

## **Lay Summary**

**BRAIN UK Ref: 24/001**

### **The mosaic brain: a new diagnostic approach in focal epilepsies**

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Epilepsy, characterised by recurrent epileptic seizures, is the most common neurological disease affecting children, significantly reducing their quality of life. Nowadays, genetics is a key element of patients' diagnosis and management, directly leading to improved outcomes to about half of patients. Still, despite the different therapies currently available, approximately 30% of children have drug resistant epilepsy. This highlights the importance of identifying new therapeutic targets and alternative therapies. Our study focuses on the role of genetic mosaicism in epilepsy, which suggests that mosaic testing would assist in diagnosing cases without a known genetic cause. As a result, some of our researchers and collaborators designed a "Mosaic Brain Disorders" panel in the Great Ormond Street Hospital genetic laboratories for diagnostic clinical testing. Genetic mosaicism occurs when genetic variation affects only a subgroup of cells in an individual and existing methods rely on brain tissue, limiting testing to children who qualify for surgery. To expand testing to more children, without the need for surgery, we want to also focus our work in using alternative samples, like DNA from cerebrospinal fluid, for the same test. We aim to further our understanding of brain mosaicism in epilepsy, using the current available tests, as well as aim to increase access to testing by developing methods to use pre-surgical samples.