GENOMIX® WITH SCIENCE ON YOUR SIDE



FACTS



THE DIAGNOSTIC DISEASES ODYSSEY

Too many families are bounced around from physician to specialist and back again only to receive multiple genetic misdiagnoses.





40%

of rare disease patients are misdiagnosed at least once.













5 YEARS

The average time to obtain a correct diagnosis for rare diseases.

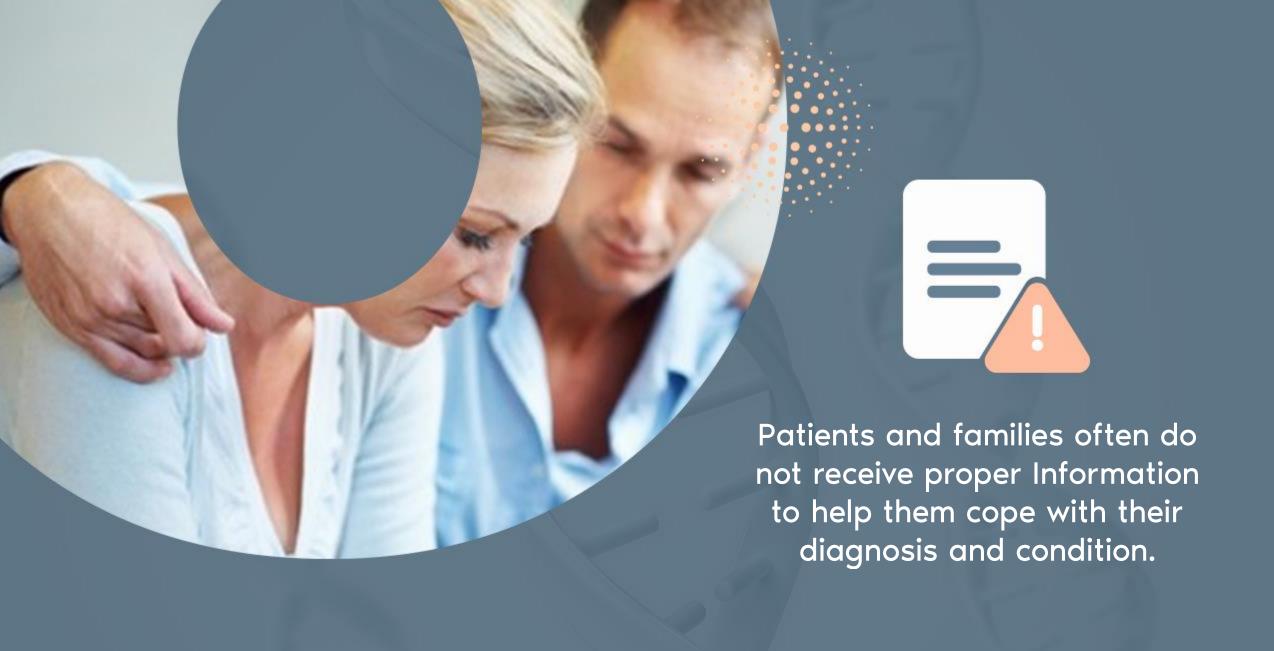


7

Physicians to be seen by patients and families before a diagnosis is made.











Limited knowledge of diagnostic options for doctors and updated state of the art using new technologies.





WHY IGENOMIX CAN HELP YOU?





SUPPORTIVE PROFESSIONAL

FREE GENETIC COUNSELING

Certified Genetic Counselors to guide you and your patients choosing the right genetic testing.



Dr Bratati Chaudhary

- Ph.D in Biotechnology and Molecular Biology from Birla Institute of Technology and a Post Doctoral experience from IIIT, Hyderabad.
- More than ten (10) years of experience in genetics,
 cytogenetics, molecular laboratory, and genetic counseling.







PATIENT FRIENDLY

GENETIC COUNSELING E-LEARNING PLATFORM

Use the e-learning platform to access to educational material and schedule meetings with our Genetic Counselors.

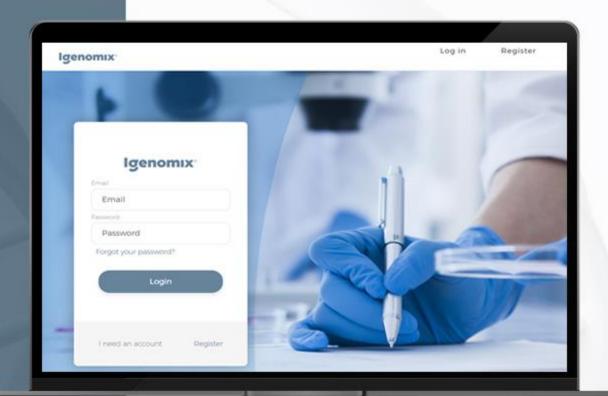




QUICK

ONLINE TEST MANAGEMENT

Use the online platform to check the tests status and download documents and reports.





360



DEDICATED CONCIERGE

CUSTOMER SUPPORT



One contact to unify and manage everything during the testing cycle.







All TECHNICAL CAPABILITIES IN-HOUSE

Testing, analysis, and reporting for all genetic services



100%



IN-HOUSE SEQUENCING AND BIO IT

State-of-the Illumina platform and bioinformatics pipeline.





TOP QUALITY SEQUENCING



- Illumina best supplier for NGS related operations
- Latest platform NOVASEQ 6000
- >100x exome mean coverage
- >98% exome CDS bases covered >20x
- >98% variants in HGMD covered
- >98% variants in Clinvar covered
- Best in class CNV detection included in the report.
- Mitochondrial analysis included in reports



ACCURATE ANALYSIS, INTERPRETATION & REPORTING

Using international and most relevant Databases

- Allele Frequency checked by human population databases (ExAC, 1000G, gnomAD, igenomix internal database)
- Genetic inheritance pattern by (OMIM)
- Variants analysis based on disease updated databases (HGMD, ClinVar, ClinGen, igenomix internal database)
- Literature search by (PubMed,Google scholar)
- In addition to SNVs and small Indels, copy number variants (CNVs) are detected using the Exome Depth method
- Pathogenicity of variants determined by American College of Medical Genetics (ACMG)
- · Reports include a full clinical interpretation of results



















SKILLED EXPERIENCED PhD SCIENTIFIC COMMITTEE







High-Quality
interpretation by
rare disease team
with vast
experience in
Middle East



Dr. Garcia-Planells,PhD Human Genetics

Clinical_Director and Scientific
Advisor Rare Diseases, H.Q.
With +20 years of experience.
European Molecular Genetics
Quality Network (EMQN) Assessor.
He is the President of the Spanish
PrenatXC3 al Diagnostic
Association (AEDP). Member of the
board of directors of the Iberoamerican Society of Prenatal
Diagnostic and Treatment (SIADTP)

Dr. Julio MartínPhD Molecular Genetics

Director of Applied Clinical development and Data Curator, H.Q.

With +17 years of experience, He has been director of the Laboratory of Molecular Diagnosis, (Preimplantation Genetic Diagnosis Unit) since 2003. His main interest is in the field of genetics of singlegene disorders, Exome, and genome sequencing as well as analysis, curation, and interpretation.

Dr. Lova SatyanarayanaPhD Human Genetics

Director Genomic Precision
Diagnostic, Middle East.
Having 10+ years of research
experience in the field of genomics
and molecular biology with 13
publications in peer reviewed
national and international journals.
He has a vast experience and is
currently responsible for analyzing
and interpreting genetic test results
for (Genome-Exome, targeted
panels, mitochondrial genome,
Microarray, etc)

LOCAL **PROFESSIONALS** HELPING YOU IN EVERY STEPS OF THE PATIENT **JOURNEY**

Francisco Rodriguez Herrera

Managing Director Middle East&India



Vikram Ganju

Country Manager India



Dr. Vandana Sharma

Lab manager



Dr Bratati Chaudhary

Genetic Counselor



Rahul Kadwal

Logistics & Customer Suppor



Ayman Ragheb

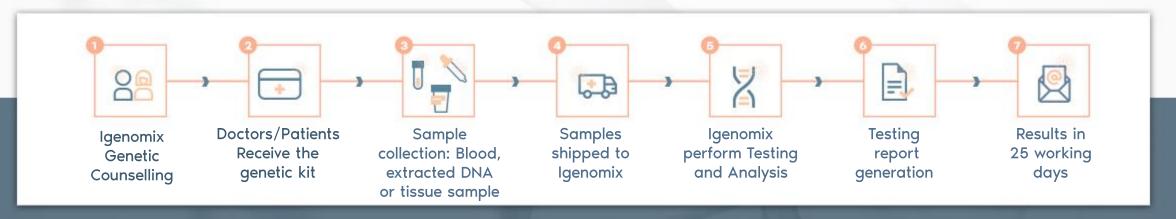
Marketing Manager Middle East & India



PROCESS & SAMPLE REQUIREMENTS



IGENOMIX MANAGES & SUPPORTS YOU DURING ALL THE PROCESS



	Sample type	Container	Transportation Temperature	Volume
(Peripheral blood	EDTA vacutainer	20-25°C	3 – 4 ml
P	Purified genomic DNA	In a sealed Eppendorf tube	20-25°C	A minimum 1 microgram of DNA at a concentration of 50-100ng/μl
1	POC (fetal tissue)	Tissue in sterile container in saline and cardiac or cord blood in vacutainer	20-25°C	3 – 4 mm POC specimen or 50 100 mg of each tissue
4	Amniotic Fluid	Sterile container	20-25°C	10-15ml
D	Chorionic villi	Sterile container with culture medium or saline solution with 1% antibiotic	2-8 °C	300-500mg

IGENOMIX GENETIC TESTS PORTFOLIO



IGENOMIX PROVIDES ADVANCED GENETIC SERVICES IN TWO MAIN AREAS



Genetics for Family diseases

Diagnostics and Precision Medicine





GENETIC DIAGNOSTIC TESTS

Genome/Exome







Chromosomal







Cardiology



Metabolic



Endocrinology



Gastroenterology



Reproductive





Repeat expansion analysis



Multiplex ligationdependent probe amplification



Next Generation Sequencing



Sanger/MiniSeq sequencing



Neurology



Haematology



Dermatology



Ophthalmology



Rare Diseases



Osteology



Pneumology



Ear, Nose Throat



Connective Tissue Disorder



Oncology



Nephrology



Immunology



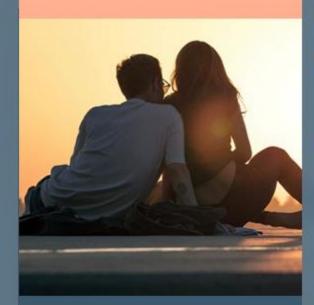
New Born Testing

Screening

ICU Diagnostic

DIAGNOSTIC TESTS APPLICATIONS

Preconception



For people who want to know if carry a genetic mutation and determine if there are at risk of having a child with a genetic disease.

Prenatal



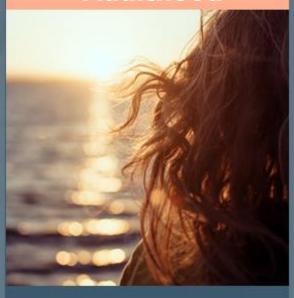
Method of testing for common chromosomal abnormalities that can occur in a developing baby.

Neonatal



Is performed in order to identify or rule out the mutation that causes the symptoms, and in a lot of cases to confirm diagnosis.

Childhood / Adulthood



Is used when no symptoms are shown yet. But there is probability of carrying the mutation and developing symptoms later In life.





Cardiology

Cardiomyopathy gene panel Cardiac Channelopathy gene panel



Connective Tissue Disorders

Ehlers-Danlos syndrome gene panel Marfan syndrome gene panel Cutis Laxa gene panel



Dermatology

Ectodermal dysplasia gene panel
Epidermolysis bullosa gene panel
Ichthyosis gene panel
Oculocutaneous albinism gene panel
Xeroderma pigmentosum gene panel
Tuberous Sclerosis (TSC1 & TSC2) gene panel
TSC1 deletion/duplication
TSC2 deletion/duplication



Endocrinology

Monogenic and syndromic obesity gene panel

Hyperlipidemia gene panel

Maturity-onset diabetes of the young (MODY) & neonatal diabetes gene panel Disorders of Sex Development (Abnormal Genitalia) Panel

Hereditary pancreatitis gene panel

Congenital adrenal hyperplasia gene panel

Congenital adrenal hyperplasia CYP21A2 (21-0H)

Congenital adrenal hyperplasia CYP21A2 (21-0H) deletion/duplication analysis



ENT

Deafness (syndromic & non-sydromic) gene panel Waardenburg syndrome gene panel Usher syndrome gene panel Bronchio-Oto-Renal syndrome panel



Gastroenterology

Alagille syndrome gene panel
Congenital hepatic fibrosis gene panel
Hyperbilirubinemia gene panel
Hemochromatosis gene panel
Progressive familial intrahepatic cholestasis gene panel
Wilson disease (ATP7B) gene analysis
ATP7B deletion/duplication



Haematology

Hereditary Hemorrhagic Telangiectasia
Congenital afibrinogenemia gene panel
Bone marrow failure syndrome gene panel
Anemia gene panel
Haemophilia (F8 & F9) gene panel
F8 intron 22 inversion
Hemophagocytic lymphohistiocytosis (HLH) gene panel
Beta-thalassemia (HBB) gene analysis
Alpha-thalassemia (HBA1/2) gene analaysis
HBA1 & HBA2 deletion/duplication
Von Willebrand disease (VWF) gene analysis
Thrombocytopenia gene panel



Immunology

Thrombophilia gene panel

IKBKG deletion/duplication analysis
Primary immunodeficiency gene panel
Severe combined immunodeficiency gene panel



Metabolic Disorders

Fatty acid oxidation disorders gene panel
Glycine encephalopathy gene panel
Glycogen storage disorder gene panel
Glycosylation (CDG) disorders gene panel
Methylmalonic aciduria gene panel
Organic acidemia gene panel
Leigh syndrome & mitochondrial encephalopathy gene panel
Ornithine transcarbamylase deficiency (OTC) deletion/duplication analysis
Lysosomal storage disorder gene panel
Urea cycle defects gene panel



Nephrology

Alport syndrome gene panel Bartter syndrome gene panel Meckel Gruber syndrome gene panel Nephrotic syndrome gene panel Polycystic kidney disease gene panel Primary hyperoxaluria gene panel Ciliopathy gene panel



Neurology - Neuromuscular

Arthrogryposis & congenital myasthenic syndrome gene panel Charcot-Marie-Tooth and sensory neuropathies gene panel Muscular dystrophy & congenital myopathy gene panel Duchenne muscular dystrophy (DMD) gene analysis Duchenne Muscular Dystrophy (DMD) deletion/duplication Myotonia congenita gene panel PMP22 deletion/duplication analysis Spinal Muscular Atrophy (SMN1) gene analysis Spinal Muscular Atrophy (SMN1/SMN2) deletion/duplication



Neurology-Epilepsy

Aicardi-Goutieres syndrome gene panel Neuronal migration disorder gene panel comprehensive epilepsy gene panel Rett syndrome gene panel

Neurology - Movement Disorders

Ataxia-telangiectasia (ATM) gene analysis
Ataxia-telangiectasia (ATM) deletion/duplication
Dystonia gene panel
Early-onset juvenile parkinsonism gene panel
Hereditary spastic paraplegia gene panel
Hyperekplexia gene panel
Neurofibromatosis (NF1 and NF2) gene analysis
Neurofibromatosis type 1 (NF1) deletion/duplication
Neurofibromatosis type 2 (NF2) deletion/duplication

Neurology - Neurodegenerative

Adrenoleukodystrophy (ABCD1) gene analysis
Joubert syndrome gene panel
Leukodystrophy gene panel
Metachromatic leukodystrophy gene panel
Neurodegeneration with brain iron accumulation (NBIA) gene panel
Neurodegeneration with brain iron accumulation 2B (PLA2G6) deletion/duplication
analysis
Pantothenate kinase-associated degeneration (PANK2) deletion/duplication analysis



Oncology

Hereditary cancer panel Breast Cancer panel



Ophthalmology

Leber congenital amaurosis gene panel Optic atrophy gene panel Retinal degeneration gene panel Congenital cataract gene panel Cone-rod dystrophy gene panel Retinitis Pigmentosa gene panel



Rare disorders

Bardet-Biedl syndrome gene panel
Cornelia de Lange syndrome gene panel
DiGeorge syndrome deletion/duplication analysis
Cystic Fibrosis (CFTR) gene analysis
Cystic fibrosis (CFTR) gene deletion/duplication
Noonan syndrome gene panel
Prader-Willi/Angelman syndrome deletion/duplication
Stickler syndrome panel



Skeletal disorders

Skeletal dysplasia gene panel Osteogenesis imperfecta gene panel Osteopetrosis gene panel Achondroplasia (FGFR3) gene analysis



New born ICU genetic screening panel

New born genetic testing screening panel New born genetic testing diagnostic panel



Reproductive panel

Infertility gene panel Arrested embryo development gene panel Recurrent pregnancy loss gene panel



Pulmonology

Pulmonary Artery Hypertension (PAH) gene panel Cystic Fibrosis (CFTR) gene analysis Cystic fibrosis (CFTR) gene deletion/duplication Primary ciliary diskinesia gene panel Surfactant metabolism dysfunction gene panel



WHOLE EXOME SEQUENCING DIAGNOSTIC REPORT

Patient Information		Sample	Information	Clinic Information		
Patient Name:		Specimen Type:	EDTA-Blood	Unique Patient IO:	200314	
Patient DOB:	November 14, 2019	Date of Collection:	NA.	Referral Clinics		
Genders	Male	Receipt Date:	March 10, 2020	Clinic Location:	Jordan	
Lab Code:	WED-20M0009	Report Date:	May 4, 2020	Referral Physicians		

CLINICAL INDICATION:

Mohammad Ibrahim Al Maraba'ah is born of a consanguineous marriage. He presented with clinical symptoms of hypertrophic cardiomyopathy with severe left ventricular impairment, protruded tongue, axial and peripheral hypotonia and liver problem. He is suspected to be affected with Pompe disease. There is a positive family history of sibling death due to cardiomyopathy.

GENETIC ANALYSIS SUMMARY:

A homozygous pathogenic variant in the GAA gene was identified in the index. The GAA gene is associated with autosomal recessive glycogen storage disease II. The result is consistent with a possible genetic diagnosis of Pompe disease.

VARIANT(S) RELATED TO THE PHENOTYPE								
GENE	GENOMIC POSITION (GRCh27)	NUCLEOTIDE CHANGE (TRANSCUPT)	PROTEIN CHANGE (EPPECT)	ZYGOSITY	SNP IDENTIFIER	MINOR ALTELE	DISORDER (OMIN, INHERITENCE)	VARIANT CLASSIFICATION *
GAA (*606800)	ohr17: 78081379delT	c.716delT (NM_000152.4)	p.leu239ArgfsTer29 (Frameshift)	Homozygous	rs1555599594	N/R	Glycogen storage disease II (#232300, AR)	Pathogenic

*Pagent haspersy present in Exone Aggregation Consortium database (ILAE), 1000Genome ground (1000G), or ground **Passed on ACMG Guidelines, ACI: Autosomal Command, AE: Autosomal Research, N.CI: E-Unked Dominant, S.E: E-Unked Secretary, N.P. Not Reported, N.P. Not Reported

VARIANT INTETPRETATION:

By whole exome sequencing, a homozygous frameshift variant in the GAA gene (c.716delT, p.Leu239ArgfsTer29) was identified. This variant is present in exon 4/20 and the reference region is conserved across the species. This variant has previously been reported in a patient affected with glycogen storage disease type II (PMIDs: 14695532). This frameshift variant is not present in population databases (1000 genomes and gnomAD). According to the recommendations of the ACMG, this variant is classified as 'Pathogenic'.

Glycogen storage disease II, an autosomal recessive disorder, is the prototypic lysosomal storage disease. In the classic infantile form (Pompe disease), cardiomyopathy and muscular hypotonia are the cardinal features; in the juvenile and adult forms, involvement of skeletal muscles dominates the clinical picture (PMID: 6360103).

In classic cases of Pompe disease, affected children are prostrate and markedly hypotonic with large hearts. The tongue may be enlarged. Although the enzyme is deficient in all tissues, muscle weakness and heart involvement are the most common features. The liver is rarely enlarged, except as a result of heart failure, and hypoglycemia and acidosis do not occur as they do in glycogen storage disease I (#232200). Death usually occurs in the first year of life in the classic form of the disorder and cardiac involvement is striking, Indeed, Pompe (1932) reported this condition as 'idiopathic hypertrophy of the heart,' and 'cardiomegalia glycogenica' is a synonym.



CHROMOSOMAL MICROARRAY ANALYSIS TEST REPORT

Patient Information	Sample Infor	mation	Clinic Inform	ation
Patient Name: XXXX	Specimen Type:	EDTA-Blood	Unique Patient (0):	1000X
Patient DOB: XXX.	Date of Colortion:	RA.	Referral Clinic;	XXX
Gender: Female	Receipt Date:		Clinic Location:	UNE
Lab-Gode: 130-30A0000	Report Date:		Referred Physicians	2002

CLINICAL INDICATION / HISTORY:

Ms. XXXX is consanguineously married. She has a history of 3 early miscarriages (two miscarriages from spontaneous pregnaccy, another early miscarriage from RUI treatment) and 4 IVF in other clinic, always with bud embryo development or arrested embryos. She has been evaluated for pathogenic copy number variations (CNV) by chromosomal microarray analysis.

ARRAY TYPE:

Affymetrix 750k Ingles.

RESULTS AND ANALYTICAL INTERPRETATION:

Array-CGH formula according to ISCN 2016: arr(1-22,X)x2. The referred sample shows a FEMALE SEX genomic pattern.

We have not detected DNA copy number changes in the DNA sample.

We have additionally detected several large regions of homozygosity (totally 74.46 Mb), encompassing 3% of the whole genome. According to the references¹, an individual with "35 homozygosity could indicate that this individual is offspring of two consanguineal parents which could mean a fourth degree of consanguineal parents which could mean a fourth degree of consanguineal perents the possibility of a recessive disorder with a causative and mutated gene located within one of these regions (listed below).

Chromosome	Cytoband Start	Cytoband End	Size (Mb)
1	q41	q42.13	8.51
1	q43	944	5.65
2	q33.3	q35	10,48
4	412	913.1	8.23
5	q22.3	q31.1	17.74
8	q23.2	q24.11	7.16
11	p15.5	915.4	5,16
X:	p22.13	p21.3	6.35
X.	p11.23	p11.22	5.18

A detailed analysis of the 11p15 region concluded that there were some genes and regions involved (CDKN2C (*600856) and KCNQ1 (*607542), including ICR2 region) whose abnormal imprinting could be cause of Beckwith-Weidemann syndrome. If this syndrome was suspected phenotypically in the probandus, a MS-MLPA/methylation analysis should be recommended to confirm the methylation of ICR2 associated to Beckwith-Weidemann.

SUMMARY AND COMMENTS:

We have not detected any CNV that could explain the phenotype of the index. Several large regions of homorygosity were detected, indicating that the proband is an offspring of consanguineal parents at third degree. One of these homozygous regions was located at 11p15, including the Beckwith-Wiedemann methylation targets.



WHOLE EXOME SEQUENCING DIAGNOSTIC REPORT

Pa	tient Information	Sample	Information	Clinic Information		
Patient Name:		Specimen Type:	EDTA-Blood	Unique Patient 10:	200314	
Patient DOS:	November 14, 2019	Date of Collection:	NA.	Referral Clinic:		
Genders	Male	Receipt Date:	March 10, 2020	Clinic Location:	Jordan	
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*Toglest Trapperty present in Exima Aggregation Consultium database (ILACS_1000Seriome project (1000G), or growthD **Issaed on ACMG Guidelines, ACI Autosomal Dominant, Ali: Autosomal Reseases, XLD: 8 critical (sonitres, XLP, Kurkind Reseases, XLP: Not Reported, XLP, Not available

VARIANT INTETPRETATION:

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NOTINGARK FZ LLC-

Unit 501 and 502, Building 40, Duba: Health Care City, P-D. Box 56566 Duba: UAE

Cytogenetic Analysis Report

MRN No: 7621 M

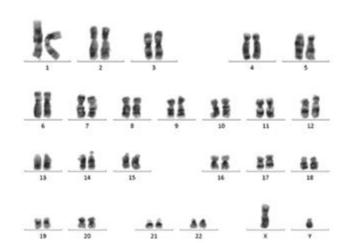
Specimen: peripheral blood lymphocytes

Report Date: 30/03/2020

Reception Date: 11/02/2020

Methodology: peripheral blood lymphocyte cell culture and GTG

banding.



Karyotype: 46,XY

Results: Chromosomal analysis (GTG-Banding with 500 band resolution) revealed an apparently normal male karyotype in all the metaphases analysed.

Note: The cytopenetic result in samples of peripheral blood does not exclude the presence of non-obsectable atmosphilities due to limitations inherent of the technique itself, such as; low frequency messacism and cryptic structural atmosphisis (incredelytons, inscodiglications and between translocations), demonstrated by other molecular techniques. In this study-normal variants without clinical implication are not specified.

SIGNATURE Laboratory Director (Validated at Igenomic)

COMPANY PROFILE





23 GENETIC LABORATORIES WITH PRESENCE IN MORE THAN 80 COUNTRIES





SPAIN HEAD QUARTER



A GROWING
FAMILY OF 500
EMPLOYESS
20% PhDs





AN INTERNATIONAL TEAM EXPERIENCED AND REPUTED (450 EMPLOYEES AND 20% PhD)

Industry Experience

22



Carmen Rubio, PhD Lab Director PGT-A H.Q.

11



Ana Cerveró, PhDLab Director PGT-A H.Q.

15



Julio Martin, PhDDirector of Applied
Clinical Development

17



David BlesaProduct Development Directo

Industry Experience

22



Javier Garcia Planells
Clinical Director and Scientific
Rare Diseases

12



Marcia Riboldi, PhD
Lab Manager Brazil

04



Vandana Sharma, PhD
Lab Manager India

1



Rupali Chopra, PhDLab Dir. Middle East



FOR MORE INFORMATION CALL US AT:



www.igenomix.co.in
Email: info.india@igenomix.com

