Title: Leica DME Microscope

Approvals:
Preparer: _____Kari Britt_____ Date __03Aug10_____
Reviewer:_____Sonia Wallman_____ Date __03Aug10_____

1. **Purpose:** Operation of the Leica DME microscope.
2. **Scope:** Applies to the proper usage of the Leica DME microscope.
3. **Responsibilities:**
   3.1. It is the responsibility of the course instructor /lab assistant to ensure that this SOP is performed as directed and to update the procedure when necessary.
   3.2. It is the responsibility of the students/technicians to follow the SOP as described and to inform the instructor about any deviations or problems that may occur while performing the procedure.
4. **References:**
   4.1. Leica DME instruction manual
   4.2. autoclave SOP
5. **Definitions:** N/A
6. **Precautions:**
   6.1. Use care when handling biological materials. Wear gloves at all times.
7. **Materials:**
   7.1. Leica microscope
   7.2. plastic protective cover
   7.3. power cord
   7.4. immersion oil
   7.5. specimen slide
   7.6. cover slips
   7.7. 70% IPA
   7.8. lab tissue
   7.9. lab towels
   7.10. sharps container
   7.11. biohazard container
   7.12. autoclave
8. **Procedure:**
   8.1. **Operation**
      8.1.1. Always use your microscope on a hard stable secure surface.
      8.1.2. Remove plastic protective dust cover from microscope.
      8.1.3. Verify that the power cord is plugged into an appropriate power source if necessary. Refer to Figure 1.
      8.1.4. Turn on illumination for the microscope by rotating the illumination power switch on the bottom left side of microscope by turning it towards the operator. Refer to Figure 1.
      8.1.5. Set the illumination control to the lowest setting.
      8.1.6. Fully open the aperture diaphragm of the condenser by rotating the ring to the right 40X. Refer to Figure 3.

Title: Leica DME Microscope

8.1.7. Using the substage condenser focusing knob, raise the condenser to the top of its excursion. Refer to Figure 3.
8.1.8. Verify that the 4X objective is in the working position by rotating the revolving nose piece, until the 4X objective is in the working position. Refer to Figure 2.
8.1.9. Utilize the X axis stage knob by turning it clockwise to bring the stage forward to allow the specimen to be placed on the stage. Refer to Figure 2.
8.1.10. Open the specimen slide clips. Refer to Figure 3.
8.1.11. Place specimen slide onto the stage in the specimen clips.
8.1.12. Verify that the specimen is properly placed in the specimen clips and that the clips are closed, holding the specimen in place.
8.1.13. Utilize the X axis stage knob to align the specimen under the objective and over the light path of the condenser. Refer to Figure 2.
8.1.14. Utilize the Y axis adjustment knob for the specimen clamp to bring the specimen under the objective and over the light path of the condenser. Refer to Figure 2.

8.2. **Focusing**

8.2.1. Adjust the interpupillary distance of the eyepiece.
8.2.2. Adjust the eye piece to allow the operator to look through the eyepieces. Refer to Figure 1.
8.2.3. Looking through the right eye piece with your right eye only, close the left eye, turn the course adjustment knob to its position to raise the stage to bring the specimen into focus. Refer to Figure 2.
8.2.4. Looking through the left eye piece with your left eye only and adjust the diopter adjustment ring to focus the specimen. Refer to Figure 1.
8.2.5. Using the fine adjustment knob to raise the stage to bring the specimen into focus. This should only require ± 1.5 rotations of focus adjustment. Refer to Figure 2.
8.2.6. The specimen slide can be scanned by utilizing the X axis adjustment knob in combination with the Y axis adjustment knob for specimen clamp to bring different parts of the specimen under the objective and into view.
8.2.7. Rotate the nose piece so that the 10X objective is in the working position.
8.2.8. Refocus by using the fine adjustment knob to raise the stage to bring the specimen into focus. This should only require ±1.5 rotations of focus adjustment.

8.3. **Immersion Oil**

8.3.1. Focus the object on the specimen slide with a lower power objective.
8.3.2. Rotate the revolving nose piece to the so that the 40X objective is out of the way. Note: Do not allow oil to touch any objective beside the 100X.
8.3.3. Place a single drop of immersion oil on the slide directly above where the light is shining through the specimen slide. (Since air bubbles in the oil will impair the image of the object, make sure the oil is free of bubbles.)
8.3.4. Rotate the revolving nose piece to allow the 100X objective to come into place Note: The lens should go into the drop of immersion oil and *not hit the specimen slide*.
8.3.5. Looking through the oculars, you may need to increase the amount of light by turning the condenser to 100X or it may be necessary to turning the illuminator knob.

Title: Leica DME Microscope

8.3.6. Your object on the specimen slide should still be in the field of vision, but slightly out of focus. Use the fine adjustment knob as necessary to clearly focus the object on the specimen slide.
8.3.7. Once you're in the immersion oil **do not go back to the 40X objective**. If you go back, the 40X objective will get oil on it, which will damage the lense.
8.3.8. When you have completed your observation of the specimen, rotate the revolving nose piece to allow the 4X objective to come into the working position.
8.3.9. Utilize the X axis stage knob by turning the knob in a clockwise direction to allow the removal of the specimen.
8.3.10. Remove the specimen slide from the microscope and dispose of the specimen slide in the appropriate waste container. (Microscope slides with microbial organisms shall be placed in biohazard waste container).
8.3.11. The 100X lens should be cleaned of the residual oil. This can be accomplished by spraying a lab tissue with 70% IPA and gently wiping the lens with the tissue. Then take a dry lab tissue, and, with very light pressure, wipe the 100X objective lens.
8.3.12. Dispose of lab tissue in the appropriate waste container. (Lab tissues that may have microbial organisms shall be placed in biohazard waste container).

8.4. **Cleaning and Storage**
8.4.1. After each usage clean the microscope.
8.4.2. Lightly spray a lab towel with 70% IPA and wipe the external surface of the microscope with the lab towel. Finish at the stage area.
8.4.3. Dispose of the lab towel in the biohazard waste container.
8.4.4. Allow any residual IPA to evaporate.
8.4.5. Rotate the revolving nose piece to allow the 4X objective to be placed in the working position.
8.4.6. Place the plastic protective cover over microscope.

8.5. **Transporting microscope**
8.5.1. Loosely wrap the electrical cord around the arm of the covered microscope. Keep the cord from coming into contact with the stage.
8.5.2. Pick up the microscope with one hand on the arm and the other hand placed under the base of the scope.
8.5.3. Place the microscope securely on a cart for transport.

9. Attachments
9.1. Figure 1: Leica DME microscope left side component view
9.2. Figure 2: Leica DME microscope right side component view
9.3. Figure 3: Leica DME microscope front component view
9.4. Equipment log sheet 4.4.3

10. History:

Name	Date	Amendment
Bob O'Brien	18May07	Initial Release
Bob O'Brien	04Apr08	College name change
Kari Britt	03Aug10	Made formatting and grammar edits as needed.

Title: Leica DME Microscope

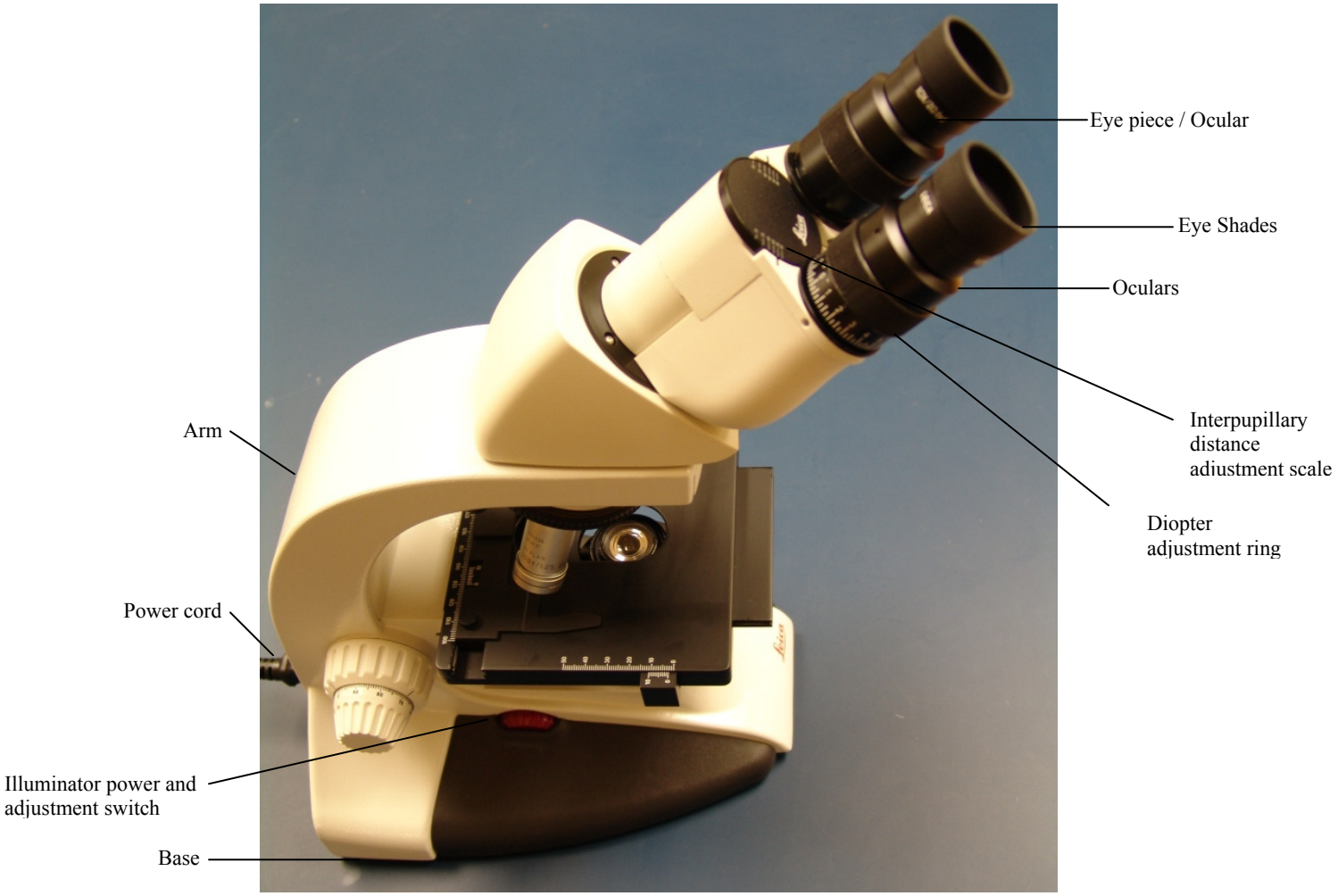

Figure 1: Leica DME microscope left side component view

Title: Leica DME Microscope

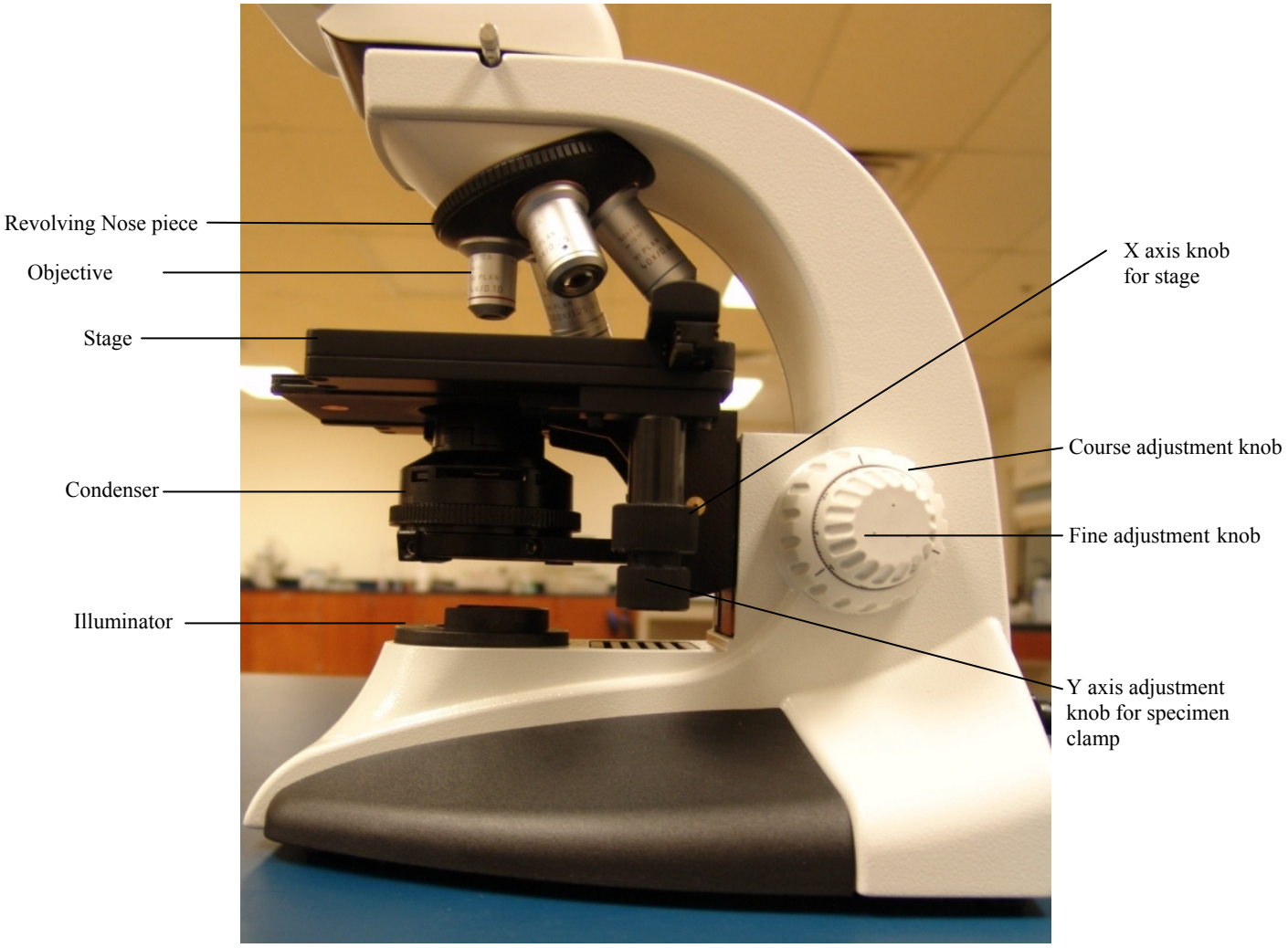

Figure 2: Leica DME microscope right side component view

Title: Leica DME Microscope

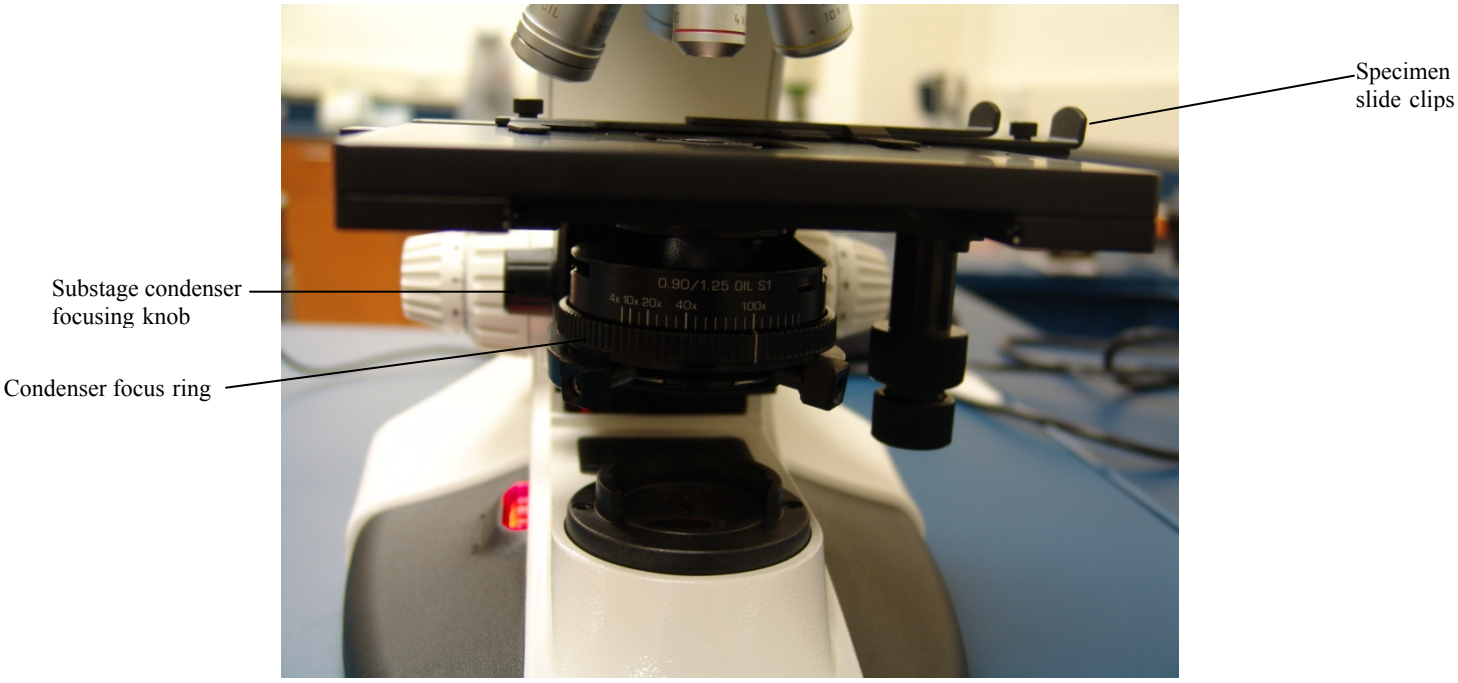

Figure 3: Leica DME microscope front component view