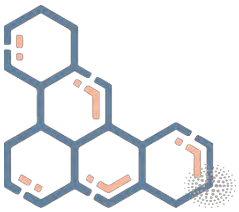
Amyloidosis and Neuropathies

Precision Panel



Overview

Amyloidosis is the general term used to refer to the extracellular tissue deposition of fibrils composed of low molecular weight subunits of a variety of proteins – amyloid proteins. Many of these proteins are normal constituents of serum, but after undergoing conformational changes, their properties change, turning them into insoluble polymers. These polymers accumulate in different systems leading to a plethora of symptoms involving many organs. There are several major forms of amyloidosis depending on the protein which originates the subunit, being AL (Immunoglobulin Light Chain) and AA (Serum Amyloid A Protein) the main types. The predominant mode of inheritance is autosomal dominant. Neuropathy is a term that refers to a generalized and homogeneous process affecting many peripheral nerves, the distal nerves usually affected most prominently. It has a wide variety of causes, such as diabetes mellitus, alcohol abuse or Charcot-Marie-Tooth Disease. The most relevant manifestations are numbness or tingling in hands and feet, muscle weakness, pain hypersensitivity and loss of balance. The mode of inheritance varies from autosomal dominant to recessive.

The Igenomix Amyloidosis and Neuropathies Precision Panel can serve as an accurate and directed diagnostic tool ultimately leading to a better management and prognosis of the disease. It provides a comprehensive analysis of the genes involved in this disease using next-generation sequencing (NGS) to fully understand the spectrum of relevant genes involved.

Indications

The Igenomix Amyloidosis and Neuropathies Precision Panel is indicated for those patients with a clinical diagnosis or suspicion presenting with or without the following manifestations:

- Renal Disease: hematuria (blood in urine)
- Cardiomyopathy: chest pain, arrythmia, heart failure
- Gastrointestinal Disease: hepatomegaly, bleeding, malabsorption.
- Neurologic Abnormalities: dementia, cortical bleeding.
- Musculoskeletal Disease: pseudohypertrophy, macroglossia.
- Hematologic Abnormalities: anemia, thrombocytopenia.
- Pulmonary Disease: dysphagia, Sjögren's syndrome.
- Skin Manifestations: subcutaneous nodules, waxy thickening.
- 9. Pain Hypersensitivity

Clinical Utility

The clinical utility of this panel is:

- The genetic and molecular confirmation for an accurate clinical diagnosis of a symptomatic patient.
- Early initiation of multidisciplinary treatment in the form of pharmacologic treatment to help reduce the production of insoluble polymers, or even surgical procedures to transplant the affected organ.
- Risk assessment and genetic counselling of asymptomatic family members according to the mode of inheritance.
- Improvement of delineation of genotype-phenotype correlation.

Genes & Diseases

GENE	OMIM DISEASES	INHERITANCE*	% GENE COVERAGE (20X)	HGMD**
AARS1	Charcot-Marie-Tooth Disease, Epileptic Encephalopathy	AD,AR	99.07	30 of 30
AGPAT2	Berardinelli-Seip Congenital Lipodystrophy	AR	100	42 of 43
AIFM1	Combined Oxidative Phosphorylation Deficiency, Cowchock Syndrome, Deafness, Spondyloepimetaphyseal Dysplasia, Leukoencephalopathy, Charcot-Marie-Tooth Disease	X,XR,G	100	-
APOA1	Amyloidosis, Apolipoprotein A-I Deficiency	AD	99.89	68 of 70
ASAH1	Farber Lipogranulomatosis, Spinal Muscular Atrophy, Myoclonic Epilepsy	AR	99.98	69 of 70
ATL1	Neuropathy, Spastic Paraplegia	AD	100	93 of 93
ATL3	Neuropathy	AD	99.91	5 of 5
ATP1A1	Charcot-Marie-Tooth Disease, Hypomagnesemia, Seizures, Mental Retardation	AD	100	16 of 16
ATP7A	Cutis Laxa, Menkes Disease, Spinal Muscular Atrophy, Occipital Horn Syndrome	X,XR,G	99.83	-
BAG3	Cardiomyopathy, Myopathy	AD	100	83 of 85
BICD2	Spinal Muscular Atrophy	AD	99.94	39 of 39
BSCL2	Encephalopathy, Lipodystrophy, Neuronopathy, Spastic Paraplegia, Neurodegenerative Syndrome	AD,AR	99.83	60 of 61
CHCHD10	Frontotemporal Dementia, Amyotrophic Lateral Sclerosis, Myopathy, Spinal Muscular Atrophy	AD	95.3	22 of 30
COX6A1	Charcot-Marie-Tooth Disease	AR	100	1 of 1
CYP27A1	Cerebrotendinous Xanthomatosis	AR	100	118 of 118
CYP7B1	Bile Acid Synthesis Defect, Spastic Paraplegia	AR	99.95	70 of 70
DCTN1	Amyotrophic Lateral Sclerosis, Neuronopathy, Parkinsonism, Alveolar Hypoventilation, Mental Depression, Perry Syndrome	AD,AR	100	56 of 56
DHTKD1	2-Aminoadipic 2-Oxoadipic Aciduria, Charcot-Marie-Tooth Disease	AD,AR	99.94	25 of 25
DNAJB2	Spinal Muscular Atrophy	AR	99.97	4 of 5
DNM2	Charcot-Marie-Tooth Disease, Lethal Congenital Contracture Syndrome, Myopathy	AD,AR	99	57 of 57
DNMT1	Cerebellar Ataxia, Deafness, Narcolepsy, Neuropathy, Autosomal Dominant Cerebellar Ataxia-Deafness-Narcolepsy Syndrome	AD	97.87	30 of 30
DRP2	Charcot-Marie-Tooth Disease, Neuronopathy, Neuropathy	-	99.98	-
DST	Epidermolysis Bullosa Simplex, Neuropathy	AR	99.08	19 of 19

DYNC1H1	Charcot-Marie-Tooth Disease, Spinal Muscular Atrophy, Intellectual Disability	AD	100	104 of 104
EGR2	Charcot-Marie-Tooth Disease, Hypertrophic Neuropathy Of Dejerine-Sottas	AD,AR	100	23 of 23
ELP1	Neuropathy, Familial Dysautonomia	AR	100	-
EXOSC9	Pontocerebellar Hypoplasia	AR	99.86	2 of 2
FBLN5	Cutis Laxa, Neuropathy	AD,AR	97.43	23 of 23
FBXO38	Neuronopathy	AD	99.87	6 of 6
FGD4	Charcot-Marie-Tooth Disease	AR	99.95	30 of 30
FIG4	Amyotrophic Lateral Sclerosis, Charcot-Marie-Tooth Disease, Cleidocranial Dysplasia, Micrognathia, Polymicrogyria, Yunis-Varon Syndrome	AD,AR	99.92	72 of 72
GAN	Giant Axonal Neuropathy	AR	100	75 of 75
GARS1	Charcot-Marie-Tooth Disease, Neuronopathy	AD	100	46 of 46
GDAP1	Charcot-Marie-Tooth Disease	AD,AR	100	106 of 106
GJB1	Charcot-Marie-Tooth Disease	X,XR,XD,G	100	-
GLA	Fabry Disease	X,XR,G	98	-
GNB4	Charcot-Marie-Tooth Disease	AD	100	5 of 5
GSN	Amyloidosis	AD	96.69	16 of 17
HARS1	Charcot-Marie-Tooth Disease, Usher Syndrome	AD,AR	100	-
HEXA	Tay-Sachs Disease	AR	100	205 of 206
HINT1	Neuromyotonia, Axonal Neuropathy	AR	99.94	19 of 19
HK1	Hemolytic Anemia, Neurodevelopmental Disorder, Visual Defects, Brain Anomalies, Neuropathy, Retinitis Pigmentosa, Charcot-Marie-Tooth Disease	AD,AR	100	14 of 17
HMBS	Porphyria	AD	100	469 of 479
HSPB1	Charcot-Marie-Tooth Disease, Neuronopathy	AD	99.96	45 of 46
HSPB8	Charcot-Marie-Tooth Disease, Neuronopathy	AD	97.59	9 of 9
IGHMBP2	Charcot-Marie-Tooth Disease, Spinal Muscular Atrophy	AR	99.94	141 of 142
INF2	Charcot-Marie-Tooth Disease, Glomerulosclerosis	AD	99.91	79 of 79
JPH1	Charcot-Marie-Tooth Disease	AD,AR	99.59	1 of 1
KARS1	Charcot-Marie-Tooth Disease, Deafness	AR	100	34 of 34
KIF1A	Mental Retardation, Neuropathy, Spastic Paraplegia, Peho Syndrome	AD,AR	100	76 of 76
KIF1B	Charcot-Marie-Tooth Disease, Neuroblastoma, Pheochromocytoma, Paraganglioma	AD	99.89	17 of 17
KIF5A	Amyotrophic Lateral Sclerosis, Myoclonus, Spastic Paraplegia	AD	100	85 of 85
LITAF	Charcot-Marie-Tooth Disease	AD	90.74	18 of 18
LMNA	Cardiomyopathy, Charcot-Marie-Tooth Disease, Emery-Dreifuss Muscular Dystrophy, Heart-Hand Syndrome, Hutchinson-Gilford Progeria Syndrome, Lipodystrophy, Malouf Syndrome, Mandibuloacral Dysplasia, Restrictive Dermopathy, Werner Syndrome, Hypergonadotropic Hypogonadism	AD,AR	100	619 of 620
LRSAM1	Charcot-Marie-Tooth Disease	AD,AR	100	18 of 18
MARS1	Charcot-Marie-Tooth Disease, Interstitial Lung And Liver Disease, Spastic Paraplegia	AD,AR	99.98	19 of 19
MCM3AP	Peripheral Neuropathy, Impaired Intellectual Development	AR	99.96	22 of 22
MED25	Basel-Vanagaite-Smirin-Yosef Syndrome, Charcot-Marie-Tooth Disease, Intellectual Disability, Cataract, Microcephaly	AR	100	5 of 5
MFN2	Charcot-Marie-Tooth Disease, Hereditary Motor And Sensory Neuropathy, Lipomatosis	AD,AR	100	233 of 233

MME	Charcot-Marie-Tooth Disease, Spinocerebellar Ataxia, Membranous Nephropathy	AD,AR	100	33 of 33
MORC2	Charcot-Marie-Tooth Disease	AD	100	20 of 20
MPV17	Charcot-Marie-Tooth Disease, Mitochondrial Dna Depletion Syndrome	AR	100	48 of 49
MPZ	Charcot-Marie-Tooth Disease, Hypertrophic Neuropathy Of Dejerine-Sottas, Neuropathy, Roussy-Levy Hereditary Areflexic Dystasia	AD,AR	99.98	245 of 245
MTMR2	Charcot-Marie-Tooth Disease	AR	100	34 of 34
NAGLU	Charcot-Marie-Tooth Disease, Mucopolysaccharidosis	AD,AR	93.23	194 of 222
NDRG1	Charcot-Marie-Tooth Disease	AR	100	11 of 11
NEFH	Amyotrophic Lateral Sclerosis, Charcot-Marie-Tooth Disease	AD,AR	97.5	28 of 31
NEFL	Charcot-Marie-Tooth Disease	AD,AR	-	-
NGF	Neuropathy	AR	100	5 of 5
NTRK1	Insensitivity To Pain, Neuropathy	AR	100	128 of 130
PDK3	Charcot-Marie-Tooth Disease	X,XD,G	99.7	-
PLEKHG5	Charcot-Marie-Tooth Disease, Spinal Muscular Atrophy	AR	99.98	14 of 14
PMP2	Charcot-Marie-Tooth Disease	AD	99.74	5 of 5
PMP22	Charcot-Marie-Tooth Disease, Deafness, Hypertrophic Neuropathy Of Dejerine-Sottas, Neuropathy, Roussy-Levy Hereditary Areflexic Dystasia, Demyelinating Polyradiculoneuropathy	AD,AR	97.82	110 of 110
PNKP	Ataxia-Oculomotor Apraxia, Charcot-Marie-Tooth Disease, Epileptic Encephalopathy	AR	100	36 of 36
POLG	Mitochondrial Dna Depletion Syndrome, External Ophthalmoplegia, Sensory Ataxic Neuropathy, Dysarthria, Ophthalmoparesis, Alpers-Huttenlocher Syndrome, Neurogastrointestinal Encephalomyopathy	AD,AR	99.92	325 of 326
POLG2	Mitochondrial Dna Depletion Syndrome, External Ophthalmoplegia	AD,AR	99.97	13 of 13
PRDM12	Neuropathy	AR	88.85	9 of 10
PRPS1	Arts Syndrome, Charcot-Marie-Tooth Disease, Deafness, Phosphoribosylpyrophosphate Synthetase Superactivity, Lethal Ataxia, Optic Atrophy, Intellectual Disability, Limb Spasticity, Retinal Dystrophy	X,XR,G	100	-
PRX	Charcot-Marie-Tooth Disease, Hypertrophic Neuropathy Of Dejerine-Sottas	AD,AR	100	59 of 59
RAB7A	Charcot-Marie-Tooth Disease	AD	100	7 of 7
REEP1	Neuronopathy, Spastic Paraplegia, Distal Hereditary Motor Neuropathy	AD	100	62 of 62
RETREG1	Neuropathy	AR	99.94	-
SBF1	Charcot-Marie-Tooth Disease	AR	99.94	19 of 19
SBF2	Charcot-Marie-Tooth Disease	AR	99.98	44 of 44
SCN11A	Neuropathy, Paroxysmal Extreme Pain Disorder, Primary Erythromelalgia	AD	99.8	21 of 23
SCN9A	Erythermalgia, Epilepsy, Indifference To Pain, Neuropathy, Extreme Pain Disorder, Dravet Syndrome	AD,AR	96.25	126 of 137
SCO2	Cardioencephalomyopathy, Myopia, Charcot-Marie-Tooth Disease, Leigh Syndrome	AD,AR	100	38 of 38
SEPTIN9	Neuralgic Amyotrophy	AD	86.94	4 of 4
SH3TC2	Charcot-Marie-Tooth Disease, Mononeuropathy Of The Median Nerve	AD,AR	99.95	114 of 114
SIGMAR1	Amyotrophic Lateral Sclerosis, Spinal Muscular Atrophy	AR	100	20 of 20
SLC12A6	Neuropathy, Corpus Callosum Agenesis	AR	100	21 of 21
SLC25A46	Neuropathy	AR	99.79	16 of 17
SLC52A2	Brown-Vialetto-Van Laere Syndrome, Spinocerebellar Ataxia, Blindness, Deafness	AR	100	31 of 32

SLC52A3	Bulbar Palsy	AR	100	43 of 43
SLC5A7	Myasthenic Syndrome, Neuronopathy	AD,AR	99.92	21 of 21
SMN1	Spinal Muscular Atrophy	AR	5.2	17 of 91
SPG11	Amyotrophic Lateral Sclerosis, Charcot-Marie-Tooth Disease, Spastic Paraplegia	AR	99.93	289 of 297
SPICE1	Microcephaly	-	99.73	-
SPTLC1	Neuropathy	AD	99.81	12 of 12
SPTLC2	Neuropathy	AD	100	18 of 18
SURF1	Charcot-Marie-Tooth Disease, Leigh Syndrome, Cardiomyopathy, Leukodystrophy	AR,MI	98.59	117 of 124
TFG	Hereditary Motor And Sensory Neuropathy, Spastic Paraplegia	AD,AR	99.67	9 of 9
TRIM2	Charcot-Marie-Tooth Disease	AR	97.87	8 of 8
TRPV4	Avascular Necrosis Of Femoral Head, Brachyrachia, Digital Arthropathy, Brachydactyly, Sensory Neuropathy, Parastremmatic Dwarfism, Spinal Muscular Atrophy, Spondyloepiphyseal Dysplasia, Brachyolmia	AD	100	88 of 88
TTR	Carpal Tunnel Syndrome, Amyloidosis	AD	100	195 of 196
UBA1	Spinal Muscular Atrophy	X,XR,G	99.58	-
VAPB	Amyotrophic Lateral Sclerosis, Spinal Muscular Atrophy	AD	100	9 of 9
VCP	Amyotrophic Lateral Sclerosis, Charcot-Marie-Tooth Disease, Inclusion Body Myopathy, Frontotemporal Dementia, Paget Disease Of Bone, Aphasia, Spastic Paraplegia	AD	100	68 of 69
VRK1	Pontocerebellar Hypoplasia	AR	99.64	15 of 15
WNK1	Neuropathy, Pseudohypoaldosteronism	AD,AR	99.45	44 of 50
YARS1	Charcot-Marie-Tooth Disease	AD	100	15 of 15

*Inheritance: AD: Autosomal Dominant; AR: Autosomal Recessive; X: X linked; XLR: X linked Recessive; Mi: Mitochondrial; Mu: Multifactorial.
**Number of clinically relevant mutations according to HGMD

Methodology

Contact us

Call +34 963 905 310 or send an email to supportspain@igenomix.com for any of the following objectives:

- Get more information about the test.
- Request your kit.
- Request a pick up of the kit after collecting the sample.

References

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