Editorial

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Editorial Note on Neurobiotechnology

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Editorial

Neurobiotechnology covers a wide variety of applications for those working in life sciences and the pharmaceutical sciences, particularly those developing diagnostics and therapeutics for the nervous system. This includes such as neurobiotechnology, like neurogenomics and neuroproteomics, molecular diagnostics, various methods of improving systemic administration of drugs for targeted delivery to the nervous system including the use of nanobiotechnology, biotechnology-based strategies and products for neuroprotection and personalized neurology.

The term neurobiotechnology refers to the application of biotechnologies in neurology. Technologies have been applied in medicine and neurology throughout the history of medicine for e.g. electroconvulsive therapy. The broad term neurotechnology covers many of the devices used in neurosurgical procedures and the term biomedical engineering refers to the construction of devices such as operating microscopes and lasers as tools for surgery.

A biomarker is a characteristic which can be objectively measured and evaluated as an indicator of a physiological and pathological process or pharmacological response to a therapeutic intervention. Classical biomarkers which are measurable alterations in blood lactate levels following the exercise and blood glucose in diabetes mellitus and blood pressure. Any specific molecular alteration of a cell on RNA, DNA, metabolite or protein level can be referred to as a molecular biomarker.

The delivery of drugs to the brain is a challenge in the treatment of CNS disorders. The obstruction to CNS drug delivery is the blood–brain barrier (BBB) which limits the access of drugs to the brain substance. The treatment of CNS disease was done mostly with systemically administered drugs. Most CNS-disorder research is directed toward the discovery of drugs and formulations for controlled release. The little attention has been paid to the method of delivery of these drugs to the brain. Now biotechnology is making a significant contribution to drug delivery in disorders of the CNS.

Neuroprotective agents aim to prevent neuronal death by inhibiting one or more of the pathophysiological steps in the processes which then follow brain injury or ischemia due to occlusion of a cerebral artery. They protect against neurotoxins and neurodegeneration. Application of new molecular technologies to dissect pathways and unravel mechanisms involved in damage to the nervous system which are providing bases for development of new neuroprotective agents for diseases and are currently treated by drugs that merely provide symptomatic relief. For developing new neuroprotective strategies, it is important to understand the intrinsic neuroprotective factors in the human body.

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