



Biafra Ahanonu

Assistant Professor of Anesthesiology, Perioperative and Pain Medicine

Bio

BIO

Biafra Ahanonu, PhD is an Assistant Professor in the Department of Anesthesiology, Perioperative and Pain Medicine. He studies the neural coding and molecular mechanisms that generate specific pain percepts and behaviors via sensorimotor transformations and how the disease or therapies alter the peripheral and central nervous systems.

He is an HHMI Hanna H. Gray Fellow and conducted his postdoctoral work at UCSF under Prof. Allan Basbaum, studying the neural coding of pain in the spinal cord and trigeminal ganglion of behaving animals and molecular properties of pain circuits. As an NSF Graduate and HHMI Gilliam Fellow at Stanford in the Dept. of Biology under Prof. Mark Schnitzer, he studied pain and locomotion/decision-making neural codes in the amygdala and striatum. In parallel, he developed and furthered imaging analysis tools (e.g. CIAtah, <https://git.io/ciatah>). As an undergraduate at MIT (BSc, Biology and Brain & Cognitive Sciences), he worked in labs in the USA (MIT, HHMI Janelia), Switzerland, Spain, Mexico, and Singapore.

ACADEMIC APPOINTMENTS

- Assistant Professor, Anesthesiology, Perioperative and Pain Medicine
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- Kavli Fellow, National Academy of Sciences (2025)
- Keystone Symposia Fellow, Keystone Symposia (2023)
- Hanna H. Gray Fellow, Howard Hughes Medical Institute (2020)
- Sammy Kuo Award in Neuroscience — Graduate Student Paper of the Year, Stanford University (2019)
- Gilliam Fellowships for Advanced Study, Howard Hughes Medical Institute (2015)
- Excellence in Teaching Award, Stanford Biology (2013)
- Graduate Research Fellowship, National Science Foundation (NSF) (2012)
- Wenderoth Scholarship, Phi Sigma Kappa (2010)
- Zeno Karl Schindler Grant, Zeno Karl Schindler Foundation (2009)
- Gates Millennium Scholarship, Bill & Melinda Gates Foundation / UNCF (2008)
- National Achievement Scholarship, National Merit Scholarship Corporation (2008)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, International Association for the Study of Pain (2019 - present)
- President, Stanford Biosciences Student Association (2016 - 2017)
- Member, Society for Neuroscience (2015 - present)

PROFESSIONAL EDUCATION

- Postdoctoral training, University of California, San Francisco , Anatomy (2025)
- PhD, Stanford University , Biology (2019)
- B.S., Massachusetts Institute of Technology , Biology & Brain and Cognitive Sciences (2012)

LINKS

- Personal website: <http://bahanonu.com>
- CIAtah (imaging analysis software): <https://github.com/bahanonu/ciatah>
- HHMI Hanna H. Gray Fellow: <https://www.hhmi.org/scientists/biafra-ahanonu>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Study the neural and molecular mechanisms of pain processing.

Publications

PUBLICATIONS

- **Long-term optical imaging of the spinal cord in awake behaving mice.** *Nature methods*
Ahanonu, B., Crowther, A., Kania, A., Rosa-Casillas, M., Basbaum, A. I.
2024; 21 (12): 2363-2375
- **Recording Pain-Related Brain Activity in Behaving Animals Using Calcium Imaging and Miniature Microscopes** *Contemporary Approaches to the Study of Pain*
Ahanonu, B., Corder, G.
Humana, New York, NY.2022
- **An amygdalar neural ensemble that encodes the unpleasantness of pain.** *Science (New York, N.Y.)*
Corder, G., Ahanonu, B., Grewe, B. F., Wang, D., Schnitzer, M. J., Scherrer, G.
2019; 363 (6424): 276–81
- **Fiber photometry in striatum reflects primarily nonsomatic changes in calcium.** *Nature neuroscience*
Legaria, A. A., Matikainen-Ankney, B. A., Yang, B., Ahanonu, B., Licholai, J. A., Parker, J. G., Kravitz, A. V.
2022; 25 (9): 1124-1128
- **Supramammillary regulation of locomotion and hippocampal activity.** *Science (New York, N.Y.)*
Farrell, J. S., Lovett-Barron, M., Klein, P. M., Sparks, F. T., Gschwind, T., Ortiz, A. L., Ahanonu, B., Bradbury, S., Terada, S., Oijala, M., Hwaun, E., Dudok, B., Szabo, et al
2021; 374 (6574): 1492-1496
- **Visually Guided Behavior and Optogenetically Induced Learning in Head-Fixed Flies Exploring a Virtual Landscape** *CURRENT BIOLOGY*
Haberern, H., Basnak, M. A., Ahanonu, B., Schauder, D., Cohen, J. D., Bolstad, M., Bruns, C., Jayaraman, V.
2019; 29 (10): 1647-+
- **Kilohertz two-photon brain imaging in awake mice.** *Nature methods*
Zhang, T. n., Hernandez, O. n., Chrapkiewicz, R. n., Shai, A. n., Wagner, M. J., Zhang, Y. n., Wu, C. H., Li, J. Z., Inoue, M. n., Gong, Y. n., Ahanonu, B. n., Zeng, H. n., Bito, et al

2019

- **Diametric neural ensemble dynamics in parkinsonian and dyskinetic states.** *Nature*
Parker, J. G., Marshall, J. D., Ahanonu, B. n., Wu, Y. W., Kim, T. H., Grewe, B. F., Zhang, Y. n., Li, J. Z., Ding, J. B., Ehlers, M. D., Schnitzer, M. J.
2018
- **Neuronal Representation of Social Information in the Medial Amygdala of Awake Behaving Mice** *CELL*
Li, Y., Mathis, A., Grewe, B. F., Osterhout, J. A., Ahanonu, B., Schnitzer, M. J., Murthy, V. N., Dulac, C.
2017; 171 (5): 1176-+
- **SIRT1 collaborates with ATM and HDAC1 to maintain genomic stability in neurons** *NATURE NEUROSCIENCE*
Dobbin, M. M., Madabhushi, R., Pan, L., Chen, Y., Kim, D., Gao, J., Ahanonu, B., Pao, P., Qiu, Y., Zhao, Y., Tsai, L.
2013; 16 (8): 1008-U54
- **On the Technology Prospects and Investment Opportunities for Scalable Neuroscience** *arXiv*
Dean, T., Ahanonu, B., et al
2013; 1307 (7302)