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Autore	Yu Albert Cheung-Hoi
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Collana	Advances in Neurobiology, , 2190-5223 ; ; 41
Altri autori (Persone)	GaoKai ZhanJiangshan
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Soggetti	Neurosciences Neural networks (Neurobiology) Bioinformatics Neuroscience Systems Neuroscience Computational and Systems Biology
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Nota di contenuto	Section A: Principle and Molecular Foundations -- Determination of neuronal activity and its meaning for the processes of learning and memory -- Emergence of the hippocampus as a vector for goal-directed spatial navigation -- Modelling and controlling system dynamics of the brain: an intersection of machine learning and control theory -- Section B: Cutting-Edge Technologies -- Adeno-associated virus mediated gene delivery across the blood-brain barrier -- Virus-based neural circuit tracing -- Spatial omics: navigating neuroscience research into the new era -- Section C: Application and Clinical Practice -- Alzheimer's disease from modeling to mechanism research -- Inflammatory demyelinating diseases of the central nervous system -- Multi-layer analysis of RNA sequencing data in alzheimer’s disease to unravel molecular mysteries -- Opportunities for system neuroscience.
Sommario/riassunto	The new edition of this popular book brings together experts in the field of Systems Neuroscience to present an overview of the area. Topics covered include how different neural circuits analyze sensory

information, form perceptions of the external world, make decisions, and execute movements; how nerve cells behave when connected together to form neural networks; the relationship between molecular and cellular approaches to understanding brain structure and function; the study of high-level mental functions; and studying brain pathologies and disease. Among the topics covered in the new edition are artificial intelligence-assisted computational neuroscience for deciphering neural networks, spatial transcriptomics single cell sequencing, and exome/whole genome sequencing for understanding brain disorders in human genetics. The best way to study the brain, the most complex organ in the body composed of 100 billion neurons with trillions of interconnections, is with a systems biology approach.