Complexity. Simplified.

Routine Multi-Gene Testing for Diagnosis of Inherited Neurocognitive Disorders

strand center
FOR GENOMICS & PERSONALIZED MEDICINE

Introduction - Multi-gene Testing for inherited Neurocognitive Disorders

Neurocognitive disorders encompass disorders in which there is a deficit of cognitive function that affects attention, learning, memory, language perception and social skills. Conventional gene-by-gene molecular diagnostic approaches (single-gene testing) do not provide adequate information to accurately diagnose a case with complex phenotypes and unknown mutations. Multi-gene testing using Next-Generation Sequencing (NGS) can provide accurate and rapid clinical diagnosis for complex and heterogeneous neurocognitive disorders, at a cost lesser than conventional single-gene testing.

Highlights of NGS Testing for Neurocognitive Disorders

1. High clinical utility for improved disease management and treatment decisions.
2. Molecular confirmation of a clinical diagnosis.
3. Aids in differential diagnosis, such as, differentiating between syndromic and nonsyndromic forms of the disorder.
4. Facilitates carrier testing (for autosomal recessive disorders).
5. Recurrence risk assessment for future pregnancies and prenatal testing after confirmation of diagnosis.
6. Identification of at-risk family members.
7. Accurate information for comprehensive genetic counseling.

Clinical Indications of Disorders Covered in the Strand Neurocognitive Disorders Test

Disorder	Description
Autism spectrum disorders (ASD)	ASD comprises a clinically heterogeneous group of disorders that share common features of impaired social relationships, language and communication, repetitive behaviors or a narrow range of interests. For most disorder, symptoms develop gradually. This test covers genes associated with ASD having autism as a major clinical feature. Autism could either be complex or essential, depending on the presence or absence of physical abnormalities.
Intellectual disability (ID)	ID is a condition that includes cognitive deficit and a lack of skills necessary for daily living. This test covers disorders with ID as a major clinical feature, such as: X-linked ID, autosomal dominant ID, autosomal recessive ID, metabolic defects associated ID, syndromic ID and neuronal ceroid lipofuscinosis associated ID.
Leukodystrophies	Leukodystrophies are a group of disorders in which there is degeneration of the white matter due to disrupted growth or maintenance of the myelin sheath that insulates nerve cells. The pattern of white matter involvement can be suggestive of a specific leukodystrophy. This test covers disorders associated with leukodystrophies as a major clinical feature, such as: hypomyelinating leukodystrophy, demyelinating leukodystrophy, leukoencephalopathy with vanishing white matter, Aicardi-Goutieres syndrome, peroxisome biogenesis disorder and mitochondrial complex deficiency associated leukodystrophy. These manifest as motor dysfunction that affects various organs and causes changes in cognitive function.

Who to Test?

1. Patient with cognitive deficit indicative of one of the three Neurocognitive conditions.
2. Carrier testing for couples with a child whose clinical features was indicative of one of these disorders.
3. Single gene test or MLPA tests have returned inconclusive.
4. For differential diagnosis.

Benefits of NGS/Multi-gene Testing for Neurocognitive Disorders

1. Rapid turnaround time and cost-effectiveness.
2. Unprecedented sequencing speed by massive parallel sequencing technology and ability to look at many genes at the same time.
3. NGS can detect different types of mutations in the DNA sequence, such as SNVs, indels and large deletions or duplications.
4. Diagnosis of complex phenotypes.

Can the Strand Neurocognitive Disorders Test Be Offered for Prenatal Diagnosis?

This test is not offered directly for prenatal diagnosis. However, a prenatal diagnosis can be offered based on the identified variation in the proband's sample or after carrier testing in the parents.

Strand Neurocognitive Disorders Test: Genes & Test Selection

Disorder	Disorder subtype	Gene list	Number of Genes
Autism spectrum disorders (ASD)	ASD	*ADNP, ADSL, AFF2, AUTS2, CACNA1C, CNTN4, DHCR7, FMR1*, FOXP1, GABRA5, GABRB3, GRIA3, GRIN2B, GRPR, HERC2, HOXA1, ITGB3*, KATNAL2, KCND2, KDM5C, KIAA2022, MBD1, MECP2*, MEF2C, MET, NIPBL, NLGN3*, NLGN4X, NRXN1, NRXN2*, NTNG1, PCDH19, POGZ, PTEN, RAB39B*, RBFOX1, RELN, SCN2A, SETD2, SLC25A12, SLC6A4, SYNGAP1, TCF4, TMLHE, TSC1, TSC2, UBE3A*	47
Intellectual disability (ID)	Autosomal dominant ID	*ADNP, AUTS2, CACNG2, CDH15, CTNNB1, DEAF1*, DOCK8, DPP6*, DYNC1H1, DYRK1A, EPB41L1, GRIN1, GRIN2B, KIF1A, KIRREL3, MBD5, MEF2C, POGZ, PPP2R1A, SETBP1*, SYNGAP1, ZMYND11*	22
	Autosomal recessive ID	*ANK3, CC2D1A, CRADD, CRBN, GRIK2, KIAA1033, MAN1B1, MED23, NDST1, NSUN2, PRSS12, ST3GAL3, TAF2, TECR, TRAPPC9, TTI2, TUSC3*	17
	Metabolic defects associated ID	*CBS, FKRP*, GATM, LAMP2, LARGE, MAOA, MTHFR, OTC, PDHA1, PGK1, POMGNT1, POMT1, POMT2, SRD5A3*	14
	Neuronal ceroid lipofuscinosis associated ID	*CLN5*, CLN6*, CLN8, MFSD8, PPT1*	5
	Syndromic ID	*AHI1, ANKRD11, AP1S1, ARL13B, ARID1A*, ARID1B*, ATP10A, ATP8A2, ATRX, C12orf57*, CA8, CASK*, CC2D2A, CDKL5, CEP290, CEP41, CNTNAP2, CREBBP, DCAF17, DMD, EHMT1, EP300, FGD1*, FLNA, GFAP*, HDAC4, HDAC8, HPRT1*, IL1RAPL1, INPP5E*, IRX5*, KAT6B, KCNJ10, KIF7*, L1CAM, LAMA1, MCPH1, MECP2*, MED12, MGAT2*, NIPBL, NRXN1, NSD1, NSDHL, NSUN2, OCRL, OFD1*, PAX6, PHF6, PIGL, PLP1, PPT1, PQBP1, PRPS1, RAB3GAP2, RAB40AL, RAD21, RBBP8, RPGRIP1L, RPS6KA3, SATB2, SIL1, SLC16A1*, SLC16A2, SMARCA2, SMARCA4, SMARCB1, SMC1A, SMC3, SMS, TBC1D24, TBCE, TCF4, TCTN1, TCTN2, TMCO1, TMEM138, TMEM216, TMEM237, TMEM67, TTC21B, UBE3A, UPF3B* USP9X, WDR81, ZEB2*	86
	X-linked ID	*ACSL4, AFF2, AGTR2, AP1S2, ARHGEF6, ATP6AP2, ATP7A, BCOR, BRWD3, CASK*, CLIC2, CUL4B, DCX, DLG3*, EFHC2, ELK1, FGD1*, FMR1*, FTSJ1, GDI1*, GPC3, GRIA3, HPRT1*, HSD17B10, HUWE1, IDS*, IGBP1, IL1RAPL1, IQSEC2*, KDM5C, KIAA2022, L1CAM, MAGT1*, MBTPS2, MECP2*, MED12, NLGN4X, NXF5*, OFD1*, OPHN1*, PAK3, PCDH19, PHF8, RAB39B*, SHROOM4, SLC9A6, SRPX2, SYP, TSPAN7, UBE2A, ZCCHC12, ZDHHC15, ZDHHC9, ZNF41, ZNF674, ZNF711, ZNF81**	57
	Others	*ARFGEF2, BCAP31, CACNA1A, CAMTA1, CHD2, CHKB, CIC, CNNM2, DIP2B, DMD, EFTUD2, ELOVL4, ELP2, ENTPD1, ESCO2*, FGFR2*, FKTN, FOXP1, GRIN2A, GRM1, HEPACAM, IGF1, ISPD*, KCNK9, KIF11, NDP, OMG, PAFAH1B1, PDHX*, PEX11B, PEX7, PIGO, PIGV, POLG, PORCN, POU1F1, PTCHD1, SLC2A1, SLC4A4, SOBP*, STXBP1, TUBA1A, VLDLR, WWOX, ZBTB16**	45
Leukodystrophies	Aicardi-Goutieres syndrome	*ADAR, IFIH1, RNASEH2A, RNASEH2B*, RNASEH2C*, SAMHD1, TREX1**	7
	Demyelinating leukodystrophy	*ABCD1*, ARSA, ASPA, GALC, GFAP, HEPACAM, HSD17B4, LMNB1, MLC1, NOTCH3*, PEX1*, PEX5, PSAP, SOX10*	14
	Hypomyelinating leukodystrophy	*AIMP1, FAM126A, HSPD1, PLP1, POLR1C, POLR3A, POLR3B*	7
	Leukoencephalopathy with vanishing white matter	*AARS2, EIF2B1, EIF2B2, EIF2B3*, EIF2B4, EIF2B5*	6
	Mitochondrial complex deficiency associated leukodystrophy	*FOXRED1, NDUFA1, NDUFA11*, NDUFAF1*, NDUFAF2, NDUFAF3*, NDUFAF4, NDUFAF5, NDUFB3*, NDUFB9, NDUFS1, NDUFS2, NDUFS3, NDUFS4, NDUFV1, NDUFV2, NUBPL, SDHA**	18
	Peroxisome biogenesis disorder	*PEX1*, PEX10*, PEX11B, PEX12, PEX13, PEX14, PEX16, PEX19, PEX2, PEX26*, PEX3, PEX6*, PEX7*	13
	Others	*ACOX1, CSF1R, CTC1, CYP27A1, DARS2, ERCC8, FA2H, HTRA1*, LAMB1, PHYH, RNASET2, SCP2, SLC16A2, SUMF1, TYMP, TYROBP*	16

Footnote:
**Genes having 85%-95% coverage. All other genes have >95% coverage in this test.*
Disclaimer: Gene coverage varies from sample to sample in the NGS runs.

How to Select a Test for Your Patient?

Based on the clinical indications of the patient and family history, select one appropriate disorder type/disorder subtype from the list provided above.

Genetic Testing Process

Test Prescription

Provide prescription to your patient for testing.

Risk Assessment

Risk assessment (to identify the risk, based on patient's family history).

Pre-test Genetic Counseling

Pre-test genetic counseling (pros and cons of the test will be explained to patient).

Sample Collection

The hospital or our product specialist collects sample from patient in kits provided by us. Sample is sent to our lab for processing.

Sample Processing & Analysis

Samples are processed through state-of-the art analysis, interpretation, and reporting platforms by our team of expert scientists.

Report

Receive your clinical report securely through email. The final results are delivered in an easy-to-read report containing actionable genomic variant information. Our genetic counselors are available to help you review the results and answer any questions you may have.

Post-test Genetic Counseling

Post-test counseling (the results of the report will be explained to the patient by the genetic counselor).

Sample Requirements (any one of the following)

Saliva in collection kits provided by Strand

Blood in EDTA (purple top tube)

DNA isolated from blood

Buccal swab in collection Kits provided by Strand

Dry blood spot Kits provided by Strand

Turnaround Time (TAT)

5-6 weeks from receipt of sample in the lab

Appendix Table : List of disorders covered in Strand® Neurocognitive Disorders Test

Name of the disorder	Category in Strand® Neurocognitive Disorders Test (Refer Page 4)
2-methyl-3-hydroxybutyryl-CoA dehydrogenase deficiency	Intellectual disability (ID)
A	
Aarskog-Scott syndrome	Intellectual disability (ID)
Acrocallosal syndrome	Intellectual disability (ID)
Adenylosuccinate lyase deficiency	Autism spectrum disorders (ASD)
Adrenoleukodystrophy	Leukodystrophies
Aicardi-Goutieres syndrome	Leukodystrophies
Alexander disease	Intellectual disability (ID), Leukodystrophies
Allan-Herndon-Dudley syndrome	Intellectual disability (ID), Leukodystrophies
Angelman syndrome	Autism spectrum disorders (ASD), Intellectual disability (ID)
Arginine:glycine amidinotransferase deficiency	Intellectual disability (ID)
Arts syndrome	Intellectual disability (ID)
Asperger syndrome	Autism spectrum disorders (ASD)
Ataxia, mental retardation and dyskinesia	Intellectual disability (ID)
ATRX syndrome	Intellectual disability (ID)
Autism	Intellectual disability (ID)
Autism spectrum disorders (ASD)	Autism spectrum disorders (ASD)
Autosomal dominant ID	Intellectual disability (ID)
Autosomal recessive ID	Intellectual disability (ID)
B	
Becker muscular dystrophy	Intellectual disability (ID)
Birk Barel mental retardation dysmorphism syndrome	Intellectual disability (ID)
Borjeson-Forssman-Lehmann syndrome	Intellectual disability (ID)
Bosley-Salih-Alorainy Syndrome (Athabaskan brainstem dysgenesis syndrome)	Autism spectrum disorders (ASD)
Brachydactyly mental retardation syndrome (2q37 microdeletion syndrome)	Intellectual disability (ID)
Brunner syndrome	Intellectual disability (ID)
C	
Canavan disease	Leukodystrophies
Cerebellar ataxia, mental retardation & dysequilibrium syndrome	Intellectual disability (ID)
Cerebellar ataxia, nonprogressive, with mental retardation	Intellectual disability (ID)
Cerebellar hypoplasia and mental retardation with or without quadrupedal locomotion 1	Intellectual disability (ID)
Cerebral autosomal recessive arteriopathy with subcortical infarcts and leukoencepha-lopathy	Leukodystrophies
Cerebral palsy	Intellectual disability (ID)
Cerebroretinal microangiopathy with calcifications & cysts	Leukodystrophies

Name of the disorder	Category in Strand® Neurocognitive Disorders Test (Refer Page 4)
Cerebrotendinous xanthomatosis	Leukodystrophies
Ceroid lipofuscinosis, neuronal	Intellectual disability (ID)
CHIME syndrome	Intellectual disability (ID)
Christianson syndrome	Intellectual disability (ID)
CK syndrome	Intellectual disability (ID)
COACH syndrome	Intellectual disability (ID)
Cockayne syndrome	Leukodystrophies
Coffin–Lowry syndrome	Intellectual disability (ID)
Coffin-Siris syndrome	Intellectual disability (ID)
Combined SAP deficiency	Leukodystrophies
Congenital disorder of glycosylation	Intellectual disability (ID)
congenital muscular dystrophy	Intellectual disability (ID)
Cornelia de Lange syndrome	Autism spectrum disorders (ASD), Intellectual disability (ID)
Cortical dysplasia-focal epilepsy syndrome	Intellectual disability (ID)
Craniofacial dysmorphism, skeletal anomalies, and mental retardation syndrome	Intellectual disability (ID)
D	
Dandy-Walker malformation with congenital anomalies	Intellectual disability (ID)
Danon disease	Intellectual disability (ID)
Demyelinating leukodystrophy	Leukodystrophies
DOOR syndrome	Intellectual disability (ID)
Dubowitz-like syndrome	Intellectual disability (ID)
Dysequilibrium syndrome	Intellectual disability (ID)
E	
Epilepsy and mental retardation restricted to females	Intellectual disability (ID)
Epilepsy, focal, with speech disorder and with or without mental retardation	Intellectual disability (ID)
Epileptic encephalopathy, childhood-onset	Intellectual disability (ID)
Epileptic encephalopathy, early infantile	Intellectual disability (ID)
Epileptic encephalopathy, early infantile, 9	Autism spectrum disorders (ASD)
Epsilon-trimethyllysine hydroxylase deficiency	Autism spectrum disorders (ASD)
F	
FG syndrome	Intellectual disability (ID)
Focal dermal hypoplasia	Intellectual disability (ID)
Fragile X mental retardation syndrome	Autism spectrum disorders (ASD), Intellectual disability (ID)
Fukuyama muscular dystrophy	Intellectual disability (ID)
G	
Genitopatellar syndrome	Intellectual disability (ID)
Gillespie syndrome	Intellectual disability (ID)
Glass syndrome	Intellectual disability (ID)

Name of the disorder	Category in Strand® Neurocognitive Disorders Test (Refer Page 4)
Growth and mental retardation, mandibulofacial dysostosis, microcephaly, and cleft palate	Intellectual disability (ID)
Growth retardation with deafness and mental retardation due to IGF1 deficiency	Intellectual disability (ID)
H	
Hamamy syndrome	Intellectual disability (ID)
Helsmoortel-van der Aa syndrome	Autism spectrum disorders (ASD)
Hereditary diffuse leukoencephalopathy with spheroids	Leukodystrophies
Homocystinuria	Intellectual disability (ID)
Homocystinuria due to methylene tetrahydrofolate reductase deficiency	Intellectual disability (ID)
Hunter syndrome	Intellectual disability (ID)
Hyperphosphatasia mental retardation syndrome, Mabry syndrome	Intellectual disability (ID)
Hypomagnesemia, seizures, and mental retardation	Intellectual disability (ID)
Hypomyelinating leukodystrophy	Leukodystrophies
Hypomyelination & congenital cataract	Leukodystrophies
Hypoparathyroidism-retardation-dysmorphism syndrome	Intellectual disability (ID)
I	
Ichthyosis, spastic quadriplegia, and mental retardation	Intellectual disability (ID)
Intellectual disability, dystonia and sensorineural deafness	Intellectual disability (ID)
Intellectual disability, Lissencephaly syndrome, X linked	Intellectual disability (ID)
Intellectual disability, nonsyndromic, autosomal recessive	Intellectual disability (ID)
Intellectual disability, spastic paraparesis and cerebellar atrophy	Intellectual disability (ID)
J	
Joubert syndrome	Intellectual disability (ID)
K	
Kahrizi syndrome	Intellectual disability (ID)
Kenny-Caffey syndrome 1	Intellectual disability (ID)
Kleefstra syndrome	Intellectual disability (ID)
Krabbe disease	Leukodystrophies
L	
Lacticacidemia due to PDX1 deficiency	Intellectual disability (ID)
Leigh syndrome	Leukodystrophies
Lesch-Nyhan syndrome	Intellectual disability (ID)
Leukodystrophy with spastic paraparesis & dystonia	Leukodystrophies
Leukodystrophy, adult-onset	Leukodystrophies
Leukodystrophy, hypomyelinating	Leukodystrophies
Leukoencephalopathy with brainstem and spinal cord involvement and lactate elevation	Leukodystrophies
Leukoencephalopathy with vanishing white matter	Leukodystrophies
Leukoencephalopathy, and ovarian failure in females	Leukodystrophies

Name of the disorder	Category in Strand® Neurocognitive Disorders Test (Refer Page 4)
Leukoencephalopathy, cystic, without megalencephaly (LCWM)	Leukodystrophies
Leukoencephalopathy, with dystonia and motor neuropathy (LDMN)	Leukodystrophies
Limb-girdle muscular dystrophy	Intellectual disability (ID)
Lissencephaly	Intellectual disability (ID), Lissencephaly
Lowe oculocerebrorenal syndrome	Intellectual disability (ID)
Lujan-Fryns syndrome	Intellectual disability (ID)
M	
Macrocephaly/autism syndrome	Autism spectrum disorders (ASD)
Marinesco-Sjogren syndrome	Intellectual disability (ID)
Martin-Probst syndrome	Intellectual disability (ID)
Martsolf syndrome	Intellectual disability (ID)
MASA syndrome	Intellectual disability (ID)
MEDNIK syndrome	Intellectual disability (ID)
Megalencephalic leukoencephalopathy with subcortical cysts	Intellectual disability (ID), Leukodystrophies
Mental retardation and microcephaly with pontine and cerebellar hypoplasia	Intellectual disability (ID)
Mental retardation with language impairment and autistic features (MRLIAF)	Autism spectrum disorders (ASD)
Mental retardation, anterior maxillary protrusion, and strabismus	Intellectual disability (ID)
Mental retardation, autosomal dominant	Autism spectrum disorders (ASD), Intellectual disability (ID)
Mental retardation, autosomal recessive	Autism spectrum disorders (ASD), Intellectual disability (ID)
Mental retardation, stereotypic movements, epilepsy, and/or cerebral malformations	Autism spectrum disorders (ASD), Intellectual disability (ID)
Mental retardation, with or without nystagmus	Intellectual disability (ID)
Mental retardation, X-linked	Autism spectrum disorders (ASD), Intellectual disability (ID)
Metabolic defects associated ID	Intellectual disability (ID)
Metachromatic leukodystrophy	Leukodystrophies
Microcephaly with or without chorioretinopathy, lymphedema, or mental retardation	Intellectual disability (ID)
Mitochondrial complex I deficiency	Leukodystrophies
Mitochondrial complex deficiency associated leukodystrophy	Leukodystrophies
Mitochondrial neurogastrointestinal encephalopathy	Leukodystrophies
Mitochondrial respiratory chain complex II deficiency	Leukodystrophies
Monoamine oxidase deficiency	Intellectual disability (ID)
Monocarboxylate transporter 1 deficiency	Intellectual disability (ID)
MORM syndrome (Mental retardation, truncal obesity, retinal dystrophy, and micropenis)	Intellectual disability (ID)
Mowat-Wilson syndrome	Intellectual disability (ID)
Multiple sulphatase deficiency	Leukodystrophies
Muscular dystrophy, congenital, megaconial type	Intellectual disability (ID)
Muscular dystrophy-dystroglycanopathy (congenital with brain and eye anomalies)	Intellectual disability (ID)
Muscular dystrophy-dystroglycanopathy (congenital with mental retardation)	Intellectual disability (ID)

Name of the disorder	Category in Strand® Neurocognitive Disorders Test (Refer Page 4)
N	
Neonatal adrenoleukodystrophy	Leukodystrophies
Neuronal ceroid lipofuscinosis associated ID	Intellectual disability (ID)
Nicholaides-Baraitser syndrome	Intellectual disability (ID)
Non syndromic intellectual disability	Intellectual disability (ID)
Norrie disease	Intellectual disability (ID)
O	
Opitz-Kaveggia syndrome	Intellectual disability (ID)
Oral-facial-digital syndrome	Intellectual disability (ID)
Ornithine transcarbamylase deficiency	Intellectual disability (ID)
P	
Pelizaeus-Merzbacher disease	Intellectual disability (ID), Leukodystrophies
Peripheral demyelinating neuropathy, central dysmyelination(PCWH syndrome)	Leukodystrophies
Periventricular heterotopia with microcephaly	Intellectual disability (ID)
Peroxisomal acyl-CoA oxidase deficiency	Leukodystrophies
Peroxisome biogenesis disorder	Leukodystrophies
Peroxisome biogenesis disorder 14B	Intellectual disability (ID)
Pettigrew syndrome (PGS)	Intellectual disability (ID)
Phosphoglycerate kinase deficiency	Intellectual disability (ID)
Pitt Hopkins syndrome	Autism spectrum disorders (ASD), Intellectual disability (ID)
Pituitary hormone deficiency, combined, 1	Intellectual disability (ID)
Polycystic lipomembranous osteodysplasia with sclerosing leukoencephalopathy	Leukodystrophies
Poretti-Boltshauser syndrome	Intellectual disability (ID)
Premature chromosome condensation syndrome	Intellectual disability (ID)
Progressive external ophthalmoplegia & mental retardation	Intellectual disability (ID)
Pyruvate dehydrogenase deficiency	Intellectual disability (ID)
R	
Refsum disease	Leukodystrophies
Renal tubular acidosis, proximal, with ocular abnormalities and mental retardation	Intellectual disability (ID)
Renpenning syndrome	Intellectual disability (ID)
Rett syndrome	Autism spectrum disorders (ASD)
Rhizomelic chondrodysplasia punctata, type 1	Intellectual disability (ID)
Roberts syndrome	Intellectual disability (ID)
Rolandic epilepsy with speech dyspraxia and mental retardation X-linked	Intellectual disability (ID)
Rubinstein-Taybi syndrome	Intellectual disability (ID)

Name of the disorder	Category in Strand® Neurocognitive Disorders Test (Refer Page 4)
S	
Scaphocephaly, maxillary retrusion, and mental retardation (Familial scaphocephaly syndrome, McGillivray type)	Intellectual disability (ID)
Seckel syndrome	Intellectual disability (ID)
SESAME syndrome (EAST SYNDROME)	Intellectual disability (ID)
Skeletal defects, genital hypoplasia, and mental retardation	Intellectual disability (ID)
Smith-Lemli-Opitz syndrome	Autism spectrum disorders (ASD)
Snyder-Robinson syndrome	Intellectual disability (ID)
Sotos syndrome 1	Intellectual disability (ID)
Spastic paraplegia 64, autosomal recessive (SPG64)	Intellectual disability (ID)
Spinocerebellar ataxia, autosomal recessive	Intellectual disability (ID)
Stomatin-deficient cryohydrocytosis with neurologic defects	Intellectual disability (ID)
Syndromic ID	Intellectual disability (ID)
Syndromic X-linked intellectual disability	Autism spectrum disorders (ASD)
T	
Temtamy syndrome	Intellectual disability (ID)
Timothy syndrome	Autism spectrum disorders (ASD)
Tuberous sclerosis	Autism spectrum disorders (ASD)
W	
Walker-Warburg syndrome	Intellectual disability (ID)
White-Sutton syndrome (Mental retardation, autosomal dominant 37)	Autism spectrum disorders (ASD)
Woodhouse-Sakati syndrome	Intellectual disability (ID)
X	
X-linked ID	Intellectual disability (ID)
X-linked mental retardation & cleft lip/palate	Intellectual disability (ID)
Z	
Zellweger syndrome	Leukodystrophies

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About Strand

A History of Innovative Genomic Research

Strand Life Sciences is a global genomic profiling company and leader in precision medicine diagnostics, aimed at empowering cancer care and genetic testing for inherited diseases. Strand works with physicians and hospitals to enable faster clinical decision support for accurate molecular diagnosis, prognosis, therapy recommendations, and clinical trials. The Strand Center for Genomics & Personalized Medicine is India's 1st and only CAP & NABL accredited NGS laboratory.

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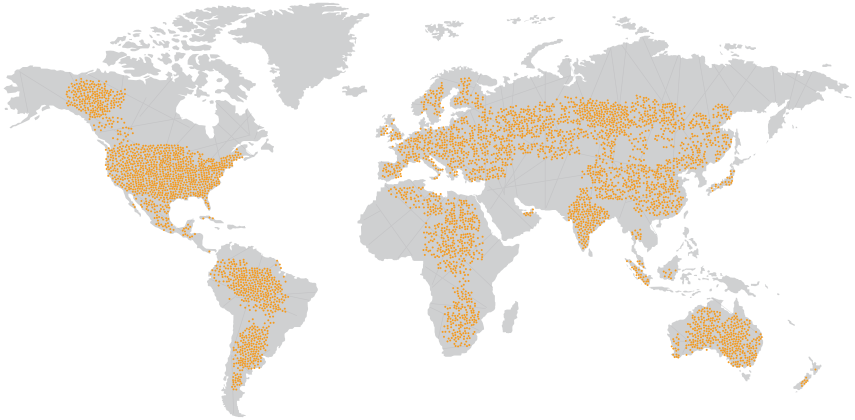

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Strand Center for Genomics & Personalized Medicine
(A unit of Strand Life Sciences Pvt. Ltd.)
UAS Alumni Association Building, Veterinary College Campus, Bellary Road, Hebbal, Bangalore – 560 024
Phone: +91-80-2309-5252, support.strandx@strandls.com, www.strandcenters.com

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