# **Schedule of Accreditation**

issued by

# **United Kingdom Accreditation Service**

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK



9028

Accredited to ISO 15189:2012

# The Newcastle upon Tyne Hospitals NHS Foundation Trust

Issue No:006 Issue date: 19 November 2024

**Northern Genetics Service** 

The Newcastle upon Tyne Hospitals

**NHS Foundation Trust,** 

Institute of Genetic Medicine,

Central Parkway,

Newcastle upon Tyne,

Tyne & Wear NE1 3BZ

Contact: Amritjit Singh Tel: +44 (0)191 282 0848

E-Mail: Amritjit.Singh@nhs.net

Website: https://www.newcastlelaboratories.com

Testing performed by the Organisation at the locations specified below

#### Locations covered by the organisation and their relevant activities

#### **Laboratory locations:**

Location details		Activity	Location code
Address Cytogenetics and Molecular Genetics Newcastle Genetics Laboratory Institute of Genetic Medicine Central Parkway Newcastle upon Tyne Tyne & Wear NE1 3BZ	Local contact Amritjit Singh	Genetic Analysis	A

#### Site activities performed away from the locations listed above:

Location details		Activity	Location code
Muscle Immunoanalysis Unit Lower Ground Floor Dental Hospital Richardson Road Newcastle upon Tyne NE2 4AZ	Local Contact Dr Richard Charlton	Muscle Immunoanalysis	В
North of England Haemato-oncology Malignancy Diagnostic Service (NEHODS) Blood Sciences Flow Laboratory Level 3, Leazes Wing Royal Victoria Infirmary Newcastle upon Tyne NE1 4LP	Local Contact Mr Gavin Cuthbert	Specimen Processing for haemato- oncological samples	С

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#### **DETAIL OF ACCREDITATION**

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis of rare disease, inherited and acquired cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
		DNA Extraction	
		Manual, semi-automated and automated DNA/RNA extraction and quantification using:	A
		Documented in-house methods - For DNA extraction using one or a combination of the techniques below by in-house procedures using commercial kits and manual extraction.	
Whole Blood		Qiagen QIA Symphony with midi or mini kit	
		SOP: GENE915	
		Qiagen EZ1 XL Advanced with:	
Whole blood, Bone Marrow, Foetal Blood		EZ1 200 μ or 350μl blood kits	
		SOP: GENE 739	
Blood spots, Amniotic Fluid, CVS, FFPE, slide sections		EZ1 Tissue Kit	
and fixed cells, Products of conception, fresh solid tissue, Separated cells from whole blood and bone marrow (separation by UKAS		SOP GENE743, GENE747, GENE738, GENE746, GENE744, GENE745	
accredited external laboratory)			
		Maxwell RSC with	
Whole Blood, Bone Marrow, Foetal Blood		Maxwell RSC Whole Blood DNA blood kit	
		SOPs:GENE 740	

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HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis of rare disease, inherited and acquired cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
Separated cells from whole blood and bone marrow, Amniotic fluid, CVS, FFPE tissue, Slide sections, Fixed Cells, Buccal scrapes, Products of conception, fresh solid tissue, Separated cells from blood and bone marrow		Maxwell RSC FFPE Plus DNA kit SOPs: GENE612, GENE611, GENE609, GENE608, GENE742	
		DNA Quantification for QC purposes: Glomax Multi detection System using Nanodrop 1000 and 2000 and Quantiflour ds DNA kit SOPs GENE881 and GENE846	
Whole Blood, Bone Marrow,		RNA EXTRACTION  Maxwell RSC with RNA extraction using RSC simply RNA Blood kit with reverse transcription to cDNA using superscript III with in-house methods	
FFPE, Slide Sections, fresh solid tissue		SOPs: GENE858, GENE859, GENE1527  RNA extraction using RSC Maxwell FFPE kit with reverse transcription to cDNA using superscript III using in-house methods  SOPs GENE860	

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HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis of rare disease, inherited and acquired cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
Genomic DNA and RNA extracted in-house from the sample types listed and received as primary samples from external sources	Detection of nucleic acid sequence variants – SNVs, small indels and breakpoints  Confirmatory and cascade testing  Detection of known or unknown sequence changes - analytic capacity as per SOPS	Using  Standard primer design methodology and PCR amplification (where relevant to internal samples)  And:  PCR blocks, Biomek NXp liquid handling robot (pre- and post-analytical), ABI3500xl Capillary electrophoresis instruments  And:  Ampure XP BigDye Terminator Cleanseq  Analysis using Mutation Surveyor software and interpretation of variants by ClassIC software.  Procedures: (equipment): GENE 735, GENE627, GENE162, (procedures and analysis): GENE956, GENE164, GENE195, GENE422 (specific disorders): GENE1501, GENE1516, GENE1502, GENE15173, GENE1507, GENE1511, GENE925, GENE165, GENE957, GENE922, GENE1519, GENE909, GENE1520	A

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HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis of rare disease, inherited and acquired cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
		Fragment Length Analysis Resolution Using	A
Genomic DNA extracted inhouse from the sample types	Detection of fragment length size, deletions, known SNVs	Capillary Electrophoresis	
listed and received as primary samples from external sources	and small indels, repeat expansions, linkage makers, short tandem repeats, microsatellites and methylation status	PCR, methylation specific PCR, Triplet Repeat PCR using in-house methods and commercial kits as listed:	
	Angelman/Prader Willi syndrome by bisulphite conversion	Zymo Research EZ DNA Methylation kit Elucigene CFEU50 kit Powerplex 16HS	
	Cystic Fibrosis (including neonatal screening)	Equipment:	
	FLT3/NPM1 in AML  Identity / zygosity testing  Microsatellite instability by	PCR blocks, BiomekNXp liquid handling robot and ABI3500xl Capillary electrophoresis instruments and Gel Electorphoresis	
	PCR and analysis of microsatellite markers	Analysis using GeneMarker or GeneMapper software	
	Monitoring stem-cell transplants	Imaging of gels (where approprirate) by Geneflash (Syngene Biolmaging)	
	X-inactivation  Tri/tetra nucleotide repeat fragment detection and interpretation (including PCR and TP-PCR)  MGMT methylation status determined by bisulphite conversion	Fragment Length Analysis SOPs: GENE735, GENE627, GENE1557, GENE586, GENE396, GENE932, GENE160, GENE380, GENE621, GENE937, GENE952, GENE1489, GENE1503, GENE954, GENE919, GENE1493, GENE193, GENE914, GENE913, GENE931, GENE930, GENE1514, GENE1490 ,GENE1508, GENE1509, GENE1513, GENE934, GENE1509, GENE954	

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HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis of rare disease, inherited and acquired cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
RNA reverse transcribed to cDNA in-house or received from external sources	Validation of splicing variants and fusion events	PCR blocks, BiomekNXp liquid handling robot, ABI3500xl Capillary electrophoresis instruments and agarose gel electrophoresis (for QC purposes)	
		Imaging of gels by Geneflash (Syngene BioImaging)	
		Procedures (equipment): GENE735, GENE627, GENE1557, GENE586 (procedures and analysis): GENE396, GENE932, GENE160, GENE380, GENE621, GENE909 (specific disorders): GENE396, GENE952, GENE1489, GENE1503, GENE954, GENE919, GENE1493, GENE931, GENE914, GENE913, GENE931, GENE930, GENE1514, GENE1490, GENE1508, GENE1509, GENE1513, GENE934,	

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HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis or rare disease and cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
Genomic DNA extracted in- house from the sample types listed	Determination of copy number changes	Quantitative Fluorescence PCR (QF-PCR) Using:	А
		In-house methods And:	
		Thermocyclers. Resolution by capillary electrophoresis using ABI 3500XL	
		Analysis using SoftGenetics.	
		Procedures: [Prenatal] : GENE979, GENE314, GENE312	
RNA extracted in house from FFPE or received as primary samples from external	Confirmatory testing of fusion events by RT-PCR-analytic capacity as per GENE36	Qualitative Reverse Transcriptase PCR (RT-PCR)	
sources		RT-PCR using in-house methods with resolution by agarose gel analysis and fragment sizing (where appropriate) using ABI 3500xl Genetics analyser	
		Procedures: GENE155, GENE156, GENE462, GENE154	

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HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis or rare disease and cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
Genomic DNA extracted inhouse from the sample types listed and received as primary samples from external sources	Determination of copy number  – deletions and duplications- analytic capacity as per GENE51	Multiplex Ligation-dependent Probe Amplification (MLPA)  Using  In-house or commercial kits, thermocyclers, Biomek NXp automated liquid handler, ABI3500xl (Pre-analytical)  Procedures: (equipment and kits): GENE735, GENE627, GENE586 (procedures and analysis): GENE929,GENE660 (specific disorders): GEBE953, GENE945, GENE949	A
Genomic DNA extracted in- house from the sample types listed and received as primary samples from external sources	Classification of Microsatellite Instability (MSI) status (stable/unstable) and genotyping of BRAF & NRAS/KRAS	Next Generation Sequencing using MSI-Plus assay (patent protected) and sequencing by MiSeq (FFPE CRC tumour samples).  Procedures: GENE259, GENE1689	А
RNA extracted from whole blood	BCR-ABL monitoring in chronic myeloid leukaemia	Amplification of RNA by real time PCR on a Roche LC480 light cycler using a commercial kit (Ipsogen) and data analysis using Roche software according to procedure GENE720	A

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HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis or rare disease and cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
Genomic DNA extracted inhouse from the sample types listed and received as primary samples from external sources	Detection of insertions, deletions, substitutions, and other polymorphisms in NRAS KRAS BRAF EGFR JAK2 V617F TPMT NUDT15 ALK-activating variants in neuroblastoma, HFE variants c.845G>A p.(Cys282Tyr) & c.187C>G p.(His63Asp) FLT3-TKD MYD88 DPYD Mutation Detection for the following targets: DPYD c.1905+1G>A DPYD*2A rs3918290 DPYD c.2846A>T p.(Asp949Val) rs67376798 DPYD c.1679T>G p.(Ile560Ser) DYPD*13 rs55886062 DPYD c.1236G>A p.(Glu412Glu) HapB3 rs56038477 DPYD c.1129-5923C>G HapB3 rs75017182	Analysis using MassARRAY 4 MALDITOF (Matrix-Assisted Laser Desorption Ionization Time Of Flight) and iPLEX single base extension (SBE) chemistry. Extension primer design using by Assay Design Suite (ADS) software and interpretation using Typer 4 software.  Procedures:  GENE 1486 GENE 1486 GENE 1424	

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Sequencing data files received from an external source within the NE&Y GLH.	Detection of SNVs and small indels and fusions associated with myeloid neoplasms -analytic capacity as per GENE119	Analysis of NGS myeloid panel derived data using in house filtering tool.  Variant interpretation supported by the ClassIC Software tool, gene knowledge bases and variant databases.	A
Sequencing data files received from an external source within the NE&Y GLH.	Detection of SNVs, small indels and CNVs associated with Familial Hypercholesterolemia and inherited cancers -analytic capacity as per GENE174	Analysis of NGS panel derived data using in house filtering tool.  Variant interpretation supported by the ClassIC Software tool, gene knowledge bases and variant databases.  Confirmatory and cascade testing by Sanger Sequencing as above.	
Genomic DNA extracted in house from peripheral blood	Cytogenetic examinations for diagnosing postnatal disorders, prenatal diagnosis, neoplastic genetics including haemato-oncology and solid tumours, and loss of pregnancy.  By detection of microscopic chromosomal imbalance (gains and losses) expressed as changes to copy number	SNP Array: CytoSNP 850K Bead Arrays using Illumina methods and a NextSeq 550. Analysis and interpretation of genetic imbalances using BlueFuse Multi and web based UCSC genome browser  Procedures: GENE334, GENE342, GENE343, GENE349, GENE359 [Prenatal] GENE349, GENE351, GENE352	

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HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis or rare disease and cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
Whole blood Bone marrow Amniotic fluid Chorionic villi Foetus and placenta Products of conception Tissue biopsy (tumour, skin, placenta, liver, lymph nodes	G-banding/Karyotyping  Detection of chromosomal rearrangements or aberrations arising from (e.g)  Prenatal Diagnosis Neoplastic Genetics including	Culturing and processing of human tissue/cells to provide interphase cells:  Manual/automated process using:  Cell harvesting: SOP GENE522 Processing – SOPs GENE308,	A
etc) Solid tumours Paraffinised histology samples Slide sections	Haemato-Oncology and Solid Tumours. Postnatal Disorders Loss of pregnancy	GENE307, GENE310, GENE574 Feeding GENE516 Subbing GENE579 Slide Preparation: GENE577,	
Mouth washes/swabs	Preparative pre-examination steps listed first	GENE578  Automated Cell capture GENE571	
		SOPs	
		[Postnatal] GENE577,GENE571, GENE301, GENE521	
		[Haemato-Oncology] GENE470	
		[Prenatal] GENE496, GENE289, GENE528, GENE290, GENE16, GENE521	
		[Foetal] GENE308, GENE575, GENE516, GENE579, GENE522, GENE519	
		Chromosome analysis:	А
		Microscopic analysis of G banded chromosomes using light microscopy and Cytovision image analysis system [Postnatal] GENE521 [Haemato-Oncology] GENE438, GENE449 [Prenatal] GENE306 [Foetal] GENE521, GENE317	

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HUMAN TISSUES & FLUIDS	Genomics analysis for the purpose of clinical diagnosis or rare disease and cancer	Documented in house procedures incorporating manufacturer's instructions (where relevant)	
	Detection of chromosomal aberrations in the diagnosis of	Fluorescence in situ hybridisation:	А
	Haematological malignancy, bone marrow failure syndromes Non-haematological malignancies	(FISH) using manual in-house methods and commercial kits (including, Abbott Vysis, Cytocell, Kreatech, Metasystems, TCAG), Thermobrite/ Hybrite denaturation stations and fluorescent microscopy  Procedures:	
	Break-apart probes Fusion products Deletion		
	Insertion Copy Number/Amplification	[Haemato-Oncology] GENE440,	
	Analytic capacity as per SOP GENE35	GENE446, GENE448, GENE441.	
	Muscle Immunoanalysis		
Frozen skeletal muscle tissue only	Examination of tissues to identify or exclude protein and morphological abnormalities for the purposes of diagnosing Limb Girdle muscular dystrophies and overlapping or allelic conditions		В
	Immunohistochemistry		
	Immunohistochemistry analysis and interpretation of data to progress a diagnosis		
Frozen skeletal muscle tissue	Antibodies listed below:	Manual immunohistochemistry staining using procedures: -	В
		Cryostat SOP No 1-48 MIU107 Immunohistochemistry SOP No 3-3 GENE38 Microscopy and imaging SOP 4-59 MIU156 Interpreting and reporting results SOP No 4-6 MIU157	
	α-Dystroglycan α-Sarcoglycan		
	u-Gaicogiycan		

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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
HUMAN TISSUES & FLUIDS	Genetic examination for the purposes of clinical diagnosis (cont'd)		
Frozen skeletal muscle tissue	Immunohistochemistry analysis and interpretation of data to progress a diagnosis (cont'd)  Antibodies listed below:  β-Dystroglycan β-Sarcoglycan β-Spectrin Caveolin 3 Collagen VI Desmin Fast myosin γ-Sarcoglycan Laminin α2 chain Laminin α5 chain MHC Class 1 Myosin heavy chain (neonatal) Myotilin nNOS p62 Slow myosin STIM1 Utrophin Valosin-containing protein		В

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Homogenised skeletal muscle biopsies	Immunoblotting analysis and interpretation of data to progress a diagnosis  Antibodies listed below:	Procedures: Cryostat SOP No 1-48 MIU107 Sample homogenisation and protein assay SOP No 3-9 DocMIU125 Western blotting SOP No 3-6MIU124 Fluorochem (Western blot imaging) SOP 1-47 Doc MIU106 Interpreting and reporting results SOP No 4-6 MIU157	В		
	α-Sarcoglycan β-Dystroglycan Calpain 3 Dysferlin Dystrophin (C-term) Dystrophin (Rod) Laminin α2 chain Telethonin				
END					

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