

# The importance of light: From vision to circadian rhythms & sleep

**Stuart Peirson**

*University of Oxford, United Kingdom*

As well as vision, light exerts widespread effects on physiology and behaviour, including regulating circadian rhythms, sleep, hormone synthesis, affective state, and cognitive processes. Appropriate lighting in animal facilities supports welfare and ensure that animals enter experiments in a controlled physiological and behavioural state. Proper consideration of light during experimentation - both as an experimental variable and as a general feature of the environment - may improve experimental design and provide more reproducible outcomes, improving data quality. However, ambient light for animals is typically quantified in units (lux) designed for human observers. Here I report the consensus view of an expert working group, with expertise spanning mammalian photobiology, neurobiology and animal husbandry and welfare, convened in February 2023 to agree upon metrics for light appropriate for laboratory animals and application to improve animal welfare and the quality of animal research. The consensus view was that species-specific versions of the recently standardised alpha-opic metrology represent the best available approach to quantifying light for non-human species. Here I will describe the importance of this approach, methods for measuring these quantities, practical guidance for their implementation in husbandry and experimentation, and quantitative guidance on appropriate light exposure for laboratory rodents.