
Supplementary information

**State-dependent responses to intracranial
brain stimulation in a patient with
depression**

In the format provided by the
authors and unedited

Supplementary Materials

Additional Patient Information: The patient's depression episode at the time of implantation was not responsive to therapy that had been effective for prior episodes. She was hospitalized due to suicidal ideation and was unable to continue working due to the severity of her symptoms. Treatment trials included maximum tolerated doses of escitalopram, duloxetine, bupropion, mirtazapine, and augmentation with lisdexamfetamine, levothyroxine, quetiapine, clonazepam, lithium, and psychotherapy. Electroconvulsive therapy led to intolerable cognitive side effects. She had brief responses to two courses of transcranial magnetic stimulation.

Characterization of Response Properties: As described in the main text, we observed that the response to stimulation interplayed closely with the patient's core symptoms and symptom-state at the time of stimulation. In the OFC, stimulation delivered during a high or neutral arousal state led to a positive mood_V change (Figure 2, yellow triangles). Stimulation during a low arousal state led to worsening mood_V response (Figure 2, blue triangle). A similar but opposite pattern was observed for the other two regions. For SGC, stimulation during the neutral state led to a negative mood response (Figure 2, blue triangles) whereas stimulation during a low arousal state improved mood (Figure 2, yellow triangle). For VC/VS, stimulation at neutral or low mood state improved mood (Figure 2, yellow triangle).