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Nanomedicine and Brain Diseases: A Themed Focus on Nano-Engineering Methods for Blood–Brain Barrier Crossing/Circumventing

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Message from the Guest Editors

Neurological disorders are one of the main challenges of medical technology that affect millions of people each year and cost billions of dollars for their treatment. They span from neurodegenerative disorders to brain cancers, depression, etc. Despite the introduction of various therapeutic compounds, there is still no effective method to treat these diseases. One of the main reasons behind this ineffectiveness is the presence of a natural protecting system around the brain, known as the blood–brain barrier (BBB), which acts as brain protection against foreign substances such as bacteria, viruses, and even drugs. With the emergence of nanotechnology, researchers have benefited from nano-size features and designed nano-platforms capable of overcoming the barrier effect of the BBB, transferring drugs to the brain and improving their effectiveness. These strategies could be divided into two main categories, invasive and non-invasive methods, in accordance with the severe effects they may have on the BBB.



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