# Increased Nuchal Translucency

# Precision Panel

## Overview

Increased Nuchal Translucency (NT) is defined as an abnormal accumulation of fluid in the nuchal area, which is visualized as a thickened sonolucent area. It is a standardized measure obtained between 11 and 14 weeks of gestation to calculate the risk of a fetus being affected by a chromosomal aneuploidy. NT>3.5mm has been found to be associated with fetal chromosomal abnormalities and single-gene disorders as well as cardiac defects and other structural abnormalities in euploid and aneuploid fetuses. Proportionally as NT increases, even with a normal karyotype, there is a higher risk of adverse pregnancy outcomes such as miscarriage, intrauterine death, congenital heart defects and numerous other structural and genetic syndromes. There is not one single cause of increased NT, it is based on a complex and multifactorial process, linked to one or more embryonic processes. It has been shown that a persistently increased NT with a normal karyotype and aCGH has a 4-10% probability of being associated to Noonan Syndrome and/or other RASopathies using Whole Exome Sequencing (WES). However, the general tendency following detection of isolated enlarged NT in an euploid fetus is that most babies with normal detailed ultrasound examination and echocardiography will have uneventful outcomes.

The Igenomix Increased Nuchal Translucency Precision Panel can be used to make a directed and accurate prenatal differential diagnosis of increased nuchal translucency in patients with or without a normal karyotype ultimately leading to a better management and prognosis of the associated comorbidities. 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 Infertility Precision Panel is indicated for those patients with ultrasound measured increased nuchal translucency (TN>3.5mm) with normal or abnormal karyotype and/or aCGH.

## Clinical Utility

The clinical utility of this panel is:

- The genetic and molecular confirmation for an accurate clinical diagnosis of associated syndromes of a fetus presenting with increased nuchal translucency.
- Reduce burden of parents over prenatally undetectable conditions.

- Genetic counselling emphasizing the fact that following detection of isolated enlarged NT, most babies with normal detailed ultrasound examination and echocardiography will have uneventful outcome.
- To provide valuable information based on genetic testing combined with fetal ultrasound examination that can influence pregnancy outcome, and provide recurrence risks.

## Genes & Diseases

| GENE | OMIM DISEASES | INHERITANCE* | % GENE COVERAGE (20X) | HGMD** |
|---|---|---|---|---|
| *ADARB1* | Neurodevelopmental Disorder With Hypotonia, Microcephaly, And Seizures | AR | 99.98 | NA of NA |
| *ADM* | Pheochromocytoma, Malignant Hypertension, Congestive Heart Failure, Pulmonary Hypertension, Renal Hypertension | - | 99.8 | NA of NA |
| *ATN1* | Congenital Hypotonia, Epilepsy, Developmental Delay, And Digital Anomalies, Dentatorubral-Pallidoluysian Atrophy Naito-Oyanagi Disease, Haw River Syndrome, Ataxia, Chorea, Seizures, And Dementia Dentatorubral Pallidoluysian Atrophy | AD | 99.86 | 11 of 11 |
| *BAZ1B* | Williams Syndrome | - | 99.05 | 5 of 5 |
| *BMPER* | Diaphanospondylodysostosis | AR | 99.98 | 22 of 22 |
| *BUB1* | Mosaic Variegated Aneuploidy Syndrome | AD | 99.76 | 18 of 19 |
| *BUB1B* | Mosaic Variegated Aneuploidy Syndrome | AD,AR | 99.84 | 30 of 31 |
| *BUB3* | Mosaic Variegated Aneuploidy Syndrome | - | 99.98 | 6 of 6 |
| *CEP57* | Mosaic Variegated Aneuploidy Syndrome | AR | 99.64 | 6 of 6 |
| *CLIP2* | Williams Syndrome | - | 99.99 | 1 of 1 |
| *CSGALNACT1* | Mild Skeletal Dysplasia With Joint Laxity And Advanced Bone Age | AR | 100 | 4 of 5 |
| *DHCR7* | Smith-Lemli-Opitz Syndrome | AR | 100 | 217 of 217 |
| *EFNB2* | Craniofrontonasal Syndrome, Congenital Chylothorax, Arteriovenous Malformation | - | 98.47 | 2 of 2 |
| *ELN* | Autosomal Dominant Cutis Laxa, Supravalvular Aortic Stenosis, Williams-Beuren Syndrome, Familial Thoracic Aortic Aneurysm And Aortic Dissection, Williams Syndrome | AD | 99.99 | 95 of 96 |
| *FGFR3* | Severe Achondroplasia With Developmental Delay And Acanthosis Nigricans, Camptodactyly, Tall Stature, And Hearing Loss Syndrome, Crouzon Syndrome With Acanthosis Nigricans, Hypochondroplasia , Lacrimoauriculodentodigital Syndrome, Muenke Syndrome, Thanatophoric Dysplasia Type I, Thanatophoric Dysplasia Type II, Camptodactyly-Tall Stature-Scoliosis-Hearing Loss, Isolated Brachycephaly, Isolated Plagiocephaly, Muenke Syndrome, Saethre-Chotzen Syndrome | AD,AR | 99.89 | 77 of 78 |
| *FIG4* | Amyotrophic Lateral Sclerosis, Charcot-Marie-Tooth Disease, Cleidocranial Dysplasia With Micrognathia, Absent Thumbs, And Distal Polymicrogyria, Bilateral Temporooccipital, Amyotrophic Lateral Sclerosis , Bilateral Parasagittal Parieto-Occipital Polymicrogyria, Yunis-Varon Syndrome | AD,AR | 99.92 | 72 of 72 |
| *FLT4* | Congenital Heart Defects, Capillary Infantile Hemangioma, Lymphatic Malformation, Milroy Disease, Tetralogy Of Fallot | AD | 100 | 119 of 120 |
| *FOXC2* | Lymphedema-Distichiasis Syndrome | AD | 87.59 | 54 of 95 |
| *GPC6* | Autosomal Recessive Omodysplasia | AR | 99.92 | 3 of 3 |
| *GTF2I* | Williams Syndrome | - | 63.79 | NA of NA |
| *GTF2IRD1* | Williams Syndrome | - | 99.98 | 1 of 1 |
| *HDAC8* | Cornelia De Lange Syndrome, Wilson-Turner Syndrome | X,XD,G | 99.78 | NA of NA |
| *KMT2A* | Hairy Elbows, Short Stature, Facial Dysmorphism, And Developmental Delay, Cornelia De Lange Syndrome, Wiedemann-Steiner Syndrome | AD | 98.14 | 144 of 149 |
| *LIMK1* | Williams Syndrome | - | 100 | 2 of 2 |
| *NF1* | Juvenile Myelomonocytic Leukemia, Neurofibromatosis-Noonan Syndrome, Familial Spinal Neurofibromatosis Type I, Watson Syndrome, 17q11.2 Microduplication Syndrome, Hereditary Pheochromocytoma-Paraganglioma | AD | 97.97 | 3082 of 3166 |
| *NFATC1* | Atrioventricular Septal Defect, Crouzon Syndrome with Acanthosis Nigricans, Autosomal Recessive Osteopetrosis | - | 99.83 | 10 of 11 |

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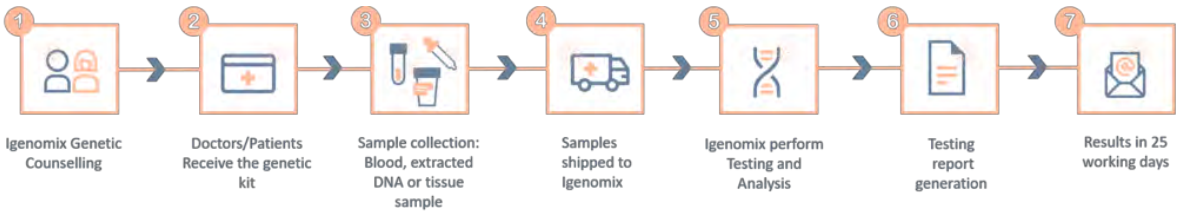
|---|---|---|---|---|
| ***NIPBL*** | Cornelia De Lange Syndrome | AD | 99.32 | 409 of 426 |
| ***NR2F2*** | 46,XX Sex Reversal, Congenital Heart Defects, Partial Atrioventricular Septal Defect | AD | 97.37 | 16 of 18 |
| ***ODC1*** | Global Developmental Delay-Alopecia-Macrocephaly-Facial Dysmorphism-Structural Brain Anomalies Syndrome | AD | 100 | 7 of 7 |
| ***PDPN*** | Lymphangioma, Atypical Neurofibroma | | 99.91 | NA of NA |
| ***PIGN*** | Multiple Congenital Anomalies-Hypotonia-Seizures Syndrome, Fryns Syndrome, Multiple Congenital Anomalies-Hypotonia-Seizures Syndrome | AR | 93.97 | 36 of 39 |
| ***PIK3CA*** | Capillary Malformation Of The Lower Lip, Lymphatic Malformation Of Face And Neck, Asymmetry Of Face And Limbs, And Partial/Generalized Overgrowth, Congenital Lipomatous Overgrowth, Vascular Malformations, And Epidermal Nevi, Cowden Syndrome | AD | 99.58 | 54 of 58 |
| ***PROX1*** | Lymphangioma, Hereditary Lymphedema, Acquired Hemangioma | - | 99.87 | NA of NA |
| ***RAD21*** | Cornelia De Lange Syndrome, Mungan Syndrome | AD,AR | 99.8 | 16 of 17 |
| ***RFC2*** | Williams Syndrome | - | 100 | 3 of 3 |
| ***SETD5*** | Autosomal Dominant Mental Retardation, Cornelia De Lange Syndrome, Intellectual Disability-Facial Dysmorphism Syndrome Due To Setd5 Haploinsufficiency | AD | 99.77 | 37 of 37 |
| ***SMC1A*** | Cornelia De Lange Syndrome, Semilobar Holoprosencephaly, Wiedemann-Steiner Syndrome | X,XR,XD,G | 100 | NA of NA |
| ***SMC3*** | Cornelia De Lange Syndrome | AD | 100 | 30 of 30 |
| ***TBL2*** | Williams Syndrome | - | 96.14 | NA of NA |
| ***TBX1*** | Conotruncal Heart Malformations, Truncus Arteriosus Communis, DiGeorge Syndrome, Tetralogy Of Fallot, Velocardiofacial Syndrome, 22q11.2 Deletion Syndrome, 22q11.2 Microduplication Syndrome | AD,AR | 88.7 | 35 of 42 |
| ***TIE1*** | Angiosarcoma, Arteriovenous Malformation, Malignant Renovascular Hypertension | - | 99.88 | 1 of 1 |
| ***TRIP13*** | Mosaic Variegated Aneuploidy Syndrome, Nephroblastoma | AR | 98.14 | 2 of 2 |
| ***VAC14*** | Childhood-Onset Striatonigral Degeneration, Yunis-Varon Syndrome | AR | 100 | 11 of 11 |
| ***VEGFA*** | Poems Syndrome | - | 99.53 | 8 of 8 |
| ***VEZF1*** | Distal Arthorgryposis Type 3, Distal Arthrogryposis Type 4 | - | 98.88 | NA of NA |

*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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