investigator
M-PIs: Aaron Boes, Thomas Nickl-Jockschat, Mark Blumberg
Total cost: $600,000

R21 NS137987, National Institute of Neurological Disorder and Stroke TMS-evoked potential as a measure of cortical excitation and inhibition during cognitive processes
08/01/2024 – 07/31/2026
Role: Co-Investigator (5% effort)
PI: Jan Wessel
Total cost: $427,650

Pending

R01 MH140248, National Institute of Mental Health (**scored at 8th percentile, council concurrence obtained**)
Investigating Mediodorsal Thalamus Representations Underlying Human Cognitive Flexibility
Role: Principal Investigator (25% effort)
M-PI: Michael Halassa (Tufts University)

Completed

F32 NINDS NS090757, National Institute of Neurological Disorder and Stroke, 2014 – 2017
Thalamic Mechanisms of Cognitive Control
Role: Principal Investigator

TEACHING AND MENTORING

University of Iowa

Semester/Yr	Advisees		Courses Taught		CLAS Core Evaluation Scores (mean/median out of 6)					
	Undergrad	Graduate	Course Number and Title	Students Enrolled	Instructor was effective	Work assigned was worthwhile	Instructor supported student learning	The course is well planned and organized	I learned a great deal in the class	Student questions are encouraged
Fall 2018	3	0	PSY:7150:0001 Brain Connectivity and Network Neuroscience	6	5.5/5.5	4.83/5.5	5.83/5.9	5/5.5	5.33/5.5	6/6
Fall 2019	6	2	PSY:4025 Laboratory in Cognitive Neuroscience	15	5.5/5.7	5.38/5.7	5.75/5.8	4.88/5.2	5.63/5.9	5.88/5.9
Spring 2020	6	2	PSY:3045 Neuroscience of Executive Functions	36	5.38/5.5	5.75/5.7	5.63/5.8	5.5/5.7	5.63/5.7	5.75/5.8

Semester/Yr	Advisees		Courses Taught		CLAS Core Evaluation Scores, Updated Fall 2020 (mean/median out of 6)					
	Undergrad	Graduate	Course Number and Title	Students Enrolled	Organization—The instructor used class time well	Clarity – The instructor communicated course material clearly	Learning Focused – The instructor's teaching methods helped students learn	Learning Materials—The assignment, readings, and activities facilitated student learning	Assessment—Assessments (such as quizzes, papers, and exams)	Support—Help was available for students
Fall 2020	5	1	PSY:4025 Laboratory in Cognitive Neuroscience	15	5.83 / 5.9	5.58 / 5.8	5.83 / 5.9	5.75 / 5.8	5.75 / 5.9	6/6
Spring 2021	4	1	PSY:3045 Neuroscience of Executive Functions	34	5.67/5.8	4.67/4.93	5/5	5.33/5.3	5.33/5.3	6/6
Fall 2021	1	2	PSY:4025 Laboratory in Cognitive Neuroscience	20	4.93/5.1	4.87/5.2	5/5.3	5.07/5.6	5.47/5.8	5.4/5.6

Fall 2021	1	2	PSY:5080 Foundations in Cognitive Neuroscience	11	5.67/5.8	5.67/5.8	5.67/5.8	5.67/5.8	5.67/5.8	5.67/5.8
Spring 2022	1	2	PSY:3045 Neuroscience of Executive Functions	43	5.67/5.8	5.67/5.8	5.33/5.3	5.33/5.3	5/5	5.67/5.8
Spring 2023	4	2	PSY:3045 Neuroscience of Executive Functions	24	5.67/5.9	5.56/5.9	5.56/5.9	5.63/5.8	5.64/5.8	6/6
Spring 2024	3	2	PSY:3045 Neuroscience of Executive Functions	32	5.7/5.8	5.3/5.3	5.4/5.5	5.2/5.3	5.3/5.3	5.2/5.2
Fall 2024	3	2	PSY:4025 Laboratory in Cognitive Neuroscience	21	5.6/6	5.7/6	5.9/7	5.6/6	5.3/6	5.6/6
Fall 2024	4	2	PSY:5080 Foundations in Cognitive Neuroscience	7	6/6	6/6	5/5	6/6	6/6	6/6
Spring 2025	6	2	PSY:3045 Neuroscience of Executive Functions	38	N/A	N/A	N/A	N/A	N/A	N/A

Graduate Student Mentoring, as Primary Mentor

Stephanie Leach (Psychological and Brain Sciences, 2021-)
- Graduate College Iowa Recruitment Fellowship (2021-2026)
- Post-Comps Fellowship (2025)

Marco Pipoly (Neuroscience, 2019 - 2020)

Xitong Chen (Psychological and Brain Sciences, 2019 -)
- SFN Trainee Professional Development Award (2025)
- Graduate College Summer Fellowship (2024)
- Simon Award (2022)

Postdoctoral Mentoring

Mengxing Liu (Joint Postdoc with Mike Halassa at Tufts University, 2023 -)

PhD Student Research Advisory Committee

Kien Huynh (Psychological and Brain Sciences, 2023)
Kalyani Datta (Psychological and Brain Sciences, 2022)
Bettina Bustos (Psychological and Brain Sciences, 2021)
Samantha Chiu (Psychological and Brain Sciences, 2020)
John Muege (Psychological and Brain Sciences, 2020)
Woo-Tek Lee (Psychological and Brain Sciences, 2020)

Neuroscience Student Rotations

Brooke Yeager (Neuroscience, 2021)

Marco Pipoly (Neuroscience, 2019)

PhD Student Prospectus and Dissertation Committee
Nathan Cremers (Neuroscience, 2025 -)
WooTek Lee (Psychological and Brain Sciences, 2024 -)
Bryan Madero (Psychological and Brain Sciences, 2023 -)
Yoojeong Choo (Psychological and Brain Sciences, 2023 - 2024)
Cheol Soh (Psychological and Brain Sciences, 2022 - 2023)
Hassan Ahmad (Neuroscience, 2022 - 2023)
Tobin Dykstra (Psychological and Brain Sciences, 2022)
Mark Bowren (Psychological and Brain Sciences, 2020 - 2021)
Alejandra Gomez (Neuroscience, 2020 - 2022)
Darcy Waller (Psychological and Brain Sciences, 2019 - 2022)
Tien Tong (Neuroscience, 2019 - 2021)

PhD Student Comprehension Exam Committee
Nathan Cremers (Neuroscience, 2024)
Bettina Bustos (Psychological and Brain Sciences, 2023)
Hassan Ahmad (Neuroscience, 2021)
Amy Barry (Neuroscience, 2021)
Jax Skye (Neuroscience, 2021)
Cheol Soh (Psychological and Brain Sciences, 2020)
Adriana Rivera-Dompenciel (Neuroscience, 2019)

Research Staff Supervision (time in lab; first position after leaving the lab)
Shannon Stokes, Post-Bac Research Intern (2024 -)
Ray Gonzalez, Scientific Programmer (2022 -2024)
Hannah Morrow, Research Assistant (2022 -2024; PhD student in organization psychology at Montclair State University)
Juniper Hollis, Post-Bac Research Intern then Research Assistant (2020 – 2022; Research associate, UIHC Radiology)
Evan Sorenson, Scientific Programmer (2020 – 2022; software engineer at Divy Inc.)
Dillan Cellier, Post-Bac Research Intern (2018 - 2020; PhD student in Cognitive Science at UCSD & NSF GRFP recipient)

Undergraduate Student Mentoring (time under supervision; first position after leaving the lab; last known position)
Reed Boardman (2024 -)
Zachery Johnson (2024 -)
Keily Escobar Torres (2023 -)
Emma Witzenburg (2023 -)
Neha Nagakar (2022 – 2024; PhD Student in Cognitive Neuroscience at University of Oregon)
Senior project title: Thalamocortical contribution to task-evoked theta/delta neural oscillations

Awarded OUR Academic Year Fellowship, Fall 2023
Awarded ICRU Summer Fellowship, Summer 2023

Chen-Yu Wu (2021 – 2023; Masters of Science in Human Factors Engineering at Virginia Tech)
Rukshad Daver (2019 – 2021; research assistant, cancer institute, UIHC)
Emily Wall (2018 – 2020; clinical assistant, UIHC Children's Hospital)
Spenser Pfannenstiel (2018 – 2021; research assistant, anesthesiology UIHC; medical student at the University of Iowa)

Awarded Iowa Neuroscience Institute Summer Fellowship, summer 2020

Klaudia Golebiewski (2018 – 2021; research assistant, emergency medicine UIHC; medical student at the University of Iowa)
Kyla Woyshner (2017 – 2018; research associate at City of Hope Medical Center; PhD student in Bioengineering at John Hopkins University)
Agnes Zhu (2016 – 2018; consultant, Bain & Company; medical student at Mayo Clinic)
Ashton Teng (2016 – 2018; master student at Stanford University; bioinformatics engineer at GRAIL inc.)
Lara Yang (2015 – 2016; PhD student in Organization Behavior at Stanford University)
Akshay Jagadeesh (2015 – 2016; PhD in Neuroscience Stanford University; Postdoc at Harvard)
William Liu (2015 – 2016; software engineer at Google)

External advising

Dillan Cellier (2024 – ; UCSD, external member on dissertation committee)
Ali Hummos (2023; MIT, consultant on K99 application)

Other mentoring activity

Iowa Mentoring Academy (2021). Completion of 8 hours of evidence-based research mentor training at the University of Iowa. Curriculum Reference: Pfund, C., Handelsman, J., & Branchaw, J. (2014). Entering mentoring. WH Freeman.

Department Recruitment Events (2020 – Current). I participate in our department's yearly open-house information session for student recruitment.

COLLOQUIA AND SYMPOSIUM PRESENTATIONS

1. Network properties and cognitive functions of the human thalamus (Scheduled for May 2025). University of Buffalo, Department of Physiology and Biophysics Seminar Series. Buffalo, NY
2. Context representations and the human thalamus (Scheduled for April 2025). TU Dresden. Invited Symposium for Bühler Talks to the Faculty of Psychology. Dresden, Germany. Virtual talk.
3. Cognitive control functions of the human thalamus (March 2025). Invited Symposium on "Role of the thalamus in attention and cognitive control." Cognitive Neuroscience Society Annual Meeting, Boston, MA. **The program committee invited me to organize this symposium.*

4. Network properties and cognitive functions of the human thalamus (March 2024). National Chung-Cheng University, Department of Psychology Colloquia, Chia-Yi, Taiwan
5. Network properties and cognitive functions of the human thalamus (March 2024). National Taiwan University, Department of Psychology Colloquia, Taipei, Taiwan
6. Dynamics of task representations support flexible cognitive control (September 2022). Society for Psychophysiology Research, Vancouver, Canada
7. Network properties and cognitive functions of the human thalamus (April 2022). Department of Brain and Cognitive Sciences and Broad Institute Seminar Series, Massachusetts Institute of Technology, Boston MA. Virtual visit.
8. What lesions tell us about the function of the thalamus (January 2022). Thalamic nuclei imaging, segmentation, and applications. Online symposium. *With Aaron Boes
9. Network properties and cognitive functions of the human thalamus (May 2021). Cognitive Control Collective Show Case. Online symposium.
10. Network properties and cognitive functions of the human thalamus (June 2020). Organization of Human Brain Mapping Conference. Montreal, Canada.
    **I co-organized this symposium and invited speakers. Moved online because of COVID-19*
11. Contextually-driven set-switching modulates theta-band oscillatory power (October 2019). Oral presentation at Society for Neuroscience Annual Meeting, Chicago IL
12. Neural substrates that modulate task-evoked functional connectivity (September 2019). Iowa Neuromodulation Conference, Iowa City, IA
13. Neural substrates for modulating task-adaptive functional connectivity patterns (November 2016). Oral presentation at Society for Neuroscience Annual Meeting, San Diego, CA.
14. Brain network dynamics of inhibitory control (September 2013). Department of Behavioral Neuroscience, Oregon Health and Science University, Portland, OR.
15. Spatiotemporal brain dynamics of inhibitory control in adolescents and young adults (August 2012). 18th International Conference on Biomagnetism, Paris, France.
16. Spatiotemporal brain dynamics of inhibitory control (November 2011). Oral presentation at Society for Neuroscience Annual Meeting, Washington D.C.
17. Basal ganglia involvement in word generation: an fMRI study. (November 2007). Oral presentation at Society for Neuroscience Annual Meeting, San Diego, CA.

OTHER INVITED TALKS

1. First-Gen Brain Research Workshop (August 2024). Iowa City, IA
2. Network properties and cognitive functions of the human thalamus (November 2023). Laboratory of Neurocognitive Development, Department of Psychiatry, University of Pittsburgh. Zoom talk.

3. Network properties and cognitive functions of the human thalamus (November 2023). Neurology Grand Rounds, Department of Neurology, University of Iowa, Iowa City, IA.
4. First-Gen Brain Research Workshop (August 2022). Iowa City, IA
5. Alpha neural oscillation and the development of inhibitory control (March 2019). DeLTA Center. University of Iowa, Iowa City, IA
6. Subcortico-cortical interactions that modulate functional connectivity (March 2019). INC group presentation at the Department of Psychiatry, University of Iowa, Iowa City, IA.
7. Neural substrates for modulating task-evoked functional connectivity patterns (November 2018). TMS group meeting, University of Iowa, Iowa City, IA
8. Neural substrates for modulating task-evoked functional connectivity patterns (May 2018). Knight lab meeting, UC Berkeley, Berkeley, CA
9. Network topography of the human thalamus (January 2016). BIC research day, UC Berkeley, Berkeley, CA.
10. Spatiotemporal brain dynamics of inhibitory control in adolescents and young adults (March, 2013). Pittsburgh MEG-SIG meeting, Pittsburgh, PA.

CONFERENCE ABSTRACTS

1. Liu, M., Lam, NH., Halassa, M.H., **Hwang, K.** (2025) Abstract contextual representation in the human mediodorsal thalamus. Cognitive Neuroscience Society Meeting, Boston, M.A. **Postdoctoral Fellow Award Winner*
2. Stokes, S., Nargarkar, N., Boes, A.b., Hwang, K. (2025) Impact of focal thalamic lesions on task-evoked aperiodic EEG activity. Cognitive Neuroscience Society Meeting, Boston, M.A.
3. Liu, M., Lam, NH., Leach, S.C., Halassa, M.H., **Hwang, K.** (2024) Mediodorsal thalamic engagement and enhanced prefrontal functional connectivity during context switching in humans. Society for Neuroscience Annual Meeting. Chicago, IL.
4. Leach, S.C., Morrow, H., Jiang, J., **Hwang, K.** (2024) Integration of internal and external sources of information to guide cognitive control. Society for Neuroscience Annual Meeting. Chicago, IL.
5. Chen, X., Jiang, J., **Hwang, K.** (2024) Working memory constructs joint probabilistic task representations for decision-making. Society for Neuroscience Annual Meeting. Chicago, IL.
6. Leach, S.C., Morrow, H., Jiang, J., **Hwang, K.** (2024) Temporal dynamics of integrative processes that construct task representations. Cognitive Neuroscience Society Meeting, Toronto Canada.
7. Morrow, H., **Hwang, K.** (2023) EEG decoding of task switching effects on hierarchical task representations. Society for Neuroscience Annual Meeting. Washington D.C.

8. Chen, X., Jiang, J., Bruss, J., Boes, A., **Hwang, K.** (2023) Connectivity predictive modeling of thalamocortical diaschisis. Society for Neuroscience Annual Meeting. Washington D.C.
9. Leach, S.C., Morrow, H., Jiang, J., **Hwang, K.** (2023) Cognitive integration—how task representations integrate information from multiple sources. Society for Neuroscience Annual Meeting. Washington D.C.
10. Leach, S.C., Hollis, J., Cellier, D., **Hwang, K.** (2023) Mapping representational integration for hierarchical control. Organization for Human Brain Mapping. Montreal, Canada.
11. Chen, X., Leach, S.C., Hollis, J., Cellier, D., **Hwang, K.** (2023) Thalamocortical contributions to hierarchical control representations. Organization for Human Brain Mapping. Montreal, Canada.
12. Chen, X., **Hwang, K.** (2022) Impaired working memory precision and distractor resistance following lesions to the human thalamus. Society for Neuroscience Annual Meeting. San Diego, CA
13. Hallquist, M.N., **Hwang, K.,** Luna, B., Dombrovski, A.Y. (2022). Mechanisms for solving the explore-exploit tradeoff in the human dorsal stream. Society for Neuroscience Annual Meeting. San Diego, CA
14. Hallquist, M.N., **Hwang, K.,** Luna, B., Dombrovski, A.Y. (2022). Dynamic, compressed value-laden maps in dorsal stream help resolve explore-exploit tradeoff. Society for Neuroeconomics Annual Meeting. Arlington, VA
15. Leach, S.C., Hollis, J., Sorenson, E., Cellier, D., **Hwang, K.** (2022) Mapping representational integration for hierarchical cognitive control. Cognitive Neuroscience Society Meeting, San Francisco CA
16. Chen, X., Yeh, F-C., Hollis, J., Sorenson, E., Cellier, D., **Hwang, K.** (2022) Thalamic convergence zones facilitate flexible cognitive control. Cognitive Neuroscience Society Meeting, San Francisco CA
17. Sorenson, E., **Hwang, K.** (2021). Human thalamic hubs shape cognitive activations across multiple domains. Society for Neuroscience Annual Meeting. Virtual meeting.
18. Chen, X., Sorenson, E., **Hwang, K.** (2021). Human thalamic activity and thalamocortical functional connectivity during the N-Back task. Organization for Human Brain Mapping. Virtual meeting.
19. Hollis, J., Cellier, D., Pipoly, M., **Hwang, K.** (2021). Human thalamic activity during intra-dimensional and extra-dimensional set shifting. Organization for Human Brain Mapping. Virtual meeting.
20. Sorenson, E., **Hwang, K.** (2021). Task-general and multi-domain activation in the human thalamus. Organization for Human Brain Mapping. Virtual meeting.

21. Cellier, D., Pipoly, M., **Hwang, K.** (2020). Contextually-driven set-switching modulates theta-band oscillatory power for hierarchical cognitive control. Cognitive Neuroscience Society Annual Meeting, Boston, MA. Moved online because of COVID-19.
22. Pipoly, M., **Hwang, K.** (2020) Intrinsic versus task-evoked network architecture of thalamocortical functional connectivity. Organization for Human Brain Mapping, Montreal Canada. Moved online because of COVID-19.
23. Cellier, D., Riddle, J., **Hwang, K.** (2019). Developmental increase in 1/f slope in EEG oscillatory power. Society for Neuroscience Annual Meeting, Chicago IL.
24. **Hwang, K.**, Cellier, D., Pipoly, M. (2019). Contextually-driven set-switching modulates theta-band oscillatory power. Society for Neuroscience Annual Meeting, Chicago IL.
25. Vogelsang, D.A., Riddle, J., **Hwang, K.**, Cellier, D., D'Esposito, M. (2018). Dissociable roles for theta and beta frequency neural oscillations in cognitive control. Society for Neuroscience Annual Meeting, San Diego CA.
26. **Hwang, K.**, Shine, J.M., D'Esposito, M. (2018). The human intraparietal sulcus modulates task-evoked functional connectivity for cognitive control. Society for Neuroscience Annual Meeting, San Diego CA.
27. **Hwang, K.**, Shine, J.M., D'Esposito, M. (2017). The thalamus interacts with the prefrontal cortex to modulate task-evoked functional connectivity. Society for Neuroscience Annual Meeting, Washington D.C.
28. Lapate, R.C., **Hwang, K.**, Lurie, D., Bertolero, M., Tambini, A., D'Esposito, M.D. (2017). Topographic properties of the centromedial amygdala: Lateral prefrontal contributions and relevance to psychopathology. Society for Neuroscience Annual Meeting, Washington D.C.
29. **Hwang, K.**, Bertolero, M., Teng, Y., D'Esposito, M. (2017). The thalamus mediates interactions between large-scale cortical functional networks. Organization for Human Brain Mapping. Vancouver, Canada.
30. Hallquist, M.N., Dombrovski, A., **Hwang, K.**, Luna, B. (2017). Developmental changes in the effects of emotion and prediction errors in reinforcement-based timing. Organization for Human Brain Mapping. Vancouver, Canada.
31. Hallquist M.N., Dombrovski, A.Y., **Hwang, K.**, Luna, B. (2016). The neural basis of perceived risk, cognitive constraint, and expected value in temporal instrumental learning. Society for Neuroecnomics Annual Meeting, Berlin, Germany.
32. **Hwang, K.**, Shine, M.J., Jagadeesh A., D'Esposito, M. (2016). Neural substrates for modulating task-adaptive functional connectivity patterns. Society for Neuroscience Annual Meeting, San Diego, CA.
33. **Hwang, K.**, Yang R., Jagadeesh A., D'Esposito, M. (2016). Distinct neural substrates for enhancing and inhibition task-adaptive functional connectivity patterns. Organization for Human Brain Mapping. Geneva, Switzerland.

34. Tambini, A., Gallen, C.L., **Hwang, K.**, Sheltraw, D., Inglis, B., D'Esposito, M., Poline, J.B. (2016). Evaluating nuisance regression approaches on resting state motion-related artifacts using SIMPACE. Organization for Human Brain Mapping. Geneva, Switzerland

35. **Hwang, K.**, Jagadeesh A., Yang R., D'Esposito, M. (2016). Goal-directed attention suppresses multivoxel pattern representation and reduces inter-regional coupling during distractor inhibition. Cognitive Neuroscience Society Annual Meeting, New York, NY

36. **Hwang, K.**, Bertolero M., D'Esposito, M. (2015). Functional organization of the human thalamus and thalamocortical connectivity estimated by intrinsic functional connectivity. Society for Neuroscience Annual Meeting, Chicago, IL.

37. Gallen, C.L., **Hwang, K.,** Lee T.G., D'Esposito, M. (2015). Influence of selective attention on brain network reconfiguration during working memory. Society for Neuroscience Annual Meeting, Chicago, IL.

38. Hallquist, M.N., Frank, M.J., **Hwang, K.**, Dombrovski, A.Y., Luna, B. (2015). The effect of emotional cues on reward learning and uncertainty-driven exploration in adolescents and young adults. Organization for Human Brain Mapping. Honolulu, HI.

39. Gallen, C.L., Tambini, A., Arnemann, K., **Hwang, K.**, Sheltraw, D., D'Esposito, M., Poline, J.B. (2015). Common processing practices in resting-state functional connectivity analyses. Organization for Human Brain Mapping. Honolulu, HI.

40. **Hwang, K.**, D'Esposito M. (2015). Cortical connectomal diaschisis in patients with subcortical thalamic or striatal lesions. Organization for Human Brain Mapping. Honolulu, HI.

41. Marek, S.A., **Hwang, K.**, Luna B. (2015). Developmental increases in phase synchrony between human functional brain networks. Organization for Human Brain Mapping. Honolulu, HI.

42. Hallquist, M.N., Frank, M.J., **Hwang, K.**, Dombrovski, A., Paulsen, D.J., Kim, T., Luna, B. (2014). The influence of emotional cues on uncertainty exploration in adolescents and young Adults. International Congress for Integrative Developmental Cognitive Neuroscience. Los Angeles, CA.

43. Hallquist, M.N., Frank, M.J., **Hwang, K.**, Paulsen, D.J., Luna, B. (2014). The influence of emotional cues on reward learning in adolescents and young Adults. Society for Research in Psychopathology Annual Meeting. Evanston, IL.

44. Marek, S.A., Foran, W., **Hwang, K.**, Luna, B. (2014). Inter-modular connectivity of functional brain networks strengthens over development. Organization for Human Brain Mapping Annual Meeting. Hamburg, Germany.

45. **Hwang, K.**, Ghuman, A.S., Luna, B. (2013). Age-related increases in preparatory frontal alpha and beta band neural oscillations support developmental improvements in inhibitory control from adolescence to adulthood. International Congress for Integrative Developmental Cognitive Neuroscience. Pittsburgh, PA.

46. Foran W., **Hwang, K.**, Padmanabhan, A., Hallquist, M.N., Luna, B. (2013) The importance of applying physiological regression to rsfMRI. International Congress for Integrative Developmental Cognitive Neuroscience. Pittsburgh, PA.
47. Ordaz, S.J., Foran, W., **Hwang K.,** Padmanabhan, A., Luna, B. (2013) Developmental changes in brain function supporting emotionally-modulated cognitive control. International Congress for Integrative Developmental Cognitive Neuroscience. Pittsburgh, PA.
48. Padmanabhan, A., **Hwang, K.**, Luna, B. (2013). Influence of variability in dopamine availability on resting state functional connectivity over adolescence. International Congress for Integrative Developmental Cognitive Neuroscience. Pittsburgh, PA.
49. **Hwang, K.**, Ghuman, A.S., Luna, B. (2013). Spatiotemporal brain dynamics of inhibitory control in adolescents and young adults. Organization for Human Brain Mapping Annual Meeting, Seattle WA.
50. Hallquist, M.N., **Hwang, K.**, Luna, B. (2013). Effects of head motion on resting-state functional connectivity are exacerbated by a common preprocessing error. Organization for Human Brain Mapping Annual Meeting, Seattle WA.
51. Padmanabhan, A., **Hwang, K.**, Luna, B. (2012). Influence of COMT val158met on resting state functional connectivity over adolescence. Society for Neuroscience Annual Meeting, Washington D.C.
52. Hallquist, M.N., **Hwang, K.**, Luna, B. (2012). The Nuisance of nuisance regression: spectral misspecification obscures functional connectivity estimates. Third Biennial Conference on Resting State Brain Connectivity, Mageburgh, Germany.
53. **Hwang, K.**, Ghuman, A.S., Luna, B. (2012). Neural synchronization of cortical networks associated with inhibitory control in adolescents and adults. 18th International Conference on Biomagnetism, Paris, France.
54. Padmanabhan, A., **Hwang, K.**, Montez, D., Luna, B. (2011). Influence of COMT val158met on resting state functional connectivity over adolescence. American College of Neuropharmacology Annual Meeting, Waikoloa, HI.
55. **Hwang, K.**, Ghuman, A.S., Luna, B. (2011). Spatiotemporal brain dynamics of inhibitory control. Society for Neuroscience Annual Meeting, Washington D.C.
56. **Hwang, K.**, Luna, B. (2010). The development of cortical hubs and frontal-parietal networks revealed by intrinsic functional connectivity. Society for Neuroscience Annual Meeting, San Diego, CA.
57. **Hwang, K.**, Terwilliger, R., Velanova, K., Luna, B. (2010). Developmental changes in connectivity associated with inhibitory control. Cognitive Neuroscience Annual Meeting, Montreal, Quebec, Canada.

58. **Hwang, K.**, Velanova, K., Terwilliger, R., Luna, B. (2009). Developmental changes in effective connectivity network of inhibitory control. Society for Neuroscience Annual Meeting, Chicago, IL.

59. **Hwang, K.**, Patha, S.K.., Cole, M.W., Schneider, W. (2008). Validation methods for spatial segmentation of functional brain region. Society for Neuroscience Annual Meeting, Washington, D.C.

60. Penso, L.R., **Hwang, K.**, Davies, M.M., Müller, R.-A. (2007). Basal ganglia involvement in word generation: an fMRI study. Society for Neuroscience Annual Meeting, San Diego, CA.

61. Grennesko, E.L., Brown, C.M., **Hwang, K.**, Brenner, L.A., Dinino, S,T., Carper, R., Müller, R.-A. (2007). Bisensory facilitation in autistic adolescents: behavioral and fMRI findings. Society for Neuroscience Annual Meeting, San Diego, CA.

62. Hill, K.J., **Hwang, K.**, Ramsier, F., Reilly, J., Yam, A., Müller, R.-A. (2007). An fMRI study of pseudo-word learning and recognition in children and adults. Society for Neuroscience Annual Meeting, San Diego, CA.

63. **Hwang, K.**, Hill, K.J., Davies M.M., Palmer, E.D., Müller, R.-A. (2007). A functional magnetic resonance imaging study of overt word generation. Cognitive Neuroscience Society Annual Meeting, New York, N.Y.

64. **Hwang, K.**, Hill, K.J., Palmer, E.D., Olson L., Müller, R.-A. (2006). Category specific effects in overt word generation: an fMRI study. Society for Neuroscience Annual Meeting, Atlanta, GA.

SERVICES

Ad-Hoc Grant Reviewer

2022 NIH Center for Scientific Review, Biobehavioral Processes Review Branch, Special Emphasis Panel, ad-hoc reviewer
2021 NIH Center for Scientific Review, Neurotechnology and Vision Review Branch, Special Emphasis Panel, ad-hoc reviewer
2021 NIH Center for Scientific Review, Biobehavioral Processes Review Branch, Human Complex Mental Functions Study Section, ad-hoc reviewer
2020 NIH Center for Scientific Review, Biobehavioral Processes Review Branch, Special Emphasis Panel, ad-hoc reviewer
2020 NIH Center for Scientific Review, Biobehavioral Processes Review Branch, Cognition and Perception Study Section, ad-hoc reviewer
2019 NSF, CAREER Award, ad-hoc reviewer

Ad-Hoc Journal Reviewer (average ~1 review/month)

Autism Research
Brain and Cognition
Brain Research Bulletin

Brain Structure and Function
Cell Report
Cerebral Cortex
Child Development
Cognition
Cognitive, Affective, and Behavioral Neuroscience
Cortex
Developmental Cognitive Neuroscience
eLife
European Journal of Neuroscience
Human Brain Mapping
Imagine Neuroscience
Nature Communications
Nature Neuroscience
Nature Reviews Neuroscience
NeuroImage
Network Neuroscience
Neurobiology of Learning and Memory
Progress in Neurobiology
PNAS
PLoS One
Journal of Cognitive Neuroscience
Journal of Neuroscience
Journal of Neuropsychology
Psychophysiology
Social, Cognitive, and Affective Neuroscience
Neuropsychologia

Departmental Service

2025 (Spring)	Acting director of graduate studies
2024 – Current	Faculty advisory committee
2023	Computational psychology/neuroscience faculty search committee
2022 – Current	International graduate student advisor
2021 – Current	Committee on graduate studies
	Reviewer for Rex Montgomery Award
	Reviewer for DC Spriestersbach Award
	Reviewer for Ballard-Seashore Award
	Reviewer for Post-Comps Award
	Reviewer for Spence-Lewis Award
	Reviewer for Simon Award
	Reviewer for CLAS dissertation writing fellowship award
2019 – 2024	Behavioral and cognitive neuroscience area brown bag coordinator

University Service

2025 – Current	Independent safety monitor board member for NIH funded TMS research
2020 – Current	MR research advisory committee

PROFESSIONAL MEMBERSHIP

2022	Society for Psychophysiology Research
2017 – 2021	FLUX Society
2009 – Current	Organization for Human Brain Mapping
2008 – 2010	Association for Psychological Science
2006 – Current	Cognitive Neuroscience Society
2005 – Current	Society for Neuroscience

FELLOWSHIPS AND AWARDS

2016	Organization for Human Brain Mapping Abstract Merit Award
2014-2017	Ruth L. Kirschstein National Research Service Award
2011	Tim Post Research Award
2009	Multimodal Neuroimaging Summer Fellowship
2008	LRDC Book Scholarship