

Summary of Research Program:

My lab's focus is reward processing, how it differs under behavior phenotypes that are more vulnerable or resilient to mental illness and how it is changed by psychiatric pathology. Our primary focus is dopamine transmission and the circuits in which it participates.

We developed tools that allow us to track dopamine with sub-second resolution in animals over the course of months (Clark et al, Nat Methods, 2010). This approach allows us to study trajectories of precise neurochemical encoding of behaviors over the course of the development of symptomology and subsequent treatment in animal models of disease. We also have adapted this technology for intraoperative recording in humans (Kishida et al, PLoS One, 2011).

Our research highlights include contributions in the area of dopamine's role in learning (Flagel et al, Nature, 2012), decision making (Gan et al, Nat Neurosci, 2010) and goal navigation (Howe et al, Nature, 2013). We have gleaned information on how stress impacts appetitive motivation (Wanat et al, Nat Neurosci, 2013), how adolescent alcohol use produces enhanced risk taking later in life (Clark et al, PLoS One, 2012), and identified biological mechanisms for the motivational shift in stress-induced depressive disorders (Lemos et al, Nature, 2012) and the switch to excessive drug intake in substance abuse (Willuhn et al, Nat Neurosci, 2014).

These approaches have attracted a large number of collaborations, including National Academy members Akil, Palmiter, Graybiel and Kandel.



Paul Phillips, PhD

[Lab Website](#)

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