

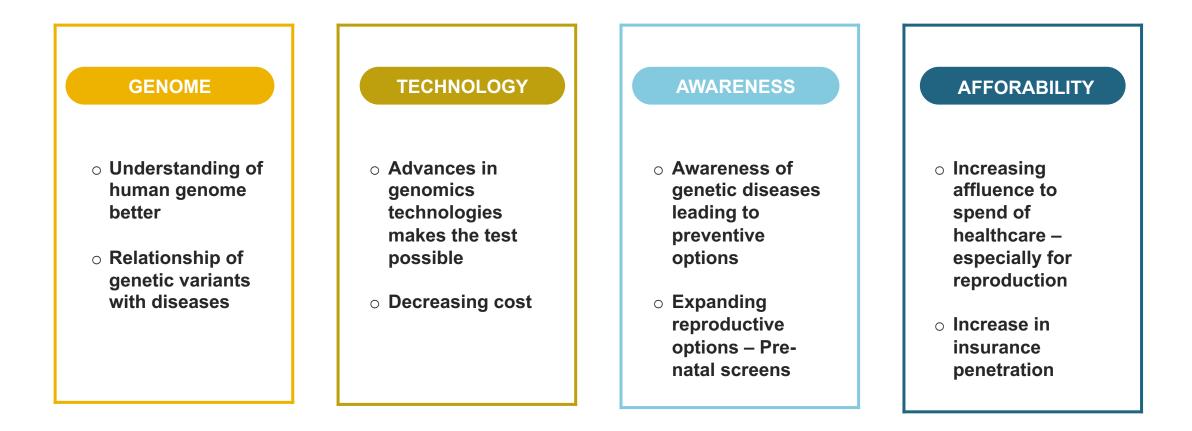




# To be an ethical and actionable precision diagnostics company by providing insights into health and disease

## **Growth Drivers in Genetic Testing**





# **About Dhiti Omics**



- Privately owned company with the promoters and angel investor as key stakeholders established in 2014
- Delivers ethical and actionable molecular diagnostics and genetic testing services, currently in following specializations;
  - Pediatrics
  - Obstetrics and Gynecology
  - Nephrology
  - Neurology
  - Cardiology
  - Oncology
  - Metabolic disorders
  - **Dysmorphologies**
- Associate company of Genotypic Technology which pioneered genomics services in India in 1998
- **o** Currently Servicing Clinicians and Geneticists of key hospitals in India
- Strong R and D and Capability to develop and launch tests in the quickest and most costeffective manner-Launched 6 new genomic tests in a span of 3 months on a shoestring budget!

## **Road Map**



# 2014

Established laboratory in Bangalore Developed relationships with key genetics clinics

# 2017

Expansion of team Business expanded to global market

# 2022

Launched Oncogenomics, and Infectious panels. Expansion of sales team

# 2016

Launched tests for Nephrology, cancer, metabolic disorders, neuromuscular disorders, Thalassemia, Single gene disorders

# 2021

Launched COVID-19 Diagnostic Lab NABL accreditation ICMR approval

## **Management Team**



### Sudha Rao, PhD

Founder & Director

- Two decades of experience in biotech as researcher and entrepreneur
- Co founder of Genotypic Technology pioneered genomics services in India

### Meena Vaidyanathan, MBA

### Director

- 25 years experience in business strategy and marketing
- $\circ\,$  Founder, Niiti consulting

### Kannan Ramesh

**Co-Founder & Director** 

- Over 25 years of consulting experience in Management, Business, Finance and Strategy in Healthcare sector
- Helped several respected brands in healthcare to scale up across verticals

### **Dr. Anand Damodaran**

M.B.B.S, M. D (Path) PDF in Immunogenetics (USA) Consultant in Molecular Pathology & Molecular Diagnostics

### Chief Mentor: Prof. Samir K. Brahmachari

An eminent geneticist and former DG, CSIR. Also, Founder Director of Institute of Genomics and Integrative Biology [IGIB] and Professor at IISc, Bangalore. Was instrumental in the development of tests for Indian specific mutations in Thalassemia in the 90s and piloted the Indian genome variant project and coordinated the Pan India genome project

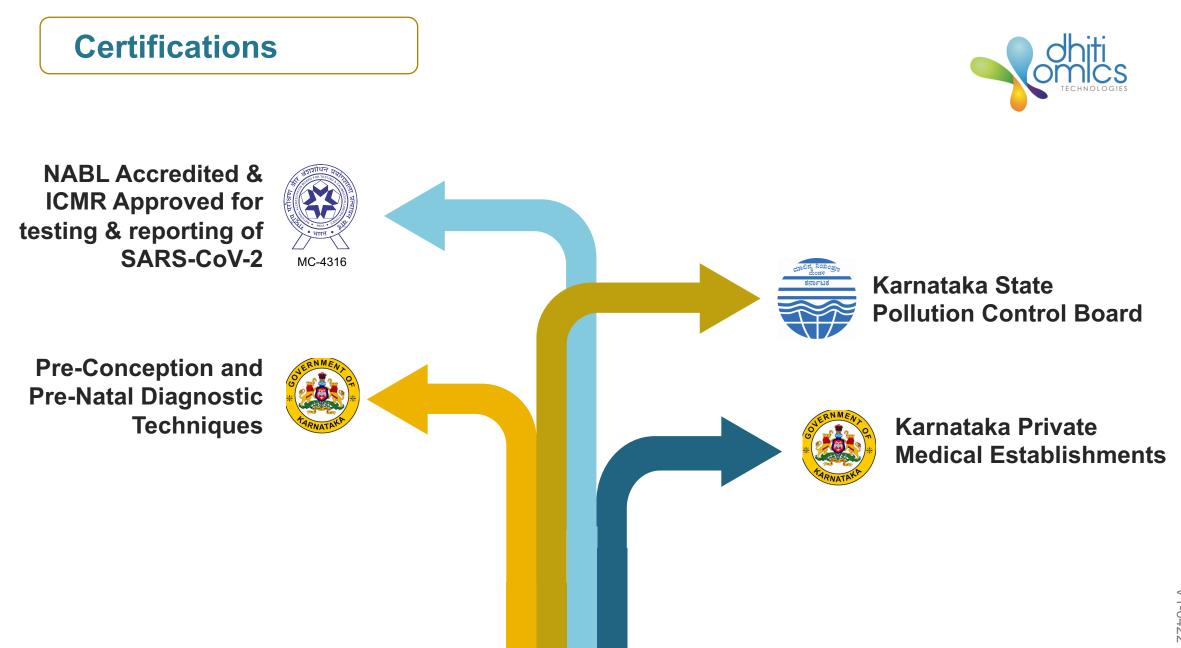
# **Genomics Facility**







- 2300 sq. ft facility in Bangalore with fully functional wet lab
- Next Gen Sequencing at the ISO 9001 certified Genomics Lab @ Genotypic Technology







- Privately owned company with the promoters and angel investor as key stakeholders established in 2014
- Collaborative Grant in collaboration with NIMHANS for Neuro-Muscular test development
- Relationships with several key clinics
- Whole genome sequencing of local subjects towards development of Indian Genomic Database
- Diagnosed over 1500 cases of rare disorders
- Over 20 Specialized Validated inhouse developed tests for rare diseases
- Over 200 clients including KOLS and hospitals in India with a minor presence in the Middle east

Test Code	Test Name	
DN01	Whole Genome Sequencing [WGS]	TECHNOLO

 Comprehensive Screening for Rare Genetic Disorders. Mainly for prognostic, diagnostic, preventive & therapy modulation of diseases.

Sample	4mL whole blood in EDTA tube / gDNA
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks

### **Screens for**

 WGS checks for SNVs, indels, CNVs, and SVs across the whole genome. It may be used for diagnosis, screening, treatment selection in prenatal, paediatric, critical care, rare disease, or adult medicine.

Test Code	Test Name
DN02	Whole Exome Sequencing [WES]



### ✓ Mainly for prognostic, diagnostic, preventive & therapy modulation of diseases.

Sample	4mL whole blood in EDTA tube / gDNA
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks

### **Screens for**

• WES sequences the human protein coding regions.

Test Code	Test Name
DN42	Hirschsprung Disease Panel



# ✓ This test is used for the diagnosis of Hirschsprung disease or aganglionic megacolon

Sample	4mL whole blood in EDTA tube / gDNA
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks
Gene List	BDNF, CELSR3, EDN3, EDNRB, KIF1BP, L1CAM, MITF, NRG1, NRTN, PAX3, PHOX2B, RET, RMRP, SOX10, ZEB2

Test Code	Test Name
DN05	Mitochondrial Disorder Panel



### ✓ Targets the full mitochondrial genome, without amplifying any nuclear encoded genes.

Sample	4mL whole blood in EDTA tube / gDNA
Technology	PCR+NGS
TAT	4 weeks

- Chronic progressive external ophthalmoplegia [CPEO]
- Kearns-Sayre syndrome [KSS]
- Leber hereditary optic neuropathy [LHON]
- Mitochondrial encephalomyopathy with lactic
- acidosis and stroke-like episodes [MELAS]
- Myoclonic epilepsy myopathy sensory ataxia [MEMSA]

- Myoclonic epilepsy with ragged-red fibers [MERRF]
- Mitochondrial recessive ataxia syndrome [MIRAS]
- Neurogenic weakness with ataxia and retinitis pigmentosa [NARP]
- Sensory ataxia neuropathy, dysarthria, ophthalmoplegia [SAND])
- Spinocerebellar ataxia with epilepsy [SCAE]

# Test CodeTest NameDN07Metabolic Disorder Panel

Contraction de la contraction

- ✓ Accurate diagnosis of Metabolism Errors and other Paediatric-Onset Genetic Disorders.
- ✓ Sequencing coding regions of 300+ genes linked to 120+ such disorders

Sample	4mL whole blood in EDTA tube / gDNA
Technology	Next-Generation Sequencing [NGS]
ТАТ	4 weeks

- Lipid Metabolism Disorders
- Acidurias
- Amino Acid Metabolic Disorders
- Carbohydrate Metabolic Disorders
- Fatty Acid Oxidation Disorders
- Metal Metabolism Disorders

- Enzyme Deficiency
- Mitochondrial Deficiency
- Organic Acid Disorders
- Urea Cycle Defects
- Peroxisomal Disorders
- Other Metabolic Disorders

# Test CodeTest NameDN15Endocrine Disorder Panel



✓ Several endocrine disorders have a strong genetic component. Genetic tests can guide treatment in patients, and pave way for carrier screening in families.

Sample	4mL whole blood in EDTA tube / gDNA
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks

- Abnormal Genitalia/ Disorders of Sex Development
- Congenital Adrenal Hyperplasia
- Glucocorticoid Deficiency
- Hyperlipidemia
- Hyperparathyroidism
- Hypoglycemia and Hyperinsulinism

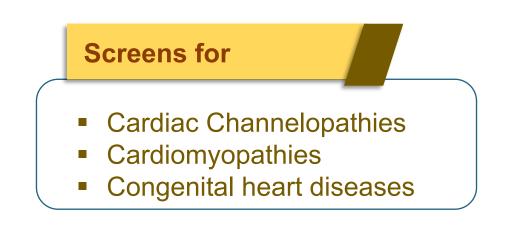
- Hypomagnesemia
- Hypothyroidism and Resistance to Thyroid Hormone
- Kallmann Syndrome/ Hypogonadotropic hypogonadism
- Premature Ovarian Failure
- Combined pituitary hormone deficiency

Test Code	Test Name	dhiti
DN03	Cardiac Disorder Panel	

Sample	4mL whole blood in EDTA tube / gDNA
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks

### Who should be tested?

- 1. Individuals presenting with the most common symptoms of cardiovascular disease
- Individuals with a positive family history of cardiovascular disease or sudden (unexplained) death
- 3. Individuals without a positive family history but with symptoms resembling the specific disease indication



# Test CodeTest NameDN04Neurological Disorder Panel



### ✓ Targeted analysis for 1200 genes associated with neurological disorders.

Sample	4mL whole blood in EDTA tube / gDNA
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks

### **Screens for**

- Neurocognitive/ Intellectual disorders (e.g. Autism, ASD, ADD/ADHD)
- Neuromuscular disorders (e.g. DMD, BMD, LGMD)
- Epileptic disorders
- Mitochondrial disorders\*

### Who should be tested?

- 1. Individuals presenting with the most common symptoms of a neurological disease
- 2. Individuals with a positive family history of neurological disease
- 3. Individuals without a positive family history but with symptoms resembling the specific disease indication
- 4. Individuals with a negative, but suspected, family history, in order to perform genetic counselling (prenatal analyses are recommended in families of affected individuals)

Test Code	Test Name
DN09	Neuromuscular Disorder Panel



 Confirms diagnosis of patients with muscular dystrophies, carrier testing of family members or for prenatal testing in offspring

Sample	4mL whole blood in EDTA tube / gDNA
Technology	Next-Generation Sequencing [NGS]
ТАТ	4 weeks
Gene List	SGCA, DYSF, CAPN3, FKRP, DMD, SGCB, SGCD, SGCG, DYSF, CAPN3, FKRP

- Duchenne Muscular Dystrophy DMD
- Becker Muscular Dystrophy BMD
- Limb Girdle Muscular Dystrophy LGMD [Type 2A, 2B, 2C, 2D, 2E, 2F, & 5C]

Test Code	Test Name	dhiti
DN17	CGH-Microarray	

 Copy number changes including deletions and amplifications in developmental delays, mental retardation, and related conditions

Sample	3mL whole blood in EDTA / Saliva / buccal swab
Technology	Microarray
TAT	4 weeks

Test Code	Test Name	<u>J</u>
DN06	Inherited Common Nephrological Disorders	TEC



Sample	4mL whole blood in EDTA tube / gDNA
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks

- Accurate diagnosis helps you decide next course of treatment
- Prognosis informed decision on transplant
- Assessment of recurrence chance
- Carrier status of family members
- Focussed test with an affordable price

Test Code	Test Name		<u>dhiti</u>
DN12	Pre-natal Testing		
Sample	4mL whole blood in EDTA tube	/ 10mL Amniotic Fluid / CVS	
Technology	Next-Generation Sequencing [	NGS]	
ТАТ	4 weeks		
First trimester		Second trimester	
<ul> <li>Encephalocele</li> <li>Facial clefting</li> <li>Agenesis of co</li> <li>Skeletal</li> <li>Limb reduction</li> <li>Anencephaly</li> <li>Acrania</li> </ul>	oloprosencephaly e Microcephaly orpus callosum Renal agenesis n defects Absent nasal bone Omphalocele Gastroschisis drocephalus	<ul> <li>Tetralogy of Fallot</li> <li>Atrioventricular canal</li> <li>Right heart defects</li> <li>Great arteries defects</li> <li>Hydronephrosis</li> <li>Osteochondrodysplasias</li> <li>Arthrogryposis</li> <li>Hydrops</li> <li>Syndactyly</li> <li>Talipes</li> <li>Hydronephrosis</li> </ul>	

Test Code	Test Name	TECHNOLOGIES
DN13	Mutation Testing for Pre – Natal validation (Includes MCC)	
✓ VNTR/ STR ar sample under a	nalysis by PCR to rule out maternal cell contamination (MCC) analysis.	in a prenatal

Sample4mL whole blood in EDTA tube (mother) and 10mL Amniotic Fluid/CVSTechnologySanger sequencingTAT2 weeks

Test Code	Test Name
DN14	Cystic Fibrosis Hotspot Testing

✓ Detects F508del mutation found in >80% of CF Patients. This is clinically actionable, with treatments such as lumacaftor/tezacaftor that help the defective CFTR fold correctly.

Sample	4mL whole blood in EDTA tube
Technology	Sanger sequencing
TAT	2 weeks

Test Code Test N	ame	
DN11 Inherite	ed Cancer Panel	

 Screens for a whole gamut of inherited cancers, such as Lynch Syndrome, Breast and Ovarian Cancers etc.

Sample	4mL whole blood in EDTA tube / gDNA	
Technology	Next-Generation Sequencing [NGS]	
ТАТ	4 weeks	
Screens for  Lynch Syndrom Breast Cancer Ovarian Cancer Colorectal Can Uterine Cancer Gastric Cancer Skin Cancer Familial Adeno	er ICer r	<ul> <li>How will genetic testing help?</li> <li>Helps the clinician to make a precise diagnosis</li> <li>Helps the clinician to decide the most suitable therapy and support for the patient.</li> <li>Early intervention and good surveillance can help the patient in leading a good life</li> <li>Results of genetic testing can be useful for future family planning</li> </ul>

Туре	Hematological Cancer	
Sample	4mL whole blood / 2 ml bone marrow in EDTA tube	
Technology	RT-PCR	
TAT	4 Days	



Test Code	Test Name	Gene List
DN27	AML Comprehensive PCR Panel	BCR-ABL1, PML-RaRa, AML-ETO, Inv16, FLT3 (ITD/TKD), NPM1, c- KIT
DN28	ALL Comprehensive PCR Panel	BCR-ABL1, TEL-AML1, MLL-AF4, MLL-AF9, MLL- ENL, E2A-PBX1
DN29	BCR-ABL Qualitative [Major, Minor & Micro]	BCR-ABL1
DN30	BCR-ABL1 Quantitative [Major, Minor & Micro], WHO International Scale	BCR-ABL1
DN32	JAK 2 Detection [Exons 12-15]	JAK 2
DN33	PML-RARA Qualitative	BCR1, BCR2 & BCR3
DN34	PML-RARA Quantitative	BCR1, BCR2 & BCR3

Test Code	Test Name	<u>dhiti</u>
DN31	BCR/ABL1, Kinase Domain Sequencing	
Sample	4mL whole blood / 2 ml bone marrow in EDTA tube	
Technology	Sanger sequencing	
TAT	14 Days	

Test Code	Test Name	
DN35	KRAS Qualitative	
DN36	NRAS Qualitative	
DN37	BRAF Qualitative	
DN38	EGFR Qualitative	

Туре	Solid Tumor
Sample	FFPE tissue block/unstained slides
Technology	RT-PCR
TAT	7 Days

Test Code	Test Name
DN22	Solid Tumours Panel_Somatic
Sample	FFPE tissue blocks/unstained slides
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks
FBAKT1XW7, FG KIT, KRAS, MAP2	BRAF, CDH1, CDKN2A, CTNNB1, DDR2, EGFR, ERBB2, ERBB4, EZH2, FR1, FGFR2, FGFR3, GNA11, GNAQ, GNAS, HRAS, IDH1, IDH2, KDR, 2K1, MET, MTOR, NOTCH1, NRAS, NTRK1, PDGFRA, PIK3CA, PTEN, 5 SMAD4, SMO, STK11, TERT promoter, TP53, VHL

Resections: Small Biopsies: Transport Temperature: Unacceptable Conditions: Additional Requirement: Transport 8 unstained 5-micron slides. (Min: 5 slides) Transport 15 unstained 5-micron slides. (Min: 10 slides) Room temperature. <10 percent tumor, Decalcified specimens, FNA smears with less than 50 tumor cells. Include surgical pathology report.

Test Code	Test Name	dhiti	
DN23	Non-small Cell Lung Carcinoma [	all Cell Lung Carcinoma [NSCLC] Panel_Somatic	
Sample	FFPE tissue blocks/unstained slides		
Technology	Next-Generation Sequencing [NGS]		
TAT	4 weeks		
Genes Co Erlotinib, Gefitinib Afatinib Osimertinib Crizotinib Ceritinib	EGFR, ERBB2, KRAS, MET EGFR, ERBB2, KRAS, MET	Recommended Therapies Guided by Genetic MarkersAlectinibALKBevacizumabKRAS, VHLVemurafenibBRAFDabrafenibBRAFTrastuzumabEGFR, ERBB2, MET, PIK3CA	
Resections:Transport 8 unstained 5-micron slides. (Min: 5 slides)Small Biopsies:Transport 15 unstained 5-micron slides. (Min: 10 slides)Transport Temperature:Room temperature.Unacceptable Conditions:<10 percent tumor, Decalcified specimens, FNA smears with less than 50 tumor cel			

Test Code	Test Name
DN24	Colorectal Carcinoma [CRC] Panel_Somatic
Sample	FFPE tissue blocks/unstained slides
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks
Genes Covered       FDA Approved and NCCN Recommended Therapies Guided by Genetic Marker         5-Fluorouracil       APC, SMAD4         Cetuximab,       BRAF, EGFR, KRAS, MET, NRAS,         Panitumumab       PIK3CA, PTEN         Oxiplatin       KRAS         Bevacizumab       KRAS	
Resections: Small Biopsies: Transport Temperature Unacceptable Conditio Additional Requiremen	ns: <10 percent tumor, Decalcified specimens, FNA smears with less than 50 tumor cells.

Test Code	Test Name	dhiti
DN25	Myeloid Tumours Panel_Somatic	
Sample	3mL whole blood or bone marrow in EDTA tube	
Technology	Next-Generation Sequencing [NGS]	
ТАТ	4 weeks	
0		

ANKRD26, ASXL1, ATM, CBL, CDKN2A, CEBPA, CREBBP, DNMT3A, ETV6, EZH2, FLT3, GATA2, HRAS, IDH1, IDH2, JAK2, KIT, KRAS, NF1, NOTCH1, NPM1, NRAS, PDGFRB, PHF6, PTPN11, RAD21, RUNX1, SF3B1, SMC1A, SMC3, SRSF2, STAG2, TET2, TP53, U2AF1, WT1

If smaller panel needed: ANKRD26, ASXL1, CEBPA, DDX41, DNMT3A, ETV6, FLT3, GATA2, IDH1, IDH2, KIT, KRAS, NPM1, NRAS, PDGFRA, RUNX1, TP53, WT1

Transport Temperature: Unacceptable Conditions:

Genes Covered

Room temperature. Ship over cool packs during summer/hot weather. Serum, plasma, grossly hemolyzed specimens, buccal brush or swab, FFPE tissue.

Test Code	Test Name
DN26	Lymphocytic Tumours Panel_Somatic
Sample	3mL whole blood or bone marrow in EDTA tube
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks
TAT4 weeksGenes CoveredABL1, ASXL1, ATM, ATRX, BCOR, BCORL1, BRAF, CALR, CBL, CBLB, CBLC, CDKN2A, CEBPA, CREBBP, CSF3R, CUX1, DNMT3A, ETV6, EZH2, FBXW7, FLT3, GATA1, GATA2, GNAS, HRAS, IDH1, IDH2, IKZF1, JAK2, JAK3, KDM6A, KIT, KMT2A, MGM173, MGM175 KMT2D, KRAS, MPL, MYD88, MGM1060 NOTCH1, NPM1, NRAS, PDGFRA, PHF6, PTEN, PTPN11, RAD21, RUNX1, SETBP1, SF3B1, SMC1A, SMC3, SRSF2, STAG2, TET2, TP53, U2AF1, WT1, ZRSR2	

Transport Temperature: Unacceptable Conditions: Room temperature. Ship over cool packs during summer/hot weather. Serum, plasma, grossly homolysed specimens, buccal brush or swab, FFPE tissue.

Test Code	Test Name	dhiti
DN39	SARS-CoV-2 RT-PCR Test	
DN41	SARS-CoV-2 Tapestry Algorithmic Pooling	
· · · · · · · · · · · · · · · · · · ·		
Sample	Nasopharyngeal & Oropharyngeal Swab	
Technology	RT-PCR	
ТАТ	24 hours	
Test Code	Test Name	

Test Code	Test Name
DN40	SARS-CoV-2 Rapid Antigen Test

Sample	Nasopharyngeal/Nasal Swab
Technology	POC
ТАТ	24 hours

Test Code	Test Name	<i>dhiti</i>
DN43	Sepsis with AMR Panel [Bacteria, Virus, Fungus]	TECHNOLOGIES
Sample	Blood/Pus Swab/gDNA	

I	5
Technology	Nanopore sequencing [Whole Genome Sequencing]
ТАТ	24 hours

- ✓ We conduct Whole Genome Metagenome Sequencing (WGMS) and Analysis in clinical samples such as blood / biological fluids (Cerebrospinal fluid, Urine etc) / gDNA.
- ✓ The test is run using the Oxford Nanopore Technology (ONT) platform, and provides rapid and accurate identification of the pathogens and AMR where applicable.

Test Code	Test Name	dhiti
DN44	Human Immuno-deficiency Virus [HIV]	TECHNOLOGIES
DN45	Hepatitis B Virus [HBV]	
DN46	Hepatitis C Virus [HCV]	
DN47	Human Papilloma Virus [HPV]	
Γ		]
Sample	<ul> <li>6mL whole blood in EDTA / 2mL Plasma for <u>HIV, HBV, HC</u> specimens: Serum and CSF].</li> <li>FFPE tissue block or 5 unstained 4-5 micron slides for <u>HF</u> neck squamous cell carcinoma [Unacceptable specimens without tumour tissue / FFPE specimens fixed in formalin Bouen or B5 fixatives), alternative fixatives or heavy meta B-5) / Decalcified specimens].</li> <li>3mL Cervical, anal, or vaginal specimen with brush or spa or SurePath collection kits for <u>HPV.</u></li> </ul>	<b>PV</b> in head and :: FFPE specimens substitutes (ie., Il fixatives (B-4 or
Technology	RT-PCR	
TAT	24 hours	

# Test CodeTest NameDN16Carrier Testing

 Targeted mutation testing in family, when the mutation has already been established in proband

Sample	4mL whole blood in EDTA tube / Saliva / buccal swab / gDNA	
Technology	Next-Generation Sequencing [NGS]	
TAT	4 weeks	

Test Code	Test Name
DN18	Sickle Cell Anaemia Testing

### ✓ Detection of Sickle Cell Anaemia mutations

Sample	4mL whole blood in EDTA tube / Saliva / buccal swab / gDNA	
Technology	Next-Generation Sequencing [NGS]	
TAT	4 weeks	

Test Code	Test Name	
DN19	Alpha Thalassemia Testing	



✓ Detects point mutations in HBA1 & HBA2 genes

Sample	4mL whole blood in EDTA tube / Saliva / buccal swab / gDNA
Technology	Next-Generation Sequencing [NGS]
ТАТ	4 weeks

Test Code	Test Name
DN20	Beta Thalassemia Testing

### ✓ Detects point mutations in HBB gene

Sample	4mL whole blood in EDTA tube / Saliva / buccal swab / gDNA
Technology	Next-Generation Sequencing [NGS]
TAT	4 weeks

Test Code	Test Name	
DN21	Single Gene Sequencing	
Sample	4mL whole blood in EDTA tube / Saliva / buccal swab / gDNA	
Technology	Sanger / Nanopore	
TAT	2 weeks	

Test Code	Test Name	ТАТ
DN48	Data Reanalysis	1 week
DN49	Result Interpretation	1 week
DN50	Genetic Counselling	1 week

## **Success Stories**





### **Success Stories**







### **Success Stories in Clinics**

Diagnosis of Uncomplicated Hereditary Spastic Paraplegia - a genetically diverse neurological disorder

19 year old male with difficulty in walking, bladder disturbance and weakness in lower limbs

Dhiti Omics found a pathogenic variant in SPAST gene causing the disease

Early diagnosis helps to improve patient's quality of life.



to into Hastith and Dea

Success Stories in Clinics Fatty Acid Hydroxylase associated Neurodegeneration - a rare Neurodegeneration with Brain Iron Accumulation (NBIA) disorder

7 year old male with difficulty in walking and speaking, unstable bladder, suspected Complicated Hereditary Spastic Paraplegia

Dhiti Omics found a deletion variant in FA2H gene leading to Fatty Acid Hydroxylase- associated Neurodegeneration Genetic testing speeds up diagnosis of rare genetic disorders and ultimately ends diagnostic odyssey

## **Awareness Building Activities**







Workshops for Clinicians | CMEs at Hospitals | Conference Participation



Quickest Team that pioneered genomics in India and ran the genomics business profitably and consistently for over 2 decades

02 Strong advisory group

- O3 Strong partnership with global technology
   companies through parent company
- 04
- Domain and technology expertise
- 05 Ethical





### **Dhiti Omics Technologies Pvt. Ltd.**

#259, 3<sup>rd</sup> Floor, Apurva, 4<sup>th</sup> Cross, 80 Feet Road RMV 2<sup>nd</sup> Stage, Bangalore – 560 094, India Website: www.dhitiomics.com Email: <u>services@dhitiomics.com</u> Mobile: +91 89712 78811