

**ROYAL LIVERPOOL & BROADGREEN
UNIVERSITY HOSPITAL TRUST**

OPHTHALMIC PATHOLOGY

**DIAGNOSTIC SERVICE
USER GUIDE**

A Laboratory of the National Specialist Ophthalmic Pathology Service

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1. PURPOSE

Ophthalmic Pathology

The information contained in this User Guide has been developed in conjunction with our users in order to not just meet their needs and requirements but also includes appropriate advisory and interpretative services. This booklet provides detailed information about the diagnostic Eye Pathology service within RLBUHT department of Ophthalmic Pathology and we hope that it will enable you to make the most efficient use of the service. If you have any questions or require information about the service provided, please contact the laboratory directly and ask for advice from Professor Sarah Coupland or one of the Biomedical Scientists.

2. DEPARTMENT OVERVIEW

Ophthalmic Pathology

2.1. The Ophthalmic Pathology department in the Duncan Building provides a diagnostic service in ophthalmic histopathology and cytopathology. It is one of 4 laboratories within England making up the National Specialist Ophthalmic Pathology Service (NSOPS).

2.2. NSOPS laboratories are commissioned by the National Commissioning Board and are centrally funded within England. This means that NHS cases from England submitted to NSOPS laboratories within England for examination are seen without charge to the referring clinician.

2.3. The laboratory aims to provide a high quality and timely service with provision of expertise in diagnosis by using an appropriate range of techniques including histology, histochemistry, cytology, immunohistochemistry, and molecular pathology.

2.4. The Ophthalmic Pathology NHS department consists of one consultant histopathologist, two biomedical scientists and one clerical staff and recognises the commitment and strong endorsement from NHS England to participate in the accreditation scheme for pathology (ISO 15189) services. The Molecular Pathology service for Ocular Oncology is carried out by a team of two scientists within the research group (Liverpool Ocular Oncology Research Group (LOORG)) and is not seeking accreditation to the ISO 15189 scheme.

2.5. The department is committed to the safe and secure handling and disposal of confidential information and accurately reporting results of investigations in a timely, confidential and clinically useful manner.

2.6. The department does not arrange or provide the following diagnostic laboratory services: microbiology, virology, immunology, haematology, biochemistry, immunofluorescence (including for pemphigoid) or advice on control of infection; these must be sent to local centres.

2.7 As mandated by the NHS England Service Specification for Ophthalmic Pathology Services (All Ages), the department participates in the UK National External Quality Assessment Schemes (UKNEQAS) for Cellular Pathology Technique and General Pathology/Lymphoma Pathology Immunocytochemistry & In-situ Hybridisation modules, the NEQAS UK slide scheme for Ophthalmic Pathology, the NSOPS internal quality investigations, and attend (and preferably present clinical or research material at) ophthalmic pathology meetings (e.g. BAOP) or major ophthalmology meetings on a regular basis.

3. HOW TO CONTACT US

Ophthalmic Pathology

Ophthalmic Pathology is situated on the 5th Floor of the Duncan Building, Daulby Street, Liverpool. L69 3GA at the Royal Liverpool Hospital, Prescot Street, Liverpool. L7 8XP

3.1. Postal address

Ophthalmic Pathology

For correspondence and specimens

**Ophthalmic Pathology
5th Floor Duncan Building
Daulby Street
Liverpool
Merseyside
L69 3GA**

3.2. Laboratory Opening Times

Ophthalmic Pathology

0900 – 1730 hours

Monday - Friday, **excluding** Public/Bank Holidays (England)

NB: There is **no** out of hours or weekend service.

3.3. Key Contacts

Ophthalmic Pathology

Head of Department: Professor Sarah Coupland Consultant Ophthalmic Pathologist Tel: 0151 794 9104 Email: sarah.coupland@rlbuht.nhs.uk	
General Enquiries: Chloe Enright Administrative Assistant Tel: 0151 706 4483 Fax: 0151 706 5859 Email: chloe.enright@rlbuht.nhs.uk	
Ophthalmic Pathology	Molecular Pathology
Technical Enquiries Mr Simon Biddolph Consultant Biomedical Scientist Tel: 0151 706 4509 Mob: 0750 0881072 Email: simon.biddolph@rlbuht.nhs.uk Ms Anna Ikin Senior Biomedical Scientist Tel: 0151 706 4509 Email: anna.ikin@rlbuht.nhs.uk	Technical Enquiries Dr Helen Kalirai Senior Post-Doctoral Fellow Tel: 0151 794 9234 Email: Helen.Kalirai@rlbuht.nhs.uk Dr Sophie Thornton Research Associate Tel: 0151 794 9234 Email: Sophie.Thornton@rlbuht.nhs.uk

4. OPHTHALMIC HISTOPATHOLOGY SERVICE: INVESTIGATIONS AVAILABLE AND SPECIMEN REQUIREMENTS

Ophthalmic pathology

4.1. Routine Histopathology

Ophthalmic pathology

4.1.1. Histopathological examination of biopsy material, either diagnostic or excisional, of any tissue from the eye or its adnexal structures is offered. Histology is used to view cells and structures within the sample in a manner which mimics them in situ as much as possible. This allows definitive diagnosis of numerous disease states, which have ramifications for the patient downstream, with regards further treatment(s) and/or excision.

4.1.2. Guidance on which specimens should be submitted for examination may be found for 'ocular pathology' at:

<https://www.rcophth.ac.uk/publications/ophthalmic-services-guidance/>

4.1.3. The choice of methodology and appropriateness of the investigation are at the discretion of the consultant pathologist who is guided by details on the clinical request form and knowledge of laboratory methods and current "best practice".

4.1.4. Ophthalmologists are free to discuss the methods employed for any given specimen, but the final decision remains a remit of the clinical pathologist. We ask that you notify us of anything specific which you may have done which may affect our ability to process and adequately report the samples which you send, such as fixation in solutions other than Neutral Buffered Formalin.

All samples should be sent in the appropriate manner, in a fully labelled, leak-proof container with a legibly completed request form. These must have at a minimum the identifiers we require to unequivocally identify the patient (at least three of the following: Name (given name and surname), Date of Birth, Hospital Number, NHS number, Age, Address (including postcode) and/or Gender). Additionally, we need to know the name and whereabouts of the clinician requesting the examination, whom the final authorised report will be despatched to. We need to know the type of sample and the anatomical site of origin which is particularly important with ophthalmic samples. Clinically relevant history on the patient is important to give context to the sample itself, as is the date of the sample being taken.

Samples being posted to the department should be sent in accordance with UN3373 (<http://www.un3373.com/info/regulations/>). We strongly recommend the use of specimen despatch/receipt or 'fax back' forms to ensure an appropriate custody trail.

4.2. Molecular Pathology

Ophthalmic pathology

4.2.1 Genetic examination of histologically confirmed choroidal melanoma to determine chromosomal aberrations present on chromosomes 1p, 3, 6, and 8 is available. This is incorporated into the pathological report to inform prognosis for the patient.

4.2.2. The choice of methodology and appropriateness of the investigation are at the discretion of the consultant pathologist who is guided by details on the clinical request form and knowledge of laboratory methods and current “best practice”.

4.2.3. Ophthalmologists are free to discuss the methods employed for any given specimen, but the final decision remains a remit of the clinical pathologist.

4.3. Unfixed Specimens

Ophthalmic pathology

4.3.1. We will accept unfixed specimens from Ocular Oncology which have been arranged with prior agreement and the sample should be sent to the laboratory as soon as possible after collection. Cytology specimens should be fixed in HOPE or Cytolyt fixative. Please contact the laboratory if you require any further details.

4.4. Histopathology Specimen Requirements

Ophthalmic pathology

4.4.1. Histology specimens should be submitted in an appropriately sized leak-proof container containing standard tissue fixative (10% formalin).

If for any reason a sample is to be submitted in a solution other than Formalin, please indicate the solution and reason for this clearly on the request form.

No extraneous materials such as swabs, needles, tissues or papers should be placed in the specimen pot.

Specimens should reach the laboratory before 1500h for processing that day (fixation allowing). Specimens received after 1500h may not be processed until the following working day.

4.5 Urgent Specimens

Ophthalmic pathology

4.5.1. It should be indicated on the request form if the specimen requires urgent attention. The reason for the apparent urgency should be clearly explained.

4.5.2. It is recommended that specimens deemed to be urgent are received by the laboratory as early in the day as practicable and before 1500h.

4.5.3. If a report is required by a particular date, this should be indicated on the request form. An attempt will be made to accommodate these requests, but a final report by a particular date cannot be guaranteed.

4.6 Fast Paraffin Processing/Reconstruction

Ophthalmic pathology

In cases of ?giant cell arteritis or where a lesion is being excised, and subsequent reconstruction depends on knowledge of whether the margins are tumour free, a “fast paraffin” approach may be considered.

This service is labour-intensive and the department should be notified with sufficient notice to ensure availability of both technical and consultant time on the required days. We cannot guarantee availability of both parties if we are not given appropriate notice, at the absolute minimum 24 hours.

When booking, all relevant patient information should be to hand, including the minimum patient identifiers, relevant clinical history, name and contact details of the requesting clinician/service and the dates of both initial and perspective reconstructive surgery.

These samples should be sent as per standard histopathology specimens, in formalin at least ten times the volume of the sample itself. These samples should be in labelled pots, with an accompanying fully completed request form.

It is worth noting that although the procedure may have been undertaken early in the day, if the sample is delayed in theatres before arriving at the department the efficiency of the fast paraffin service will be compromised.

Un-booked specimens for Fast Paraffin analysis may not be processed as expediently, leading to poor patient experience.

4.7 Rejection of Specimens

Ophthalmic pathology

Specimens are rejected in certain circumstances, but we attempt to reduce delay by dealing with these issues promptly.

If there are anomalies with the samples (i.e. discrepancies between the request form and specimen labelling, specimens in inadequately labelled containers or accompanied by inadequately completed request forms) **the specimen may be returned to the referring clinician for proper completion**, resulting in a delay in processing.

In the first instance we will attempt to contact you to clarify any issue locally, please ensure contact details are included with every request.

Samples for disciplines other than Cellular Pathology are rejected immediately. These will be returned to sender for forwarding to appropriate departments, such as Microbiology, Haematology for example.

The department does not provide Immunofluorescence (IMF) for Mucous Membrane Pemphigoid studies (MMP), these should be sent directly to an appropriate local centre.

Some factors which can affect the performance of examinations are:

- Inadequate sample size
- Poor/inappropriate fixation
- Inadequate Clinical detail

For these reasons we ask that referring clinicians are generous in providing as much material as possible for examination in a manner which is most useful (i.e. whole resections as opposed to piece meal). All samples are sent in formalin (with the exception of cytology fluids) and that as much relevant clinical information is also included.

5. OPTHALMIC CYTOLOGY SERVICE: INVESTIGATIONS AVAILABLE AND SPECIMEN REQUIREMENTS Ophthalmic pathology

5.1. Cytology Investigations Ophthalmic pathology

5.1.1. Cytology is the investigation of small samples of dispersed or dissociated cells and other tissue components devoid of natural tissue architecture.

5.1.2. Specimens for cytological investigations include fluid such as tears, aqueous, vitreous, or fluid from cystic lesions.

5.1.3. Cytological investigation provides a preliminary diagnostic and should not be regarded as providing a definitive diagnosis.

5.1.4. The practice of cytology is challenging and if there is uncertainty about its use in a particular case, it is preferable to discuss the case with the consultant pathologist prior to obtaining the specimen.

5.2. Cytology Specimen Requirements Ophthalmic pathology

5.2.1. **Aspirates of fluids (eg vitreous)** may be submitted fresh if it is possible to arrange immediate transport to the laboratory within working hours. If immediate transport is impossible, the specimen should have an additional volume of Cytolyt OR Hope medium added. In case of any queries or concerns please contact the laboratory in advance.

Any needles must be removed and the syringe capped and secured.

5.2.2. If microbiological investigation is required, the requesting clinician must submit a separate specimen to an appropriate microbiology service. It is not possible for this laboratory to split a specimen under sterile conditions.

6. HOW TO SUBMIT SPECIMENS FOR INVESTIGATION Ophthalmic pathology

6.1 Request Forms and Sample Labelling Ophthalmic pathology

6.1.1. For all specimens submitted to the laboratory,

A fully completed request form **MUST accompany each case.**

6.1.2. You may use request forms provided by this department or by your own local histopathology department, as long as it is suitable for histopathology or cytology specimens.

6.1.3. Request forms are designed to provide:

- unique identification of the patient.
- a destination for the report and any charging information.
- the laboratory with the clinician contact details if discussion of the case is required.
- date and time of specimen collection/removal and investigations required (eg histology/cytology).
- type of specimen and anatomical site of origin
- clinical information so that the pathologist may handle the specimen appropriately and interpret microscopic findings in the proper context.
- an awareness of any health and safety issues with a given specimen.
- an indication if consent has been provided for research purposes.

6.1.4. With this in mind, **please provide complete information on the request form.**

Failure to adequately complete any portion of a request form may lead to dangerous errors, the responsibility for which will lie with the referring ophthalmologist.

6.1.5. The patient's NHS number should be stated (when applicable), as this provides a unique identifier, together with first and last names, date of birth, gender, hospital number (if appropriate) and ethnicity.

6.1.6. Each specimen container, no matter how small, must also be labelled with the appropriate patient identification data (minimum of 3 identifiers eg first and last name, date of birth/age, gender and preferably NHS/Hospital No).

The information must be consistent with the request form, to prevent errors in specimen and patient identification. Multiple specimens from the same patient should also identify the specimen type/site.

6.1.7. Multiple specimens from the same procedure should be placed on the same request form. For subsequent procedures, a separate form must be used.

6.1.8. If there are discrepancies between the request form and specimen labelling, specimens in inadequately labelled containers or accompanied by inadequately completed request forms; **the requesting clinician will be required to complete the documentation in the department or the specimen may be returned** to the referring clinician for proper completion, resulting in a delay in processing.

6.2 High risk/danger of infection specimens

Ophthalmic pathology

6.2.1. It is the responsibility of the requesting clinician to indicate on the request form and specimen if the patient is known or suspected to be within a **“HIGH RISK/DANGER OF INFECTION”** category (eg HIV, TB, Hepatitis B, Hepatitis C etc), to facilitate appropriate handling.

6.3 Specimen Containment

Ophthalmic pathology

6.3.1. It is the responsibility of the referring clinical/surgical team to ensure that all specimens are submitted to the laboratory in suitable and approved containers.

6.3.2. Approved specimen containers have sealable, leak-proof lids which can withstand a fall from desk height.

6.3.3. Ensure specimen containers are placed in a bag with enough absorbent material to contain any leakage and the appropriate hazard warning sign for the fixative eg formalin.

6.3.4. Specimens received leaking or damaged are a danger to all those who come into contact with them, including theatre staff, porters and laboratory staff.

6.3.5. Leakage from a specimen container may seriously compromise the diagnostic process. If a specimen is deemed unsuitable for safe processing by the laboratory staff, it will be disposed of and the requesting clinician informed of the problem as soon as is practicable.

7. SPECIMEN TRANSPORTATION TO THE LABORATORY Ophthalmic pathology

7.1 Mailed or Couriered Specimens Ophthalmic pathology

7.1.1. Specimens mailed or couriered should be packaged in approved containers and in accordance with UN3373 (<http://www.un3373.com/info/regulations/>).

7.1.2 Specimen containers with sealable, leak-proof lids which can withstand a fall from desk height and should be placed in a bag with sufficient absorbent material to contain any leakage and the appropriate hazard warning sign for the fixative eg formalin. Ensure specimen containers are then placed in a suitable, labelled postal box for transport.

7.1.3. Hospitals more local to the department may make their own delivery arrangements via portering or delivery van services.

7.1.4. To confirm receipt of specimen(s) in the department, it is recommended that a "confirmation of receipt fax-back" form, providing the sender's confidential fax number, is enclosed with the specimen(s) to ensure an appropriate custody trail.

8. RECEIPT OF SPECIMENS IN THE LABORATORY Ophthalmic pathology

8.1 Specimen Receipt Ophthalmic pathology

8.1.1 A specimen does not become the responsibility of Ophthalmic Pathology until it arrives at the specimen reception area within the department on the 5th Floor of the Duncan Building.

8.1.2 Specimens should reach the laboratory before 1500h for processing that day (fixation allowing). Specimens received after 1500h may not be processed until the following working day.

8.1.3 It is therefore recommended that specimens deemed to be urgent, are delivered to the laboratory as early in the day as practicable and before 1500h.

8.1.4 On receipt, the request form and specimen are assigned a unique laboratory number which tracks the specimen throughout and is stated on the report.

9. FACTORS AFFECTING THE PERFORMANCE OF EXAMINATION OR INTERPRETATION OF RESULTS Ophthalmic pathology

9.1 Factors Affecting Results Ophthalmic pathology

9.1

Factor	Impact	Possible Cause	Solution
Crush artefact	Distortion of the cells	Specimen is damaged during removal	Tissue should be excised gently avoiding trauma

			caused by crushing or tearing
Drying artefact	Cells appear dehydrated and shrunken	Specimen is left to dry out prior to fixation Sample placed on absorbent material prior to fixation	Samples should be placed in fixative immediately after removal
Heat damage	Tissue margins become distorted and cells are damaged	Use of cauterisation during removal	As far as possible avoid heat during removal
Chemical damage	Inadequately fixed samples	Use of out of date fixatives	Always check the expiration date before use
Inadequate volume of fixative	Degradation of the area of specimen not submerged in fixative	Formalin stores low Inappropriate size of container used	Contact relevant supplier for formalin delivery, either the lab or pharmacy department Contact the lab to inform them that a specimen needs more formalin adding to pot and write this on the request form Ensure that the container allows for 10x volume of fixative to be added to fully submerge the specimen
Inadequate fixation	Cell degradation, nuclear detail not preserved	Formalin fixation slows down when refrigerated Biopsy/specimen stuck in lid of container	Please store formalin pots and samples within them at room temperature Ensure that biopsy/specimen is fully submerged in fixative
Delay in transportation of fresh unfixed samples	Degradation of the specimen Unable to perform certain tests due to delay in preservation	Samples being held waiting for porter or transport	Ensure prompt delivery to laboratory after sample taken Ensure correct sample container and instructions for transport followed

10.1 Availability of Reports/Turnaround Times

10.1.1 The department aims to provide a timely as well as a high quality service. Target turnaround times (from specimen receipt to availability of an authorised report) are within 7-10 calendar days. It is not always possible to have a final report available within the above stated times. Complex cases may require a sequential series of special investigations, and in the case of referrals from elsewhere, time may be spent awaiting submission of further diagnostic material at our request.

10.1.2. If a report is required by a particular date, this should be indicated on the request form. An attempt will be made to accommodate these requests, but a final report by a particular date cannot be guaranteed.

Molecular Pathology

10.1.3. Once genetic testing of choroidal melanoma has been requested, the target turnaround time (from specimen receipt to availability of an authorised report) is 20 days.

10.1.4. It is not always possible to have a final report available within the above stated times. Complex cases may require a sequential series of special investigations, and in the case of referrals from elsewhere, time may be spent awaiting submission of further diagnostic material at our request.

10.1.5. If a report is required by a particular date, this should be indicated on the request form. An attempt will be made to accommodate these requests, but a final report by a particular date cannot be guaranteed.

10.2 Time Limits for Requesting Additional Examinations

10.2.1 Paraffin wax blocks and stained slides are retained for a minimum of 30 years should additional examinations be required.

10.2.2. It is rare that we retain unprocessed tissue as we process all of it in almost all circumstances. Any residual tissue is kept for a maximum of one month after report authorisation.

10.2.3. Residual cytological material is also retained for a minimum of one month post report sign out. After these time limits the material is disposed of in an appropriate manner which maintains patient confidentiality whilst satisfying both local and national guidance. Empty pots are retained for one month post-examination. Any issues relating to samples should be notified back to the department as soon as possible after discovery.

10.3 Clinical Advice and Interpretation

Ophthalmic pathology

10.3.1. Advice to clinicians is readily available at all stages of the diagnostic process, from deciding what material to submit for examination to guidance on interpretation of the final report.

10.3.2. Please feel free to contact the reporting pathologist in the department for discussion of individual cases.

10.3.3. If discussing a report, please quote the Laboratory Number which appears on the report and uniquely identifies the patient and specimen.

10.4 Uncertainty of Measurement Calculations

Ophthalmic pathology

10.4.1. The Department stresses that both macroscopic and microscopic measurements are an approximation and should be viewed within clinical context. The routine processes of fixation, processing, orientation and subsequent staining can have an effect on the size and shape of tissues which can invalidate stated measurements.

Further information is available in the document 'Uncertainty of Measurement Statement' CP-OPAT-POL-5.

Issues with measurements that do not meet clinical requirements should be reported back to the department.

11. USER SATISFACTION

Ophthalmic pathology

11.1. It is our aim to continually provide, maintain and improve the services of our department so that they most suit the needs and requirements of our users and benefit patient care.

11.2. Feedback questionnaires are issued biennially but, in the meantime, we appreciate any comments or suggestions that you consider would improve the quality of services provided.

12. NON-NHS SERVICES PROVIDED BY THE DEPARTMENT

Ophthalmic pathology

12.1 Specimens from Private Patients

Ophthalmic pathology

12.1.1. The department accepts specimens from private patients, for which a charge will be made to the referring clinician. The request form accompanying such a specimen must clearly indicate that the specimen is from a private patient.

12.2 Research

Ophthalmic pathology

12.2.1. Being based in the University Hospital Trust, the ophthalmic pathology department is in an ideal position to provide services to support researchers. Services can range from technical preparation of small numbers of slides to collaborative work with input from one or more consultant ophthalmic pathologists. Please contact the department if you wish to discuss a project.

12.3 Training

Ophthalmic pathology

12.3.1. Both ophthalmologists and histopathologists are welcome to spend time in the department if they wish to learn about ophthalmic pathology, either in preparation for examinations or in order to develop a subspecialist interest. Please contact the consultant ophthalmic pathologist if you wish to arrange a training placement.

13 COMPLAINTS AND COMPLIMENTS

Ophthalmic pathology

The Pathology department deals with complaints in accordance with the Liverpool Clinical Laboratories complaints procedure. We will advise and assist with complaints to the best of our ability, in an open and honest manner.

You may address your complaint or compliment either by telephone, via email, or in writing to the below address:

Please contact:
Mr Simon C. Biddolph
Consultant Biomedical Scientist and Service Manager
Ophthalmic Pathology
5th Floor Duncan Building
Daulby Street
Liverpool
Merseyside
L69 3GA