

HYUNWOO JANG

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EDUCATION

- Ph.D.**, Neuroscience, University of Michigan, United States (Advisor: Zirui Huang) Aug 2022 –
M.S., Bio and Brain Engineering, KAIST, South Korea (Advisor: Myung Chul Choi, GPA 4.3 / 4.3) 2016 – 2018
B.S., Bio and Brain Engineering, KAIST, South Korea (**GPA 4.10/4.3, *summa cum laude***) 2011 – 2015

JOURNAL PUBLICATIONS

- [1] Dai, R., **Jang, H.**, Hudetz, A. G., Huang, Z., & Mashour, G. A. (2025). Mirror Images of Consciousness: Opposing Brain Connectivity Patterns in Psychedelic and Sedated States. *Science Advances*. (submitted).
- [2] **Jang, H.**, Jeong, D.-W., Oh, B.-C., Lee, S., Cho, H., Choi, S., Hyeon, C., Ahn, C. W., Lee, H.-S., Choi, M. C. (2025). Spatiotemporally-controlled droplet merging reveals 2D diffusion dynamics of multi-component surfactants. *Journal of Colloid And Interface Science*. (submitted, co-first)
- [3] **Jang, H.**, Mashour, G. A., Hudetz, A. G., & Huang, Z. (2024). Measuring the dynamic balance of integration and segregation underlying consciousness, anesthesia, and sleep in humans. *Nature Communications*, 15, 9164. doi: 10.1038/s41467-024-53299-x
- [4] **Jang, H.**, Fotiadis, P., Mashour, G. A., Hudetz, A. G., & Huang, Z. (2024). Thalamic Roles in Conscious Perception Revealed by Low-Intensity Focused Ultrasound Neuromodulation. *Nature Communications*. (under revision)
- [5] **Jang, H.**, Dai, R., Mashour, G. A., Hudetz, A. G., & Huang, Z. (2024). Classifying Unconscious, Psychedelic, and Neuropsychiatric Brain States with Functional Connectivity, Graph Theory, and Cortical Gradient Analysis. *Brain Sciences*, 14(9), 880. doi:10.3390/brainsci14090880
- [6] **Jang, H.**, Song, C., Kim, B., Lee, C., Lee, J., Han, Y., ... & Choi, M. C. (2023). Regulation of Interfacial Anchoring Orientation of Anisotropic Nanodumbbells. *ACS Macro Letters*, 12, 1298-1305. doi:10.1021/acsmacrolett.3c00339 (co-first)
- [7] Jeon, J., Kim, H., **Jang, H.**, Hwang, K., Kim, K., Park, Y. G., & Jeong, K. H. (2022). Handheld laser scanning microscope catheter for real-time and in vivo confocal microscopy using a high definition high frame rate Lissajous MEMS mirror. *Biomedical Optics Express*, 13(3), 1497-1505. doi:10.1364/BOE.447558
- [8] Jeong, D., Lee, S., Lee, J., **Jang, H.**, Lee, S., & Choi, M. C. (2019). Molecular Switches Regulating Assembly Transitions of Biological Molecules: Tubulin, Amylin and Lipids. *AAPPS Bulletin*, 29(5), 52–59. doi:10.22661/AAPPSBL.2019.29.5.52
- [9] Azzam, S. K., **Jang, H.**, Choi, M. C., Alsafar, H., Lukman, S., & Lee, S. (2018). Inhibition of Human Amylin Aggregation and Cellular Toxicity by Lipoic Acid and Ascorbic Acid. *Molecular Pharmaceutics*, 15(6), 2098–2106. doi:10.1021/acs.molpharmaceut.7b01009
- [10] Jeong, D.-W., **Jang, H.**, Choi, S. Q., & Choi, M. C. (2016). Enhanced stability of freestanding lipid bilayer and its stability criteria. *Scientific Reports*, 6(December), 38158. doi:10.1038/srep38158

CONFERENCE PRESENTATIONS

- [1] The Brain's Balancing Act: Measuring Integration and Segregation in Consciousness. Jan 2025
2025 Consciousness, Anesthesia and Evolutionary Biology Gordon Research Seminar. (Oral talk)
- [2] Thalamic Contributions in Conscious Visual Perception Investigated by Focused Ultrasound Neuromodulation. Jan 2025
2025 Consciousness, Anesthesia and Evolutionary Biology Gordon Research Conference. (Poster)
- [3] Thalamic contributions in conscious perception unveiled by focused ultrasound neuromodulation. Oct 2024
U-M Anesthesiology Research Retreat. (Poster, **Awarded Best Poster**)
- [4] Unraveling the Brain's Integration-Segregation Balance: Insights into Anesthesia, Psychedelic and Sleep. Oct 2024
U-M Anesthesiology Department Research Retreat. (Oral talk)
- [5] Measuring the dynamic balance of integration and segregation underlying conscious states. Aug 2024
Association for the Scientific Study of Consciousness 27. (Oral talk)
- [6] Measuring the dynamic balance of integration and segregation underlying conscious states. Jul 2024
Organization for Human Brain Mapping 2024. (Poster)
- [7] Measuring the dynamic balance of integration and segregation underlying consciousness, anesthesia, and sleep. Apr 2024
The Science of Consciousness 2024. (Oral talk)
- [8] Integration-segregation balance and its dynamic shift during anesthetic-induced loss of consciousness. Sep 2023
Resting State Brain Connectivity 2023. (Poster)
- [9] Assessment of Interfacial Phase Behaviors of Anisotropic Nanoparticles. Feb 2020
Biophysical Society 2020 Annual Meeting. (Poster)
- [10] Two-dimensional mutual diffusion dynamics in heterogeneous lipid domains. Mar 2019
Biophysical Society 2019 Annual Meeting. (Poster) doi:10.1016/j.bpj.2018.11.1992
- [11] In-situ visualization of 2D phase separation of oxidized phospholipid and cholesterol. Aug 2018
International Soft Matter Summer School: Soft Matter and Topology. (Poster)
- [12] Direct visualization of 2D phase separation of oxidized phospholipid and cholesterol at monolayer. Jul 2017
International Soft Matter Summer School Membranes. (Poster)
- [13] A novel strategy to enhance the stability of freestanding lipid bilayer. Apr 2017
Korean Physical Society Spring Meeting. (Oral talk, **Awarded Best Presentation**)
- [14] Effects of phospholipid composition on liposome fusion at the air-water interface. Aug 2015
KAIST Undergraduate Research Program Workshop. (Oral talk, **Awarded Grand Prix**)

BOOKS

- [1] Yeo, W., **Jang, H.**, & Lee, D. (Korean Trans.). (2024). *의식은 어디에서 오는가 [The Hidden Spring]*. Seoul: Hana Medical Publishing Company. (Original work by Solms, M. published 2021).
- [2] **Jang, H.** (Korean Trans.). (2022). *뇌의식의 증명 [Conscious Mind in the Physical World]*. Seoul: Haneon Publishing Company. (Original work by Squires, E. J. published 1990).
- [3] **Jang, H.**, & Hwang, Y. (Korean Trans.). (2021). *뇌의식의 기초 [Foundations of Consciousness]*. Seoul: Haneon Publishing Company. (Original work by Revonsuo, A. published 2017).
- [4] **Jang, H.** (Korean Trans.). (2020). *뇌의식의 우주 [A universe of consciousness]*. Seoul: Haneon Publishing Company. (Original work by Edelman G. M., & Tononi, G. published 2000).
- [5] **Jang, H.** (Korean Trans.). (2019) *뇌의식의 대화 [Conversations on Consciousness]*. Seoul: Haneon Publishing Company. (Original work by Blackmore, S. J. published 2005).

MEDIA COVERAGE

The Brain in Balance, *U-M Medicine* (<https://www.michiganmedicine.org/health-lab/brain-balance>) Nov 2024

Hanbitsa Interview, *Biological Research Information Center, South Korea* Oct 2024

- ♦ Written interview: <https://www.ibric.org/s.do?bLmYMOTMal>
- ♦ Online webinar: <https://www.youtube.com/watch?v=g4HhFAj5hXI>

GRANT-ASSOCIATED RESEARCH EXPERIENCE

Neuroimaging of Anesthetic Modulation of Human Consciousness (R01 Grant) Feb 2024 – Nov 2027

- ♦ Role: PhD Student, Personnel/Investigator

SCHOLARSHIPS, HONORS, AND AWARDS

Best Poster Award, 2024 U-M Anesthesiology Department Research Retreat Oct 2024

Doctoral Study Abroad Scholarship, Korea Foundation for Advanced Studies 2021 –

2020 Sejong Books, Publication Industry Promotion Agency of Korea Jul 2020

- ♦ Korean translation of *Conversations on Consciousness* was officially selected as a book with excellent content.
- ♦ Total 1,000 books were purchased by the Korean government and distributed to nation-wide public facilities.

Best Presentation Award, 2017 Korean Physical Society Spring Meeting Apr 2017

Grand Prix, 2015 Undergraduate Research Participation Program, KAIST Aug 2015

- ♦ Competition among 50+ research projects

Kim Young-han Global Leader Scholarship (\$4,000/year) 2013 – 2014

9th Chung Moon Soul Pioneer Program, Dept. of Bio and Brain Engineering, KAIST Aug 2013

- ♦ 2-week academic tour to top-tier universities in the US supported by the departmental fund

Merit-based Scholarship, KAIST (\$1,000/semester) Spring 2014 / Fall 2014

KAIST Presidential Fellowship, KAIST (\$20,000) 2011 – 2015

TEACHING EXPERIENCES

Invited Lecture, PSYCH 401 The Psychology of Mindfulness, University of Michigan Winter 2024

Graduate Student Instructor, NEUROSCI 470 Neuroanatomy, University of Michigan Winter 2024

Counseling Assistant, KAIST Spring 2016 – Fall 2017

Teaching Assistant, BiS223 Physical Principles of Biological Engineering, KAIST Spring 2016

Teaching Assistant, HSS436 Philosophy of Mind, KAIST Spring 2015

Instructor, HSS062 Freshmen Leadership Program <Book Concert>, KAIST Spring 2015

OTHER ACADEMIC ACTIVITIES

Peer-review services

- ♦ NeuroImage, Communications Biology, Human Brain Mapping, Network Neuroscience, Scientific Reports, etc.

Neuroscience Graduate Program Admissions Committee Sep 2024 – Present

Perspectives in Neuroscience Steering Committee Sep 2023 – Present

President, Establisher, <i>Korea Association for Consciousness Sciences</i>	Jun 2021 – Present
Completed <i>2014 / 2015 Computational Neuroscience Winter School</i>	Feb 2014 / Feb 2015
Student Member, Association for the Scientific Study of Consciousness	
Student Member, The Science of Consciousness	
Student Member, Society for Neuroscience	
Student Member, Biophysical Society	

VOLUNTEER AND EXTRA-CURRICULAR ACTIVITIES

President, Establisher, <i>GRIT</i>	Feb 2017 – Feb 2021
♦ A university-wide club of graduate students for motivation and self-help	
President, <i>Bio Abroad Club</i>	May 2019 – May 2020
♦ A nation-wide club of prospective graduate students in biology who are preparing to study abroad	
Volunteer translator, <i>NAVER Connect Foundation</i>	Nov 2018
♦ Translated <i>Fast.AI: Introduction to Machine Learning for Codes</i> course	
President, Establisher, Department Undergraduate Academic Club <i>Blink</i>	2014 – 2016
♦ Hosted journal clubs, mentoring, and lectures	
President, Co-establisher, University Club for Korean History <i>Ppuri</i>	2012 – 2014
♦ Organized weekly seminars and school-wide campaigns	
Educational Volunteer, <i>Mi-dam Scholarship Committee</i>	2011 – 2013
♦ Lecture and mentoring for underprivileged high school students	

Last Updated February 2025