Schedule of Accreditation

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LGC Limited

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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
BODY FLUIDS and TISSUES	<u>Relationship Analysis</u>	Documented In-House Methods using:
Saliva - Swabs (buccal cells) - FTA cards Bone Teeth	Y Chromosome Short Tandem Repeat (STR) DNA profiling for paternal lineage testing	Manual extraction • Qiagen (DNA/SOP-037) • Qiagen Maxi kit (DNA/SOP-036) Manual amplification (DNA/SOP-024) and the following chemistry: • Y23 Electrophoresis Spectrum Compact (DNA/SOP 041)
	<u>Related Opinions and Interpretation</u>	
	Comparison, interpretation and statistical analysis of DNA profiles against compatible DNA Profile information from within submitted cases	Genetic Characterisation - GeneMarker HID (DNA/SOP 042) YHRD (DNA/SOP029)
Synthetic DNA or DNA extracted Bacterial, Mammalian, Plant/crop, Plasmid and Viral sources in solution	Quantification on extracted DNA (8-80000 copies)	Flexible scope protocol MOLDIGI SOP007 using Bio-rad QX200 droplet digital PCR
Genomic DNA	Quantification of HER2 copy number concentrate (CNC) and copy number variation (CNV) Quantification in extracted human genomic DNA: gDNA Range: 8-80,000 copies of HER2, with a HER2 copy number variation (CNV) measurement range of 1.0 to 40	Protocols: MOLDIGI 009 using BioRad QX200 droplet generator, C1000 thermal cycler, QX200 droplet reader, QuantaSoft (BioRad v 1.7.4.0917) and QX Manager software (Biorad v 2.1.0.25)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
FOODS/FOOD PRODUCTS	Chemical Tests	Documented In-House Methods using:
Food and food products	Ash	Heating and gravimetry (FFF/B1-0005)
Food and food products	Nitrogen	DUMAS combustion followed by thermal conductivity detection (FCS-021)
Food and food products	Mycotoxins including Aflatoxins B1, B2, G1, G2 Total aflatoxins	FFF/A1-0315 using ultra-performance liquid chromatography (UPLC) and fluorescence detection (FCS-029)
FOODS/FOOD PRODUCTS /ANIMAL FEED	Analysis and related opinions and interpretation for the purpose of meeting the requirements for referee analysis	Methods developed using instrumentation listed below following the Flexible Scope protocol CP/WI-001: Referee Analysis of Food and Agricultural Samples, in association with methods and techniques in line with appropriate legislation. • Gravimetric • HPLC-Fluorescence • HPLC-UV • Real-Time PCR • Digital PCR • ICP-OES • ICP-MS • IDMS (GC-MS, GC-MS/MS, LC-MS, LC-MS/MS)
Ground samples of soya, oil seed rape and cereal based food and feed materials	*Identification and quantification of GM events *Indicates examination performed under Food Standards Agency designation as a National Reference Laboratory in accordance with assimilated European law AEUL OCR 2017/625	GMO testing using methods based on the JRC GMO methods database of reference methods for GMO analysis and verified under flexible scope protocol MOLBIO/SOP-004, employing automated CTAB extraction using Maxwell® RSC system (MOLBIO/SOP-008) followed by Applied Biosystems™ QuantStudio™ 7 Flex Real-Time PCR System, (MOLBIO/SOP-007)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ORGANIC MATRICES INCLUDING FOOD/FOOD PRODUCTS	Chemical Tests (cont'd)	
Alcoholic Beverages (Wines, Beers and Spirits)	Alcoholic strength	Density (FFF/B1-1006)
ORGANIC/INORGANIC MATRICES INCLUDING FOODS/FOOD PRODUCTS		
Food/food products, organic and inorganic matrices, clinical samples. - Aqueous solutions - Digests - Extracts - Leachates - Natural and treated waters - Aqueous solutions - Effluents	Metals, nutritional elements, trace elements, acid soluble trace elements including: • aluminium, • arsenic, • boron, • barium, • cadmium, • cobalt, • chromium, • copper, • iron, • mercury, • manganese, • nickel, • lead, • sulfur, • antimony, • selenium, • tin, • strontium, • vanadium, • zinc, • silver, • iodine, • molybdenum, • uranium	Documented in-house methods by Flexible Scope Protocol SOP-INORG-0011 using: • Microwave digestion (SOP-INORG 0004) as required and • ICP-MS (SOP-INORG-0010)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
ORGANIC/INORGANIC MATRICES INCLUDING FOODS/FOOD PRODUCTS (cont'd)	Chemical Tests (cont'd)	
Natural and treated waters	Metals, nutritional elements, trace elements, acid soluble trace elements, including: • Aluminium • Antimony • Arsenic • Barium • Beryllium • Boron • Cadmium • Chromium • Cobalt • Copper • Iron • Lead • Lithium • Manganese • Mercury • Molybdenum • Nickel • Selenium • Silver • Strontium • Tin • Vanadium • Zinc	Documented in-house methods by SOP-INORG-007 using: - ICPMS
REFERENCE MATERIALS	Chemical Tests Inorganic Analytes	Documented In-House Methods: Flexible Scope Protocols FFF/B1-1031 using: • Microwave digestion (SOP-INORG-0004) as required and • Inorganic High Accuracy IDMS by ICP-MS (SOP-INORG-0010), or • ICP-TOF-MS (SOP-INORG-0001)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
REFERENCE MATERIALS (cont'd)	Chemical Tests (cont'd)	Documented In-House Methods:
	Inorganic Analytes	Flexible Scope Protocol SOP-INORG-0003 using: • Microwave digestion (SOP-INORG-0004) as required and • Exact Single Matched (ESM) Standard by ICP-MS (SOP-INORG-0010), ICP-TOF-MS (SOP-INORG-0001) or • ICP-OES (SOP-INORG-0009)
	Organic Analytes	Flexible Scope Protocol INS B1-0413 using: - Organic High Accuracy IDMS
Metallic Nanoparticles		
Equivalent spherical diameter range of 20 – 150nm and concentration greater than 1 x 10^7 kg^{-1}	Number Based concentration of metallic nanoparticles in suspensions (Water, trisodium citrate solution triethylamine/sodium hydroxide solution) of: - Gold	Single Particle Inductively Coupled Plasma Mass Spectrometry (spICP-MS) with Dynamic Mass Flow (DMF) (SOP-INORG-0006)
Rice materials	Inorganic arsenic as the sum of As(III) and As(V)	Determination of inorganic arsenic in rice materials by anion-exchange HPLC-ICP-MS (SOP-INORG-0002) and Exact Standard Matching (SOP-INORG-0003)
COSMETICS	Chemical Tests	
Cosmetic substances, formulations and products	Apparent total Nitrosamine content (ATNC)	Thermal Energy Analyser (FCS-017)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
PHARMACEUTICALS	Chemical Tests (cont'd)	
Oral solid preparations - tablets and capsules	Determination of dissolution of tablets and capsules	Specifications and methods detailed in the current British Pharmacopoeia (BP) apparatus 1 and 2 and manufacturer's licenced methods, using: • Assay by UV spectroscopy • LC -UV (BP-MHRA/SOP/021)
Medicinal and pharmaceutical substances used in the preparation of pharmaceutical products. Formulated preparations: - Oral solid preparation (tablets and capsules) - Oral liquid preparations - Parenteral preparations - Topical liquid preparations - Topical solid preparations - Herbal preparations	Identification of 'active' and 'non-active' ingredients and related impurities	Specifications and methods detailed in the current British Pharmacopoeia (BP), manufacturer's licenced methods or in-house methods developed with protocol BP-MHRA/QAD/008 using: • IR Spectroscopy • UV spectroscopy • Thin Layer Chromatography • LC (detection by UV photodiode array, fluorescence, Refractive Index, MS) • GC-MS

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
PHARMACEUTICALS (cont'd)	Chemical Tests (cont'd)	

Medicinal and pharmaceutical substances used in the preparation of pharmaceutical products.
 	
Formulated preparations:
- Oral solid preparation (tablets and capsules)
- Oral liquid preparations
- Parenteral preparations
- Topical liquid preparations
- Topical solid preparations
- Herbal preparations
	Assay of 'active' and 'non-active' ingredients and related impurities	Specifications and methods detailed in the current British Pharmacopoeia (BP), manufacturer's licenced methods or in-house methods developed with protocol BP-MHRA/QAD/008 using:
		• UV spectroscopy
		• Thin Layer Chromatography
		• LC detection by:
		  ○ UV,
		  ○ fluorescence,
		  ○ refractive index,
		  ○ MS
		• (Headspace) GC detection by
		  ○ FID or
		  ○ MS)
		• Potentiometric and colorimetric titration
		• Karl Fischer titration
		• Loss On Drying
		• Oven sample processor and Karl Fischer coulometer to BP-MHRA/SOP/51
		• Density using Density Meter for the determination of density of solutions (BP-MHRA/SOP/033)

Medicinal and pharmaceutical substances used in the preparation of pharmaceutical products	Volatile Organic compounds	Using: • Headspace GC-MS and FID (BP-MHRA/SOP/027)
Oral solid preparation (tablets and capsules)	Verification of authenticity	Using: • Near infra-red (NIR) spectroscopy with visual comparison of spectra and principal component analysis (BP-MHRA/SOP/023)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
PHARMACEUTICALS (cont'd)	Chemical Tests (cont'd)	
Formulated preparations: Oral solid preparation (tablets and capsules) Oral liquid preparations Parenteral preparations Topical liquid preparations Topical solid preparations	Uniformity of content, weight and dosage	Specifications and methods detailed in the current British Pharmacopoeia (BP), manufacturer's licenced and in-house methods Conformity - BP-MHRA/SOP/020 using: • UV spectroscopy • LC-UV • Gravimetry • Volumetry
Formulated preparations: Oral liquid preparations Parenteral preparations Topical liquid preparations	pH	Using: • Potentiometry (BP-MHRA/SOP/012)

British Pharmacopeia Chemical Reference Substances (BPCRS)	Identification, Assay and % Declared Content of 'active' and 'non-active' ingredients and related impurities	Using specifications and methods detailed in the current British Pharmacopoeia (BP), developed with protocol BP-MHRA/QAD/008 using techniques:
		• LC detection by
		  ○ UV,
		  ○ Refractive Index,
		  ○ Fluorescence, or
		  ○ MS
		• (Headspace) GC detection by
		  ○ FID or
		  ○ mass spectrometry
		• Thin Layer Chromatography
		• Karl Fischer
		• UV-VIS,
		• Titrimetry,
		• Loss on drying
		• FTIR

END		