

**Wpc1**

---

**From:** Mendes, Maria  
**Sent:** Friday, April 20, 2007 3:43 PM  
**To:** Mullen, Dr. Brendan  
**Cc:** Kuruzar, Gordana; Ni, Ruoyu; D'Mello, Vince  
**Subject:** ER/PR Newfoundland  
**Attachments:** IHC ERPR SOP.doc; ERPR SOP.doc; Dr. Mullen.xls; ER Protocol.doc; PR Protocol.doc

Hi Dr. Mullen,

This was the information I had sent Newfoundland on a previous occasion. Gordana will add the clone # to the SOP. I have also attached the the excel sheet showing all your results as well as which instrument was used and which dilution since there was some adjustments made when we changed instruments.

Let me know if this looks O.K. I will send it to the person requesting the information.

Maria

PATHOLOGY AND LABORATORY MEDICINE  
Mount Sinai Hospital  
Toronto, Canada M5G 1X1

---



## ER/PR

### Immunohistochemistry (IHC) Standard Operating Procedure

#### Special Histology Hard Tissue Procedure Manual

#### Project Specific Protocol

Authorization by Study Director: \_\_\_\_\_ Date: \_\_\_\_\_  
Dr. Brendan Mullen

Written by: \_\_\_\_\_ Date: \_\_\_\_\_

PATHOLOGY AND LABORATORY MEDICINE

Mount Sinai Hospital

Toronto, Canada M5G 1X1

---

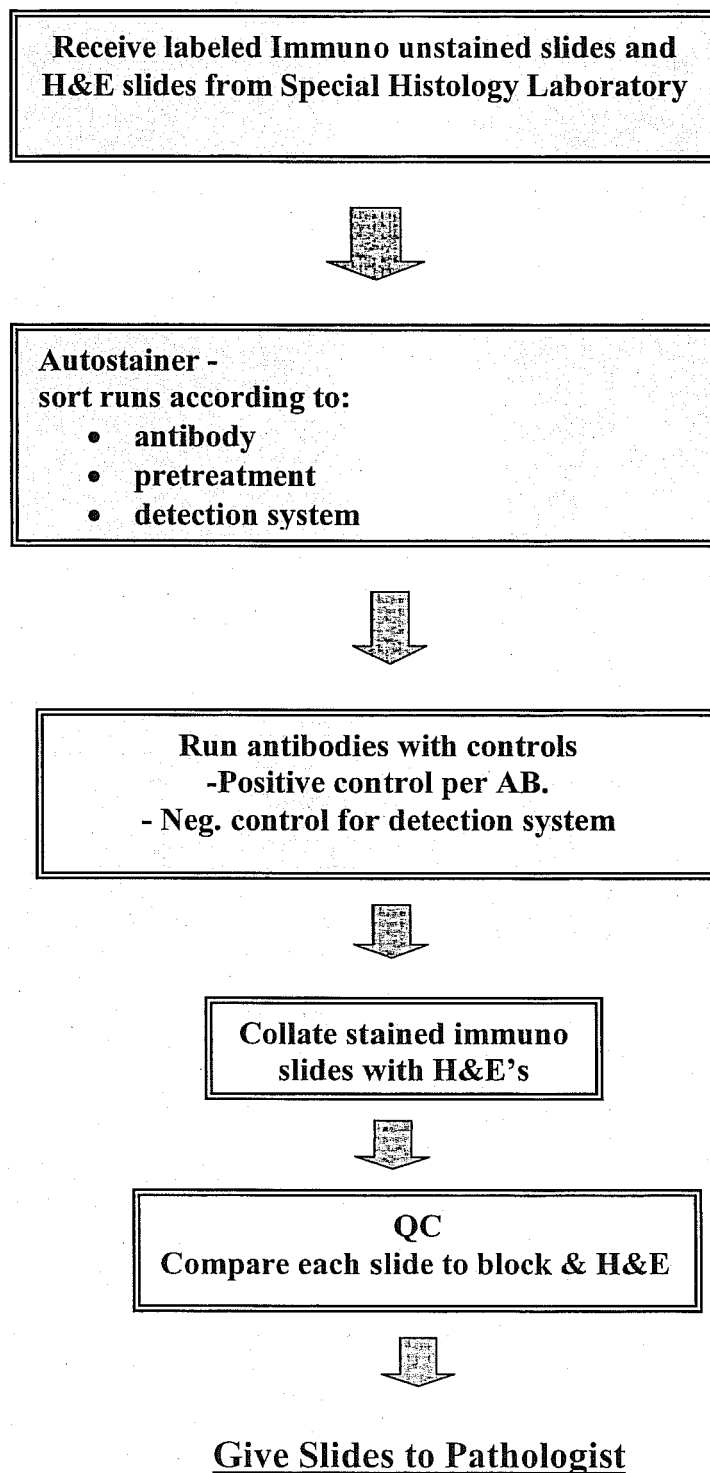
## Table of Contents

<b>Flowchart</b>	<b>3</b>
<b>Principle of IHC</b>	<b>4</b>
<b>Detection Systems</b>	<b>4</b>
<b>Methodologies - Automated</b>	<b>4</b>
<b>Quality Control</b>	<b>7</b>

PATHOLOGY AND LABORATORY MEDICINE  
Mount Sinai Hospital  
Toronto, Canada M5G 1X1

---

### Overview Flowchart



PATHOLOGY AND LABORATORY MEDICINE  
Mount Sinai Hospital  
Toronto, Canada M5G 1X1

---

## **Principles of Immunohistochemistry:**

Refer to *Histology/Immunohistochemistry procedure manual SOP# 3:Principles of Immunohistochemistry*

## **Detection Systems:**

Optimal antibody titer and detection system are predetermined for each of the antibodies to be run and the information recorded.

## **Methodologies**

First few runs (refer *Attached Excel Sheet*) are run on DAKO Autostainer (refer *Histology/Immunohistochemistry SOP*). After validation and correction of Antibody dilution the project is continued on LabVision Autostainer 720.

## **Automated IHC Method:**

### **Programming the Autostainer - LabVision 720:**

All information regarding antibody titer and detection system used is preprogrammed into the computer in the protocol template. (refer to *Labvision manual, section 13.6.1 Creating a New Staining Program*).

### **Organization of Slides:**

Group the slides in accordance with the antibody, stated on the QC Antibody chart. Both antibodies (ER and PR) using Horse anti-mouse (HAM)/Elite-ABC detection system and grouped together on the same run. Positive controls for each antibody are included. The decision to use negative controls for every block is left up to the discretion of the pathologist. (refer to *Attached Excel sheet*).

PATHOLOGY AND LABORATORY MEDICINE  
Mount Sinai Hospital  
Toronto, Canada M5G 1X1

---

### **Pretreatment:**

#### **Blocking endogenous pigments:**

Interstitial peroxidase activity may be present in the tissue sections. In order to suppress endogenous peroxidase activity in formalin fixed tissue, perform the following:

Deparaffinize the slides and take down to water using descending grades of alcohol. Block the endogenous peroxidase activity by using a 3% aqueous solution of hydrogen peroxide for a 15 minutes. Wash well in 2 changes of tap water.

#### **Antigen Retrieval:**

In order to unmask the antigen sites the Microwave Antigen Retrieval method is employed using the Micromed TT Mega with Tris Buffer pH 9.0 for both the antibodies. The method can be found in the *Histolgy/Immunohistochemistry procedure manual SOP#4*.

### **Blocking of Non-Specific binding of Endogenous Avidin/Biotin Activity**

Biotin is distributed in a wide variety of tissues. These tissues may bind avidin, biotinylated horseradish peroxidase or other Biotin/Avidin system components which cause non-specific binding. This occurrence can be suppressed by adding Avidin to the normal blocking serum and biotin to the primary.

### **Setting up the grid and map on the Autostainer:**

The autostainer capacity is 84 slides depending on the number of antibodies and the number of detection systems used. Program the autostainer with the number of slides for the antibodies being run. The detection system information is pre-programmed into the computer. The software devises a map and a grid of the antibodies to be tested. The map and the grid for each run are saved, printed out, and logged.

PATHOLOGY AND LABORATORY MEDICINE  
Mount Sinai Hospital  
Toronto, Canada M5G 1X1

---

## **Preparing reagents for the Run**

### **Antibody Preparation:**

The optimal dilutions (*refer Routine Antibody Data Sheet*) of the primary antibodies are made up according to the volumes stated on the Reagent map. The primary antibodies are diluted in Antibody diluent with the addition of Biotin. The quantities are prepared fresh for each run.

The blocking serum plus Avidin, the secondary and the tertiary antibodies are made up in Tris buffered saline and measured into the reagent vials according to the volumes stated on the reagent map.

## **Loading the Autostainer**

The slides are loaded in the autostainer in accordance with the map. The positions of the reagent vials in the rack are checked against the map.

## **Completing the Staining Run**

At the end of the staining run, save the Run Log. Remove the slides from the machine. Click on the Clean button to run the clean cycle.

## **Counterstaining the slides**

Wash the slides in running water for a few seconds. Counterstain in Mayer's Hematoxylin, followed by washing in warm running water. Differentiate 10-20 seconds in Scott's Tap Water followed by washing in warm running water. Dehydrate clear and mount. The slides are then collated with their corresponding Hematoxylin and Eosin stained slide.

PATHOLOGY AND LABORATORY MEDICINE  
Mount Sinai Hospital  
Toronto, Canada M5G 1X1

---

## **Quality Control**

The quality control performed for the project is in compliance with standard laboratory practices (refer to *Histology/Immunohistochemistry procedure manual SOP#10 Quality Control Program*).

Each antibody tested is run with a positive control. Negative controls were run on each patient block at the beginning of the project. After Pathologist review it was decided that no Negative control per block would be required. Instead there was one Negative control per run (refer to *Attached Excel Chart*). The control slides are dated along with the test slides that are run in the same batch and the positive control slides are filed in the laboratory archive. The Negative control slides / per block/ are filed with the test project slides. The Negative control slide /per run/ will be kept at our location.

Upon completion of staining, each IHC stained slide is compared to the block it was cut from and its corresponding H&E slide.

Each slide stained is checked microscopically for stain and section quality this is recorded on the **ER/PR QC sheet**.

All discrepancies that arise during processing, cutting, and staining are recorded on a "Quality Assurance Problem Sheet." The description of the problem and the follow-up and/or corrective action are included on this document. These sheets are kept in the "QC Documentation 2005" project binder.



ER/PR Retrospective Study, Special Histology, Hard Tissue Division  
PATHOLOGY AND LABORATORY MEDICINE  
Mount Sinai Hospital, Toronto, Canada M5G 1X5

---



# ER/PR

## S.O.P. FOR ER/PR RETROSPECTIVE STUDY

### Special Histology Hard Tissue Procedure Manual

#### Project Specific Protocol

Authorization by Study Director: \_\_\_\_\_ Date: \_\_\_\_\_  
Dr. Brendan Mullen

Written by: \_\_\_\_\_ Date: \_\_\_\_\_

## **SPECIMEN RECEIVING**

All specimens were received in clear transport bags with the surgical report and the corresponding block(s). Specimens were accessioned and given an RS number (indicating the research laboratory) and labels were affixed to the attached surgical report and the wax block(s). Any block/surgical number discrepancies, however minor, were noted on an Excel spreadsheet and the requesting hospital was notified via e-mail.

An Excel spreadsheet was created to document the following information: RS#, specimen# (requesting hospital's surgical number), patient name, block(s) received and site. Slide box numbers (storage for stained slides) were also noted on this spreadsheet along with ER/PR results and staining information.

Another Excel spreadsheet was created listing specimens that were requested for HER 2 neu staining and specimens that were to be taken out of the retrospective study and treated as a routine surgical consult. These blocks were returned upon completion of the surgical report. The blocks in the retrospective study were kept at Mount Sinai until notification was received to return all blocks, along with stained slides.

## **SPECIMEN PROCESSING**

Specimens did not require processing, as wax blocks were received.

## **CUTTING AND STAINING**

All wax blocks were cut in accordance with immunohistochemical procedures. Blocks were cut at 4 microns, picked up onto 6 RS# labeled charged slides (H&E, ER, PR, negative control and 2 spare slides), rolled and melted briefly on a 60°C hotplate. Cut slides were then dried in a 37°C oven overnight and stained the following day. Slides that were not stained were stored at 4°C until required.

Refer to the Research IHC Standard Operating Procedure for ER/PR for staining overview.

## **PAPERWORK**

Results were e-mailed via the Excel spreadsheet as they became available. All Excel spreadsheets listing specimens received, block discrepancies and consults will be printed out and sent out along with the stained slides and blocks via FedEx.

## **PATHOLOGIST COMPONENT**

The code used is as follows:

**RS#** - our research number

**SPECIMEN#** - your case number

**PATIENT NAME** - patient's name

**BLOCK** - block number supplied

**COMMENTS** - discrepancies in block information/hospital of origin

**Tumour** = tumour type with the following descriptions:

**D** = ductal

**DL** = ductal with lobular features

**DT** = ductal with tubular features

**L** = lobular

**PAP** = papillary

**DCIS** = ductal carcinoma in situ

**DCIS/M** = ductal carcinoma in situ with microinvasion (<1mm)

**C** = colloid

**T** = tubular

**MCa** = metastatic CA

**EPAP** = encysted papillary in situ carcinoma

**DA** = ductal carcinoma with apocrine features

**EIC** = extensive DCIS (>25%),

**M** = metaplastic carcinoma

**AC** = adenoid cystic carcinoma

**CaNOS** = unclassified carcinoma

**PU** = pickup with tumour adherent to tissue

**NT** = no tumour

**ER** = % cells positive 6F11, LSAB procedure

**PR** = % cells positive PGR1294, LSAB procedure

**IC** = internal controls with the following comments:

**P** = present but not stained

**PS** = present and stained

**PSW** = present and stained weakly

**A** = absent

**F/P** = fixation and processing with the following comments:

**A** = adequate and

**P** = poor

Threshold for positive ER/PR result: staining of any intensity in >1% invasive tumour cells

Positive and negative laboratory external controls stained appropriately