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## **Imaging the Immediate Non-Genomic Effects of Stress Hormone on Brain Activity**

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The stress hormones, glucocorticoids, bind to intracellular receptor proteins and act as transcription factors affecting gene activity. These genomic effects occur over hours and even days producing long term changes in synaptic plasticity and neural transmission. In addition to this classic genomic pathway, there is evidence that stress hormones can have immediate, non-genomic effects on brain function. Using non-invasive functional magnetic resonance imaging, awake, adrenalectomized rats were given intravenous doses of corticosterone mimicking blood levels of hormone achieved with modest and intense stress. The dose of corticosterone mimicking high stress caused a significant increase in functional activity in the hippocampus, forebrain cortex and lateral hypothalamus within minutes of administration. This finding shows that stress hormones can have non-genomic effects on brain activity potentially affecting the immediate cognitive and behavioral response to a highly emotional experience.

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