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Brain computational modeling by tools of nanotechnology, biotechnology and nanomedicine

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Recently has been found, that nanomaterials, especially carbon nanotubes (CNTs), have their application in neuroscience, [1]. Regarding that relatively novel topic, a discussion on studies, describing nanoneuroscience has been presented, [2]. Also potential applications of nanotechnology in neuroscience have been analyzed in [2]. New class of generation of "nanodevices and hybrid systems could be help in the repair of damaged central nervous system (CNS) tissue and that have paved the road to nanoneuroscience as a new discipline which can aid in veiling functional properties of brain". Moreover CNTs discovered by S. Iijima in 1991, are cylindrically shaped carbon nanostructures and they possess unique mechanical, electrical, thermal, conductivity, electronic, optical, chemical etc. characteristics. Depending on geometry CNTs are known as both types- single walled carbon nanotubes (SWCNTs) and multi walled carbon nanotubes (MWCNTs). CNTs could be considered as very good substrates/scaffolds for neuronal growth. Applications of CNTs in neuroscience research "has been orientated towards the use of both MWNTs and SWNTs". In the articles [3,4,5], has been reported that CNTs, MWNTs and SWNTs, could be used as biocompatible materials. "The effects of CNTs substrates on the electrical neurons and neuronal networks in culture" have been given in [6]. A great attention has been directed towards generating CNTs scaffolds" that may guide new tissue regeneration after injury". So it has been concluded that "CNTs have the potential to be the next generation of materials for use in implantable neuroprosthetic devices and in injectable local treatment to promote nerve regeneration after injury". Many authors have been reported some cases and analysis of electrical interactions between neurons and CNTs.

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