FY 2025 Annual Report

Unit Name

Neurobiology Research Unit

Professor Jeff R Wickens

Personnel:

- Dr. Gideon Sarpong, Staff Scientist
- Dr. Satyajit Mahapatra, Staff Scientist
- Dr. Rachel Pass, Postdoctoral Scholar
- Dr. Nobuyoshi Kitamura, Staff Scientist
- Dr. Kiyoto Kurima, Technical Staff
- Yumiko Akamine, Technical Staff
- Kavinda Liyanagama, Technical Staff
- Arvinda Panthee, Technical Staff

Students Supervised:

- Bozena Silic (PhD Student)
- Miyu Nambu (PhD Student)
- Tanomi Yamamura (PhD Student)
- Kang-Yu Chu (PhD Student)
- Dvyne Nosaka (PhD Student)
- Arjun Manish Joshi (PhD Student)
- Mao-Ting Hsu (PhD Student)
- Jannes Sonja P Olieslagers (Research Intern)
- Vincent Borghijs (Research Intern)

Students Co-supervised:

- Lorena Andreoli (PhD Student)
- Naano Nagahama (PhD Student)
- Kokila Parera (PhD Student)

Scholarly Contributions and Creative Productions (by Faculty)

Journal Article

1. Hsu, M.-T.; Akamine, Y.; Kurima, K.; Tanaka, K. Z.; Wickens, J. R. Cholinergic Interneurons of the Dorsomedial Striatum Mediate Winner-Loser Effects on Social Hierarchy Dynamics in Male Mice. *iScience* 2025, 28, 113581.

2. Zhang, R.; Wickens, J. R.; Carrasco, A.; Oorschot, D. E. Absolute Number of Thalamic Parafascicular and Striatal Cholinergic Neurons, and the Three-Dimensional Spatial Array of Striatal Cholinergic Neurons, in the Sprague-Dawley Rat. *Journal of Comparative Neurology* 2025, 533.
3. Sarpong, G. A.; Pass, R.; Liyanagama, K.; Chu, K.-Y. Y.; Kurima, K.; Akamine, Y.; Chouinard, J. A.; Looger, L. L.; Wickens, J. R. Spatially Heterogeneous Acetylcholine Dynamics in the Striatum Promote Behavioral Flexibility. *Nature Communications* 2025, 16, 10877.
4. Roshgadol, J. I.; Chouinard, J. A.; Majumder, S.; Scott, E. C.; Borges, K.; Hagihara, K. M.; Mancini, N.; Steveson, T.; Kamath, T.; Lodder, B.; MacLennan, B. J.; Dalangin, R.; Tjahjono, N.; Pal, A.; Soares-Cunha, C.; Melugin, P. R.; Marley, A.; Mahe, K.; Kurima, K.; Takahashi, S.; Nosaka, D.; Murakami, K.; Colgan, L. A.; Freitas, P. T.; Chaudhuri, R.; Siciliano, C. A.; Rodrigues, A. J. J.; Gradinaru, V.; Von Zastrow, M.; Podgorski, K.; Sabatini, B. L.; Bidaye, S. S.; Hanks, T. D.; Ji, N.; Wickens, J. R.; Inagaki, H. K.; Tian, L. Sensitive dLight3 for Imaging Broad-Spectrum Dopamine Events across Brain Regions. *Research Square* 2025.

Poster Presentation at Conference

1. Perera, K. D.; Wickens, J. R.; Alsop, B.; Hulsbosch, A.-K.; Furukawa, E.; Silic, B.; Tripp, G. Control of Response Allocation by Reward-Predicting Cues in Children with and without ADHD. ENETHYDIS Annual Meeting, 2025.
2. Perera, K. D.; Hulsbosch, A.-K.; Wickens, J. R.; Silic, B.; Alsop, B.; Furukawa, E.; Tripp, G. Sign-and-Goal Tracking in Children with and without ADHD. 10th World Congress on ADHD 2025.
3. Oorschot, D.K., Zhang, R., Carrasco,A., Wickens, J.R. Absolute Number of Thalamic Parafascicular and Striatal Cholinergic Neurons, and the Three-Dimensional Spatial Array of Striatal Cholinergic Neurons, in the Sprague-Dawley Rat: Modern Stereological Studies. 14th European Congress for Stereology and Image Analysis, Prague, September 15-18 2025 **(https://ecsia2025.karlin.mff.cuni.cz).**

Seminars

1. Wickens, J. R.

   Opening Lecture: History of Computational Neuroscience. Okinawa Computational Neuroscience Course, June, 2025.

Teaching

A314 Neurobiology of Learning and Memory, Term 1, 2025. 4 students.

Scholarly Contributions (by Unit Members)

Name of Unit Member	Type	Title	Outlet	Year Pub
Kang-Y Y. Chu	Journal Article	Multiplexed Opto-Microfluidic Biosensing: Advanced Platform for Prostate Cancer Detection	ACS Sensors 9:2596–2604.	2024
Sarpong, G.	Invited talk	Striatal acetylcholine release during unexpected non-reward promotes behavioral flexibility	Shiga University of Medical Sciences, March 18	2026
Sarpong, G.	Oral presentation	Spatiotemporal patterns of striatal acetylcholine and their role in behavioral flexibility	SWEBAGS Conference 2025 (Online)	2025

Outreach Activity (by Unit Members)

Kiyoto Kurima, Lecture on Molecular Genetics, at University of Ryukyu, Department of Health Science (Ginowan, Okinawa), May 2025.
Kiyoto Kurima, Science and Career Talk at Taira Middle School (Miyako, Okinawa), Nov 2025
Yumiko Akamine On-site discussion at OIST with technicians from the University of Ryukyus. 30MAY2025

Kiyoto Kurima , Yumiko Akamine SEED Program for SSH (Super Science Schools) Odawara HS. Provided the presentations and the lab tour, including hands-on experience. https://www.oist.jp/outreach/high-school/seed-program 09OCT2025.
Yumiko Akamine, Arvinda Panthee, SEED Program for SSH Momoyama HS. Group Discussions, OIST Auditorium 14OCT2025
Bozena Silik, Yumiko Akamine. Workplace Experience Program for Kin Jr HS, organized by Community Relations. Presentations, Lab Tour, Hands-on Experience, Wickens Unit. 29OCT2025
Yumiko Akamine. Workshop “Let's make a Brain Hat: 脳ハットを作ろう.”
"The Science Tech Fest in Naha" organized by OIST Community Relations
Location: San-A Naha Main Place. https://okinawa-manabii.com/posts/science-tech-fes-winter
14DEC2025 (Sun)
Yumiko Akamine. HiSciLab 2025. Career Talk for local high school students (female) at Sydney Brenner Auditorium. https://www.oist.jp/ja/outreach/high-school/hisci-lab 11JAN2026 (Sat)
Yumiko Akamine. Kyushu District Advanced Technology Research Conference 2026 at the University of Ryukyus. https://tech2026.skr.u-ryukyu.ac.jp/alltech/. 16-17MAR2026