Every year, tens of thousands of researchers gather for the Society for Neuroscience meeting. The lecture theaters and poster halls are full of smart and hardworking individuals. Every year, we return home from the conference excited about all the facts learned and insights gained. However, despite the collective efforts of so many bright people, there is still much progress to be made in tackling the big questions in our field. Could it be that we are interpreting our data with outdated concepts? Most of the dominant concepts in present-day neuroscience, after all, were developed 50 to more than 100 years ago.

This special issue questions some of our approaches. Do the many diverse lines of inquiry in neuroscience need a broader set of animal models? How are resources best balanced between big data projects and smaller-scale focused projects?

On the conceptual side, how do we define a brain region—such as, for example, the prefrontal cortex? What is consciousness, and what makes it different from the many unconscious processes in our brain? Why do computers presently lack consciousness, and when might they acquire it?

The concepts of space and time are essential to how we see the world. Neuroscientists should take a fresh look at the emergence of these concepts in the brain and think about how to investigate them. These are exciting times for neuroscience, but conceptual challenges still remain, as outlined in the Reviews in this issue. With many questions still open, it is time for our community to embrace and address these challenges.
Neuroscience: In search of new concepts
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