Pulmonary Artery Hypertension

Precision Panel

Overview

Pulmonary Artery Hypertension (PAH) is defined as a mean pulmonary arterial pressure greater than 25mmHg at rest or greater than 30mmHg during exercise. It is a rare, progressive disorder typified by occlusion of the pulmonary arteries due to endothelial dysfunction and uncontrolled proliferation of smooth muscle of pulmonary artery and fibroblasts. It is characterized by a progressive and persistent increase in pulmonary vascular resistance that will ultimately exert a strain over the right heart causing right ventricular failure. It is a lethal pulmonary vascular disease if not treated appropriately. There are 5 classifications of PAH according to the World Health Organization based on the similarities in pathophysiology, clinical presentation and therapeutic options. The cohort of genes that has been identified to be related to PAH are germline mutations that are dominantly inherited with a reduced penetrance.

The Igenomix Pulmonary Artery Hypertension Precision Panel can be used as a 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.

Indications

The Igenomix Pulmonary Artery Hypertension Precision Panel is indicated in those cases where there is a clinical suspicion of PAH or presence of an underlying disease entity that may lead to PAH with or without the following manifestations:

- Shortness of breath with exertion
- Fatigue
- Lethargy
- Syncope with exertion
- Chest pain
- Anorexia
- Right upper quadrant pain
- Cough
- Haemoptysis
- Hoarseness

Clinical Utility

The clinical utility of this panel is:

- The genetic and molecular diagnosis for an accurate clinical diagnosis and improve prognosis.
- Early initiation of treatment with a multidisciplinary team in the form supportive therapy, pharmacologic therapy with targeted endothelin receptor antagonists, phosphodiesterase-5 inhibitors or prostacyclin analogues, and/or surgical treatment including lung transplantation.
- Risk assessment and genetic counselling of asymptomatic family members according to the mode of inheritance.

Genes & Diseases

GENE	OMIM DISEASES	INHERITANCE*	% GENE COVERAGE (20X)	HGMD**
ABCD4	Methylmalonic Aciduria And Homocystinuria	AR	100	8 of 8
ACTA2	Multisystemic Smooth Muscle Dysfunction Syndrome	AD	100	88 of 88
ACTC1	Atrial Septal Defect, Left Ventricular Noncompaction, Familial Hypertrophic Cardiomyopathy, Familial Isolated Dilated Cardiomyopathy	AD	99.93	72 of 74
ACVRL1	Osler-Rendu-Weber Syndrome	AD	100	457 of 462
AFF4	CHOPS Syndrome, Short Stature-Skeletal Dysplasia Syndrome	AD	99.42	6 of 6
ALMS1	Alstrom Syndrome	AR	99.92	302 of 305
ARHGAP31	Adams-Oliver Syndrome	AD	100	6 of 6
ATP5F1A	Combined Oxidative Phosphorylation Deficiency, Mitochondrial Complex V (ATP Synthase) Deficiency	AR	91.8	NA of NA
BANF1	Nestor-Guillermo Progeria Syndrome	AR	100	1 of 1
BMPR2	Primary Pulmonary Hypertension, Pulmonary Venoocclusive Disease	AD	99.99	590 of 600
BTNL2	Sarcoidosis	AD	99.98	1 of 1
CACNA1D	Primary Aldosteronism, Seizures, And Neurologic Abnormalities, Sinoatrial Node Dysfunction And Deafness	AD,AR	100	18 of 18
CAV1	Primary Pulmonary Hypertension, Diffuse Cutaneous Systemic Sclerosis , Limited Cutaneous Systemic Sclerosis	AD,AR	100	18 of 18
CCN2	Diffuse Cutaneous Systemic Sclerosis, Limited Cutaneous Systemic Sclerosis	-	95.83	NA of NA
CCR6	Diffuse Cutaneous Systemic Sclerosis, Limited Cutaneous Systemic Sclerosis	-	99.83	NA of NA
CHST3	Multiple Joint Dislocations, Short Stature, Craniofacial Dysmorphism, With Or Without Congenital Heart Defects	AR	99.97	38 of 38
CITED2	Atrial Septal Defect , Ventricular Septal Defect,Tetralogy Of Fallot	AD	99.22	18 of 24
CLCN7	Hypopigmentation, Organomegaly, And Delayed Myelination And Development, Albers-Schonberg Osteopetrosis	AD,AR	99.85	109 of 111
COG1	Congenital Disorder Of Glycosylation Type IIg	AR	99.91	3 of 3
COL1A1	Caffey Disease , Ehlers-danlos Syndrome Type VII, Arthrochalasia Ehlers-Danlos Syndrome	AD	99.98	1156 of 1159
COL1A2	Ehlers-Danlos Syndrome Arthrochalasia Type, Cardiac-Valvular Ehlers-Danlos Syndrome	AD,AR	100	576 of 581
COLQ	Synaptic Congenital Myasthenic Syndromes	AR	100	70 of 71
COX1	Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes, Leber Hereditary Optic Neuropathy	MI	na	na
COX2	Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes	MI	na	na
COX3	Leber Optic Atrophy , Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes , Leber Hereditary Optic Neuropathy	MI	na	na
COX7B	Aplasia Cutis Congenita, Reticulolinear, With Microcephaly, Facial Dysmorphism, And Other Congenital Anomalies	X,XD,G	99.97	NA of NA
CTCF	Intellectual Disability-Feeding Difficulties-Developmental Delay-Microcephaly Syndrome	AD	96.6	39 of 41
DLL4	Adams-Oliver Syndrome	AD	99.98	21 of 21
DOCK6	Adams-oliver Syndrome	AR	98.06	37 of 37
EIF2AK4	Pulmonary Venoocclusive Disease	AR	99.98	102 of 102

ENG	Hereditary Hemorrhagic Telangiectasia, Generalized Juvenile Polyposis/Juvenile Polyposis Coli	AD	100	467 of 471
EOGT	Adams-oliver Syndrome	AR	100	11 of 11
FBN1	Marfan Lipodystrophy Syndrome, Mass Syndrome, Stiff Skin Syndrome, Weill-Marchesani Syndrome, Neonatal Marfan Syndrome, Shprintzen-Goldberg Syndrome	AD	100	2836 of 2845
FGFR1	Hartsfield Syndrome, Jackson-Weiss Syndrome, Pfeiffer Syndrome, Hartsfield Syndrome	AD	100	279 of 280
FGFR3	Crouzon Syndrome With Acanthosis Nigricans, Muenke Syndrome, Camptodactyly-Tall Stature-Scoliosis-Hearing Loss Syndrome, Crouzon Syndrome-Acanthosis Nigricans Syndrome, Saethre-Chotzen Syndrome	AD,AR	99.89	77 of 78
FIG4	Amyotrophic Lateral Sclerosis, Charcot-Marie-Tooth Disease, Yunis-Varon Syndrome	AD,AR	99.92	72 of 72
FLNA	Cardiac Valvular Dysplasia, Melnick-Needles Syndrome, X-linked Ehlers-Danlos Syndrome	X,XR,XD,G	100	NA of NA
FLNC	Familial Hypertrophic Cardiomyopathy, Filaminopathy, Distal Myopathy, Familial Isolated Restrictive Cardiomyopathy	AD	100	185 of 186
FOXF1	Alveolar Capillary Dysplasia With Misalignment Of Pulmonary Veins , Congenital Alveolar Capillary Dysplasia	AD	95.93	74 of 96
FOXP1	Mental Retardation With Language Impairment And With Or Without Autistic Features, Intellectual Disability-Severe Speech Delay-Mild Dysmorphism Syndrome	AD	100	63 of 80
G6PC3	Severe Congenital Neutropenia	AR	100	45 of 45
GATA4	Atrial Septal Defect, Atrioventricular Septal Defect, Testicular Anomalies With Or Without Congenital Heart Disease, Tetralogy Of Fallot, Ventricular Septal Defect	AD	94.69	108 of 130
GATA6	Atrial Septal Defect, Atrioventricular Septal Defect, Conotruncal Heart Malformations, Truncus Arteriosus Communis, Pancreatic Agenesis And Congenital Heart Defects, Tetralogy Of Fallot, Congenital Diaphragmatic Hernia Syndrome	AD,AR	84.19	66 of 84
GBA	Gaucher Disease, Gaucher Disease-Ophthalmoplegia-Cardiovascular Calcification Syndrome	AD,AR	100	469 of 471
GDF2	Hereditary Hemorrhagic Telangiectasia	AD	98.58	51 of 57
GJA1	Atrioventricular Septal Defect, Hypoplastic Left Heart Syndrome	AD,AR,MU,O	100	119 of 119
HBB	Alpha-Thalassemia, Beta-Thalassemia, Sickle Cell Anemia, Delta-Beta-Thalassemia, Hemoglobin C-Beta-Thalassemia Syndrome, Hemoglobin E-Beta-Thalassemia Syndrome	AD,AR	100	753 of 789
HLA-B	Spondyloarthropathy, Behcet Disease, Takayasu Arteritis	MU	99.55	1 of 1
HLA-DRB1	Multiple Sclerosis, Sarcoidosis, Diffuse Cutaneous Systemic Sclerosis, Limited Cutaneous Systemic Sclerosis	AD,MU	97.19	2 of 2
HSPG2	Dyssegmental Dysplasia Silverman-Handmaker Type , Schwartz-Jampel Syndrome Type 1	AR	99.41	68 of 69
IDUA	Hurler Syndrome, Hurler-Scheie Syndrome	AR	99.73	287 of 292
IKBKG	Ectodermal Dysplasia And Immunodeficiency	X,XR,XD,G	38.16	NA of NA
IL12B	Immunodeficiency, Takayasu Arteritis	AR	100	12 of 12
IRF5	Diffuse Cutaneous Systemic Sclerosis, Limited Cutaneous Systemic Sclerosis, Primary Biliary Cholangitis	-	99.33	1 of 1
JAK2	Budd-Chiari Syndrome, Familial Erythrocytosis, Myelofibrosis With Myeloid Metaplasia, Polycythemia Vera, Essential Thrombocythemia, Primary Myelofibrosis	AD,AR	99.63	25 of 27
KCNK3	Primary Pulmonary Hypertension	AD	98.11	23 of 26
KCNN4	Dehydrated Hereditary Stomatocytosis	AD	99.78	3 of 4
KIAA0319L	Limited Cutaneous Systemic Sclerosis	-	99.97	NA of NA
KIF20A	Familial Isolated Restrictive Cardiomyopathy	-	99.97	2 of 2
KRAS	Cardiofaciocutaneous Syndrome, Noonan Syndrome, Pancreatic Cancer, Schimmelpenning-Feuerstein-Mims Syndrome, Toriello-Lacassie-Droste Syndrome	AD	100	38 of 38
KRT18	Familial Cirrhosis With Pulmonary Hypertension	AD,AR	100	14 of 14
KRT8	Familial Cirrhosis With Pulmonary Hypertension	AD,AR	99.98	26 of 26
LAMA2	Muscular Dystrophy, Congenital Merosin-Deficient 1a, Limb-Girdle Muscular Dystrophy, Laminin Subunit Alpha 2-Related Congenital Muscular Dystrophy	AR	100	363 of 377
LAMB2	Pierson Syndrome, Synaptic Congenital Myasthenic Syndromes	AR	100	129 of 129
LIFR	Stuve-Wiedemann Syndrome	AR	99.81	33 of 33

LIPA	Lysosomal Acid Lipase Deficiency, Cholesteryl Ester Storage Disease, Wolman Disease	AR	99.91	103 of 104
LIPT1	Lipoyl Transferase Deficiency, Leigh Syndrome With Leukodystrophy	AR	97.25	10 of 10
LMNA	Dilated Cardiomyopathy, Charcot-Marie-Tooth Disease Type 2b1, Emery-Dreifuss Muscular Dystrophy, Heart-Hand Syndrome, Hutchinson-Gilford Progeria Syndrome, Malouf Syndrome, Lethal Restrictive Dermopathy	AD,AR	100	619 of 620
MED12	Lujan-Fryns Syndrome, Ohdo Syndrome, Opitz-Kaveggia Syndrome, X-linked Intellectual Disability With Marfanoid Habitus	X,XR,G	100	NA of NA
MED25	Basel-Vanagaite-Smirin-Yosef Syndrome, Charcot-Marie-Tooth Disease Type 2b2	AR	100	5 of 5
MGP	Keutel Syndrome	AR	99.93	7 of 7
MLX	Takayasu Arteritis		82.12	NA of NA
MPL	Myelofibrosis With Myeloid Metaplasia, Essential Thrombocythemia, Familial Thrombocytosis, Polycythemia Vera, Primary Myelofibrosis	AD,AR	100	55 of 55
MUC5B	Idiopathic Pulmonary Fibrosis	AD	99.89	12 of 12
MYH6	Atrial Septal Defect, Dilated Cardiomyopathy, Familial Hypertrophic Cardiomyopathy	AD	99.94	140 of 142
MYPN	Dilated Cardiomyopathy, Familial Hypertrophic Cardiomyopathy, Nemaline Myopathy, Cap Myopathy, Familial Isolated Restrictive Cardiomyopathy	AD,AR	99.94	49 of 49
ND1	Leber Optic Atrophy, Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes, Leber Hereditary Optic Neuropathy, Mitochondrial DNA-Associated Leigh Syndrome	MI	na	na
ND4	Leber Optic Atrophy, Leber Hereditary Optic Neuropathy, Mitochondrial DNA-Associated Leigh Syndrome	MI	na	na
ND5	Leber Optic Atrophy, Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes, Leber Hereditary Optic Neuropathy, Mitochondrial DNA-Associated Leigh Syndrome	MI	99.89	NA of NA
ND6	Leber Optic Atrophy , Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes, Leber Hereditary Optic Neuropathy, Mitochondrial DNA-Associated Leigh Syndrome	MI	100	NA of NA
NFIX	Marshall-Smith Syndrome, Sotos Syndrome, Malan Overgrowth Syndrome, Marshall-Smith Syndrome	AD	94.42	75 of 81
NFU1	Multiple Mitochondrial Dysfunctions Syndrome	AR	100	13 of 15
NKX2-1	Choreoathetosis, Hypothyroidism, And Neonatal Respiratory Distress, Brain-Lung-Thyroid Syndrome	AD	97.04	115 of 123
NKX2-5	Atrial Septal Defect With Or Without Atrioventricular Conduction Defects, Conotruncal Heart Malformations, Truncus Arteriosus Communis, Hypoplastic Left Heart Syndrome, Tetralogy Of Fallot, Ventricular Septal Defect, Atrial Septal Defect, Familial Bicuspid Aortic Valve, Familial Progressive Cardiac Conduction Defect, Hypoplastic Left Heart Syndrome, Tetralogy Of Fallot	AD,AR	99.98	112 of 116
NOD2	Inflammatory Bowel Disease, Yao Syndrome, Blau Syndrome	AD,MU	100	97 of 97
NOTCH1	Adams-Oliver Syndrome, Aortic Valve Disease, Familial Bicuspid Aortic Valve	AD	99.83	178 of 179
PAM16	Chondrodysplasia, Megarbane-Dagher-Melki Type	AR	41	2 of 2
PDSS1	Coenzyme Q10 Deficiency	AR	97.34	5 of 5
PIEZO1	Dehydrated Hereditary Stomatocytosis	AD,AR	99.98	107 of 107
PIGA	Multiple Congenital Anomalies-Hypotonia-Seizures Syndrome, Paroxysmal Nocturnal Hemoglobinuria, West Syndrome	X,XR,G	97.98	NA of NA
PIGN	Multiple Congenital Anomalies-Hypotonia-Seizures Syndrome, Fryns Syndrome	AR	93.97	36 of 39
PPCS	Dilated Cardiomyopathy	AR	98.95	4 of 4
RBPJ	Adams-Oliver Syndrome	AD	99.98	8 of 8
SARS2	Hyperuricemia, Pulmonary Hypertension, Renal Failure, And Alkalosis	AR	97.5	6 of 6
SCARB2	Action Myoclonus-Renal Failure Syndrome, Gaucher Disease, Unverricht-Lundborg Disease	AR	99.95	29 of 29
SFTPA2	Idiopathic Pulmonary Fibrosis	AD	99.98	6 of 6
SFTPB	Pulmonary Surfactant Metabolism Dysfunction, Infant Acute Respiratory Distress Syndrome, Neonatal Acute Respiratory Distress Due To Sp-b Deficiency	AR	100	27 of 27
SFTPC	Idiopathic Pulmonary Fibrosis, Surfactant Metabolism Dysfunction, Infant Acute Respiratory Distress Syndrome	AD	99.84	83 of 83
SLC25A24	Fontaine Progeroid Syndrome, Gorlin-Chaudhry-Moss Syndrome	AD	99.59	2 of 2
SLC29A3	Histiocytosis-Lymphadenopathy Plus Syndrome, Dysosteosclerosis	AR	100	32 of 32
SLC37A4	Glycogen Storage Disease Ib, Glycogen Storage Disease Ic	AR	99.97	112 of 112

SLC4A1	Hereditary Spherocytosis, Dehydrated Hereditary Stomatocytosis	AD,AR	100	139 of 139
SMAD4	Juvenile Polyposis Syndrome, Hereditary Hemorrhagic Telangiectasia, Myhre Syndrome	AD	99.56	136 of 136
SMAD9	Primary Pulmonary Hypertension	AD	99.97	35 of 35
SNX10	Osteopetrosis	AR	100	14 of 14
SPECC1L	Opitz Gbbb Syndrome	AD	99.66	14 of 14
STAT1	Immunodeficiency, Mycobacterial And Viral Infections, Autoimmune Enteropathy And Endocrinopathy-Susceptibility To Chronic Infections Syndrome	AD,AR	100	138 of 138
TBX20	Atrial Septal Defect Ostium Secundum Type	AD	99.98	33 of 34
TBX4	Ischiocoxopodopatellar Syndrome With Or Without Pulmonary Arterial Hypertension, Coxopodopatellar Syndrome	AD,AR	99.72	91 of 94
TCIRG1	Osteopetrosis, Autosomal Dominant Severe Congenital Neutropenia, Dysosteosclerosis	AR	100	140 of 146
TERT	Pulmonary Fibrosis And/Or Bone Marrow Failure, Telomere-Related, Idiopathic Pulmonary Fibrosis, Hoyeraal-Hreidarsson Syndrome	AD,AR	99.09	194 of 197
THPO	Thrombocythemia, Familial Thrombocytosis	AD	100	11 of 11
TLL1	Atrial Septal Defect Ostium Primum Type , Atrial Septal Defect Ostium Secundum Type	AD	99.96	8 of 8
TNFSF11	Osteopetrosis	AR	99.84	4 of 4
TNNI3	Dilated Cardiomyopathy, Familial Hypertrophic Cardiomyopathy, Familial Restrictive Cardiomyopathy	AD,AR	100	139 of 139
TNNT2	Dilated Cardiomyopathy, Familial Hypertrophic Cardiomyopathy, Familial Restrictive Cardiomyopathy	AD	100	169 of 169
TRNF	Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes, Myoclonic Epilepsy Associated With Ragged-Red Fibers	MI	NA	NA
TRNH	Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes, Myoclonic Epilepsy Associated With Ragged-Red Fibers	-	NA	NA
TRNL1	Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes, Myoclonic Epilepsy Associated With Ragged-Red Fibers, Kearns-Sayre Syndrome, Mitochondrial DNA-Associated Leigh Syndrome	MI	NA	NA
TRNQ	Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes	MI	NA	NA
TRNS1	Mitochondrial Complex IV Deficiency , Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes , Mitochondrial DNA-Related Progressive External Ophthalmoplegia	AR,MI	NA	NA
TRNS2	Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes, Usher Syndrome Type 3	MI	NA	NA
TRNW	Mitochondrial Myopathy, Encephalopathy, Lactic Acidosis, And Stroke-Like Episodes , Mitochondrial Myopathy, Episodic, With Optic Atrophy And Reversible Leukoencephalopathy , Mitochondrial DNA-associated Leigh Syndrome	AR,MI	NA	NA
UBE2A	Mental Retardation, X-linked, Syndromic, Nascimento Type	X,XR,G	99.99	NA of NA
VAC14	Striatonigral Degeneration, Childhood-Onset, Yunis-Varon Syndrome	AR	100	11 of 11
VPS33A	Mucopolysaccharidosis-Like Syndrome With Congenital Heart Defects And Hematopoietic Disorders	AR	97.86	1 of 1
ZMPSTE24	Mandibuloacral Dysplasia With Type B Lipodystrophy, Lethal Restrictive Dermopathy, Hutchinson-Gilford Progeria Syndrome	AR	100	35 of 36

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

Methodology

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.
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