Genomic Unity® Case Study

Shifting the diagnostic paradigm with a whole genome platform

Partial exon deletion explains clinical Rett syndrome diagnosis in 9-year-old female

Clinical presentation

A 9-year-old female with a clinical diagnosis of Rett syndrome presented with a history of global developmental delay with regression and an array of symptoms, including:

- Microcephaly
- Quadriparesis and quadriplegia with a history of infantile hypotonia
- Seizures and tremors
- Nonverbal with a history of speech difficulty

Results and interpretation

Variantyx Genome Analysis identified a heterozygous, pathogenic 453bp deletion affecting the final exon of the *MECP2* gene.

The deletion is predicted to result in absent or dysfunctional protein.

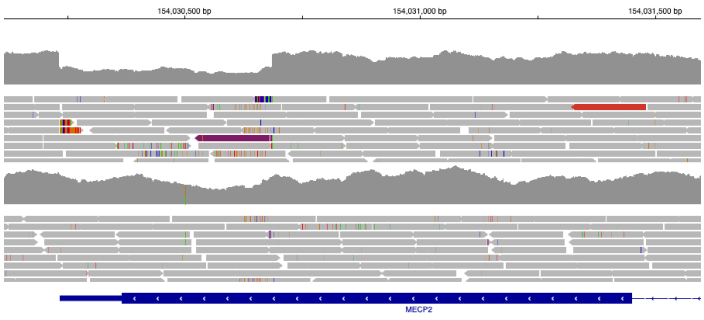
Diagnosis: Rett syndrome

Previous genetic testing

Beginning at 2 years of age, exhaustive testing was performed including:

- Chromosomal microarray (2x)
- Epilepsy panel
- *SCN1A* and *MTHFR* gene sequencing
- Rett/Angelman syndrome panel, PWS/AS methylation
- Whole exome sequencing (WES), multiple reanalysis
- Whole genome sequencing (WGS)

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



Uniform data from PCR-free WGS clearly shows the 453bp deletion.

Variantyx

The Variantyx difference

Why was this partial exon deletion detected by Variantyx Genome Analysis, and not detected by other tests?

- ✓ CMA tests are unable to detect deletions smaller than 25kb.
- ✓ Targeted tests like the epilepsy and Rett/Angelman syndrome panels ordered are typically unable to detect deletions smaller than 500bp.
- ✓ Exomes are typically unable to detect deletions smaller than 3 exons in size, particularly in poorly covered regions such as this region of *MECP2*.
- ✓ Other genome analyses are typically unable to detect deletions smaller than 1kb.

Variantyx genome analysis has a detection range from 1bp to whole chromosomal events, easily detecting this 453bp deletion.

- ✓ One of the deletion breakpoints is intronic, adding to the complexity of detection.

Variantyx genome analysis includes intronic regions, enabling variant 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 | Genomic Unity® Intellectual Disability 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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