

Translational research platform — University of Bristol, UK

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This project is using tiny fruit flies (*Drosophila*) to understand what goes wrong when the CASK gene does not work properly, and to find ways of reversing these problems.

The researchers have developed CASK fly models that reproduce several features seen in people with CASK-related disorders, including difficulties with movement, abnormal sleep and increased susceptibility to seizures. Importantly, they have shown that restoring human CASK in particular nerve cells can improve movement in the flies. They have also identified specific types of nerve and support cells that appear to be important in CASK-related seizures.

The team is now investigating what happens inside CASK-deficient cells. Their results show that reducing CASK affects cell survival and calcium signalling, providing clues about the cellular mechanisms that may contribute to CASK disorders.

The next stage is to build and test more detailed CASK fly models, including models carrying different CASK variants and models in which different parts of the CASK protein can be restored in specific cell types. The ultimate aim is to establish a practical, relatively low-cost platform that can be used to test potential treatments and identify drugs that could improve CASK-related problems.

This research is helping us move from understanding what CASK does towards finding ways to correct the problems caused when it does not function properly.