

1. Record Nr.	UNINA9910624382103321
Titolo	Engineering Biomaterials for Neural Applications / / edited by Elizabeth Nance
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2022
ISBN	9783031114090 9783031114083
Edizione	[1st ed. 2022.]
Descrizione fisica	1 online resource (354 pages)
Collana	Biomedical and Life Sciences Series
Disciplina	345.04 610.28
Soggetti	Medicine - Research Biology - Research Biomedical engineering Neurosciences Biotechnology Biomedical Research Biomedical Engineering and Bioengineering Biomedical Devices and Instrumentation Neuroscience
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Chapter 1. Scaffolds for promoting neural repair -- Chapter 2. Composites for nerve regeneration -- Chapter 3. Configurable models of the blood-brain barrier -- Chapter 4. Engineering nerve conduits -- Chapter 5. Flexible electronics for stem cell differentiation -- Chapter 6. Nanosensors for brain chemistry -- Chapter 7. Nanomaterials for imaging the brain ECS -- Chapter 8. Microfluidics for analysis of neuronal development -- Chapter 9. Multiple particle tracking measurements of extracellular matrix dysregulation -- Chapter 10. Bioresponsive nanomaterials for treatment of CNS disease -- Chapter 11. Redox regulation for controlling cell fate -- Chapter 12. Polymersome delivery of CRISPR-based therapies -- Chapter 13. Multifunctional polymers for targeted delivery -- Chapter 14.

Theranostic nanomaterials for brain injury.

Sommario/riassunto

This contributed volume explores the ways in which researchers engineer new biomaterials for the challenging problems of the peripheral and central nervous systems. These biomaterials are uniquely positioned for use in creating in vitro models of injury and disease, testing therapeutic treatments, understanding neural development, and mapping the multi-scalar environment of the brain. This book informs readers from biology, chemistry, materials science, engineering, and neuroscience on cutting edge research in engineering technologies, from fundamental material development through pre-clinical studies. The book also highlights target applications in three areas of research: (1) engineering neural models and materials, (2) probing biological underpinnings of neurological function and disease, and (3) designing therapeutic and diagnostic treatments for neurological disease. .