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NEURONS IN THE CORTEX OF FREELY BEHAVING ANIMALS HOMEOSTATICALLY REGULATE THEIR OUTPUT SUCH THAT FIRING RATES RETURN PRECISELY TO INDIVIDUAL SET-POINTS. THE ELECTROPHYSIOLOGICAL TRACES (DERIVED FROM REAL DATA (HENGEN ET AL., CELL 2016) AND ARTISTICALLY MANIPULATED) REPRESENT RECORDINGS OF SINGLE NEURONS IN THE VISUAL CORTEX OF FREELY BEHAVING RATS DURING A ROYAL MONOCULAR DEPRIVATION EXPERIMENT. THE DROP IN ACTIVITY IS THE ACUTE EFFECT OF VISUAL DEPRIVATION, AND THE HOMEOSTATIC REBOUND SUBSEQUENTLY APPEARS IN A STEP-WISE FASHION, ONLY OCCURRING DURING PERIODS OF WAKING (PINK OVERLAYER). (IMAGES AND ARTWORK BY KEITH HENGEN, WASHINGTON UNIVERSITY IN ST. LOUIS, MO.)

Cover Image

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Cover image

Neurons in the cortex of freely behaving animals homeostatically regulate their output such that firing rates return precisely to individual set-points. The electrophysiological traces (derived from real data (Hengen et al., Cell 2016) and artistically manipulated) represent recordings of single neurons in the visual cortex of freely behaving rats during a 9-day monocular deprivation experiment. The drop in activity is the acute effect of visual deprivation, and the homeostatic rebound subsequently appears in a step-wise fashion, only occurring during periods of waking (pink overlay). (Images and artwork by Keith Hengen, Washington University in St. Louis, MO.)
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Philosophical Transactions of the Royal Society B
Biological Sciences

Integrating Hebbian and homeostatic plasticity
Discussion meeting issue organized and edited by Kevin Fox and Michael Stryker