Genomic Unity® Case Study

Shifting the diagnostic paradigm with a whole genome platform

Partial exon deletion plus deep intronic SNV explains juvenile parkinsonism in 16-year-old male

Clinical presentation

A 16-year-old male presented with a history of dopa-responsive juvenile parkinsonism/dystonia since the age of four. Additional symptoms included:

- Oculogyric crises
- Diurnal fluctuation of symptoms
- Learning delays
- Possible neurotransmitter metabolic disorder

Results and interpretation

Variantyx **Genomic Unity® Whole Genome Analysis** identified compound heterozygous variants in the *TH* gene: a likely pathogenic, paternally inherited 554bp deletion impacting part of exon 2 and a likely pathogenic, maternally inherited intronic SNV >300bp from an exon/intron boundary.

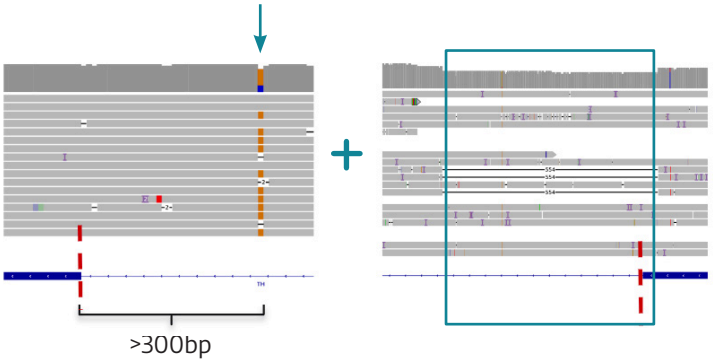
Diagnosis: Segawa syndrome

Previous genetic testing

Multiple tests were performed including:

- *TH* gene sequencing
- Dystonia panel
- Whole exome sequencing (WES)

Genomic Unity® Whole 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 intronic SNV (left) and 554bp deletion (right).

Variantyx

The Variantyx difference

Why were both of these variants detected by Genomic Unity® Whole Genome Analysis, and not detected by other tests?

Gene sequencing is unlikely to detect CNVs like this deletion and would need to have been paired with MLPA for better likelihood of detection.

✓ Panels are typically unable to detect deletions smaller than 1 exon in size.

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 554bp deletion.

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

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

✓ The SNV falls outside of the 10-20bp of intronic sequence flanking exon/intron boundaries that is sometimes targeted by panel and exome assays.

Variantyx genome analysis includes the full intronic sequence, enabling detection of characterized variants anywhere within the intron.

Variantyx tests that would have identified this variant

Genomic Unity® Whole Genome Analysis | Genomic Unity® Exome Plus Analysis | Genomic Unity® Exome Analysis | Genomic Unity® Movement Disorders 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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