Schedule of Accreditation

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Accredited to ISO 15189:2012

The Walton Centre NHS Foundation Trust

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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 The Neurosciences Laboratories The Walton Centre Lower Lane Fazakerley Liverpool L9 7LJ United Kingdom	**Local contact** Wallis Hayes	Neurobiochemistry Neuroimmunology Neuropathology	A
Address Theatre Suite Hot Lab The Walton Centre Lower Lane Fazakerley Liverpool L9 7LJ United Kingdom	**Local contact** Wallis Hayes	Stereotactic biopsies	B

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	<u>Biochemistry</u>		
HUMAN BODY FLUIDS	Biochemical examination activities for the purposes of clinical diagnosis:	In house documented procedures based on equipment manuals and standard methods as specified below:	
Serum	Quantification of anti-epileptic drug levels:	By liquid chromatography tandem mass spectrometry using Waters Aquity TQD with reference to SOPs BSM9 & BSM10 and:	A
	Lamotrigine	SOP BSM8	
	Total phenytoin	SOP BSM8	
	Free phenytoin	SOP BSM4	
	Carbamazepine	SOP BSM8	
	Carbamazepine epoxide	SOP BSM8	
	Phenobarbital	SOP BSM8	
	Valproate	SOP BSM8	
	Midazolam	SOP BSM17	
	Pregabalin	SOP BSM12	
	Levetiracetam	SOP BSM11	
	Topiramate	SOP BSM13	
	Quantification of:	Roche Cobas c311 SOP BSR20	A
Serum & CSF	Total protein		
Serum, plasma & CSF	Glucose		
Serum	Albumin		
CSF	Lactate		

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	Biochemistry (cont'd)		
HUMAN BODY FLUIDS	Biochemical examination activities for the purposes of clinical diagnosis: (cont'd)	In house documented procedures based on equipment manuals and standard methods as specified below:	
	Quantification of:	Siemens BN Prospec SOP BSR4	A
CSF	Albumin		
Serum & CSF	IgG		
Serum	IgA		
Serum	IgM		
Fluid & serum	Beta trace protein	Siemens BN Prospec SOP BSR22	A
Serum		Gel electrophoresis using Helena SAS-1plus & SAS-2 equipment with reference to SOPs BSP5 & BSP7 and the following:	A
	Detection of normal and abnormal protein electrophoretic patterns	SOP BSP2	
	Detection of kappa & lambda light chains	SOP BSP4	
Fluid & serum	Quanitification of Beta-2-transferrin	Gel electrophoresis and immunochemical detection using Helena SAS-1plus SOP BSP1	A
CSF & serum	Detection of oligoclonal bands	Isoelectric focusing using Pharmacia Biotech and immunoblotting SOP BSP3	A
CSF	CSF cell count and differential	Manual microscopy using Leica DM2000 microscope SOP BSR11	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
HUMAN BODY FLUIDS	Biochemical examination activities for the purposes of clinical diagnosis: (cont'd)	In house documented procedures based on equipment manuals and standard methods as specified below:	
CSF	Detection of bliirubin	By spectrophotometry using Analytik Jena SPECORD 210 Plus UV-Visible Spectrophotometer SOP BSR2	A
	<u>Immunology</u>		
HUMAN BODY FLUIDS	Immunological examination activities for the purposes of clinical diagnosis:	In house documented procedures based on equipment manuals and standard methods as specified below:	
	Quantification of:	Radioimmunoassay using Wizard Gamma Counter with reference to:	A
Serum	Antibodies to voltage gated potassium channels	SOP IS17	
Serum	Antibodies to voltage gated calcium channels	SOP IS16	
Serum	Antibodies to acetyl choline receptor	SOP IS6	
Serum	Antibodies to muscle specific kinase	SOP IS28	
		Immunohistochemistry screen followed by recombinant immunoblot with reference to:	A
CSF & Serum	Paraneoplastic antibodies: Hu, Yo, Ri, CV2, amphiphysin, Ma1, Ma2, Tr, SOX-1, GAD65, Zic4, Titin, Recoverin, Protein Kinase C Gamma	PNS14 kit SOPs IS14, IS2 & IS3	
Serum	Antibodies to Amphiphysin, GAD65	Ravo SPS Blot kit SOP IS18 & IS14	
CSF	Antibodies to Amphiphysin, GAD65	PNS14 kit SOP IS18 & IS14	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	Immunology		
HUMAN BODY FLUIDS	Immunological examination activities for the purposes of clinical diagnosis:	In house documented procedures based on equipment manuals and standard methods as specified below:	
		ELISA using Biochrom EZ Read LED Microplate reader	A
Serum	Detection and quantification of:		
	Glycolipid antibodies (GM1, GQ1b, GT1b, GD1a)	In-house ELISA method SOPs IS20, IS29 & IS39	
Serum	Qualitative detection of:		
	Antibodies to myelin associated glycoprotein	Buhlman anti-MAG ELISA kit SOP IS24 & IS39	
	Quantification of:	Immunofluorescence using the EUROStar III plus Euroimmune microscope with reference to:	A
Serum & CSF	NMDA Receptor Antibodies	SOP IS32	
Serum & CSF	Antibodies to LGI1 and CASPR2	SOP IS35	
Serum	Antibodies to IgLON5	SOP IS36	
Serum & CSF	Antibodies to AMPA1, AMPA2 & GABA-B	SOP IS37	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Fixed, fresh and frozen tissue; neuropathology tissue samples (brain biopsies, skull bone, spinal biopsies, temporal artery, nerve & muscle)	<u>Neuropathology</u> Examination of tissues to identify or exclude morphological and cytological abnormalities for the purposes of diagnosis	Macroscopic and Microscopic examination using in house documented procedures based on equipment manuals and standard methods as specified below: <u>Specimen dissection & tissue processing</u> Documented in-house procedure HSB6 and HSB43 in conjunction with manufacturers instructions using Leica ASP300 and Leica ASP6025 <u>Tissue Embedding</u> Documented in-house procedure HSB10 in conjunction with manufacturers instructions using Leica EG1160b <u>Tissue Sectioning</u> Documented in-house procedure HSB12 to HSB17	A
Intraoperative Quick Smears/Frozen Sections	Nuclei and other cellular components	SOP HSIN3 by manual H&E stain	A
	Metachromatic substances	SOP HSIN3 by manual Toluidine Blue stain	A
Serial Stereotactic Preparations	Nuclei and other cellular components	SOP HSIN6 – Serial stereotactic preparation and reporting H&E Stain	B

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	Neuropathology		
Fixed, fresh and frozen tissue; neuropathology tissue samples (brain biopsies, skull bone, spinal biopsies, temporal artery, nerve & muscle)	Examination of tissues to identify or exclude morphological and cytological abnormalities for the purposes of diagnosis	Macroscopic and Microscopic examination using in house documented procedures based on equipment manuals and standard methods as specified below:	A
Formalin fixed paraffin embedded tissue (FFPE Tissue) unless otherwise stated:	Special stains	Documented in-house procedure by manual staining	A
	Detection of:		
	Acid mucins	SOP HSS1 – Alcian Blue	
	Acid and neutral mucins	SOP HSS2 – Alcin Blue / PAS Technique	
	Axons	SOP HSS3 – Silver Bielschowskys	
	Amyloid	SOP HSS4 – Congo Red (Higmans)	
	Neurones	SOP HSS5 - Cresyl Violet Acetate	
	Elastin fibres	SOP HSS6 – Elastic Van Gieson	
	Gram positive or negative bacteria	SOP HSS9 – Gram stain	
Formalin fixed paraffin embedded tissue (FFPE Tissue) unless otherwise stated: (cont'd)	Special stains (cont'd)	Documented in-house procedure by manual staining	A
	Detection of:		
	Fungi	SOP HSS8 – Grocott Hexamine Silver technique	
	Basophilic and eosinophilic structures	SOP HSS11 – Haematoxylin and Eosin	
	Myelin and other CNS structures	SOP HSS12 – Modified Luxol Fast Blue	
	Myelin & CNS structures; basophilic & eosinophilic structures	SOP HSS32 - Luxol Fast Blue / Haematoxylin and Eosin	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	<u>Neuropathology</u>		
Fixed, fresh and frozen tissue; neuropathology tissue samples (brain biopsies, skull bone, spinal biopsies, temporal artery, nerve & muscle)	Examination of tissues to identify or exclude morphological and cytological abnormalities for the purposes of diagnosis	Macroscopic and Microscopic examination using in house documented procedures based on equipment manuals and standard methods as specified below:	A
Formalin fixed paraffin embedded tissue (FFPE Tissue) unless otherwise stated: (cont'd)	Special stains (cont'd)	Documented in-house procedure by manual staining	A
	Detection of:		
	Connective tissue	SOP HSS16 – Masson Trichrome Technique	
	Fibrin	SOP HSS17 – MSB technique	
	Glycogen and other periodase-reactive carbohydrates	SOP HSS20 – Periodic Acid Schiff	
	Ferric iron salts	SOP HSS21 – Perls Prussian Blue	
	Reticulin	SOP HSS23 - Reticulin method (Gordon & Sweets)	
	Myelin	SOP HSS24 – Solochrome Cyanine	
	Metachromatic substances	SOP HSS25 – Toluidine Blue (Wolman 1971)	
	Connective tissue	SOP HSS29 – Van Gieson	
	TB	SOP HSS26 – Ziehl Neelsen stain	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Muscle biopsy frozen sections	Muscle Biopsy service	<u>Preparation of sample</u> HSM1 – receipt and preparation of muscle tissue HMS3 – Frozen Section Protocol – Muscle biopsies Enzyme histochemistry using:	A
	Demonstration of lipofushin	SOP HSM12 - Acid Phosphatase	
	Fibre typing	SOP HSM13 by– Myofibrillar ATPase	
	Mitochondrial complexes	SOP HSM11 – Cytochrome oxidase	
	Mitochondrial complexes	SOP HSM8 by Muscle Tinctorial using Gomori Trichrome	
	Basophilic and eosinophilic structures	SOP HSM5 - Haematoxylin and Eosin	
	Special stain techniques for detection of:	Documented in-house procedure by manual staining	
	Myodenylate activity	SOP HSM15 – Myodenylate deaminase	
	Lipids	SOP HSM7 – Oil Red O	
	NADH	SOP HSM9 - NADH	
	Phosphorylase activity	SOP HSM16 – Phosphorylase	
	PAS +ve substances	SOP HSM6 – Periodic Acid Schiff	
	Phosphofructokinase	SOP HSM14 - Phosphofructokinase	
	SDH activity	SOP HSM10 – Succinic dehydrogenase	
	Cytochrome oxidase / SDH actvity	COX / SDH (SOP HSM17)	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
HUMAN BODY FLUIDS AND TISSUES	Immunohistochemistry		
Formalin fixed paraffin embedded tissue (FFPE Tissue and muscle) unless otherwise stated:	Examination of tissues to identify or exclude morphological and cytological abnormalities for the purposes of clinical diagnosis	Automated immunohistochemical staining methods using Ventana Benchmark Ultra SOP HS177	A
	Neuro protein	Alpha synuclein	
	Pituitary hormone	ACTH	
	Alzheimer Precursor Protein	APP	
	Neuro protein	β-Amyloid (BAM)	
	Gliomas	ATRX	
	Epithelial cells – metastic disease	CAM	
	CD1a positive cells	CD1a	
	Leukaemia antigen, clear cell renal carcinomas	CD10	
	Reed Sternberg cells, hodgkins	CD30	
	Vascular neoplasm	CD31	
	Vascular epithelium	CD34	
	Neuroectodermal cells, neurones, astrocytes	CD56	
	B cells	CD79a	
	Plasma cell differentiation	CD138	
	GI carcinoma marker	CDX2	
	Epithelial malignancy	CEA	
	Neuroendocrine tumours	Chromogranin	
	Squamous cell differentiation	CK 5/6	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
	Immunochemistry		
Formalin fixed paraffin embedded tissue (FFPE Tissue and muscle) unless otherwise stated:	Examination of tissues to identify or exclude morphological and cytological abnormalities for the purposes of clinical diagnosis	Automated immunohistochemical staining methods using Ventana Benchmark Ultra SOP HS177	A
	Glandular and transitional epithelial cells	CK7	
	Gastric and intestinal epithelial cells	CK20	
	Ewings sarcoma	Ewing's (CD99)	
	Epithelial cells	EMA	
	Estrogen receptor	ER	
	Pituitary hormone	FSH	
	Astrocytic protein	GFAP	
	Pituitary hormone	GH	
	Germ cell tumours	HCG	
	Melanocytes	HMB45	
	Isocitrate dehydrogenase 1	IDH1	
	Atypical teratoid rhabdoid tumours	INI 1a	
	Proliferating cells	Ki67	
	Lymphoid	LCA	
	Pituitary hormone	LH	
	Diffuse midline gliomas	H3K27M	
	Melanocytes	Melan A	
	Epithelial Cells	MNF116	
	Myelin Basic Protein	MBP	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Formalin fixed paraffin embedded tissue (FFPE Tissue and muscle) unless otherwise stated:	<u>Immunochemistry</u> Examination of tissues to identify or exclude morphological and cytological abnormalities for the purposes of clinical diagnosis	Automated immunohistochemical staining methods using Ventana Benchmark Ultra SOP HS177	A
	Neuronal nuclei protein	NeuN	
	Axons	NFP	
	Germ cell tumours	PLAP	
	Progesterone receptor	PR	
	Pituitary hormone	Prolactin	
	Prostate neoplasm	PSA	
	Tumour suppression	P53	
	Neuroendocrine marker	Synaptophysin	
	Melanoma, glial cells	S100	
	Muscle derived actin	Smooth Muscle Actin	
	Solitary fibrous tumour	STAT6	
	Tangles in neurones	TAU	
	Thyroid	Thyroglobulin	
	Pituitary hormone	TSH	
	Lung and thyroid	TTF-1	
	Inclusions in neurodegenerative disease	Ubiquitin	
	T cells in mantle zone	CD3	
	T cells	CD4 & CD8	
	Macrophages	CD68	
	B cells-lymphoma	L26	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Formalin fixed paraffin embedded tissue (FFPE Tissue and frozen muscle) unless otherwise stated:	Examination of tissues to identify or exclude morphological and cytological abnormalities for the purposes of clinical diagnosis	Automated immunohistochemical staining methods using Ventana Benchmark Ultra SOP HS177	A
	Smooth and striated muscle	Desmin	
	Mesenchymal cells	Vimentin	
Formalin fixed paraffin embedded tissue (FFPE frozen muscle only) unless otherwise stated:	Examination of tissues to identify or exclude morphological and cytological abnormalities for the purposes of clinical diagnosis	Automated immunohistochemical staining methods using Ventana Benchmark Ultra SOP HS177	A
	Membrane attack complex	C5b-9	
	Localisation of muscle protein	Dysferlin	
	Localisation of muscle protein	Dystrophin 1	
	Localisation of muscle protein	Dystrophin 2	
	Localisation of muscle protein	Dystrophin 3	
	Localisation of muscle protein	Emerin	
	B cells	HLA-1	
	Compliment protein	HLA-DR	
	Inclusion bodies	P62	
	Limb Girdle Muscular Dystrophy	Alpha-Sarcoglycan Beta-Sarcoglycan Delta-Sarcoglycan Gamma-Sarcoglycan	
	Neuronal marker	Utrophin	
	Muscle membrane integrity	Spectrin	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
HUMAN BODY FLUIDS AND TISSUES	<u>Cytology</u>		
CSF FFPE	Examination of tissues to identify or exclude morphological and cytological abnormalities for the purposes of diagnosis	SOP HSCY1 by manual staining method using Tinctorial stain with haematoxylin and eosin	A
	<u>Electron Microscopy Service</u>	<u>Preparation of sample</u> SOP HSEM1 Preparation and processing of specimens SOP HSEM2 Making glass knives for cutting EM specimens SOP HSEM3 Ultramicrotomy sample preparation for Transmission electron microscopy <u>Ultrastructural examination</u>	A
Muscle biopsy specimens, Peripheral Nerve biopsy specimens and Tumour biopsy specimens	Examination of tissues to identify or exclude ultrastructural morphological abnormalities for the purpose of diagnosis.	SOP HSEM5 Electron microscopy	A
END			