Integrated CNV and Structural Variant Analysis Leads to Improved Clinical Yield

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Ambry Genetics performs comprehensive genetic testing on multiple hereditary conditions. Of these the lab performs testing on neuro developmental cases where, sequence enrichment of the targeted coding exons and adjacent intronic nucleotides is carried out by a bait-capture methodology using long biotinylated oligonucleotide probes. This is followed by polymerase chain reaction and next-generation sequencing of up to 196 genes associated with intellectual disability, autism spectrum disorders and epilepsy. Gross deletion/duplication analysis for all genes is performed utilizing a targeted chromosomal microarray. Similarly, for constitutional testing, Genomic deoxyribonucleic acid (gDNA) is labeled and hybridized to an oligonucleotide array with more than 1.9 million copy number probes and nearly 750,000 SNP probes used for genotyping and copy number analysis. This array allows for detection of loss of copy number (deletion), gain of copy number (duplication) or regions of homozygosity. Negative results can be reflexed to customizable exome sequencing of up to 500 genes. For both of these tests, CNV, AOH, and SV data is generated and visualized using different platforms. In this presentation, we describe how all of these different data modalities can be brought together to provide a much-improved clinical utility of genetic testing over a single test approach.