



Neuronal Network Dynamics in 2D and 3D in vitro Neuroengineered Systems

By Monica Frega

Springer-Verlag GmbH Mrz 2016, 2016. Buch. Condition: Neu. Neuware - The book presents a new, powerful model of neuronal networks, consisting of a three-dimensional neuronal culture in which 3D neuronal networks are coupled to micro-electrode-arrays (MEAs). It discusses the main advantages of the three-dimensional system compared to its two-dimensional counterpart, and shows that the network dynamics, recorded during both spontaneous and stimulated activity, differs between the two models, with the 3D system being better able to emulate the *in vivo* behaviour of neural networks. The book offers an extensive analysis of the system, from the theoretical background, to its design and applications in neuro-pharmacological studies. Moreover, it includes a concise yet comprehensive introduction to both 2D and 3D neuronal networks coupled to MEAs, and discusses the advantages, limitations and challenges of their applications as cellular and tissue-like *in vitro* experimental model systems. 148 pp. Englisch.

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