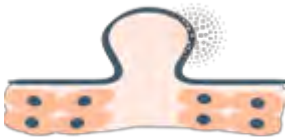
Marfan Syndrome

Precision Panel



Overview

Marfan Syndrome (MFS) is a spectrum of disorders caused by a genetic defect of the connective tissue and it is inherited in an autosomal dominant pattern. Since the connective tissue is the tissue that helps body growth as well as serving as a scaffold for cells and organs, Marfan Syndrome is a pleiotropic syndrome affecting mainly musculoskeletal, cardiac and ocular systems. The most severe of these manifestations include aortic root dilation and dissection, which are responsible for early patient demise. Pregnancy is a time of increased cardiovascular risk for women with Marfan syndrome, so an early diagnosis is key in pregnancy management.

The Igenomix Marfan Syndrome Precision Panel can be used to make an accurate and directed diagnosis as well as a differential diagnosis of connective tissue disorders due to their overlapping phenotypic features 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 Marfan Syndrome Precision Panel is indicated for those patients with a clinical suspicion or diagnosis with or without the following manifestations:

- Subluxation of lenses
- Cardiovascular findings: mitral valve prolapse, aortic regurgitation, mitral regurgitation, aortic dilation, dissection or aneurysm
- Tall and thin stature
- Long fingers and toes
- Pectus carinatum or excavatum
- Scoliosis
- Hypermobile joints
- Severe hindfoot valgus

Clinical Utility

The clinical utility of this panel is:

- The genetic and molecular confirmation for an accurate clinical diagnosis of a symptomatic patient. Understanding global and molecular functions of fibrillin containing microfibrils for the development of a comprehensive theory of pathogenesis.

- Early initiation of treatment with a multidisciplinary team in the form of medical treatment and surveillance to prevent vascular complications and/or surgical care in case of development of vascular compromise.
- Risk assessment and genetic counselling of asymptomatic family members according to the mode of inheritance.
- Improvement of delineation of genotype-phenotype correlation due to overlapping features of connective tissue disorders.

Genes & Diseases

GENE	OMIM DISEASES	INHERITANCE*	% GENE COVERAGE (20X)	HGMD**
ABL1	Congenital Heart Defects And Skeletal Malformations Syndrome, Chronic Myeloid Leukemia	AD	99.93	8 of 8
ADAMTS10	Weill-Marchesani Syndrome	AR	99.94	12 of 12
ADAMTS17	Weill-Marchesani Syndrome	AR	95.56	9 of 9
ADAMTSL4	Ectopia Lentis	AR	100	27 of 27
B3GAT3	Multiple Joint Dislocations, Short Stature, Craniofacial Dysmorphism, With Or Without Congenital Heart Defects	AR	99.86	15 of 15
BGN	Meester-Loeys Syndrome, Spondyloepimetaphyseal Dysplasia	X,XR,G	99.87	-
CBS	Homocystinuria	AR	99.98	192 of 194
COL11A1	Deafness, Fibrochondrogenesis, Marshall Syndrome, Stickler Syndrome, Myopia-Midfacial Retrusion-Sensorineural Hearing Loss-Rhizomelic Dysplasia Syndrome	AD,AR	100	104 of 106
COL11A2	Deafness, Fibrochondrogenesis, Otospondylomegaepiphyseal Dysplasia, Stickler Syndrome	AD,AR	99.98	58 of 58
COL1A1	Caffey Disease, Ehlers-Danlos Syndrome, Osteogenesis Imperfecta, Osteoporosis, Dermatofibrosarcoma Protuberans	AD	99.98	1156 of 1159
COL1A2	Ehlers-Danlos Syndrome, Osteogenesis Imperfecta, Osteoporosis	AD,AR	100	576 of 581
COL2A1	Achondrogenesis, Avascular Necrosis Of Femoral Head, Czech Dysplasia, Epiphyseal Dysplasia With Or Without Myopia And Conductive Deafness, Legg-Calve-Perthes Disease, Osteoarthritis With Mild Chondrodysplasia, Stickler Syndrome, Dysspondyloenchondromatosis, Kniest Dysplasia, Platyspondylic Dysplasia	AD,MU	100	583 of 583
COL3A1	Ehlers-Danlos Syndrome, Polymicrogyria, Acrogeria, Cerebral Saccular Aneurysm	AD,AR	100	676 of 676
COL5A1	Ehlers-Danlos Syndrome	AD	99.08	191 of 195
COL5A2	Ehlers-Danlos Syndrome	AD	100	45 of 45
DLG4	Intellectual Developmental Disorder	AD	99.83	13 of 13
EFEMP2	Cutis Laxa	AR	99.99	17 of 17
FBN1	Acromicric Dysplasia, Ectopia Lentis, Geleophysic Dysplasia, Marfan Syndrome, Mass Syndrome, Stiff Skin Syndrome, Weill-Marchesani Syndrome, Familial Thoracic Aortic Aneurysm And Aortic Dissection, Glaucoma-Ectopia Lentis-Microspherophakia-Stiff Joints-Short Stature Syndrome, Shprintzen-Goldberg Syndrome	AD	100	2836 of 2845
FBN2	Contractural Arachnodactyly, Macular Degeneration	AD	100	115 of 115
LOX	Aortic Aneurysm, Aortic Dissection	AD	95.47	8 of 8
MAT2A	Thoracic Aortic Aneurysm, Aortic Dissection	-	100	3 of 3
MED12	Lujan-Fryns Syndrome, Ohdo Syndrome, Opitz-Kaveggia Syndrome, Blepharophimosis-Intellectual Disability Syndrome, Fg Syndrome	X,XR,G	100	-
PLOD1	Ehlers-Danlos Syndrome	AR	100	36 of 36
SKI	Shprintzen-Goldberg Syndrome	AD	99.66	39 of 39
SLC2A10	Arterial Tortuosity Syndrome	AR	100	35 of 35

SMAD3	Loeys-Dietz Syndrome, Aneurysm-Osteoarthritis Syndrome, Thoracic Aortic Aneurysm And Aortic Dissection	AD	100	128 of 128
SMAD6	Aortic Valve Disease, Craniosynostosis, **B**icuspid Aortic Valve	AD	80.88	64 of 74
TGFB2	Loeys-Dietz Syndrome, Familial Thoracic Aortic Aneurysm And Aortic Dissection	AD	99.9	41 of 44
TGFB3	Arrhythmogenic Right Ventricular Dysplasia, Loeys-Dietz Syndrome, Familial Thoracic Aortic Aneurysm And Aortic Dissection	AD	100	34 of 35
TGFBR1	Loeys-Dietz Syndrome, Multiple Self-Healing Squamous Epithelioma, Familial Thoracic Aortic Aneurysm And Aortic Dissection	AD	94	96 of 100
TGFBR2	Loeys-Dietz Syndrome, Familial Thoracic Aortic Aneurysm And Aortic Dissection, Lynch Syndrome, Squamous Cell Carcinoma Of Esophagus	AD	99.9	165 of 166
UPF3B	Intellectual Disability With Marfanoid Habitus	X,XR,G	98.75	-
VCAN	Wagner Syndrome	AD	99.91	11 of 21
ZDHHC9	Intellectual Disability With Marfanoid Habitus	X,G	100	-

*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

1. Ammash, N., Sundt, T., & Connolly, H. (2008). Marfan Syndrome—Diagnosis and Management. *Current Problems In Cardiology*, *33*(1), 7-39. doi: 10.1016/j.cpcardiol.2007.10.001
2. Dietz, H., Cutting, C., Pyeritz, R., Maslen, C., Sakai, L., & Corson, G. et al. (1991). Marfan syndrome caused by a recurrent de novo missense mutation in the fibrillin gene. *Nature*, *352*(6333), 337-339. doi: 10.1038/352337a0
3. Yuan, S. M., & Jing, H. (2010). Marfan's syndrome: an overview. *Sao Paulo medical journal = Revista paulista de medicina*, *128*(6), 360–366. https://doi.org/10.1590/s1516-31802010000600009
4. Dean J. C. (2007). Marfan syndrome: clinical diagnosis and management. *European journal of human genetics : EJHG*, *15*(7), 724–733. https://doi.org/10.1038/sj.ejhg.5201851
5. Pyeritz R. E. (2019). Marfan syndrome: improved clinical history results in expanded natural history. *Genetics in medicine : official journal of the American College of Medical Genetics*, *21*(8), 1683–1690. https://doi.org/10.1038/s41436-018-0399-4
6. Robinson, P. N., & Godfrey, M. (2000). The molecular genetics of Marfan syndrome and related microfibrillopathies. *Journal of medical genetics*, *37*(1), 9–25. https://doi.org/10.1136/jmg.37.1.9
7. von Kodolitsch, Y., & Robinson, P. N. (2007). Marfan syndrome: an update of genetics, medical and surgical management. *Heart (British Cardiac Society)*, *93*(6), 755–760. https://doi.org/10.1136/hrt.2006.098798