Disclosures

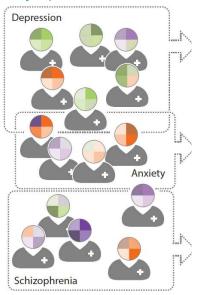
- Inventor on patents and patent applications on electrical and magnetic brain stimulation therapy systems held by the NIH and Columbia University, with no remuneration
- The views expressed are my own and do not necessarily reflect the views of NIMH/NIH/DHHS/US Federal Government



From Subjective Symptoms to Objective Biomarkers

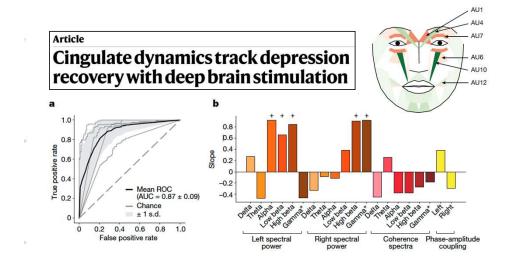
- Symptom-based diagnosis and outcome assessment in psychiatry is associated with
 - Heterogeneity within diagnoses, comorbidity across diagnoses, and fails to map well onto brain circuitry
- Role for objective biomarkers to reduce heterogeneity and inform treatment decisions

Symptom-based Dx



Deng, ... Lisanby. Annu. Rev. Pharmacol. Toxicol. 2020.

Biomarker-informed treatment decisions

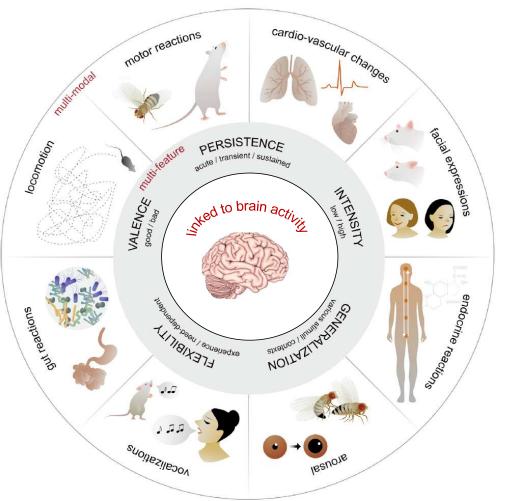


Alagapan et al. Nature 2023





Brain Behavior Quantification and Synchronization (BBQS)

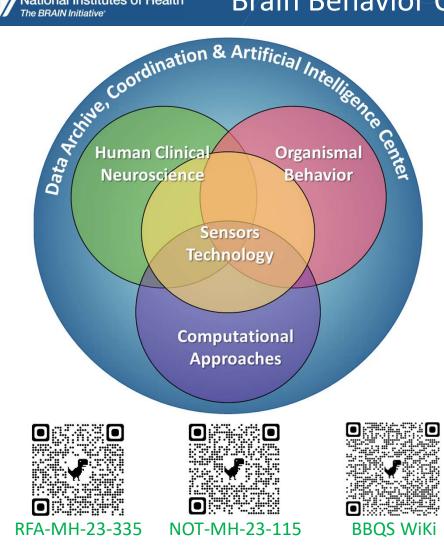


Zych & Gogolla, 2021

- Gaps in understanding how the brain gives rise to complex behaviors represent barriers to fulfilling the potential of brain-based interventions
- Understanding behavior in its full complexity requires detailed, multidimensional analysis of a broad range of behaviors in the context of the environment



Brain Behavior Quantification and Synchronization (BBQS)



- Gaps in understanding how the brain gives rise to complex behaviors represent barriers to fulfilling the potential of brain-based interventions
- Understanding behavior in its full complexity requires detailed, multidimensional analysis of a broad range of behaviors in the context of the environment
- BBQS is a set of integrated funding opportunities with the goals of:
 - Developing tools to capture and quantify behavior with high temporal resolution and across multiple dimensions
 - Synchronizing behavior capture with simultaneously recorded brain activity
 - Building new conceptual and computational models that capture the complexity of behavior
 - Establishing a cross-disciplinary consortium to develop, integrate and disseminate tools, research designs, and ethical frameworks