

Neuropsychiatry in the Century of Neuroscience

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Neuroscience can be simply described as scientific investigation of the central nervous system and its functions. It is a multidisciplinary area of science that connects various disciplines such as physiology, anatomy, molecular biology, cytology, psychology, physics, computer science, chemistry, medicine, statistics, mathematical modelling and many more (1-3). The main goal of neuroscience is understanding the biological basis of the functioning of central nervous system and this effort has been described by Eric Kandel, the renowned master of neuroscience, as the “epic challenge” of biological sciences (4).

Nervous system has an enormously dynamic and complex way of functioning. This dynamism and complexity evoke great curiosity in neuroscientists, with motives for exploring how it evolves, works, interrupts or changes and heals. Historically, the oldest experiments about central nervous system were found in ancient Egypt. The first methods for treating head traumas or mental disorders and reducing intracranial pressure were known to be implemented in the Neolithic period. In the light of the manuscripts dating back to 1700 B.C., we know that the ancient civilizations had at least a primitive knowledge of brain damage (5).

The availability of molecular biology, electrophysiology, neuroimaging, genetics, genomics, computational neuroscience and the applications of artificial intelligence has been a driving force for the research, and especially in the 20th century, there is advancement in neuroscience studies with increasing attention. With these advancements, the possibility of investigating normal or disordered versions of the central nervous system as a journey from molecular and cellular levels to systems and behavioral levels or symptoms has emerged and the concept of translational neuroscience has been formed.

Main focus of the studies changes in time by the guidance of a growing database and sophisticated technical methods. For example, currently, imaging of networks in the brain can be used for detecting normality and pathology, computer-based diagnoses are possible with artificial intelligence and machine learning, and pathologies can be detected before clinical presentation by the help of detailed studies at the molecular level (6,7). These were not imaginable in the past. Since the technological advancements are uncovering the formerly inaccessible research questions and strategies, the field of neuroscience is constantly improving. We are witnessing that the current developments in neuroscience are bringing the already related fields of neurology and psychiatry even closer and increasing the collaboration.

In the light of these advancements in neuroscience which raises our excitement, we aimed to form and present a neuroscience issue. Most of the articles of this issue has been rooted from the sessions of the 14th Neuropsychiatry Days which was organized by the Turkish Neuropsychiatric Society with the title of “Current Paradigms from Neuroscience to Neuropsychiatry”. In accordance with the publication policy of the journal, there are articles in this issue from the fields of both neurology and psychiatry. We have included reviews of theoretical or translational studies that has potential to inspire future research and we have also included reviews with a guideline structure that focuses on the clinical and practical implications of the results of neuroscientific studies. We hope that this issue will be an inspiring source, a pleasant journey accompanied by the experts in their fields from molecules to system in various directions of neuroscience.

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