

## A neural mechanism for forming and terminating a decision

### Abstract

The neurobiology of perceptual decision-making provides our most detailed understanding of a thought process, owing to the consilience of mathematical theory, quantitative behavior, and both correlational and causal experiments. Recent progress in neural recording technology now renders most of the forebrain accessible to population recordings, thus enabling simultaneous recordings of functionally connected neural populations in the parietal cortex and superior colliculus (SC). The population recordings permit direct observation of the stochastic drift diffusion signal in the parietal cortex (area LIP) associated with a single decision. The SC appears to implement the threshold crossing operation on the LIP signal, leading to termination of the decision process and a saccadic report. The SC also terminates decisions covertly, when the saccadic report is uncoupled from decision termination. The findings bear on broader principles of the state computation, direct vs. distributed computation and the logic of macro-circuit function.

### Speaker

**Michael Shadlen**

**Professor of Neuroscience**

COLUMBIA Zuckerman

Institute

