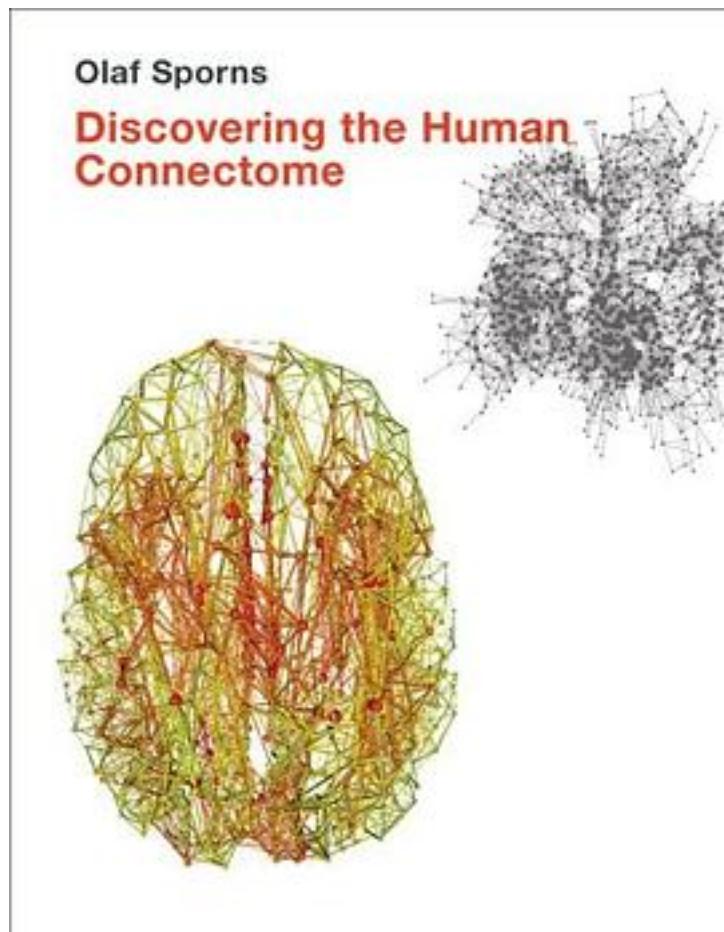


Discovering the Human Connectome



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Crucial to understanding how the brain works is connectivity, and the centerpiece of brain connectivity is the connectome, a comprehensive description of how neurons and brain regions are connected. The human brain is a network of extraordinary

complexity--a network not by way of metaphor, but in a precise and mathematical sense: an intricate web of billions of neurons connected by trillions of synapses. How this network is connected is important for virtually all facets of the brain's integrative function. In this book, Olaf Sporns surveys current efforts to chart these connections--to map the human connectome. Sporns, a pioneer in the field who was the first to define and use the term "connectome," argues that the nascent field of connectomics has already begun to influence the way many neuroscientists collect, analyze, and think about their data. Moreover, the idea of mapping the connections of the human brain in their entirety has captured the imaginations of researchers across several disciplines including human cognition, brain and mental disorders, and complex systems and networks. Sporns describes the biological and conceptual foundations of the connectome; the many research challenges it faces; the many cutting-edge empirical strategies, from electron microscopy to magnetic resonance imaging, deployed to map brain connectivity; the relationship between structure and function; and the wide array of network computational approaches to connectomics. Discovering the Human Connectome offers the first comprehensive overview of current empirical and computational approaches in this rapidly developing field.

作者介绍:

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标签

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评论

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