Schedule of Accreditation

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Cambridge University Hospitals NHS Foundation Trust

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Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
HUMAN TISSUES AND BODY FLUIDS	<u>Genomic analysis for the purpose of clinical diagnosis of rare disease and cancer</u> DNA extraction, quantification and quality check for subsequent in-house analysis (see below), referral to specialist centres and longterm storage	Documented in house procedures incorporating manufacturer's instructions (where relevant) **Manual and automated DNA extraction and quantification using:**
Whole Blood		**Automated Extraction:** Automated DNA extraction using Flex Star SOP 517
Whole Blood,Buffy Coat CVS/Amniocentesis Tissues Guthrie Spots		Automated DNA extraction using Qiagen EZ1 SOP325, 439,174 and 176
CVS/Amniocentesis Cultured Cells Tissues including skin and Buccal swabs		**Manual extraction:** Phenol chloroform SOP SOP185, 003. 174, 176
Whole Blood		Qiagen QiaAmp DNA micro kit SOP 237
Tissue Cultured Cells Fixed cells Bone marrow		Qiagen DNEASY SOP 410, 439

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
HUMAN TISSUES AND BODY FLUIDS (cont'd)	<u>Genomic analysis for the purpose of clinical diagnosis of rare disease and cancer</u> (cont'd)	Documented in house procedures incorporating manufacturer's instructions (where relevant)
	DNA extraction, quantification and quality check for subsequent in-house analysis (see below), referral to specialist centres and longterm storage (cont'd)	**Manual and automated DNA extraction and quantification using:**
Saliva and Buccal swabs		**Manual extraction:** Oragene
		SOP 267
Genomic DNA extracted in-house from the sample types listed above or received as primary sample type from an external source		DNA Quantification for QC purposes:
		Nanodrop ND-1000 spectrophotometer and Qubit fluorometer
		SOPs 231 (Nanodrop (ND-1000) and 509 (Qubit)
DNA Clean up		Qiagen QiaAmp DNA micro kit SOP414
Genomic DNA extracted in-house from the sample types listed above or received as primary sample type from an external source	Detection of nucleic acid sequence variants - SNVs and small indels	**Sanger Sequencing** Using:
	[reference to definitive list of known targets (where appropriate) and purposes (eg 1-8 of your draft) as per GEN4	Standard Primer Design methodology: SOP 518
		PCR/ Thermal cyclers, ABI3130, ABI 3730, Biomek robotics
		SOPs 069, 253, 254, 313, 079, 268
		Analysis using Mutation Surveyor by SoftGenetics
		SOP 255

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
HUMAN TISSUES AND BODY FLUIDS (cont'd)	Genomic analysis for the purpose of clinical diagnosis of rare disease and cancer (cont'd)	Documented in house procedures incorporating manufacturer's instructions (where relevant)
Genomic DNA extracted in-house from the sample types listed above or received as primary sample type from an external source	Screening of large targeted single or multigene panels for genetic variants: reference to definitive list of panels, capture and genetic variant types as per GEN4] SNVs and Small indels	**Next Generation Sequencing** Library Preparation and capture Illumina TruSight One Panels created managed using Gemini (GEnome MINIng) SOP 493 PCR Thermal cyclers, ABI3130, Biomek robotics and Illumina Hiseqs 2500 and 4000 SOPs 471, 549, 551 Analsyis using Dias Bioinformatics software SOP 545
PCR/Long Range PCR amplicons	SNVs and small indels for the purpose of diagnostic, confirmation, ad-hoc or familial testing And/or Detection and quantification of Low-level mosaic variants as inferred from Sanger sequencing data (or clinical phenotype)	In-house documented methods Using: Illumina MiSeq. SOPs: SOP445, 446,451, 546

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HUMAN TISSUES AND BODY FLUIDS (cont'd) Genomic DNA extracted in-house from the sample types listed above or received as primary sample type from an external source	<u>Genomic analysis for the purpose of clinical diagnosis of rare disease and cancer</u> (cont'd) Determination of fragment length size and detection of deletions, fusion deletions, known mutations, microsatellites, repeat expansions and linkage markers for the purpose of genotyping at specific known gene loci [Reference to definitive list as per GEN4]	Documented in house procedures incorporating manufacturer's instructions (where relevant) **Fluorescent Based Fragment Analysis** Commercial Methods: Fluorescent Fragment Assays: Fluorescent ARMS using the Elucigene Cystic Fibrosis-EU2v1 kit. SOP 030 QF-PCR kit (QF-PCR) - Devyser Compact SOPs 428 QF-PCR, 528 - MCC And: In house Fluorescent Fragment Assays using PCR and allele specific PCR and PCR of linked markers SOP348: DNA Testing for thrombosis risk factors, SOP257: Testing for HFE1 common mutations, SOP502: X-Chromosome inactivation PCR and analysis, SOP045: DNA testing for Prader-Willi syndrome and Angelman syndrome,SOP040: Testing for Huntington Disease (HD) Fluorescent Fragment Analysis using ABI 3130 and 3730 genetic analysers and GeneMarker software SOPs 079, 268 and 320

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
HUMAN TISSUES AND BODY FLUIDS (cont'd)	Genomic analysis for the purpose of clinical diagnosis of rare disease and cancer (cont'd)	Documented in house procedures incorporating manufacturer's instructions (where relevant)
Genomic DNA extracted in-house from the sample types listed above or received as primary sample type from an external source	Determination of fragment size length, Detection of deletions, fusion deletions, known mutations, repeat expansions and inversions for the purpose of genotyping at specific known gene loci [Reference to definitive list as per GEN4]	**Gel electrophoresis based Fragment Analysis** In house methods for: Long range PCR, MS-PCR, inverse shifiting PCR followed by gel electophoresis. SOP041: DNA testing for Incontinentia Pigmenti (IP), SOP045: DNA testing for Prader-Willi syndrome and Angelman syndrome, SOP387: Haemophilia A (F8) Inversion screening and SOP246: Testing for GRA Gel Electrophoresis and visulisation SOPs: 0.16, 076, 386: And
Genomic DNA extracted in-house from the sample types listed above or received as primary sample type from an external source	Detection of repeat expansions too large to be amplified by PCR [Reference to definitive list as per GEN4]	**In house methods for:** Southern blot hybridization analysis using labelled probes**.** SOPs 037: DNA testing for FMR1 expansion (Fragile X & FXTAS 043 (DNA testing for Myotonic Dystrophy) Southern blot protocol 358 (Digoxigenein Southern Blot)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
HUMAN TISSUES AND BODY FLUIDS (cont'd)	<u>Genomic analysis for the purpose of clinical diagnosis of rare disease and cancer</u> (cont'd)	Documented in house procedures incorporating manufacturer's instructions (where relevant)
Genomic DNA extracted in house from the sample types listed above and received as primary samples from external sources	Cytogenetic examinations for diagnosing postnatal disorders prenatal diagnosis, neoplastic genetics including haemato-oncology, loss of pregnancy by detection of sub microscopic chromosomal imbalance (gains and losses) expressed as changes to copy number and copy neutral loss/absence of heterozygosity	**Microarray** Using: Affymetrix Genechip 3000 and Agilent G2565BA scanners: SOPs 438 and 452 Analysis by Affymetrix chromosome analysis suite and Agilent Cytogenomics data analysis softwares and: SOPs298 and 453 Affymetrix 750K Cytoscan and Agilent 8x60K ISCA. SOPs 438, 452, 489 and 453
Genomic DNA extracted in-house from the sample types listed above or received as primary sample type from an external source	Detection of whole exon deletions/duplications and specific methylation abnormalities [Reference to definitive list as per GEN4 to be inserted here]	**Multiplex Ligation Probe Analysis (MLPA) and methylation specific MS-MLPA** using: in house or commercial MRC Holland kits Thermal cyclers and ABI 3130 /3730 Genetic Analyser Analysis using GeneMarker SOPs 384, 405, 079,428, 251, 564

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
HUMAN TISSUES AND BODY FLUIDS (cont'd) Whole blood Amniotic fluid Chorionic villus samples Products of Conception Tissues Stem cells	<u>Genomic analysis for the purpose of clinical diagnosis of rare disease and cancer</u> (cont'd) G-Banding/Karyotyping Detection of constitutional chromosomal rearrangements or aberrations arising from: Prenatally detected disorders Development disorders Inherited Haematology/Oncology Disorders (Preparative Pre-examination steps listed first)	Documented in house procedures incorporating manufacturer's instructions (where relevant) **Manual culturing and processing of humans tissue to provide interphase cells:** using commercial media and: SOPs: 175. 178, 176 174 Cell Harvesting : Manual harvesting using in house methods : SOPs 141 (whole blood and prenatal and tissue cultures 142) Slide Preparation, coverslipping and storage : SOP 180 **Microscopic Analysis and reporting of G banded chromosomes:** Using: Brightfield microscopes: SOPS: 137 (G-banding procedure) and 135 (Analysis)
Fixed cell slides from human tissues and body fluids: Amnoitic fluid CVS Stemcells Wholeblood	Detection and analysis of genomic rearrangements and imbalances. Confirmation of genomic rearrangements detected using alternative technologies and family follow up studies in the diagnosis of constitutional disorders using locus specific probes: Deletion Copy Number/Amplification	**Fluorescent in-situ hybridisation (FISH)** Using: Cytocell and Vysis commercial kits, Vysis HYBrite hotplate and applied imaging (Leica) Analysis using: Cytovision analysis software and and fluorescent microscope system SOPs SOP 158 (Fluorescent in-situ hybridisation), 187 (Fluorescent microscope), and 160 (FISH analysis and checking)
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