

# A link between brown adipose tissue, circadian dysregulation, and suicide risk?

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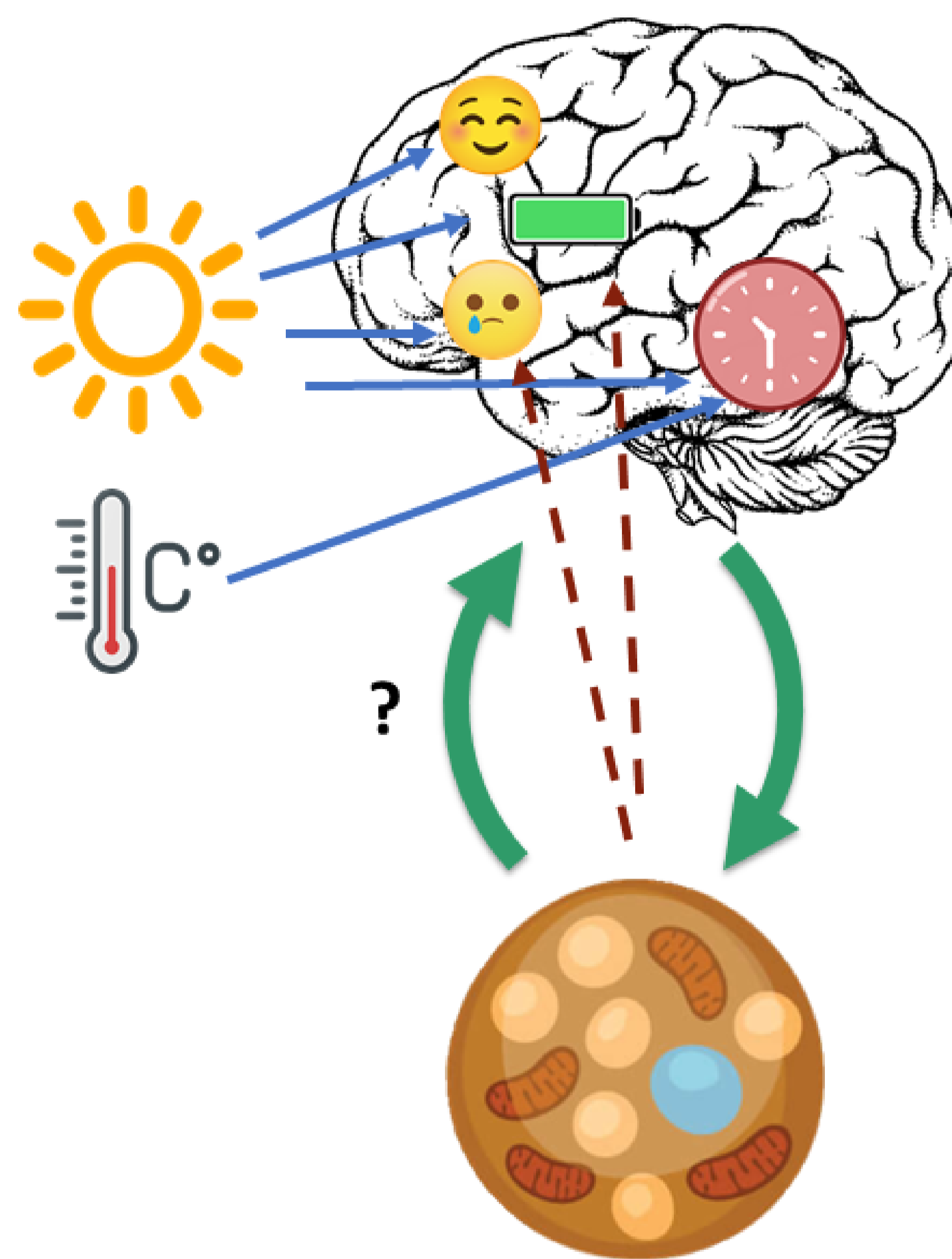
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## INTRODUCTION

Brown adipose tissue (BAT) is important for the regulation of body temperature and is involved in the circadian system. This endocrine active organ is under neuronal, hormonal and immune control and secretes autocrine, paracrine and endocrine active substances (“batokines”). Circadian desynchronizations are common in psychiatric disorders and associated with an increased suicide risk.

## METHODS

We summarize current evidence and present a hypothesis regarding crosstalk between the brain, circadian system, and BAT (Fig. 1).



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**Figure 1. Cross-talk between brain, circadian clock and BAT. Blue arrows:** daylight and ambient temperature affect mood, energy level and circadian clock.  
**Green arrows:** cross-talk between brain and brown adipose tissue in general.  
**Dotted line arrows:** Hypothesised influence of BAT on mood and energy level.

## CONCLUSIONS

We suggest that BAT is involved in the brain/environment homeostasis and deserves attention from a psychiatric point of view. Better understanding of circadian disruptions and its mechanisms can contribute to personalized diagnostic measures and therapies as well as advanced methods for assessment of the suicide risk.

## RESULTS

Dysregulation of BAT can indirectly worsen psychiatric conditions and increase the risk of suicide, as one of the previously suggested explanations for the seasonality in suicide rates. Interestingly, substances with proven efficacy in reducing the suicide risk, like clozapine or lithium, interact with BAT. The effects of clozapine on fat tissue are stronger and might differ qualitatively from other antipsychotics, but the significance remains unclear.

## CONTACT

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