

Editorial

Advanced Neuroscience: Connecting Mechanisms, Systems, and Translation

Xiaochuan Wang *

Hubei Key Laboratory of Cognitive and Affective Disorders, Institute of Biomedical Sciences, School of Medicine, Jiangnan University, Wuhan 430014, China

* Corresponding author. E-mail: wangxiaochuan@jhun.edu.cn (X.W.)

Received: 5 August 2026; Accepted: 5 August 2026; Available online: 7 August 2026

Neuroscience is entering an era of profound scientific convergence. Advances in multimodal neuroimaging, single-cell and spatial omics, large-scale neural recording, optogenetics, neuromodulation, connectomics, and biologically informed artificial intelligence are transforming how we investigate the organization, development, function, and dysfunction of the nervous system. These capabilities are creating unprecedented opportunities to connect mechanisms across levels of analysis—from molecules and cells to circuits, systems, cognition, behavior, and clinical phenotypes.

Scientific opportunity, however, is inseparable from scientific and societal responsibility. Neurological and psychiatric disorders impose a growing burden on individuals, families, healthcare systems, and societies worldwide. Brain aging and neurodegenerative diseases present especially urgent challenges, requiring a deeper understanding of cellular vulnerability, energy metabolism, network dysfunction, disease progression, and resilience. At the same time, the expanding use of neural interfaces, large-scale brain data, and artificial intelligence raises important questions concerning privacy, agency, consent, access, and responsible governance. Progress in neuroscience must therefore be not only innovative, but also rigorous, reproducible, clinically meaningful, and ethically accountable.

It is in this context that we launch *Advanced Neuroscience*, an international, peer-reviewed, open-access journal dedicated to advancing knowledge across the breadth of neuroscience.

The central purpose of *Advanced Neuroscience* is to deepen understanding of the nervous system across biological and analytical scales and to strengthen the reciprocal relationship between fundamental neurobiology and clinical application. We seek research that moves beyond isolated observations to reveal mechanisms, principles, and relationships capable of advancing both scientific understanding and human health. Although the journal embraces the full diversity of neuroscience, it will place particular emphasis on major neurological challenges, including brain aging, metabolic dysfunction, neurodegeneration, neurodevelopmental disorders, epilepsy, stroke, traumatic brain injury, neuro-oncology, and disorders affecting cognition, emotion, and behavior.

Our scope encompasses cellular and molecular neuroscience; cognitive and behavioral neuroscience; neural development, plasticity, and regeneration; brain aging and energy metabolism; neuropharmacology and neurochemistry; systems and circuit neuroscience; computational and theoretical neuroscience; translational and clinical neuroscience; and integrative approaches, including neuroinformatics. We also encourage research at the interface of neuroscience and materials science, particularly where interdisciplinary technologies enable substantive biological insight, improved measurement or modulation of neural systems, or clinically relevant innovation.



A defining priority of the journal will be the integration of evidence across levels of organization. We particularly welcome studies that establish coherent links between molecular and cellular processes, circuit and network dynamics, cognitive or behavioral outcomes, and clinically meaningful phenotypes. Such integration is essential if neuroscience is to move beyond increasingly detailed description toward explanatory frameworks that are mechanistically grounded and capable of guiding translation.

Advanced Neuroscience is intended to be more than a venue for technically accomplished studies. We aim to provide a forum for research that changes how important questions are formulated, investigated, and interpreted. Through original investigation, critical synthesis, methodological and conceptual innovation, and informed scholarly dialogue, the journal will support work that opens new directions, resolves persistent uncertainties, or establishes more reliable foundations for future discovery.

Scientific ambition must be matched by evidential strength. Conceptual novelty alone is insufficient without methodological rigor, just as technical complexity alone does not guarantee biological or clinical significance. We will prioritize studies characterized by well-defined questions, robust experimental design, appropriate statistical and computational analysis, transparent reporting, meaningful validation, and conclusions proportionate to the evidence. We will also value carefully conducted research that challenges prevailing assumptions, clarifies the limits of existing models, or produces findings that are important despite not conforming to fashionable narratives.

Transparency and reproducibility are integral to this mission. Authors will be expected to describe methods and analyses in sufficient detail to permit independent scrutiny and, where ethically, legally, and practically permissible, to make relevant data, materials, and analytical resources available to the scientific community. We recognize that neuroscience frequently involves sensitive human data, clinical information, intellectual-property constraints, and legitimate restrictions on public access. Our approach to openness will therefore balance reproducibility with participant protection, data security, responsible governance, and respect for the communities from which data are obtained.

The integrity of a journal depends not only on the work it publishes, but also on the fairness and independence of the processes by which that work is evaluated. We are committed to peer review that is rigorous, constructive, impartial, and timely. Editorial decisions will be based on scientific quality, significance, methodological soundness, and relevance to the journal, rather than institutional prestige, geographic location, or conformity with prevailing academic opinion. Conflicts of interest will be managed transparently, and research involving human participants, animals, clinical data, or emerging neurotechnologies will be expected to meet appropriate ethical and reporting standards.

Our Editorial Board brings together expertise across basic, computational, translational, and clinical neuroscience, including neurodegeneration, developmental neuroscience, neuroanatomy, neuropharmacology, neurorehabilitation, systems biology, artificial intelligence, biomarker discovery, and biostatistics. This breadth reflects our conviction that many of the most consequential questions in neuroscience cannot be resolved within a single discipline, methodology, model system, or level of analysis.

We also recognize that scientific excellence is globally distributed, whereas access to resources, networks, and publishing opportunities is not. *Advanced Neuroscience* welcomes contributions from researchers across career stages, institutions, and regions. We are committed to cultivating an editorial culture in which manuscripts are assessed on the quality of their questions, methods, evidence, and reasoning, and in which peer review serves not only as a mechanism of selection but also as a constructive component of scientific communication.

The name *Advanced Neuroscience* expresses both an ambition and an obligation. “Advanced” refers not only to the frontier of experimental technology, computation, and clinical innovation, but also to a mature conception of scientific progress—one grounded in biological plausibility, theoretical coherence, empirical robustness, translational relevance, and ethical foresight. We will not equate novelty with importance, complexity with depth, or scale with understanding. Research advances neuroscience when it

strengthens explanation, improves inference, enables responsible translation, or reveals the boundaries of what is currently known.

As the founding Editor-in-Chief, I invite the global neuroscience community to contribute not only its most ambitious research, but also its critical judgment, disciplinary diversity, and highest standards of scientific conduct. We invite authors, reviewers, readers, and Editorial Board members to help shape *Advanced Neuroscience* as an open forum for discovery, integration, debate, and responsible innovation.

The challenges before neuroscience are formidable, but so too are the opportunities. By connecting mechanisms, systems, technologies, clinical questions, and scientific communities, we hope to establish *Advanced Neuroscience* as a trusted record of progress and a catalyst for research that advances both knowledge and human well-being.

We look forward to building *Advanced Neuroscience* together.

Declaration of Competing Interest

The author declares that there are no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.