Genomic Unity® Case Study

Shifting the diagnostic paradigm with a whole genome platform

Single exon deletion explains epilepsy and developmental delay in 2-year-old male

Clinical presentation

A 2-year-old male presented with a history of severe, early-onset seizures and global developmental delay:

- 4 weeks old - Tonic clonic seizures
- 2 months old - Global developmental delay
- 22 months old - Difficulty swallowing, unable to sit or roll over, right side seems stronger than his left, cortical visual impairment, hypotonia, abnormal electroencephalogram [EEG], relative microcephaly

Results and interpretation

Variantyx **Genomic Unity® Whole Genome Analysis** identified a *de novo*, hemizygous, pathogenic 2.1kb deletion that spans exon 7 of the *CDKL5* gene.

The deletion is mosaic, present in ~40% of reads for this X-linked gene.

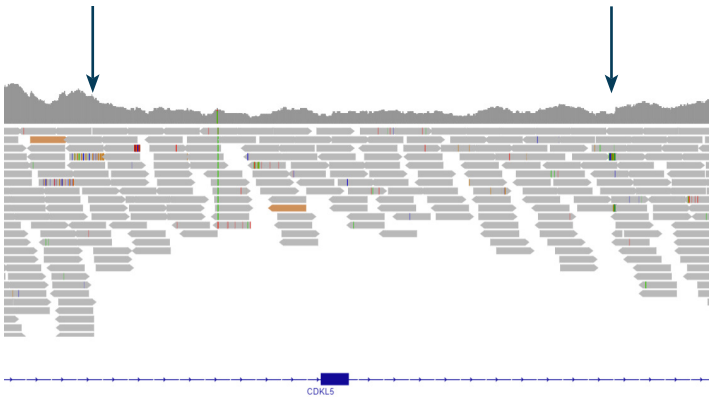
Diagnosis: X-linked dominant developmental and epileptic encephalopathy 2 (DEE2)

Previous genetic testing

Multiple tests were performed including:

- Chromosomal microarray (CMA)
- Epilepsy and hypotonia gene panels
- Mitochondrial genome sequencing
- Whole exome sequencing (WES)

! Variantyx Genome Analysis was ordered because of its ability to identify all major variant types in a single test.



Uniform data from WGS clearly shows the mosaic, 2.1kb deletion.

Variantyx

The Variantyx difference

Why was this single exon deletion detected by Genomic Unity® Whole Genome Analysis, and not detected by other tests?

- ✓ CMA tests are unable to detect deletions smaller than 25kb.
- ✓ Targeted tests like the epilepsy panel ordered are typically unable to detect deletions smaller than 500bp. While the full size of the deletion is 2,123bp, the exonic portion is only 121bp.
- ✓ Exomes are typically unable to detect deletions smaller than 3 exons in size.

Variantyx genome analysis has a detection range from 1bp to whole chromosomal events, easily detecting this 2.1kb deletion.

- ✓ Both deletion breakpoints are intronic, adding to the complexity of detection.

Variantyx genome analysis includes intronic regions, enabling breakpoint detection regardless of location.

Variantyx tests that would have identified this variant

Genomic Unity® Whole Genome Analysis | Genomic Unity® Exome Plus Analysis | Genomic Unity® Constitutional Genome-Wide Copy Number Variant Analysis | Genomic Unity® Genome-Wide CNV and FMR1 Analysis | Genomic Unity® Epilepsy Analysis

Bring the power of whole genome sequencing to your practice today.

To get started, contact your Clinical Sales Specialist and visit us online at variantyx.com.

Variantyx

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