SPECIMEN COLLECTION MANUAL FOR PHYSICIANS AND INSTITUTIONS OUTSIDE OF THE UNIVERSITY OF IOWA
Enucleation (whole globe/eyeball): ................................................................. 22
Evisceration: ............................................................................................................ 23
Exenteration: .............................................................................................................. 23
Eyelid: ......................................................................................................................... 24
Foreign body: ........................................................................................................... 24
Intraocular lens Implant: ......................................................................................... 24
Iris: ............................................................................................................................. 25
Lacral System (lacrimal gland or sac): ............................................................... 25
Muscle: ..................................................................................................................... 25
Optic Nerve: .............................................................................................................. 26
Ptterygium: ............................................................................................................... 26
Skin: ......................................................................................................................... 26
Trabecular Meshwork: ......................................................................................... 26

PHYSICIAN NOTIFICATION .......................................................................................... 27

STORAGE OF WET TISSUE, OPHTHALMIC PATHOLOGY CONSULTATION REQUEST FORMS, BLOCKS AND SLIDES .......................................................................................................................... 27

References: ............................................................................................................... 28

DIAGNOSTIC VITREOUS BIOPSY – INSTRUCTIONS FOR NON-UIHC PHYSICIANS ...................... 29

CONJUNCTIVAL BIOPSY FOR OCP (OCULAR CICATRICIAL PEMPHIGOID) INSTRUCTIONS FOR NON-UIHC PHYSICIANS ......................................................................................................................... 30

OPHTHALMIC PATHOLOGY CONSULTATION REQUEST FORM FOR OUTSIDE PHYSICIANS AND INSTITUTIONS .......................................................................................................................... 31

REJECTION AND EXEMPTION OF SPECIMENS ...................................................................... 34
Background:

The purpose of the collection manual is to provide specimen collection information to providers outside of the University of Iowa Hospitals and Clinics. This manual is found on the Ophthalmology Department’s website at [http://www.medicine.uiowa.edu/eye/](http://www.medicine.uiowa.edu/eye/). Click on “Patient Care”, then click on “Labs and Screening”, click on “Ophthalmic Pathology”, scroll down to the manual under Information for Physicians & Institutions Outside the University of Iowa.

The F.C. Blodi Eye Pathology Laboratory at the University of Iowa is a division of the Department of Ophthalmology and Visual Sciences and specializes in the processing and interpretation of ophthalmic pathology specimens. The laboratory is one of the oldest and largest of its type in North America. Recognizing that many surgical pathology laboratories may lack expertise in the specialized area of ophthalmic histotechnique, the F.C. Blodi Eye Pathology Laboratory provides services to process and interpret wet tissue samples that are sent as referrals. In addition, the laboratory provides consultation services for microscopic slides from ophthalmic specimens for pathologists throughout the world.

The laboratory director is a board certified ophthalmologist with specialty training in Ophthalmic Pathology. The F.C. Blodi Eye Pathology Laboratory is thoroughly integrated with other specialty laboratories in the Department of Pathology at the University of Iowa. Occasionally, material seen in the Eye Pathology Laboratory will also be seen by other consultants in the Dept. of Pathology.

The F.C. Blodi Eye Pathology Laboratory has earned its accreditation through several regulatory bodies: College of American Pathologists (CAP), and the Centers for Medicare and Medicaid Services (CMS).

Services Offered:

1. The Eye Pathology Laboratory is available to process and/or interpret the following types of ophthalmic specimens:
   a. Autopsy eyes for forensic examinations (especially cases of suspected child abuse)
   b. Ciliary body resections (also known as iridocyclectomy specimens)
c. Conjunctival biopsies (including those for ocular cicatricial pemphigoid)
d. Corneal biopsies (small diagnostic resections of corneal tissue)
e. Corneal buttons
f. Corneal epithelial scrapings (most commonly used to identify Acanthamoeba)
g. Cytology (anterior chamber paracentesis, vitrectomy, corneal scrapings)
h. Enucleation (whole eyes)
i. Eviscerations (internal contents of eyes)
j. Exenterations (orbital contents including the eye)
k. Eyelid biopsies
l. Lens (from cataract surgery)
m. Intraocular lenses
n. Iris biopsies
o. Lacrimal system (gland or sac)
p. Optic nerve
q. Optic nerve sheath
r. Orbital tissue
s. Temporal artery
t. Trabeculectomy specimens
u. Consultations/second opinions on ophthalmic cases from other laboratories

2. A completed Ophthalmic Pathology Consultation Request form should be submitted with specimens.
   a. Blank forms can be printed from our website:
      http://www.medicine.uiowa.edu/eye/path-lab

3. Once a specimen or slide consultation reaches our laboratory, the submitting provider will be informed by FAX that the laboratory has received the specimen or slides.

4. If you do not have access to a FAX machine, we will notify you by phone or by mail only if the case will be delayed due to special studies necessary for diagnosis.

5. We strive for a 2 working day turnaround time for most ophthalmic specimens (i.e.: trabeculectomy, corneal biopsy, corneal epithelial scrapings, corneal button, eyelid biopsies, etc.), UNLESS special studies are necessary for diagnosis.
   a. Turnaround time for enucleation specimens is within 10-14 working days after the receipt of the material.
   b. Turnaround time for exenterations is within 10-14 working days after the receipt of the material.
Value Added Services:

The following services are provided to referring laboratories at no additional charge:

1. Telephone Consultations with Referring Pathologists and Ophthalmologists:
   a. Our laboratory can assist referring pathologists and/or surgeons regarding the best surgical or pathologic technique to achieve an accurate diagnosis.
   b. We will never contact a surgeon without the permission of the pathologist, but we are willing to spend time with ophthalmologists discussing the clinical implications of their patient's diagnoses as appropriate.

Billing Considerations:

1. The patient's insurance is billed unless otherwise requested. Patient billing and demographics information must be provided.
   a. If the patient is covered by insurance or Medicare, these agencies are then billed directly.
   b. The University of Iowa Hospitals and Clinics does accept Medicare assignment.
2. This arrangement eliminates almost all billing paperwork for referring laboratories.
3. On a case by case basis, we can arrange for the referring laboratory to be billed directly.

Fee Schedule:

It is difficult for us to publish a fixed fee schedule that would cover every contingency in ophthalmic pathology. Frequently, the number of blocks and types of special stains required on an ophthalmic specimen cannot be anticipated until the specimen is "grossed." We do not perform "routine panels" of special stains on most ophthalmic specimens to keep the cost to the patient as low as possible. We do encourage referring laboratories to contact us about individual cases so that we may estimate charges based upon a particular specimen and diagnosis.
GENERAL INFORMATION ON COLLECTION AND HANDLING OF SPECIMENS

Laboratory hours:

a. The F.C. Blodi Eye Pathology Laboratory Hours are Monday-Friday, 7:30 am-5:00 PM.

Questions or concerns:

a. If you have any questions or concerns about your patient or their specimen please contact us by phone (319-335-7609), fax (319-335-7193), or e-mail. Please do not include protected health care information in emails:

   Pathologists: Dr. Nasreen A. Syed
   nasreen-syed@uiowa.edu

   Laboratory Supervisor: Sajag Bhattarai
   sajag-bhattarai@uiowa.edu

   Clerks: Peggy Harris
   peggy-harris@uiowa.edu
   Kimberly Jensen
   kimberly-jensen@uiowa.edu

Note: Please see Special Procedure Specimen Collection for instructions on how to handle the following special procedure specimens: Consultation on medicolegal cases, corneal scraping for Acanthamoeba, electron microscopy, fine needle aspiration, immunohistochemistry, a metabolic disease (i.e.: gout, cystinosis, storage disease), slide and block consultations, temporal artery biopsy or vitreous. Prior to performing the surgery, any questions concerning the handling of special procedure specimens or routine specimens should be directed to the Ophthalmic Pathologist, Ophthalmic Pathology Fellow or the Ophthalmic Pathology Supervisor (F.C. Blodi Eye Pathology Laboratory (319-335-7609).

Note: Please see Routine Specimen Collection by Specimen Type for specimens not mentioned in the Special Procedure Specimen Collection.

Filling out the information on the Ophthalmic Pathology Consultation Request form:

a. Ophthalmic Pathology Consultation Request forms are available through the F.C. Blodi Eye Pathology Laboratory and are available for download from our website.

   i. All requests for consultation must be done in writing. Verbal or phone orders are not accepted.
b. The F.C. Blodi Eye Pathology laboratory must have the following information on the requisition prior to processing the specimen (College of American Pathologist regulation).

i. Material submitted (wet tissue, slides or blocks)

ii. Type and location of the tissue submitted: (i.e.: corneal button, left eye)

iii. Clinical history, data and operative findings

iv. Clinical diagnosis

v. Date of surgery

vi. Patient's full name

vii. Patient's address

viii. Date of birth

ix. Gender of patient

x. Name of referring physician/institution and contact information

Note: If there is more than one referring physician, institution and/or pathologist, please indicate this on the requisition so that we may send copies of the final report to the correct individuals and/or institutions. Please include:

xi. Address of each referring physician, institution or pathologist

xii. A HIPAA compliant (secure from the public) fax number to send final report and other correspondence.

xiii. Any special instructions or communications to the laboratory (i.e.: rush or stat cases, instructions/diagram to denote margins, etc.)

Packaging the Specimen:

a. Identification and labeling of specimen containers:

i. Identify and label all specimen containers with the following information:

   a) Two unique patient identifiers (name and medical record number or date of birth)

   b) Physician's name

   c) Type and location of the specimen (i.e.: corneal button, left eye)

   d) Formalin warning label

ii. Make sure that a well-constructed container with a secure lid is used.

iii. Specimen containers must be labeled with the above information at the time of the procedure and before the container leaves the procedure room.
b. Specimens being transported for “diagnostic purposes” are fully regulated by IATA (International Air Transport Association) and the DOT (Department of Transportation).

i. Diagnostic specimens that are not suspected to contain a highly pathogenic organism are shipped as “Exempt Patient Specimens” or “Exempt Animal Specimen” providing:
   a) the specimen has been placed in a fixative.
   b) the fixative is 10% Neutral Buffered Formalin.

ii. The Diagnostic Specimen must be packed in a triple packaging system.
   a) The primary receptacle must be packed in a way, that under normal conditions of transport, they cannot break, be punctured, or leak their contents into the secondary package. This receptacle cannot exceed a volumetric capacity of more than 500 ml.
      i) Lids should be reinforced with tape.
      ii) The primary receptacle must be labeled with a formalin warning sticker.
   b) Absorbent material must be placed between the primary receptacle and the secondary packaging. If more than one receptacle is placed into a single secondary package, wrap each receptacle with absorbent material. The absorbent material must be of sufficient quantity to absorb the entire contents of the primary receptacle(s).
   c) The secondary package must be leak proof and labeled with a biohazard sticker.
   d) The secondary package(s) need to be secured in the outer package with suitable cushioning materials such that any leakage of the contents will not impair the protective properties of the cushioning material.
   e) The patient’s paperwork and an itemized list of contents must be enclosed outside of the secondary package and within the outer package.
   f) For shipments by aircraft, the primary receptacle or the secondary packaging must be capable of withstanding, without leaking, an internal pressure differential of not less than 95 k Pa (95 bar, 14 psi).
   g) The outer package must be marked with:
      i) “Exempt Human Specimen”
   h) The outer package may not exceed 4L (1 gallon) capacity.
   i) The outer package must be at least 4 inches in smallest dimension.
**Shipping Specimens:**

a. Please send specimens to the following address:

   F.C. Blodi Eye Pathology Laboratory  
   The University of Iowa  
   233 Medical Research Center  
   Iowa City, IA  52242-1182

   NOTE: This is a recognized street address for all the major shippers below.

b. As a requirement of our laboratory accreditation by the College of American Pathologists, specimens need to be sent by a carrier that provides:

   i. Training to their personnel in regard to the handling of “Diagnostic Specimens”/Hazardous Substances.

   ii. A tracking system to ensure that all specimens submitted to the F.C. Blodi Eye Pathology Laboratory have been received.

c. The following services provide the above requirements:

   i. Fed Ex  
      a) [www.Fedex.com](http://www.Fedex.com) 1-800-463-3339

   ii. UPS  
      a) [www.ups.com](http://www.ups.com) 1-800-742-5877

   iii. U.S. Mail  
      a) For routine specimens  
      b) Must send by “Delivery Confirmation” or Priority Mail for tracking purposes  
      c) [www.usps.com](http://www.usps.com)

d. If you have any questions on how to send your specimen, please contact the F.C. Blodi Eye Pathology Laboratory at 319-335-7095. We will be happy to assist you.

**Rejection of Specimens:**

1. In order to assist our personnel in processing your specimen or consultation as quickly as possible, please make sure to include all the requested patient information.

2. Specimens received without adequate patient information cannot be processed until the information is received from the referring physician, College of American Pathologists (CAP) and Joint Commission on Accreditation of Hospitals (JCAHO) regulations. This is considered a specimen “rejection”.

   a. If there is incomplete or missing information, our clerical staff will contact your facility in order to obtain the information necessary to process your specimen as soon as possible.
Note: Clerical staff, laboratory supervisor, technicians, and students cannot give patient diagnosis information over the phone; only the pathologist can give this information to a referring physician or pathologist. If information is given over the phone by the pathologist, the conversation will be documented in the Comment section of the final patient report.
SPECIAL PROCEDURE SPECIMEN COLLECTION

The F.C. Blodi Eye Pathology Laboratory should be contacted (319) 335-7609 prior to performing surgery, if any of the following special procedures will be needed on the case; consultation on medicolegal cases, corneal scraping for Acanthamoeba, electron microscopy, conjunctival biopsies for OCP, fine needle aspiration, immunohistochemistry, or if the case is a metabolic disease (i.e.: gout, cystinosis, storage disease), slide and block consultations, temporal artery biopsy or vitreous. These cases will need special handling.

CJD/Creutzfeldt--Jakob Disease:

a. Under no circumstances should tissue from a patient at risk, a known or suspected CJD patient be sent to the F.C. Blodi Eye Pathology Laboratory.

Consultation on Medical Legal Cases:

a. Arrangements: The F.C. Blodi Eye Pathology Laboratory Ophthalmic pathologist or supervisor/manager must be contacted (319-335-7609) prior sending this type of specimen to the laboratory to assure proper handling of the case.

b. Fixation: This will be determined by the type of specimen being sent to the laboratory. Please refer to the area in this manual that covers information concerning the type of specimen you are dealing with before determining fixation. If you have a question concerning the type of fixative necessary, contact the F.C. Blodi Eye Pathology supervisor or technicians for specific instructions.

c. Special Instructions:

i. Please either refer to the area in this manual dealing with the type of specimen you are handling or call the laboratory for instructions on how to handle your case.

ii. Follow the procedures listed under General Information on Collection and Handling of Specimens for proper packaging and labeling of the specimen, how to properly fill out the Ophthalmic Pathology Consultation Request forms and for shipping information.

Corneal Scraping for Acanthamoeba:

a. Arrangements: Follow the special instruction listed below, if you have any questions, please contact the F.C. Blodi Eye Pathology Laboratory (319-335-7095) prior to beginning this procedure.

b. Make sure the following materials are in the room prior to performing the scraping:

i. If you are using the Saccomanno or other cytology fixative:
   a) Spatula for scraping the cornea
b) Sterile container (centrifuge tube, specimen container)

c) Wash/squirt bottle containing cytology fixative such as Saccomanno fixative

d) Ophthalmic Pathology Consultation Request form with the patient information, clinical data, and specimen location (i.e.: corneal scrapping right eye) written on the form.

ii. If you are using the **10% Neutral buffered formalin method**:

a) Spatula for scraping the cornea

b) Slides with one end frosted

c) Coplin jar with 10% neutral buffered formalin

d) Paper towel

c. The following procedural instructions based on the materials available to your institution are:

i. If you have **Saccomanno or other cytology fixative** available use these instructions (this is the preferred method):

a) Have an open sterile container (centrifuge tube, specimen container) available prior to scraping the patient.

b) Using a spatula scrape the patient as usual.

c) Immediately after scraping the patient, using wash bottle containing fixative, wash cells and tissue off spatula and into the sterile container.

d) Make sure not to use more than 0.5 ml of fixative to wash the cells off the spatula.

e) Past experience has shown when more than 0.5 ml of fixative is used, there is usually a sparse cell count per slide. When using 0.5 ml Saccomanno, the lab produces slides with a better cell representation per slide.

f) Take tip of spatula and swirl in the Saccomanno to assure that all of the cells have been removed from the spatula.

g) Place the lid on the container tightly

h) Label the specimen container with the patient’s name and date of birth

ii. If you are using **10% Neutral Buffered Formalin**:

a) Scrape the cornea, immediately smear the scrapings on the clear portion of a clean glass slide. The specimen should be smeared so that the frosted end is facing up.

b) Immediately immerse the slide containing the specimen in the coplin jar containing 10% Neutral Buffered Formalin.
c) Allow the slides to sit in the 10% Neutral Buffered Formalin fixative for 15-20 minutes.

**Note:** DO NOT leave the slides in the formalin more than 15-20 minutes or the tissue may float off the slides.

d) Remove the slides from the fixative.

e) Place the slides tissue side up on a paper towel to air dry.

**Note:** Make sure the side of the slide containing the specimen is right side up or the scraping may be wiped off.

f) After completely air dried, place the slides into a slide mailer (can be provided by the F.C. Blodi Eye Pathology laboratory).

g) Fill out the Ophthalmic Pathology Consultation Request form completely.

**Electron Microscopy:**

a. **Arrangements:** Prior to surgery, contact the F.C. Blodi Eye Pathology Laboratory (319-335-7095) and ask to speak with the ophthalmic pathologist to determine if Electron Microscopy is necessary for the patient’s care or if another test would be more informative.

b. **Fixative:** 2.5% Glutaraldehyde and 10% Neutral Buffered Formalin

c. **Special instructions:**

i. Prior to surgery obtain the following:

a) 50 ml specimen container of 2.5% Glutaraldehyde.

   i) Label the specimen container with the patient's name, date of birth, physician’s name, specimen type (i.e.: cornea, left eye) and percentage of Glutaraldehyde in the bottle.

b) A specimen container with the correct amount of 10% neutral buffered formalin in it.

   i) The amount of formalin in the container will vary with the size of the specimen; however, the fixative should be a minimum of ten times the volume of the specimen being fixed.

   ii) A formalin warning label on the specimen container.

   iii) Label with the patient's name, date of birth, surgeon's name and type and location of the specimen (i.e.: cornea, left eye) on the specimen container.

c) An Ophthalmic Pathology Consultation Request form.

ii. Immediately after removing the tissue from the patient, place half of the tissue into the 2.5% Glutaraldehyde and the other half of the tissue into the 10% Neutral Buffered Formalin.
a) Fill out the Ophthalmic Pathology Consultation Request form completely, using the instructions found under General Information on Collection and Handling of Specimens.

i) When filling out the request form make sure to indicate that one specimen is in 2.5% Glutaraldehyde and that the other is in 10% neutral buffered formalin (i.e.: A. corneal biopsy, left eye in 2.5% Glutaraldehyde for EM studies, B. corneal biopsy, left eye in 10% neutral buffered formalin).

b) If possible, the specimen in 2.5% Glutaraldehyde should be refrigerated until the specimen is shipped to the F.C. Blodi Eye Pathology Laboratory. The 10% neutral buffered formalin specimen can stay at room temperature or can be refrigerated.

c) Both specimens and requisition should be shipped via overnight mail to the F.C. Blodi Eye Pathology Laboratory, unless the specimen is removed on Friday.

i) If the specimen is removed on Friday, refrigerate the specimen until Monday.

ii) On Monday morning ship the both the Glutaraldehyde, 10% neutral buffered formalin specimens and Consultation Requisition form via overnight mail to the laboratory.

d) Send specimens to the address mentioned under General Information on Collection and Handling of Specimens.

Fine Needle Aspirations:

a. Arrangements: No special arrangements are necessary

b. Fixation: This specimen requires a special fixative, Saccomanno cytology fixative, or other ethanol-based cytology fixative.

c. Special instructions:

i. The following materials should be in the surgical suite prior to beginning this procedure.

a) Small gauge needle with cap

b) Syringe

c) An empty sterile specimen container:

i) Label the specimen container with the patient's name and date of birth, surgeon's name, type and location of the specimen (i.e.: cornea, left eye).

d) 10 ml of Saccomanno fixative
e) Ophthalmic Pathology Consultation Request form

ii. The specimen should be removed from the patient and retained in the syringe.

a) A notation should be made on the Ophthalmic Pathology Consultation Request form as to the amount, color and consistency of the fluid removed from the patient (i.e.: 0.2 cc of red-tan colored viscous fluid was removed from the (right or left) eye).

iii. The physician should carefully place the needle into the Saccomanno fixative and draw up an equal amount of Saccomanno fixative into the syringe. The remaining Saccomanno fixative should be discarded.

iv. Next the physician should:

a) Carefully squirt the specimen into the sterile container through the needle and immediately place the lid on the container.

b) Once the entire contents of the syringe have been dispensed into the sterile container, dispose of the syringe needle intact into a bio-hazard sharps container.

v. Seal the lid of the container with parafilm or paraffin wax.

vi. Fill out the Ophthalmic Pathology Consultation Request form completely.

vii. Send the specimen and Ophthalmic Pathology Consultation Request form via overnight mail to the address mentioned under General Information on Collection and Handling of Specimens.

Immunohistochemistry:

a. Arrangements: The F.C. Blodi Eye Pathology Laboratory should be contacted (319-335-7095) with any questions the physician may have. Ordering immunohistochemistry is at the discretion of the pathologist.

b. Fixation: Special arrangements must be made with the F.C. Blodi Eye Pathology pathologist prior to the surgery being performed.

c. Special Instructions:

i. Prior to beginning the surgery, the following should be in the surgical room:

a) A specimen container with the correct amount of 10% neutral buffered formalin in it.

i) A formalin warning sticker on the specimen container.

ii) A label on the specimen container with the patient's name, date of birth, surgeon's name, and type and location of the specimen (i.e.: cornea, left eye).

iii) All patient and referring physician, pathologist or institutions information filled out on the Ophthalmic Pathology Consultation Request form.
ii. Immediately after the specimen has been removed from the patient, place the tissue into the specimen container, make sure the tissue is completely covered with the fixative.

iii. Place the lid on the container properly and tightly to avoid a spill. Follow the procedures listed under General Information on Collection and Handling of Specimens for proper packaging and labeling of the specimen, how to properly fill out the Ophthalmic Pathology Consultation Request forms and shipping information.

**Metabolic Diseases (i.e.: gout, cystinosis, storage disease):**

a. **Arrangements:** If the specimen has a suspected metabolic disease, contact the F.C. Blodi Eye Pathology Laboratory, PRIOR TO REMOVAL OF THE SPECIMEN for special fixation instructions.

b. Tissues must be collected in 100% ethanol.
   i. If tissues are collected in a fixative containing water, the crystals will dissolve.

c. Each specimen is different and must be handled on a case by case basis. Contact the F.C. Blodi Eye Pathology Laboratory for instructions (319)-335-7095.

d. Send the specimen and consultation request form to the address listed under General Information on Collection and Handling of Specimens.

**Slide and/or Block Consultations:**

a. **Arrangements:** No special arrangements are necessary; however, it may be helpful to speak with the Ophthalmic Pathologist prior to sending the slides to discuss any concerns you have regarding the case.

b. **Fixation:** None.

c. **Special Instructions:**
   i. When sending a consultation (slides and/or blocks) to the laboratory we ask that you follow these instructions:
      a) Label the slides with 2 patient identifiers: your lab’s accession number and the patient's name
      b) Place the slides into a plastic slide mailer (holds 1-5 slides).
         i) DO NOT use the cardboard or flat plastic mailers. When slides are received in flat mailers they can be damaged beyond repair.
      c) If you have blocks to send, wrap them in some kind of tissue paper (Kleenex, paper towel) and secure it with tape.
      d) Fill out the Ophthalmic Pathology Consultation Request form completely.
ii. Follow the procedures under General Information on Collection and Handling of Specimens for how to properly fill out the Ophthalmic Pathology Consultation Request forms and specimen sending information.

**Temporal Artery Biopsies:**

a. **Arrangements:** No special arrangements are necessary.

b. **Fixation:** 10% Neutral buffered formalin

c. **Special Instructions:**

i. Prior to beginning the surgery for a TA biopsy, the following should be in the surgical room:

a) A specimen container with the correct amount of 10% neutral buffered formalin in it.

b) A formalin warning label on the specimen container.

c) Label with the patient's name, date of birth, surgeon's name and type and location of the specimen on the specimen container.

d) An Ophthalmic Pathology Consultation Request form.

ii. Immediately after the TA biopsy specimen has been removed from the patient, place the tissue into the container of 10% neutral buffered formalin, make sure the tissue is completely covered with the 10% neutral buffered formalin.

a) The amount for TA biopsies should be at least 25-30 ml of 10% neutral buffered formalin in the container.

iii. Seal the lid with either parafilm or paraffin (see Collection and Handling of Specimens for proper packing of the specimen).

iv. Follow the procedures under General Information on Collection and Handling of Specimens for proper packing of the specimen, labeling of the specimen, how to properly fill out the Ophthalmic Pathology Consultation Request forms and specimen sending information.

**Vitreous Biopsy:** (Intraocular biopsy, fluid and tissue fragments from inside the eye)

a. **Arrangements:** The F.C. Blodi Eye Pathology Laboratory (319-335-7609) should be notified in advance about diagnostic vitrectomy procedures. Time is often of the essence in obtaining and handling the specimen.

b. **Fixation:** Saccomanno or other cytology fixative: an equal amount of fixative added to the specimen.

c. **Special Instructions:**

i. Detailed instructions for obtaining and submitted vitreous biopsies to the Blodi Lab can be found below. (Diagnostic Vitreous Biopsy; Instructions for Non-UIHC Physicians). These instructions can also be found on our website
ii. The specimen, preferably a concentrated aspirate, should be placed in cytology fixative and sent as soon as possible to the laboratory. Our laboratory uses a commercial cytology fixative known as Saccomanno fixative. If you would like us to send you the fixative, please notify us at least one week prior to the procedure.

a) The physician will then gently transfer the specimen mixed with fixative into the empty specimen container from the syringe.

b) Never send syringes with needle attached to the pathology lab.

c) Seal the specimen tube closed and gently agitate the tube to mix the specimen and fixative for complete fixation.

d) Place the specimen tube into the Biohazard bag.

e) Fill out Ophthalmic Pathology Consultation Request form completely and place it in the outer pocket of the specimen biohazard bag.

f) Indicate the physician who should be contacted for a verbal report of results on the form.

g) If a portion of the specimen is sent to another laboratory for flow cytometry or other studies, please tell us on the request form and include name of the other lab so that we may contact them for results (we do not do flow cytometry in this lab).

h) Keep the specimen at room temperature. Never refrigerate or place these specimens on ice as cells degenerate faster.

iii. Follow the procedure under General Information on Collection and Handling of Specimens for proper packing and labeling of the specimen, how to properly fill out the Ophthalmic Pathology Consultation Request forms and specimen sending information.

**ROUTINE SPECIMEN COLLECTION BY SPECIMEN TYPE**

**Autopsy eye:**

a. **Special Arrangements:** Contact the F.C. Blodi Eye Pathology Laboratory in advance of the removal of the eyes.

b. **Fixation:** 10% neutral buffered formalin.

c. **Special Instructions:**

i. Immerse the specimen in a sufficient quantity of fixative so that the eye is covered completely by the fixative.
ii. **DO NOT** wrap the tissue in gauze or other types of toweling as they will absorb the fixative and parts of the eye may not be covered by the fixative.

iii. Make no holes or incisions in the globe as this will complicate the diagnosis and may destroy pertinent diagnostic information.

iv. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.

v. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Ciliary body:** *(iridocyclectomy specimen)*

a. **Special Arrangements:** No special arrangements necessary

b. **Fixation:** 10% neutral buffered formalin.

c. **Special Instructions:**

i. Because this specimen is usually taken for tumor, a study of the resection margins is important. Please make a diagram on the Ophthalmic Pathology Consultation Request form indicating the location of the tumor in the eye so that the medial and temporal resection margins can be distinguished in the specimen.

ii. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.

iii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Conjunctiva:**

a. **Special Arrangements:** No special arrangements are necessary

b. **Fixation:** 10% neutral buffered formalin.

c. **Special Instructions:**

i. Conjunctival tissue should be handled according to the following protocol to prevent curling of the tissue:

a) Spread the conjunctiva onto a flat, absorbent surface such as the paper wrapping for sterile gloves or the card around which sutures are wrapped. Some surgeons have used their business cards for this purpose. Another surface suggested for this purpose is filter paper.

b) Allow the conjunctival tissue to become adherent to the surface for approximately 10-15 seconds.
c) When the tissue is adherent to its support, float the supporting surface and tissue onto formalin with the tissue surface **facing up**. The absorbent material will soak up fixative and sink. The specimen will be received in the pathology laboratory with its proper orientation preserved.

d. It is important that an accurate clinical diagnosis or differential diagnosis accompany the specimen. For example, conjunctival biopsies to rule out sarcoid are **handled differently** by the grossing pathologist from biopsies for suspected neoplasms.

i. Please indicate if the biopsy is to rule-out the diagnosis of sarcoid on the pathology request form.

ii. Conjunctival biopsies for ocular cicatricial pemphigoid (OCP) require 2 pieces of tissue. One should be submitted in Michel medium for direct immunofluorescence (DIFM), and the other in formalin for light microscopy. For detailed information, see [below](Conjunctival Biopsy for OCP; Instructions for Non-UIHC Physicians). These instructions can also be found on our website [https://medicine.uiowa.edu/eye/path-lab](https://medicine.uiowa.edu/eye/path-lab) under Information for Physicians & Institutions Outside the University of Iowa.

e. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.

f. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Corneal buttons (Special):**

a. **Special Arrangements:** Please contact the F.C. Blodi Eye Pathology laboratory (319-335-7609) before surgery when the anticipated diagnosis will require: (1) electron microscopy, (2) immunopathology, or (3) the detection of crystalline substances, especially urate crystals.

b. **Fixation:** Dependent upon type of test required, typically 10% neutral buffered formalin.

c. **Special Instructions:**

i. Corneal buttons should not be allowed to desiccate in the operating room before being placed into fixative. Because it may be important to wait until donor tissue is secured into place, place the host material into tissue culture medium or saline until the surgeon considers the circumstances of the operation "safe enough" to transfer the host tissue into the proper fixative.

ii. Follow the instructions listed under Special Procedure Specimen Collection for how to handle electron microscopy, immunopathology or detection of crystalline substances (urate crystals) specimens.
d. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.

e. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Corneal Buttons (routine):**

a. Special Arrangements: No special arrangements are necessary

b. Fixation: 10% neutral buffered formalin.

c. Special Instructions:
   
   i. Follow the instructions listed under General Information for Routine Specimen Collection for proper handling and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.

   ii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Descemet Membrane:**

a. Arrangements: No special arrangements are necessary

b. Fixation: 10% neutral buffered formalin

c. Special Instructions:

   i. Follow the instructions listed under General Information on Collection and Handling of Specimens (beginning on page 1).

**Enucleation (whole globe/eyeball):**

a. Special Arrangements: Contact the F.C. Blodi Eye Pathology laboratory (319-335-7609) in advance of the removal of the eye if special studies (such as electron microscopy) are to be performed on the tissue.

b. Fixation: 10% neutral buffered formalin.

c. Special Instructions:

   i. Immerse the specimen in a sufficient quantity of fixative so that the eye is covered completely by the fixative.

   ii. **DO NOT** wrap the tissue in gauze or other types of toweling as they will absorb the fixative and parts of the eye may not be covered by the fixative.

   iii. Make no holes or incisions in the globe as this will complicate the diagnosis and may destroy pertinent diagnostic information.
iv. It is important that a complete clinical history accompany the specimen (i.e.: a list of any previous surgeries performed on the eye that may alert the pathologist to the presence of an intraocular lens or a surgical wound).

v. If an eye is removed for tumor, provide a copy of the fundus drawing so that the eye may be opened in an appropriate plane.

vi. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.

vii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Evisceration:**

a. **Special Arrangements:** No special arrangements are necessary

b. **Fixation:** 10% neutral buffered formalin.

c. **Special Instructions:**
   i. Follow the instructions listed under General Information for Routine Specimen Collection.

**Exenteration:**

a. **Special Arrangements:** No special arrangements are necessary

b. **Fixation:** 10% neutral buffered formalin.

c. **Special Instructions:**
   i. Please be certain to have all aspects of this large specimen completely covered by fixative.
   
   ii. **DO NOT** wrap the tissue in gauze or other types of toweling as they will absorb the fixative and parts of the eye may not be covered by the fixative.
   
   iii. Make no holes or incisions in the globe as this will complicate the diagnosis and may destroy pertinent diagnostic information.
   
   iv. Mark tissue with suture so that specimen can be oriented.
   
   v. It is important that a complete clinical history accompany the specimen (i.e.: a list of any previous operations performed on the eye may alert the pathologist to the presence of an intraocular lens or a surgical wound).
   
   vi. Indicate the location of any tumor present.
   
   vii. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.
viii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

Eyelid:

a. **Special Arrangements:** No special arrangements are necessary

b. **Fixation:** 10% neutral buffered formalin.

c. **Special Instructions:**
   i. If the resection margins are important, please make a diagram on the Ophthalmic Pathology Consultation Request form indicating the location of the tumor or area of interest in the eyelid so that the resection margins can be distinguished in the specimen. Also, mark the tissue with sutures (typically 90 degrees apart) to assist in orienting the specimen.
   
   ii. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.

   iii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

Foreign body:

a. **Special Arrangements:** Please contact the F.C. Blodi Eye Pathology Laboratory (319-335-7609) prior to sending the foreign body to the laboratory to determine if pathologic assessment is appropriate.

b. **Fixation:** None.

c. **Special Instructions:**
   i. Special instructions will be provided on a case by case basis, please contact the F.C. Blodi Eye Pathology Laboratory ((319)-335-7095) for instructions.

Intraocular lens Implant:

a. **Special Arrangements:** No special arrangements are necessary

b. **Fixation:** None.

c. **Special Instructions:**
   i. Please provide the name of the manufacturer of the lens together with the model number or style of the lens.
   
   ii. Important for future medico-legal considerations.
**Iris:**

a. **Special Arrangements:** If the iris is removed for a suspected tumor, please see instructions listed above under ciliary body (iridocyclectomy) specimens.

b. **Fixation:** 10% neutral buffered formalin.

c. **Special Instructions:**
   
i. There are no special instructions if the iris is removed at the time of glaucoma filtering procedures.

ii. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.

iii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Lacrimal System (lacrimal gland or sac):**

a. **Special Arrangements:** If material is being sent for flow cytometry, please contact the F.C. Blodi Eye Pathology Laboratory (319-335-7609) for instructions prior to surgery. Flow cytometry is not performed in the Blodi Eye Pathology Laboratory.

b. **Fixation:** 10% neutral buffered formalin, unless specimen is for immunopathology then contact the F.C. Blodi Eye Pathology laboratory for instructions on how to handle the tissue prior to surgery.

c. **Special Instructions:**
   
i. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.

ii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Muscle:**

a. **Special Arrangements:** When sending tissue for Neuromuscular disease, you must first contact Dr. Steven Moore in the Department of Pathology (Email steven-moore@uiowa.edu, Phone 319-384-9084).

b. **Fixation:** per Dr. Moore.

c. **Special Instructions:**
   
i. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.
ii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Optic Nerve:**

a. **Special Arrangements:** No special arrangements are necessary  
b. **Fixation:** 10% neutral buffered formalin.  
c. **Special Instructions:**  
   i. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.  
   ii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Pterygium:**

a. **Special Arrangements:** No special arrangements are necessary  
b. **Fixation:** 10% neutral buffered formalin  
c. **Special Instructions:**  
   i. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.  
   ii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Skin:**

a. **Special Arrangements:** No special arrangements are necessary  
b. **Fixation:** 10% neutral buffered formalin  
c. **Special Instructions:**  
   i. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.  
   ii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

**Trabecular Meshwork:**

a. **Special Arrangements:** No special arrangements are necessary  
b. **Fixation:** 10% neutral buffered formalin
c. Special Instructions:
   i. Follow the instructions listed under General Information for Routine Specimen Collection for proper packaging and labeling of routine specimens and how to fill out the Ophthalmic Pathology request form.
   ii. Follow the procedure under General Information on Collection and Handling of Specimens for proper specimen sending information.

PHYSICIAN NOTIFICATION

1. If the specimen diagnosis is critical to the patient’s treatment and requires immediate attention, the ophthalmic pathologist will contact the submitting physician by telephone as soon as the diagnosis is complete.
   a. The above information is noted in the “Comment” section of the final report along with the following information:
      i. Date
      ii. Time
      iii. First and last name of person notified

2. Final reports are faxed back to the referring physician or laboratory (if a HIPAA-compliant fax machine is available at that facility).

3. Hard copies of each report are also sent by mail to the referring physician.

STORAGE OF WET TISSUE, OPHTHALMIC PATHOLOGY CONSULTATION REQUEST FORMS, BLOCKS AND SLIDES

1. If there is any remaining wet tissue from the case it is saved and retained for at least 5 years.

2. The original Ophthalmic Pathology Consultation Request forms are retained for 5 years.
   a. Ophthalmic Pathology Consultation Request forms are scanned into the electronic medical record and become part of the patient’s permanent medical record.

3. The slides and blocks created from the patient's specimen are retained indefinitely.

4. Consultation slides and/or blocks received from outside facilities are kept for 3 months after the final report and then will be sent back to that facility unless an earlier return is requested by the referring physician or pathologist.

5. If we keep the consultation slides and blocks, they will be marked with our accession number and filed with our other slides and blocks, which are retained indefinitely.


**References:**


Aldrich: Catalog and Handbook of Fine Chemicals; Aldrich Chemical Co., Inc.; Milwaukee, WI; 1986.

Safety Data Sheets.
DIAGNOSTIC VITREOUS BIOPSY – INSTRUCTIONS FOR NON-UHC PHYSICIANS

F.C. Blodi Eye Pathology Laboratory
233 Medical Research Center
Iowa City, IA 52242-1142
Phone: 319-335-7609
FAX: 319-335-7193

✓ The F.C. Blodi Eye Pathology Laboratory does accept vitreous biopsies for diagnostic cytology. The laboratory does not do flow cytometry, microbiology cultures or molecular studies such as PCR to look for pathogens. Please do not send our lab specimens for any of these other studies.

✓ The F.C. Blodi Eye Pathology Laboratory should be notified in advance about diagnostic vitrectomy procedures. Time is often of the essence in obtaining and handling the specimen.

✓ The specimen, preferably a concentrated aspirate should be placed in cytology fixative and sent as soon as possible to the laboratory. Our laboratory uses a commercial cytology fixative known as Saccomanno fixative (blue liquid). If you would like us to send you the fixative, please notify us at least 1 week prior to the procedure.

  ➢ The physician will then gently transfer the specimen mixed with fixative into the empty specimen container from the syringe.
    ▪ Never send syringes with needle attached to the lab.
  ➢ Seal the specimen tube closed and gently agitate the tube to mix the specimen and fixative for complete fixation.
  ➢ Place the specimen tube into the Biohazard bag.
  ➢ Fill out an Eye Pathology request form completely and place it in the outer pocket of the specimen biohazard bag.
    ▪ Indicate the physician who should be contacted for a verbal report of results on the form.

  ➢ If a portion of the specimen is sent to another laboratory for flow cytometry or other studies, please tell us on the request form and include name of the other lab so that we may contact them for results (we do not do flow cytometry in this lab). We may need this information to make an accurate diagnosis.

  ➢ NOTE: Keep the specimen at room temperature. Never refrigerate or place these specimens on ice as cells degenerate faster.

  ➢ Pack the specimen as instructed for shipping.

✓ The specimen should be sent to the Blodi Eye Pathology Laboratory at the address located at the top of this page via overnight shipping service with package tracking. We are not a division of the main pathology lab at the Univ. of Iowa so please use the address above (the address above is a legal street address for shippers).

NOTE: The laboratory strongly discourages the surgeon from performing vitreous biopsies on a Friday or the day before a major holiday, since the laboratory is not open on weekends and major holidays to accept the specimen shipment. Cellular material can degrade over the extended period of time that the specimen sits, even if in cytology fixative.
CONJUNCTIVAL BIOPSY FOR OCP (OCULAR CICATRICIAL PEMPHIGOID) INSTRUCTIONS FOR NON-UHIC PHYSICIANS

- The F.C. Blodi Eye Pathology Laboratory does accept conjunctival biopsies for evaluation for ocular cicatricial pemphigoid (OCP). We do this in partnership with the University of Iowa Diagnostic Laboratories (UIDL).

- When sending tissue to make the diagnosis of OCP, 2 specimens need to be obtained, 1 for light microscopy (in formalin) and 1 for direct immunofluorescence (in transport medium). The specimens should both be from the same eye (i.e. right or left). The specimen in formalin will be processed in the Eye Pathology Laboratory. The immunofluorescent studies will be performed in the Immunopathology division of the Pathology Laboratory at the University of Iowa Hospital and Clinics.

- Each piece of tissue should be a minimum of 5 mm in length.

- Both pieces of tissue (formalin-fixed and transport medium) can be sent to the Blodi Eye Pathology Lab.

- The portion for light microscopy should be placed in 10% neutral buffered formalin in a tightly-sealed container labeled with the patient’s name, date of birth, and specimen source.
  - Place the specimen container into a Biohazard bag.
  - Fill out the Eye Pathology Consultation request form completely and place it in the outer pocket of the specimen biohazard bag.
  - The portion for direct immunofluorescence should be placed in Michel medium in a tightly sealed container labeled with the patient’s name, date of birth, and specimen source. Place the specimen container into a separate Biohazard bag.
  - Michel transport medium is commercially available, may be obtained from your local pathology lab or can be obtained by calling the University of Iowa Diagnostic Laboratories at the numbers above. The Blodi Eye Pathology laboratory does not supply this medium. Specimens in Michel medium can be transported at room temperature (no ice needed).

- Pack the specimen as instructed for shipping.

- Ship the tissue as soon as possible. Overnight shipping is recommended.

**NOTE:** The Blodi Lab does not accept packages on weekends or holidays so please factor this into your biopsy planning.

- Specimen Transportation
  - Shipping address (this is a real street address):
    F.C. Blodi Eye Pathology Laboratory
    University of Iowa
    233 Medical Research Center
    Iowa City, IA 52242-1182
    Phone: 319-335-7609
  - Results will be issued as a single report with results of both direct immunofluorescent studies and light microscopy.
OPHTHALMIC PATHOLOGY CONSULTATION REQUEST FORM FOR OUTSIDE PHYSICIANS AND INSTITUTIONS

1. The F.C. Blodi Eye Pathology laboratory must have the following information on the requisition prior to processing the specimen (College of American Pathologist regulation).
   a. Material submitted (wet tissue, slides or blocks)
   b. Type and location of the tissue submitted: (i.e.: Corneal button, left eye)
   c. Clinical history, data and operative findings
   d. Clinical diagnosis
   e. Date of surgery
   f. Patient's complete name
   g. Patient's address
   h. Sex of patient
   i. Date of birth or age of patient
   j. Name of each referring physician, institution or pathologist

Note: If there are more than one referring physician, institution and/or pathologist, please indicate this on the requisition so that we may send copies of the final report to the correct individuals and/or institutions.

k. Current address of each referring physician, institution or pathologist

l. Current HIPAA compliant (secure from public) fax number for each referring physician, institution or pathologist

m. Any special instructions or communications to the laboratory (i.e.: rush or stat cases, instructions to understand margins, etc.)

2. Please send to the following address:

   F.C. Blodi Eye Laboratory
   Dr. Nasreen Syed
   Room 233 MRC
   Iowa City, IA  52242-1182

   a. If the specimen is rush (any of the special procedure specimens) use overnight shipping.
b. If the specimen is routine, using a second day air or ground transportation should be sufficient as long as the tissue is stored in 10% neutral buffered formalin.
REJECTION AND EXEMPTION OF SPECIMENS

1. In order to assist our personnel in processing your specimen or consultation as quickly as possible, please make sure to include all of the requested patient information.

2. Specimens received without proper patient information cannot be processed until the information is received from the primary care physician, College of American Pathologists (CAP) and Joint Commission on Accreditation of Hospitals (JCAH) regulations.
   
a. If there is incomplete or missing information our secretarial staff will contact your facility in order to obtain the information necessary to process your specimen as soon as possible.

Note: Secretaries, laboratory supervisor, technicians, and students cannot give patient diagnosis information over the phone; only the Ophthalmic pathologist can give this information to a referring physician or pathologist. If information is given over the phone by the pathologist, the conversation will be documented in the final patient report for permanent record.