



# Brain Structure & Function: the future—a prospective

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“Nothing in the world is permanent, and we're foolish when we ask anything to last, but surely we're still more foolish not to take delight in it while we have it. If change is the essence of existence one would have thought it only sensible to make it the premise of our philosophy.” W Somerset Maugham, *The Razor's Edge*

It is a time for change at *Brain Structure & Function*. Professor Laszlo Zaborszky, one of the two Founding Editors of the journal, stepped down from his role as Editor-in-Chief this past June after 15 years of unfailing service (Zaborszky 2021). Nearly, 1 year earlier, Professor Karl Zilles, the other Founding Editor, passed away (Zaborszky 2020), leaving Laszlo alone at the helm. The launch of *Brain Structure & Function* in 2006 came at a critical time in Neuroscience when there were few options for publishing quality integrative studies of morphology and function. The journal was thus a boon to the field and quickly became popular with systems neuroscientists working across a range of animal models, mappers creating multimodal atlases of regions and tracts in various species, and structural neuroimagers exploring the living human brain. The steadfast leadership of Professors Zaborszky and Zilles allowed *Brain Structure & Function* to grow in volume and influence over many years. It reached its peak impact in 2012 and then maintained its place as the top-ranked journal in the Anatomy and Morphology category (Zaborszky 2021). The numerous reasons for the high status of *Brain Structure & Function* are elaborated in Laszlo's illuminating retrospective published

in September. One factor not noted, however, is the indefatigable stewardship Laszlo gave to the journal over such a long period. We are thankful for his creation of an important vehicle for quality publication in neuroscience and for his unswerving guidance and insightful leadership.

We are also personally grateful to Laszlo for appointing us to succeed him and Professor Zilles to continue the journey they began. We value the editorial process as an essential contribution to science that is fully integrated with the laboratory and the lecture hall. It is our solid belief that publishers, editors, and authors should work harmoniously to produce the most impactful scientific progress that sheds light on the mechanisms of the brain and mind. We embrace the challenge of maintaining this valuable journal and expanding its impact.

As we begin moving forward, we wish to acknowledge important traditions that will be preserved. The first is for *Brain Structure & Function* to have Co-Editors-in-Chief, one based in Europe and the other in the United States. The second is for the journal to remain a publishing platform welcoming original research leading to significant advances in understanding brain structure–function relationships. Our focus will continue to be on the insights provided by morphological investigations spanning synaptic, cellular and circuit levels for understanding brain function at multiple scales. Emphasis on human structure–function relationships alongside experiments enabled by the vertebrate nervous system will remain central to the investigations published in *Brain Structure & Function* (<https://www.springer.com/journal/429/aims-and-scope>). Third, we will continue to organize and publish multiple thematic special issues that bring together experts from different communities who publish in related areas. Whenever possible, we will follow these special issues with online conferences where experts can exchange, discuss, and integrate their views and develop collaborations. As a recent example, the special issue “Structural Connectivity of the Cerebral Cortex” (Takemura and Thiebaut de Schotten 2020) gathered together macro- and microscopic observations, electrophysiological and behavioural measurements, and pathological examination of the white matter, providing a comprehensive

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vision that was subsequently debated in a 2-day online meeting (<https://youtu.be/EYEaR6A7yAY> and <https://youtu.be/Sdkr82JeJX4>). This special issue, while published a year ago, has accumulated more than 130 citations, with an average citations per paper equivalent to an impact factor of 8.7. These numbers demonstrate the importance of such initiatives to our community. Upcoming special issues will follow the same example and include “Asymmetry of Brain Structure & Function” edited by Michel Thiebaut de Schotten and Christian Beckmann, “Structure & Function of the Visual System” edited by Hiromasa Takemura and Marcello Rosa, “The Parietal Lobe” edited by Will Graves and Kathleen Rockland, “Towards Multi-modal, Multi-species Brain Atlases” edited by Rogier Mars and Nicola Palomero-Ghallagher, and “The Disconnectome” edited by Hannah and Antonio Damasio, Michel Thiebaut de Schotten and Aaron Boes. Proposals for future special issues are welcome from all readers of *Brain Structure & Function* and can be discussed directly with us. We meet twice a month to discuss the journal’s future along with Amy Joint, our amazingly supportive Senior Journal Development Editor from Springer.

So much for tradition. Yet, we cannot remain where we are, for change is the only thing that is constant. Tomorrow holds many possibilities, and we must consider what primary direction we envision for such a valuable journal. It is truly a different world from the one that stimulated the launch of *Brain Structure & Function*. Many scientific visions have been realized, a few advancements have eclipsed expectation, and some elements of scientific anticipation have receded further out of reach. The scientific enterprise itself seems sometimes so enraptured with innovation it fails to reward judiciousness, thoroughness, and incremental, albeit important advances. Neuroscience, while making prodigious leaps, is far from stochastic in its nature, instead seemingly organized into highly specialized, self-validating communities focused on a method, a molecule, or a module. Rather than progressing together through necessary collaboration, such communities risk advancing separately until they resemble something Kafkaesque. Of graver concern is the struggle facing all peoples of the world with the SARS-CoV-2 virus in a pandemic made worse by loss of faith in science and governments. Racial and political differences are rending societal fabric and leading to disaffection and violence. Meanwhile, the planet that endures us is losing vitality at a rate so alarming, we no longer know how long human life may be sustained. The inauguration of *Brain Structure & Function* took place at an international conference, whereas now, we cannot meet in the same physical space to talk about these worrisome issues.

What can we hope to contribute when what is needed are major actions beyond our individual powers? In such dystopian times, it is crucial to reaffirm our foundational

principles and recommit ourselves to those lesser but vital actions we make every day and that we know to be right. A fundamental belief in the value and importance of robust science conducted and published with prudence becomes the guide that keeps us moving forward. We need to gather strength from what we do and come together knowing that what we do is important. Doing science the right way matters, and publishing the best of scientific findings matters too.

For the future, we intend to publish the very best of careful scientific investigations that produce the most robust results. To achieve this goal, we wish to strive for certain qualities in ourselves and in our publications. The first and most important of these is humility, a quality too often missing in the trendy science of the day. Being at core biologists, we are essentially engaged in a dialogue with Nature, and we need regular reminding of its complexity and how deeply its secrets are hidden. It is incumbent on us to approach our work modestly, especially when making conclusions about experimental outcomes. Nature may be complex, and yet it is also remarkably simple in its constructs. We need to accept and recognize when astonishingly novel findings are ground breaking and when they are just wrong.

The second quality needed to achieve prudent science is rigor. Rigor and reproducibility must be the cornerstones on which we lay the foundations of our scientific advancements, and they must be verifiable in the papers we publish. Editors and reviewers will continue to look for methodology applied strictly according to unbiased principles and producing the most robust outcomes, reproducible results, and confidence in data interpretation. To that end, we have endeavored, with the help of our Founding Editor-in-Chief, to re-recruit and revitalize the Editorial Board, including both Associate Editors and Advisory Board members, so we are most ably assisted in this enterprise. The value of their contributions to *Brain Structure & Function* is incalculable, and we cannot achieve our objectives without them. And so, we want to use this forum to recognize and thank them for their continued service to the journal and to science.

Finally, we acknowledge the quality that is central to all of us, namely the intense curiosity that drives us to be life-long investigators seeking to understand the workings of the brain. While there has been a great deal of discovery over the last 15 years, there is still so much we do not know. What essential rules govern the evolution of the brain? To what extent do these factors direct brain development and to what extent is development adjusted by epigenetic factors? What are the exact mechanisms through which structure predicts and supports synaptic, cellular, and network function? How are these mechanisms impacted by disease in a manner that alters structure–function relationships? How well can we visualize and quantify the detailed morphology of the living

human brain while simultaneously envisaging its operation in health and illness?

With these qualities as our base, we can explore and capitalize on the wonders of innovation being introduced by modern neuroscience techniques. Now is a time for change at *Brain Structure & Function*, and it is also a time for humility in the face of Nature, rigor and reproducibility in the conduct and interpretation of science, and deep inquisitiveness driving us forward in our effort to shed light on the mechanisms of the brain and mind. We take up that charge with humbleness and face the future with great anticipation. Although we live in a troubled world, we will, at the least, get this part right.

“We work in the dark. We do what we can. We give what we have. Our doubt is our passion, and our passion is our task.” Henry James, *The Middle Years*

## References

- Takemura H, Thiebaut de Schotten M (2020) Perspectives given by structural connectivity bridge the gap between Structure & Function. *Brain Struct Funct* 225(4):1189–1192. <https://doi.org/10.1007/s00429-020-02080-z>
- Zaborszky L (2020) Karl Zilles (1944–2020): a personal tribute. *Brain Struct Funct* 225(4):1185–1187. <https://doi.org/10.1007/s00429-020-02088-5>
- Zaborszky L (2021) Brain Structure & Function: the first 15 years—a retrospective. *Brain Struct Funct*. <https://doi.org/10.1007/s00429-021-02362-0>

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