Appendix A

Syllabus for Histopathology

This syllabus document is an adjunct to the curriculum and is to guide aspects of learning expected to be covered during Histopathology training. The syllabus is not designed to be prescriptive as indicative content may quickly become out of date. The document is a guide for trainees and trainers. Learning is an incremental process and as such the trainees will gradually undertake more complex specimen types and techniques as they progress through their training.

Broad topic areas included in the syllabus are as follows:

- Deeper understanding of undergraduate medical pathology, pathological basis of disease and anatomy
- Macroscopic and microscopic appearance of disease processes in organs, samples of tissues and cellular specimens, across all organ systems
- The autopsy process
- The role of the history and associated clinical information in interpreting pathological findings
- Evolving ways of working: Digital Pathology and Molecular Pathology
- Report production: quality aspects, writing, recording and working with IT systems
- Laboratory organisation, accreditation and management
- Generic skills relating to health and safety, legal and ethical frameworks, education and supporting research
- General Principles of working in the Cellular Pathology smaller specialties

Syllabus Overview for Histopathology Higher Specialty Training:

- Working with systems-specific members of the MDT
- Pathology relating to all the adult organ system excluding the nervous system

Integrated Cellular Pathology Training Syllabus

The table below is a non-exhaustive list of further syllabus information.

Areas of Learning	Knowledge	Skills
Basic knowledge	Demonstrates sufficient general clinical knowledge including major changes in trends of diagnosis and treatment Possesses sufficient knowledge of normal anatomy, physiology and pathophysiology	Develops the ability to solve complex clinical and research [when applicable] problems by applying sound knowledge of basic principles without the requirement always to rely on 'pattern matching'
Surgical cut-up	Understands principles of specimen dissection, macroscopic description and block selection in neoplastic and non-neoplastic disease	Possesses sufficient manual dexterity to perform dissection safely and accurately, without damage to tissues
Laboratory processes	nderstands the principles of laboratory processing within	Gains experience of laboratory processing including section cutting at the start of training

	surgical pathology and cytopathology	
Surgical reporting	Understands the principles of microscopy Demonstrates knowledge of the microscopic features of the range of normality within tissues as well as the major common pathological processes and patterns of disease	Demonstrates ability to set up a microscope with ergonomic safety and operate it effectively Demonstrates ability to recognise the microscopic features of tissue structure in normality and disease
Special techniques	Understands principles of 'special' histochemical and immunohistochemical methods	Understands when to resort to special techniques Demonstrates ability to recognise histological features of histochemical and immunohistochemical stains in normal & diseased tissues
Fundamentals of molecular biology	Understands principles of common molecular pathology techniques Understand principles of electron microscopy Demonstrates understanding of the origins and consequences of germ-line variation and somatic mutations, including DNA methylation and gene expression changes Demonstrates knowledge of basic molecular databases Demonstrates knowledge of how histological samples are taken, prepared and of how nucleic acids are extracted from them Understands the principles of the most up-to-date molecular methods Demonstrates knowledge of molecular tests currently performed on histological samples, including the limitations of those tests, and of tests which are anticipated in the near future	Demonstrates ability to understand origins of, and justifications for, molecular tests Demonstrates ability to retrieve relevant data from public sources Demonstrates ability to undertake the appropriate sample collection, retrieval and preparation for the common molecular tests, whether performed on extracted nucleic acid or in situ Demonstrates knowledge of sequencing, PCR, microarrays (DNA and RNA), in situ hybridisation, mutation detection Demonstrates ability to assess the demand for molecular tests and the modes of supply

Autopsies	Demonstrates a wide knowledge of the pathological basis of disease and the macroscopic/microscopic pathology of various types of death Possesses knowledge of anatomy, macroscopic features of major disease processes and common tissue dissection techniques relevant to autopsy practice Demonstrates knowledge of the main side effects of common treatments & the major complications of most surgical procedures Demonstrates some understanding of the training undertaken by anatomical pathology technologists (APTs) and the role that they can appropriately play within all aspects of the mortuary function. Demonstrates understanding of the use of clinical information and the health record in autopsy examination Be conversant with current policy in relation to consent for autopsies and for tissue or organ retention Is conversant with current policy in relation to tissue or organ donation Understands the legal basis of consent to autopsy examination and the circumstances in which consent is not required Demonstrates awareness of the value of the autopsy as a teaching aid	Demonstrates ability to obtain consent for autopsies and for further investigation of tissue or whole organs Demonstrates manual dexterity sufficient to perform autopsies safely and to demonstrate the major abnormalities Acquires the ability to demonstrate findings to clinicians and medical students, with clear clinicopathological correlation Liaises with the APTs to maximise the autopsy learning opportunities Demonstrates ability to interrogate the clinical and laboratory records and understand the utility and limitations associated with various types of investigation including imaging, microbiology and biochemistry Demonstrates ability to identify issues to be addressed by the autopsy examination.

Areas of Learning	**Knowledge**	**Skills**
General Pathology		Sets up a microscope correctly

	Correctly identifies patient details relevant to each specimen Demonstrates understanding of normal anatomy and histology Demonstrates understanding of the pathological basis of disease Demonstrates understanding of common pathological abnormalities Demonstrates understanding of lymph node anatomy and dissection in cancer specimens	Recognises normal histology and normal variations of common tissue types Selects/identifies appropriate histochemical stains for glygogen, fat, mucins and amyloid Demonstrates familiarity with basic immunohistochemical markers for major tissue and tumour types and interpretation of a basic panel of immunohistochemical markers on an undifferentiated tumour Correctly orientates specimens Opens fresh specimens Correctly obtains fresh tissue for touch preparation, freezing, electron microscopy etc
Areas of Learning	**Knowledge**	**Skills**
Breast Pathology	Demonstrates understanding of: • Ductal carcinoma in situ • Invasive ductal carcinoma • Invasive lobular carcinoma • Fibrocystic change • Fibroadenoma	Demonstrates ability to diagnose invasive cancer on needle biopsy Reports mastectomy or wide local excision specimens Demonstrates ability to perform wide local excision for macroscopic tumour Demonstrates ability to perform axillary lymph node dissection Demonstrates ability to screen specimen for microcalcification
Areas of Learning	**Knowledge**	**Skills**
Upper Gastrointestinal Tract	Demonstrates understanding of specimens obtained via: • Oesophagectomy • Gastrectomy • Antrectomy Demonstrates understanding of: • Helicobacter associated gastritis • Reactive gastritis • Barrett's oesophagus	Recognises Helicobacter associated gastritis; oesophageal and gastric malignancy on biopsy Reports oesophageal and gastric malignancy resection specimens

	• Oesophageal carcinoma • Gastric carcinoma • Coeliac disease • Duodenitis	
Areas of Learning	**Knowledge**	**Skills**
Lower Gastrointestinal Tract	Demonstrates understanding of specimens obtained via: • Colectomy/proctectomy for cancer or inflammatory bowel disease • Appendicectomy • Polypectomy Demonstrates understanding of: • Appendicitis • Inflammatory bowel disease. Not otherwise specified (NOS) • Hyperplastic polyp • Sessile serrated lesion • Adenomatous polyp • High grade dysplasia Colorectal carcinoma	Recognise colorectal carcinoma on biopsy Identify presence of inflammatory bowel disease (IBD) and attempt to classify type on biopsy Distinguish serrated from adenomatous polyps Recognise high grade dysplasia Report colorectal carcinoma resection specimen
Areas of Learning	**Knowledge**	**Skills**
Respiratory Pathology	Demonstrates understanding of specimens obtained via: • Bronchial biopsies • Open biopsy of lung • Pneumonectomy or lobectomy • Pleural biopsy specimens Demonstrates understanding of: • Squamous cell carcinoma • Small cell carcinoma • Adenocarcinoma • Metastatic carcinoma • Vasculitis • Interstitial pneumonia • Mesothelioma	Recognises presence of the common subtypes of primary lung cancer in biopsies Recognises the presence of metastatic cancer in the lung
Areas of Learning	**Knowledge**	**Skills**
Skin	Demonstrates understanding of: • Basal cell carcinoma • Squamous cell carcinoma • Melanoma • Melanocytic naevi	Able to diagnose basic skin cancer types including squamous cell carcinoma, basal cell carcinoma and typical cases of melanoma

	• Haemangioma • Seborrhoeic keratosis • Actinic keratosis • Chronic dermatitis NOS • Epidermal inclusion cysts • Dermatofibroma	Recognises presence of atypical features in naevi Demonstrates adequate morphological description of features seen in an inflammatory skin biopsy Demonstrates accurate gross description of skin lesions Demonstrates appropriate handling of orientated or complex skin specimens
Areas of Learning	**Knowledge**	**Skills**
Lymphoreticular Pathology	Demonstrates understanding of: • Reactive lymphadenitis including follicular hyperplasia,sinus histiocytosis, dermatopathic change, etc. • High grade lymphoma • Common types of low-grade lymphoma • Hodgkin lymphoma • Granulomatous diseases • Metastatic carcinoma	Screens lymph node dissections for metastatic tumour Screens lymph node for neoplastic and non-neoplastic disease Recognises common reactive node patterns including follicular hyperplasia and sinus histiocytosis Able to diagnose high-grade lymphoma, common types of low-grade lymphoma and Hodgkin lymphoma in lymph node specimens and marrow biopsies Gains experience of examining bone marrow trephine biopsies, where locally available Demonstrates ability to sample tissue for supplementary techniques (e.g. flow cytometry, molecular studies, etc)
Areas of Learning	**Knowledge**	**Skills**
Head and Neck Pathology	Demonstrates understanding of specimens obtained via: • Mucosal biopsy • Tonsillectomy • Nasal polypectomy • Salivary gland tumour resections • Radical neck dissection Demonstrates understanding of: • Simple nasal polyps	Recognises reactive changes in tonsils; distinguish from high grade lymphoma Identifies main types of salivary gland tumours

	• Pleomorphic adenoma • Adenocarcinoma Warthin's tumour	
Areas of Learning	**Knowledge**	**Skills**
Gynaecological Pathology	Demonstrates understanding of specimens obtained via: • Hysterectomy and/or salpingo-oophorectomy for malignant or benign disease • Cervical loop/cone biopsy Demonstrates understanding of: • Leiomyoma • Secretory and proliferative endometrium • Endometrial atrophy • Endometrial carcinoma • Cervical carcinoma • Chronic cervicitis • Ovarian cystic follicles/theca cysts • Ovarian cystadenoma • Ovarian cystadenocarcinoma	Recognises leiomyomata, secretory and proliferative endometrium, endometrial and cervical carcinoma Reports hysterectomy and/or salpingooophorectomy
Areas of Learning	**Knowledge**	**Skills**
Liver and Pancreatobiliary Pathology	Demonstrates understanding of specimens obtained via: • Liver biopsy • Resections for metastatic tumour • Cholecystectomy Demonstrates understanding of: • Chronic cholecystitis • Cholesterolosis • Steatosis • Cirrhosis NOS • Chronic hepatitis NOS • Metastatic carcinoma	Reports cholecystectomies Recognises normal liver on needle biopsy Recognises value of special stains Identifies presence of cirrhosis, hepatitis or metastatic tumour in needle biopsy
Areas of Learning	**Knowledge**	**Skills**
Cardiovascular Pathology	Demonstrates knowledge of blood vessels, including temporal artery biopsy Demonstrates knowledge of temporal arteritis, atheroma	Recognises inflammation in temporal artery specimen

Areas of Learning	Knowledge	Skills
Renal and Urological Pathology	Demonstrates understanding of specimens obtained via: • Renal biopsies • Bladder biopsies • Nephrectomy specimens Demonstrates understanding of: • Bladder carcinoma • Renal cell carcinoma • Chronic pyelonephritis Understands the value of immunohistochemistry and electron microscopy in the diagnosis of glomerulonephritis	Assesses deviation from normal histology Recognises presence of cancer in bladder biopsies Recognises glomerular changes that might indicate glomerulonephritis, e.g. hypercellularity, crescent formation Reports nephrectomy specimens
Areas of Learning	**Knowledge**	**Skills**
Male Genital Tract	Demonstrates understanding of specimens obtained via: • Prostate biopsis and chippings • Orchidectomy and if available prostatectomy specimens Demonstrates understanding of: • Prostatic adenocarcinoma • Benign prostatic hyperplasi • Germ cell tumours	Reports normal vas deferens Recognises presence of cancer in prostatic needle biopsies Reports orchidectomy Recognises seminoma, embryonal carcinoma
Areas of Learning	**Knowledge**	**Skills**
Endocrine Pathology	Demonstrates understanding of specimens obtained via: • Thyroidectomy • Parathyroidectomy Demonstrates understanding of: • Nodular colloid goitre • Main types of carcinoma	Recognises normal thyroid and parathyroid Recognises nodular colloid goitre
Areas of Learning	**Knowledge**	**Skills**
Soft Tissue Pathology	Demonstrates understanding of specimens obtained via: • Soft tissue tumour resection • Simple (i.e. lumpectomy)	Recognises morphological features suggestive of main subtypes of tumours (i.e. lipomatous, fibromatous, myomatous, neural, vascular characteristics)

	Demonstrates understanding of • Lipoma • Angiolipoma • Neurofibroma • Dermatofibroma Demonstrates knowledge of immunohistochemical techniques to apply Understands value of cytogenetics	Recognises high-grade sarcoma
Areas of Learning	**Knowledge**	**Skills**
Neuropathology	Demonstrates knowledge of basic neuroanatomy and histology, and basic entities and disease processes affecting the nervous system: • Basic neuroanatomy and histology • Basic pathophysiology (e.g. cellular reactions to injury, cerebral oedema, raised intracranial pressure and herniation, hydrocephalus) • Trauma • Cerebrovascular diseases • Infections • Human prion diseases (very basic knowledge with emphasis on Health & Safety considerations) • Demyelinating diseases • Degenerative diseases • Genetic, toxic and acquired metabolic diseases (basic knowledge) • Epilepsy and the concept of SUDEP (Sudden & Unexpected Death in Epilepsy) • Tumours (e.g. primary versus metastatic, paraneoplastic syndromes, familial tumour syndromes)	Observes or performs a range of examinations, and documents activities with reflective notes, including: • An indicative 10 fresh brain examinations with demonstration of basic neuroanatomy as part of general autopsy training • An indicative 2 fixed brain examinations with demonstration of basic neuroanatomy and macroscopic abnormalities, as appropriate • An indicative 2 post mortem brain histology cases following neuropathological examination and representative sampling Demonstrates observation of or participation in adult neuro-oncology multidisciplinary meetings, clinical neuroscience Grand Round or equivalent clinical neuroscience encounter
Areas of Learning	**Knowledge**	**Skills**

Paediatric and Perinatal Pathology	Demonstrates understanding of common paediatrics tumours: • neuroblastoma • nephroblastoma • rhabdomyosarcoma • acute lymphoblastic leukaemia/lymphoma • Burkitt lymphoma • Hodgkin's lyphoma Demonstrates awareness of special stains in paediatric pathology Understands value of cytogenetics Demonstrates awareness of perinatal pathology including: • normal development of the placenta • early pregnancy loss (1st and early 2nd trimesters) • syndromes associated with common aneuplodies (T13, T18, T21, X0) • common cardiac malformations (septal defects, Truncus Arteriosus, Tetralogy of Fallot, coarctation of the aorta, transposition of the great arteries) • observation/assistance in at least 2 perinatal post-mortem examinations with reflective notes	Recognises common inflammatory and neoplastic conditions occurring in childhood Description and processing of biopsy specimens Demonstrates examination, description and sampling of placentas Demonstrates examination, description and sampling of other specimens only under direct consultant supervision

Autopsy pathology

It is envisaged that trainees will perform an indicative minimum of 20 autopsies during each year of training. ST1 trainees should begin to understand the level of certainty with which macroscopic features can be interpreted at autopsy and when histological examination of autopsy tissues is important. They should begin to recognise histological changes that occur due to postmortem artefact.

This section of the syllabus incorporates the basic autopsy practice competences that all trainees will acquire. It will come from apprenticeship training, reading, formal tuition and the practical experience from the indicative minimum 20 adult autopsies per annum and 2 Paediatric/Perinatal autopsies that all trainees will undertake until satisfactory completion of ICP training.

Areas of Learning	Knowledge	Skills
General	Demonstrates understanding of methods for identification of the patient Describes the pathological basis of disease and the macroscopic/microscopic pathology of various types of death	Applies basic standard of practice in the techniques used for identifying morphological abnormalities at autopsy examination
	Describes the anatomy, macroscopic features of major disease processes and common tissue dissection techniques relevant to autopsy practice	Demonstrates manual dexterity sufficient to perform autopsies safely and to demonstrate the major abnormalities
	Recognises the -training undertaken by anatomical pathology technologists (APTs) and the role that they can appropriately play within all aspects of the mortuary function (see www.aaptuk.org)	Operates with the APTs to maximise the autopsy learning opportunities
	Identifies the use of clinical information and the health record in autopsy examination	Demonstrates ability to interrogate the clinical and laboratory records and understand the utility and limitations associated with various types of investigation including imaging, microbiology and biochemistry
	Demonstrates awareness of the principles and practice of Digital Autopsies	Identifies issues to be addressed by the autopsy examination
Areas of Learning	**Knowledge**	**Skills**
Autopsy technique	Demonstrates knowledge of, and the ability to perform, autopsies in a variety of clinical situations, such as: • cardiac disease of uncertain cause • endocrine/metabolic death • hepatic disease of unknown cause • Intra-abdominal disease of unknown cause • neurological disease of unknown cause • renal disease of unknown cause	Demonstrates a normal full evisceration and dissect the internal organs Describes the appearances accurately and succinctly Interprets the findings in the light of the clinical information available Summarises the findings to clinicians either immediately or later at a clinical meeting

	• respiratory disease of unknown cause •	
Areas of Learning	**Knowledge**	**Skills**
Deaths in the community	Describes and explains the aims of the autopsy and investigations required where death occurs in the community and there are no suspicious circumstances	Demonstrates the ability to perform a full postmortem examination and the ability to take relevant samples for histology if appropriate consent is in place
Areas of Learning	**Knowledge**	**Skills**
Microbiology	Identifies microbiological processes that are relevant to autopsy practice, e.g. sepsis, meningitis, pneumonia, endocarditis, tuberculosis, viral hepatitis	Demonstrates the ability to take appropriate samples
Areas of Learning	**Knowledge**	**Skills**
Histology	Describes the postmortem histological appearances of various common fatal conditions	Demonstrates the ability to select appropriate tissue blocks
Areas of Learning	**Knowledge**	**Skills**
Other investigations	Describes those areas of haematology, biochemistry, medical genetics and other investigative modalities that are relevant to autopsy practice	Demonstrates the ability to select appropriate tissue/fluid samples
Areas of Learning	**Knowledge**	**Skills**
Consent	Describes and explain current policy in relation to consent for autopsies and for tissue or organ retention Describes and explain current policy in relation to tissue or organ donation Identifies the legal basis of consent to autopsy examination and the circumstances in which consent is not required	Demonstrates the ability to obtain consent for autopsies and for further investigation of tissue or whole organs
Areas of Learning	**Knowledge**	**Skills**
Health and Safety	Describes relevant protocols and documentation of departmental working practices,	Demonstrates the ability to work in the mortuary in a safe way

	and be familiar with the practicalities of mortuary practice Describes and explain regulatory aspects of health and safety issues Summarises the following documents: Safe Working and Prevention of Infection in the Mortuary and Autopsy Suite (Health Services Advisory Commission) Guidelines on Autopsy Practice	
Areas of Learning	**Knowledge**	**Skills**
Coroner's/Procurator Fiscal Service Regulations	Demonstrates familiarity with the duty to report deaths to the Coroner, the preliminary enquiries that may take place through the Coroner system and entitlement to attend autopsy examination by interested parties Demonstrates an understanding of current legislation and regulations relating to medico-legal autopsies and related matters Demonstrates attendance at some inquests to gain passive experience	Demonstrates a working knowledge of the law relating to death, the investigation of death and disposal of the dead (for those in Scotland, relevant documents in the Crown Prosecution and Procurator Fiscal Service)
Areas of Learning	**Knowledge**	**Skills**
Autopsy Report	Demonstrates familiarity with the RCPath's Guidelines on Autopsy Practice and Best Practice Scenarios	Demonstrates writing a final gross and microscopic report with suitable summaries, according to the RCPath's Guidelines on Autopsy Practice Includes the cause of death in the Office of National Statistics (ONS) format
Areas of Learning	**Knowledge**	**Skills**
Teaching	Explains the value of the autopsy as a teaching aid	Demonstrates appropriate teaching skills
Areas of Learning	**Knowledge**	**Skills**

Demonstration of Autopsy Findings	Demonstrates awareness of the value of communicating relevant autopsy findings to clinicians	Demonstrates the communication skills required to inform clinical colleagues and other non-clinical professionals involved in inquiries into deaths and assist in multidisciplinary mortality review

Complex post-mortem examinations
These autopsies and special techniques are part of the higher autopsy training curriculum. However ICPT trainees may take the opportunity to observe or assist in these examinations should the opportunity arise.

- Assessment of traumatic injury, e.g. after road traffic accident
- Methods of sampling for toxicology, e.g. in suicide, drug overdose
- HIV, HCV and tuberculosis infected persons
- Maternal deaths
- Removal of eyes, dissection of middle ear
- Removal of spinal cord
- Post-mortem examination in haematological malignancy, including sampling of bone marrow from iliac crests and femur
- Post-mortem examination of a decomposed body
- Post-mortem examination in a case of suspected drowning
- Post-mortems in patients dying after complex cardiothoracic surgery
- Assessment of the changes following complicated gastrointestinal surgery

Cytopathology:
Cervical and non-cervical cytology will be part of the histopathology curriculum and assessment processes for ICPT training. Subsequently, cervical cytology will be available as an optional training package, equivalent to 3 months of training. Histopathology relating to cervical screening and non-cervical cytology will continue to be part of the higher histopathology training curriculum and assessment processes.

Cervical Cytology		
Areas of Learning	**Knowledge**	**Skills**
General Principles and CSP	Applies rationale, methodology and organisation of the CSP Demonstrates a basic understanding of roles of component organisations, failsafe Identifies features to determine the adequacy of a cervical sample	Demonstrates the ability to source information on the CSP Demonstrates understanding of the difficulties in producing rigid criteria for adequacy. Ability to recognise inadequate specimens
Areas of Learning	**Knowledge**	**Skills**
Technical Aspects	Demonstrates basic knowledge of automated screening devices and HPV testing Demonstrates awareness of the process involved in approving new technologies for use in cervical screening	Demonstrates awareness of sampling devices used and the fixation of specimens Demonstrates a basic knowledge of the range of methods for converting a raw sample into a slide
Areas of Learning	**Knowledge**	**Skills**

Normal and Benign changes	Identifies normal cellular components in cervical specimens Identifies features of infections in cervical samples	Recognises typical morphological appearances of specific organisms commonly seen in cervical specimens, e.g. Trichomonas, Candida, herpes simplex, human papilloma virus, actinomyces
Areas of Learning	**Knowledge**	**Skills**
Borderline nuclear changes (BNC)	Demonstrates understanding of criteria for diagnosis of BNC	Recognises the morphological features of BNC
Areas of Learning	**Knowledge**	**Skills**
Dyskaryosis	Demonstrates understanding of criteria for diagnosis and grading of squamous and glandular dyskaryosis	Recognises typical examples of mild, moderate and severe squamous dyskaryosis and endocervical cellular abnormalities
Areas of Learning	**Knowledge**	**Skills**
Quality Assurance (QA)	Demonstrates awareness of QA including internal quality control (IQC), external quality assurance (EQA) and audit	Recognises QA procedures involved in cervical screening, including internal quality control (IQC), external quality assurance (EQA) and audit Recognises current national quality standards and indicators

Non-cervical cytology		
Areas of Learning	**Knowledge**	**Skills**
Technical Aspects	Demonstrates knowledge of preparation and staining techniques for common specimen types Demonstrates knowledge of use of special techniques, e.g. immunocytochemistry	Recognises faults and artefacts of preparation, e.g. air-drying Describes panels of antibodies for particular diagnostic applications, e.g. mesothelioma
Areas of Learning	**Knowledge**	**Skills**
Morphology	Demonstrates knowledge of cell components Demonstrates knowledge of various stains used in air dried and fixed preparations	Recognises normal cell populations Recognises the differences in cell morphology in air dried and fixed preparations

	Identifies the nuclear features used to diagnose malignancy Identifies features of malignancy in sites commonly investigated with cytopathology Identifies features of specific non-malignant diagnoses, e.g. infection	Demonstrates the ability to diagnose malignancy with confidence in specimens from breast, gastrointestinal (GI) tract, respiratory tract, urinary tract, head and neck, lymphoreticular system, serous fluids and thyroid Demonstrates the ability to integrate clinical information and histology or other investigations into diagnosis Demonstrates the ability to recognise when definitive diagnosis is beyond capability
Areas of Learning	**Knowledge**	**Skills**
Report writing	Identifies requirements for a report Demonstrates ability to recall relevant datasets Identifies nationally recognised coding systems Demonstrates knowledge of the likely outcome in terms of further investigation or management of the patient	Demonstrates the ability to write an accurate report that gives clinicians the information they need

MOLECULAR PATHOLOGY

This section lists the required basic knowledge in molecular methods and their applications, both potential and actual, within Histopathology. The section is focussed on DNA- and RNA-based techniques.

Areas of Learning	**Knowledge**	**Skills**
Fundamentals of molecular biology	Identifies the origins and consequences of germline variation and somatic mutations, including DNA methylation and gene expression changes	Demonstrates the origins of and justifications for molecular tests
Areas of Learning	**Knowledge**	**Skills**
Fundamentals of genetics	Identifies the structure of genes including translation and transcription, factors affecting gene expression and inheritance patterns	Recognises the factors affecting transcription and translation
Areas of Learning	**Knowledge**	**Skills**

Molecular techniques	Identifies molecular techniques	Demonstrates awareness of principles, practical knowledge of sequencing, PCR, microarrays (DNA and RNA), in situ hybridisation, mutation detection
Areas of Learning	**Knowledge**	**Skills**
Molecular Tests	Describes molecular tests currently performed on histological samples	Interprets the common molecular tests

Histopathology Higher Specialty Training syllabus

Following completion of the ICP training, trainees will continue to consolidate their knowledge and skills within the relevant areas of learning, mapped out in the syllabus for ICPT. They will be expected to take increased responsibility for specimen types and techniques included in the ICPT syllabus including independent reporting of cases. In addition, they will get an opportunity to develop their skills in Histopathology as below. This period of higher specialist training in Histopathology will typically be in years 3-5 of training. This is a competency based curriculum and as such there are no absolute minimum numbers. However, it is anticipated that most trainees will achieve the competencies required with the minimum practical experience detailed below (per WTE training year):

Year 3

Surgical histopathology- 750 cases

Cytopathology- 200 non-cervical cytology cases, which may either be new cases, or be seen in the context of teaching sets with appropriate structured feedback from an experienced trainer.

Year 4

Surgical histopathology- 1000 cases

Cytopathology- 300 non-cervical cytology cases, the majority of (approximately 70%) should be new diagnostic cases.

Year 5

Surgical histopathology- 1500 cases (dependent on specialist interest), most of which in the latter half of the year should be independently reported.

Cytopathology- 300 non-cervical cytology cases, the majority of (approximately 80%) should be new diagnostic cases.

Areas of Learning	Knowledge	Skills
General	Demonstrates sufficient general clinical knowledge including major changes in trends of diagnosis and treatment Demonstrates sufficient knowledge of normal anatomy, physiology and pathophysiology Demonstrates the knowledge contained in and be able to operate within the tissue pathways and datasets documents produced by the	Demonstrates the ability to solve complex clinical (and research, when applicable) problems by applying sound knowledge of basic principles without the requirement always to rely on 'pattern matching'

	Royal College of Pathologists and any updates of these documents	
Areas of Learning	**Knowledge**	**Skills**
Specimen Dissection	Explain the principles of specimen dissection, macroscopic description and block selection in neoplastic and non-neoplastic disease Explain and describe the principles of dissection of all major cancer resection specimens and tissue sampling to enable completion of RCPath's Standards and Datasets for Reporting Cancers	Demonstrates sufficient manual dexterity to perform dissection safely, accurately and independently, without damage to tissues
Areas of Learning	**Knowledge**	**Skills**
Special Interests	Develops a special interest in one or more diseases or organ systems	Uses RCPath Standards and Datasets for Reporting Cancers and Tissue Pathways for reporting most cases

Molecular Pathology

This section describes the required practical knowledge and application of molecular biology. While many of these competences could be achieved by spending time attached to a specialist molecular biology laboratory, it is not essential that trainees do so. It is anticipated that for most trainees much of their experience in molecular pathology will be integrated with relevant specialist histopathology training.

Areas of Learning	**Knowledge**	**Skills**
General	Describes the origins and consequences of germline variation and somatic mutations, including DNA methylation and gene expression changes	Demonstrates the origins of and justifications for molecular tests
Areas of Learning	**Knowledge**	**Skills**
Fundamentals of databases and bioinformatics	Demonstrates ability to recall the basic molecular databases	Summarises the use of data and identify relevant data from public sources
Areas of Learning	**Knowledge**	**Skills**
Use of Histology samples	Describes how histological samples are taken and prepared, and how nucleic acids are extracted from them	Demonstrates practical understanding of undertaking the appropriate sample collection, retrieval and preparation for the common molecular tests, whether

		performed on extracted nucleic acid or in situ
Areas of Learning	**Knowledge**	**Skills**
Technology	Outlines the principles and limitations of the most up-to-date molecular methods	Demonstrates practical knowledge of sequencing, PCR, microarrays (DNA and RNA), in situ hybridisation, mutation detection
Areas of Learning	**Knowledge**	**Skills**
Molecular Tests	Describes molecular tests currently performed on histological samples, including the limitations of those tests, and of tests which are anticipated in the near future	Demonstrates the demand for molecular tests and the modes of supply Describes and explain common molecular tests including some of the common pitfalls and how to avoid them Illustrates the significance of common molecular tests