

# Insects cannot tell us anything about subjective experience or the origin of consciousness

Brian Key<sup>a,1</sup>, Robert Arlinghaus<sup>b</sup>, and Howard I. Browman<sup>c</sup>

Barron and Klein (1) propose that insects have the capacity for subjective experience. This hypothesis is based on two questionable premises: first, that the vertebrate midbrain is sufficient for subjective experience and, second, that this structure integrates multiple sensory inputs and produces a neural representation that is used to drive behavior. Barron and Klein (1) argue that because the insect brain has analogous functional properties to the vertebrate midbrain, it must be, at least, capable of subjective experience. However, this conclusion is not supported by their analysis.

Although Barron and Klein's hypothesis (1) speaks to the analogous evolution of nervous systems capable of integrative processing, it is silent on the emergence of subjective experience. In the abstract, the authors contend that the vertebrate midbrain is sufficient for subjective experience. However, in the main text, they instead claim that the midbrain supports a basic capacity for subjective experience, which is elaborated upon by the cortex. The idea that the vertebrate nervous system is hierarchical is well known; their thesis provides no new insight into subjective experience and has no more explanatory power than proposing that a brain is necessary for subjective experience. We note that even the authors question the idea that the

vertebrate midbrain is sufficient for subjective experience. In fact, Barron and Klein's conclusions (1) about the capacity of the midbrain are primarily based on anecdotal reports that some anencephalic individuals respond to sensory stimulation, observations that failed to distinguish nonconscious from conscious responses. They also contend that subcortical regions must be responsible for awareness because some cortical lesions do not produce defects in subjective experience. This conclusion is unsupported because there are many reports of selective cortical lesions producing abnormal subjective experience. For instance, lesions to the primary visual cortex are well known to cause blindness (i.e., loss of the subjective experience of imagery). These weaknesses in the premises underlying Barron and Klein's hypothesis have been discussed in detail elsewhere (2–4).

Finally, Barron and Klein (1) believe that because insects display selective attention to visual stimuli (or produce upstream neural representations of sensory information), they must be sentient. However, neither selective attention nor neural representations are necessarily indicative of subjective experience (5), a point Barron and Klein (1) acknowledge. Thus, they fail to make a convincing case that insects can tell us anything about subjective experience or consciousness.

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<sup>a</sup>School of Biomedical Sciences, University of Queensland, Brisbane, QLD 4072, Australia; <sup>b</sup>Department of Biology and Ecology of Fishes, Leibniz Institute of Freshwater Ecology and Inland Fisheries & Humboldt-Universität zu Berlin, Berlin 10155, Germany; and <sup>c</sup>Institute of Marine Research, Storebo 5392, Norway

Author contributions: B.K., R.A., and H.I.B. performed research, analyzed data, and wrote the paper.

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<sup>1</sup>To whom correspondence should be addressed. Email: brian.key@uq.edu.au.