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Behaviour of laboratory mice is altered by light pollution within the housing environment

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Abstract

*Environmental light-dark cycles play an important role in behavioural and physiological processes. It is essential that laboratory vivaria be designed to properly control the light conditions in which laboratory mice are housed; however, this is not universally the case. Some laboratory vivarium doors are designed with windows, which allow light from the hallways to leak into the housing space during the rodents' dark phase. Personnel entering and exiting the housing space during the dark phase can also create excessive light leak from brightly illuminated hallways. In this study, we investigated the hypothesis that exposure to dim light at night, as commonly experienced in many laboratory rodent housing spaces, alters mouse (*Mus musculus*) behaviour. We specifically analysed patterns of locomotor activity, anxiety- and depressive-like responses. Exposure to dim (5 lux) light at night altered home-cage locomotor activity and increased anxiety and some depressive responses among laboratory mice. These results suggest that light conditions can alter mouse behaviour and potentially influence experimental outcomes. Increased care should be taken to properly control light-dark conditions for laboratory animals.*

Keywords: *animal welfare, anxiety, behaviour, circadian, depression, mouse*