CENTOGENE
THE RARE DISEASE COMPANY

NGS Panels Pediatric Neurology

A Targeted Approach For Testing Neurological Disorders

PRODUCT SHEET

NGS Panels For Pediatric Neurology

CENTOGENE's selection of Next Generation Sequencing (NGS) gene panels for hereditary neurological disorders (HNDs) can help pediatricians pinpoint the genetic cause of major neurological disorders in children including movement disorders, epilepsy, autism spectrum disorders, neuropathies, neuromuscular disorders and others.

Our panels follow a phenotype-directed approach that includes all relevant clinical genes and genes necessary for the differential diagnosis of syndromes with overlapping phenotype(s) — enabling the diagnosis of a disease that could have otherwise been missed. Our high-quality sequencing is spported by complementary assays to provide advanced detection and enable a true diagnosis. This approach maximizes the clinical utility, minimizes the risk of incorrect panel choice, increases cost-effectiveness, and ultimately simplifies the diagnostic process.

The CENTOGENE Advantage

- Coverage of **all relevant disease-causing genes** and non-coding and coding pathogenic variants
- The most **up-to-date panel gene content** with the latest medical and in-house findings
- **High-quality analysis for precise clinical interpretation** using advanced bioinformatics and artificial intelligence-powered tools
- **Best-in-class insights** powered by the world's largest rare disease-centric Bio/Databank from the leader and trusted partner in rare disease diagnostics
- **Dedicated team of rare disease experts** to provide the best clinical interpretation and life-long support

NGS Panel Options

PEDIATRIC NEUROLOGY PANELS	ASSOCIATED DISEASE(S)
CentoMito® Comprehensive	Panel includes syndromes related to mutations in mitochondrial genes and nuclear genes related to mitochondrial diseases such as chronic progressive external ophthalmoplegia, Kearns-Sayre syndrome, Leigh's syndrome, mitochondrial disorders, mitochondrial encephalomyopathy, lactic acidosis and stroke-like episodes, myoclonus epilepsy with ragged red fibers, myogastrointestinal encephalomyopathy, NARP, neonatal mitochondrial hepatopathies, and Pearson syndrome.
CentoMito® Genome	Panel includes syndromes related to mutations in mitochondrial DNA such as chronic progressive external ophthalmoplegia, Kearns-Sayre syndrome, leber hereditary optic neuropathy, Leigh's-like syndrome, Leigh's syndrome, mitochondrial disorders, and NARP.
CentoIEM	Inborn Errors of Metabolism largely impact human diseases. CentoIEM covers a large array of different disorders and includes genes responsible for diverse phenotypes such as amino-acidopathies, organic acidurias, urea cycle disorders, porphyrias, Aicardi-Goutieres syndrome, ceroid liposfuscinosis, congenital glycosylation disease, familial hypercholesterolemia, Leigh's syndrome, mitochondrial encephalopathy, neurodegeneration with brain iron accumulation, and Refsum disease, among others.
CentoMetabolic®	Our panel integrates genetic and biochemcial testing to test for patients suspected of having a metabolic disorder of presenting complex, overlapping symptoms, a metabolic crisis, or neurological conditions of unkown etiology. Panel includes complementary testing by proprietary biomarkers and enzyme-activity assays if applicable.
CentoNeuro	Our largest panel is designed to detect a wide array of neurological disorders including arthrogryposis multiplex congenita, dystonia, epilepsy, familial hemiplegic migraine, hypogonadotropic hypogonadism, Kallman syndrome, Leigh's syndrome, leukodystrophy, Meckel syndrome, mitochondrial encephalomyopathy, neonatal mitochondrial hepatopathies, and neuromuscular disorders between others.
Epilepsy	Our epilepsy panel covers different types of seizure syndromes including but not limited to Aicardi-Goutieres syndrome, brain iron accumulation syndromes, Dravet syndrome, early infantile epileptic encephalopathy, epilepsy partial, epilepsy generalized, epilepsy absence, myoclonic epilepsy, epileptic encephalopathy, Leigh's syndrome, mitochondrial encephalomyophaty, mitochondrial DNA depletion, leukodystrophy, peroxisome biogenesis disorders, hypomagnesemia and urea cycle disorders. Panel includes repeat expansion analysis for *CSTB*.
Intellectual Disability	Panel covers neurodevelopmental disorders such as syndromic autism, microcephaly, neural migration disorders, intellectual disability, and Aircardi-Goutieres syndrome. Panel includes repeat expansion analysis for *FMR1*.
Neuromuscular	Our panel for muscular diseases covers disorders such as metabolic myopathies, muscular dystrophies, Charcot-Marie-Tooth, congenital myasthenic syndromes, congenital myopathies, myofibrillar myopathies, nemaline myopathies, and other syndromes with hypotonia, myotonia, or muscular weakness. Panel includes repeat expansion analysis for *DMPK*.

For more details on gene content and other syndromes covered please visit our page: www.centogene.com/ngspanels

Key Features and Performance

COVERAGE	• ≥99.0% targeted regions covered at ≥ 20x • Mean depth coverage 150x • For each gene, all SNVs described in HGMD® and CENTOGENE's Bio/Databank are covered, including relevant deep intronic and regulatory variants.
GENES	For a complete overview of included genes, please visit: www.centogene.com/ngspanels-medical-reporting
SPECIFICITY	≥99.9% guaranteed for all reported variants. Variants with low quality and/or unclear zygosity are confirmed by orthogonal methods (Sanger, MLPA, qPCR).
CNV SENSITIVITY	NGS-based copy number variations (CNV) are detected with a sensitivity of above 95% for all homozygous deletions and heterozygous deletions/duplications spanning at least three consecutive exons. Heterozygous CNVs spanning less than three exons cannot reliably be detected, are therefore excluded from routine analysis, and will only be inspected and reported upon medical or technical indication.
REPORTING	Pathogenic and likely pathogenic variants are reported following American College of Medical Genetics and Genomics (ACMG) classification guidelines. Variants of uncertain significance (VUS) are not reported in any of the following cases: the described phenotype(s) is explained by detected pathogenic or likely pathogenic variant(s); the detected VUS are not related to the described phenotype(s) of the patient or family members; in the lack of sufficient clinical information.
TAT	25 business days[1]

SNVs: single nucleotide variants; InDels: small insertions/deletions; CNVs: copy number variations; MLPA: Multiplex ligation-dependent probe amplification; qPCR: quantitative polymerase chain reaction.

1 For relevant panels where a quick medical answer is needed we have shorter TAT (10 or 15 days) please visit www.centogene.com/ngspanels for more information

DELETION/DUPLICATION	High resolution NGS-based CNV analysis to detect larger deletions and duplications is included in all our panels at no extra cost. Deletion/duplications constitute 5 – 10% of disease-causing variants. By including CNV analysis in our panels, the potential of providing the most accurate diagnosis increases.
COMPLEMENTARY ASSAYS	To maximize clinical utility, our panels are reinforced with auxiliary assays such as repeat expansions to cover genes/regions that cannot be examined by current sequencing technology.
IMPROVED INTERPRETATION	Our proprietary Bio/Databank enables access to more than 31 million unique variants for best medical interpretation.
VARIANT RECLASSIFICATION PROGRAM	All our panels are automatically entered into our variant reclassification program. This program supports the identification of new genetic evidence, and physicians will be notified free of charge for life if the nature of a previous diagnosis has been impacted.