

BDR SEMINAR in Kobe

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Monday, February 3, 2020

14:00-15:00, Large Conference Room, MI R&D Building 2F

The Neural Basis for the Brain-Body Connection

Summary

Modern medicine has generally viewed the concept of "psycho-somatic" disease with suspicion. This is partly because no neural networks were known for the "mind," conceptually associated with the cerebral cortex, to influence autonomic and endocrine systems that control internal organs. We recently used a unique tracing method to identify the areas of the cerebral cortex that communicate through multi-synaptic connections with the adrenal medulla, a major sympathetic effector. Our results suggest that there is a link between the descending control of core muscles and the regulation of sympathetic output. This link could provide the neural substrate for the control of stress through core exercises, such as yoga and pilates. We also found anatomical circuits that link negative affect (e.g., sadness) and cognitive control processes (e.g., awareness of errors) to stress responses. This circuitry may mediate the effects of internal states like chronic stress and depression on organ function. Thus, our results provide a concrete anatomical basis for psychosomatic illness where mental states can alter organ function.



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