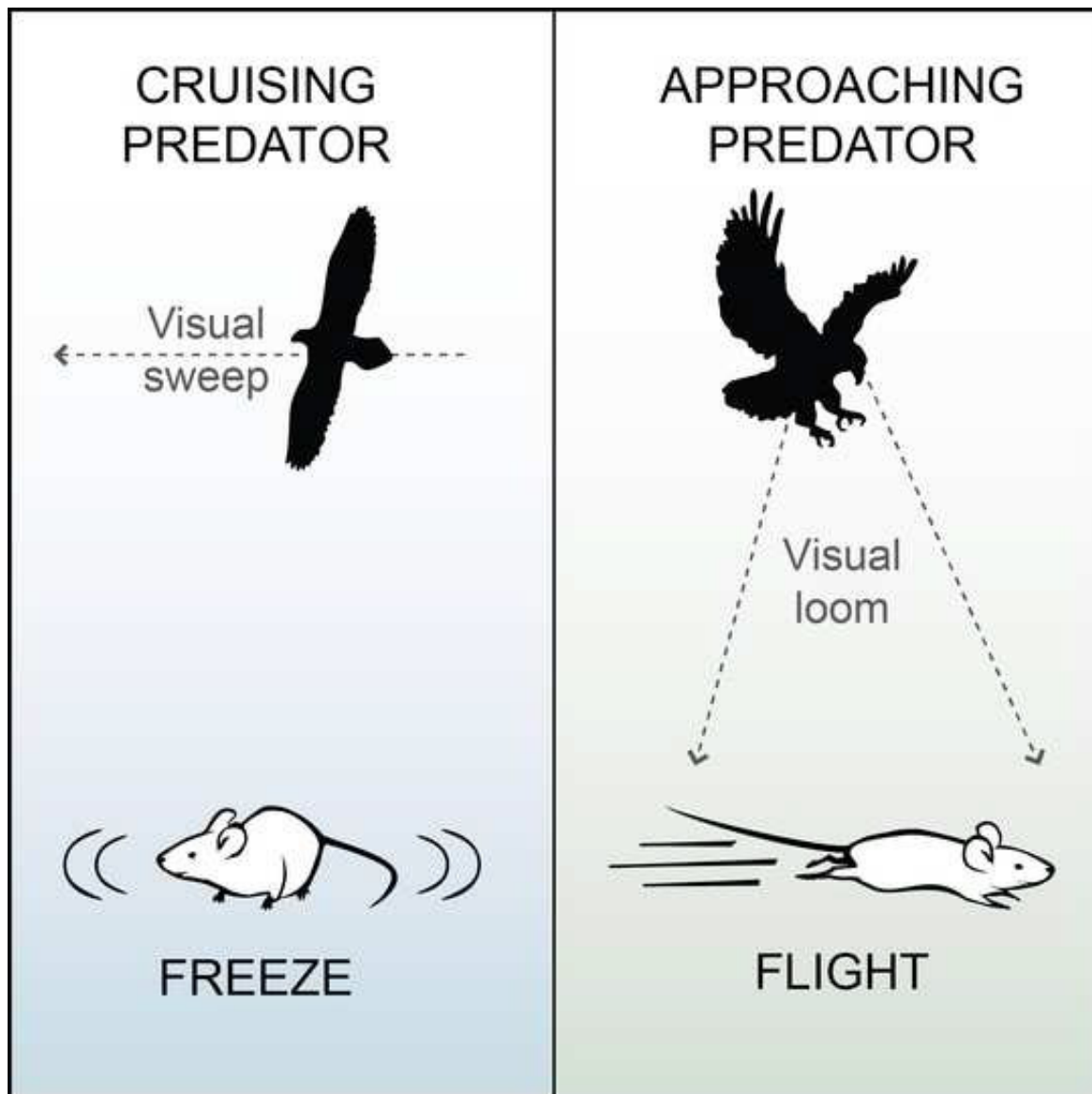


# Researchers discover what makes mice freeze or flee

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New UCL research shows that mice are likely to freeze at the sight of small slow-moving shapes and flee from fast approaching ones. This is thought to represent

reactions to predators cruising overhead or swooping in. Credit: Sam Solomon, UCL

Mice are likely to freeze at the sight of small slow-moving shapes and flee from fast approaching ones, finds new UCL research.

This provides the first evidence that [mice](#) make instinctive behavioural choices based on vision alone, and could help inform future studies of behaviour and [brain function](#) in mice. Knowing how mice instinctively respond to visual cues will enable researchers to conduct easy, reproducible studies to see if this behaviour is disrupted in mental and physical conditions.

The study, published in *Current Biology*, involved mice that were shown [visual stimuli](#) in a controlled environment while their movements were filmed. The environment included open ground, a covered refuge and a display screen representing the 'sky'.

Small discs moving slowly across the screen simulated flying predators cruising at a distance, while growing discs simulated approaching, 'looming' predators. The results showed that mice fled to the refuge 88% of the time when they saw the looming disc, but instead froze 84% of the time when they saw the cruising disc.

"We found that mice reacted consistently to these different visual cues, offering a reliable way of driving opposing behaviours," says Dr Sam Solomon (UCL Experimental Psychology), who led the study. "Previous research has relied on presenting real predators, which are harder to control and also produce scent or sound. Mice are generally thought to rely on scents and sounds more than vision. By using only [visual cues](#), we found strong evidence that they do use the visual system to guide their

behaviour."

For the 'cruising' stimulus, mice reacted differently depending on how fast the disc travelled. Mice were more likely to freeze when the disc was travelling slowly, and more likely to flee when it was travelling quickly.

"The fact that mice appeared to take various factors into account when deciding whether to freeze or flee from a cruising predator suggests that this is not a simple reflex," explains Dr Solomon. "When they saw a cruising stimulus, mice would often freeze initially and then flee, suggesting that they continuously assess their defence strategies during freezing behaviour. They then select an optimal defence strategy, considering the flight path of the predator."

Provided by University College London

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