

Book Review

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Received: March 15, 2016; Accepted: March 20, 2016

doi:10.2399/ana.15.044

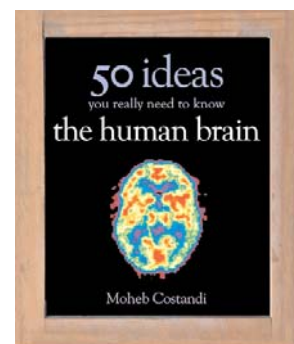
anatomy
An International Journal of Experimental and Clinical Anatomy

50 Human Brain Ideas You Really Need to Know

by Moheb Costandi

Hardcover, 208x182 mm, 208 pages, ISBN : 978-1780879109; Quercus; 2013
quercusbooks.co.uk

Anatomy 2016;10(1):85 ©2016 Turkish Society of Anatomy and Clinical Anatomy (TSACA)



One of the greatest challenges of the 21st century is understanding the brain. The most complex organ in the human body, it is the brain that produces our every thought, action, memory, feeling and experience of the world. The brain is estimated to contain about 80 to 120 billion neurons, and these make contact with thousands or even tens of thousands of others *via* synapses.

Moheb Costandi is a molecular and developmental neurobiologist, and a science writer for the Guardian and Scientific American. In *50 Human Brain Ideas You Really Need to Know*, there are 50 short chapters, each devoted to a concept that is fundamental to our current understanding of the brain.

The essays are on six main topics. On the structure and function of the nervous system, there are essays on topographic mapping, specialized brain regions, movement, sensory perception and the neuron doctrine. The 'Your Brain, Your Self' section includes interesting essays on mirror neurons, The Human Connectome Project, cognition, consciousness, free will and personality. The 'Thought Process' section is devoted to attention, memory, decision-making, reward and motivation, language processing and executive function. 'The Dynamic Brain' covers cell migration and axon pathfind-

ing, cell death, neuroplasticity, neurodegeneration, and essays on how adolescence, stress and aging change the brain. There is also a section 'Breaking from Dogma': adult neurogenesis – does the adult human brain produce new cells?, epigenetics – how life experiences can alter gene activity, default mode network of the brain, brain-wave oscillations – synchronization of neuronal discharges, prediction error – the brain is an inference machine. The last section 'Emerging Technologies and Challenges' covers stem cells, brain stimulation, cognitive enhancement, decoding the mind, brain-computer interfacing.

50 Human Brain Ideas You Really Need to Know provides the general reader with current and practical information on the brain, to what is known with neuroscience research and what remains to be discovered. Interesting, clearly written and easy to read, it is a perfect introduction to the complex and amazing world of the brain.

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Online available at:
www.anatomy.org.tr
doi:10.2399/ana.15.044
QR code:



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