

Frederick National Laboratory for Cancer Research <small>sponsored by the National Cancer Institute</small>	HPV Serology Laboratory Standard Operating Procedure	
Use and Maintenance of the BioRad BioPlex 100		
Document ID: HSL_EQ_026	Version 1.0	Page 1 of 9

Released by/Date Effective:

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Approver Name	Title	Signature/Date

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1. PURPOSE

- 1.1. The purpose of this procedure is to describe the use and maintenance of the BioRad BioPlex 100 instrument.

2. SCOPE

- 2.1. This procedure applies to the HPV Serology Laboratory located at the Advanced Technology Research Facility, Room C2007.

3. REFERENCES

- 3.1. HSL_EQ_026.01: BioPlex 100 Use and Maintenance Form
- 3.2. HSL_GL_001: Waste Disposal at the Advanced Technology Research Facility
- 3.3. HSL_GL_002: Equipment Qualification and Calibration in the HPV Serology Laboratory
- 3.4. HSL_GL_003: Good Documentation Practices for the HPV Serology Laboratory
- 3.5. HSL_GL_004: Laboratory Notebook Control and Use for the HPV Serology Laboratory
- 3.6. HSL_GL_006: Reagent Preparation for the HPV Serology Laboratory
- 3.7. HSL_GL_007: Reagent and Chemical Expiry in the HPV Serology Laboratory
- 3.8. HSL_GL_008: Laboratory Flow and Gowning Procedures for the HPV Serology Laboratory
- 3.9. HSL_GL_009: HPV Serology Laboratory BSL-2 Procedures
- 3.10. HSL_GL_010: Control and Request of Documents in the HPV Serology Laboratory

4. RESPONSIBILITIES

- 4.1. The Research Associate, hereafter referred to as analyst, is responsible for reviewing and following this procedure.
- 4.2. The Scientific Manager or designee is responsible for training personnel in this procedure and reviewing associated documentation.
- 4.3. The Quality Assurance Specialist is responsible for quality oversight and approval of this procedure.

5. REAGENTS, CHEMICALS AND EQUIPMENT

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- 5.1.1. Cavicide (Warehouse, Cat # 79300360)
- 5.1.2. Ster-ahol (VWR, Cat # 14003-358 or equivalent)
- 5.1.3. Isopropyl alcohol (Sigma, Cat # I9516-500ML or equivalent)
- 5.1.4. Wypalls paper towel (Warehouse, Cat # 79300335 or equivalent)
- 5.1.5. Clorox Bleach, Concentrated (Warehouse, Cat # 68100251 or equivalent)

6. HEALTH AND SAFETY CONSIDERATIONS

- 6.1. Proper safety precautions should be taken while working in a laboratory setting. This includes, but is not limited to, proper protective equipment such as lab coats, safety glasses, closed-toe shoes, and non-latex gloves.
- 6.2. Refer to the respective SDS when working with any chemicals.
- 6.3. Refer to "HSL_GL_001: Waste Disposal at the Advanced Technology Research Facility" regarding waste disposal processes at the ATRF.

7. DEFINITIONS

Term	Definition
ATRF	Advanced Technology Research Facility
FME	Facilities, Maintenance and Engineering
HPV	Human Papillomavirus
HSL	HPV Serology Laboratory
IPA	Isopropyl alcohol
SDS	Safety Data Sheets
SOP	Standard Operating Procedure
Type I Water	Ultrapure/Reagent Grade/Critical applications
Type II Water	Pure/Analytical Grade, used for standard applications

8. GENERAL USE

- 8.1. Calibration is performed on each day that an assay is performed.
- 8.2. Validation is required weekly when the instrument is in use, and prior to use after a long period of the instrument not being in use.

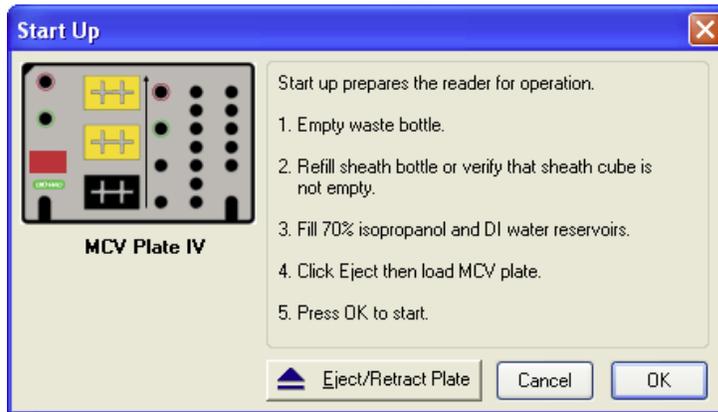
9. START UP

- 9.1. Turn on Bioplex 100 (use on/off switch on surge protector), and then turn on computer.
- 9.2. Log into computer with hslcommon login.



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9.3. Double click BioPlex Manager 6.1 icon on desktop.



9.4. Click on the “Warm Up” icon.

Note: This process takes 30 minutes to warm up the lasers.

9.5. Click on the “Start Up” icon.



9.6. Click on the Eject/Retract Plate toggle button to eject the plate platform. After adding the appropriate reagents to the Bio-Plex MCV Plate IV (see pop-up screen), place the Bio-Plex MCV Plate IV plate on the plate carrier then click on the Eject/Retract Plate toggle button to retract the plate platform. Click on the OK toggle button to start the procedure.

Note: The screen prompts will illustrate where to add Type I Water and 70% IPA to the special Bio-Plex MCV Plate IV.



9.7. Following the completion of “Start Up”, perform the following procedures in sequence:

9.7.1. Alcohol Flush

9.7.2. Between Plate Wash

Note: Fill the Type I Water and 70% IPA reservoir during the “Start Up” procedure.

9.8. Calibration- click on the “Calibrate” icon.



9.9. Verify that the radio button is checked for “CAL 1 & CAL 2” and all the control numbers and target values match the BioRad calibration bottles. If a new calibration lot is started, then click the “Add...” button and fill in the appropriate values for CAL 1 and CAL 2. Always treat CAL 1 and CAL 2 as sets, never mix CAL 1 and CAL 2 lot numbers.

9.10. Click on the OK toggle button.

9.11. Follow the instructions on the pop-up screen.

9.12. After adding the appropriate reagents to the Bio-Plex MCV Plate IV (see pop-up screen), click on the OK toggle button to start the procedure.

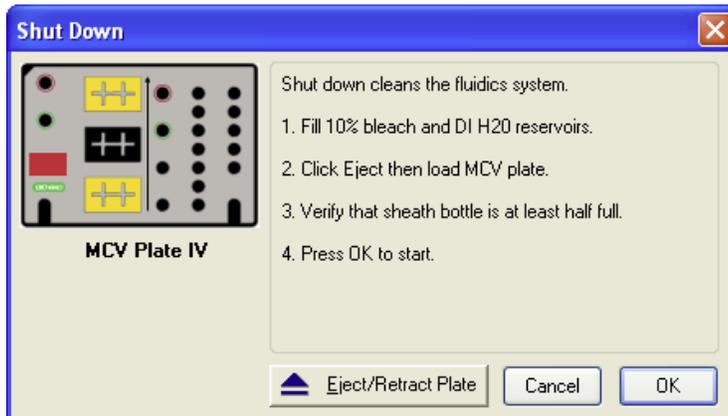
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10. PROBE HEIGHT ADJUSTMENT

- 10.1. Place the appropriate alignment tool in the selected well of the plate and retract:
- 10.2. Flat bottom= 2 large discs
- 10.3. Filter plate=3 large discs
- 10.4. Round bottom= 2 small discs
- 10.5. V-bottom (PCR)= 1 sphere
- 10.6. Loosen the screw gently on the probe holder. Push probe down until the probe comes in contact with the plate. Tighten the screw. Adjust probe height in the software to ensure probe is hitting the plate.

11. SHUT DOWN

- 11.1. Verify that the batch run “.rbx” file has been saved in the appropriate study folder:
- 11.2. Click on the “Shut Down” icon. 
- 11.3. Follow the instructions on the pop-up screen.



- 11.4. Click on the Eject/Retract Plate toggle button to eject the plate platform. After adding the appropriate reagents to the Bio-Plex MCV Plate IV (see pop-up screen), place the Bio-Plex MCV Plate IV plate on the plate carrier. Click on the OK toggle button to start the procedure.

Note: The screen prompts will illustrate where to add Type I Water and 10% Bleach to the Bio-Plex MCV Plate IV.

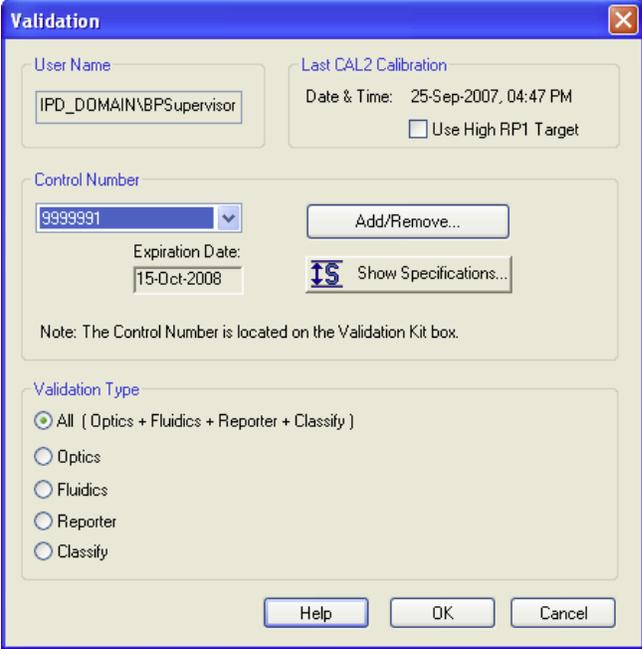
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- 11.5. After the “Shut Down” procedure has completed, eject the plate carrier and remove the Bio-Plex MCV Plate IV. Retract the empty plate carrier and power down the Bio-Plex 100 (use on/off switch on surge protector), then turn off the computer.

Note: Sufficiently rinse off the Bio-Plex MCV Plate IV with Type I Water. Dry the Bio-Plex MCV Plate IV, and store the plate on top of the Bio-Plex 100 for future use.

12. WEEKLY MAINTENANCE (VALIDATION)

- 12.1. When validation is required, then click on the “Validation” icon. 



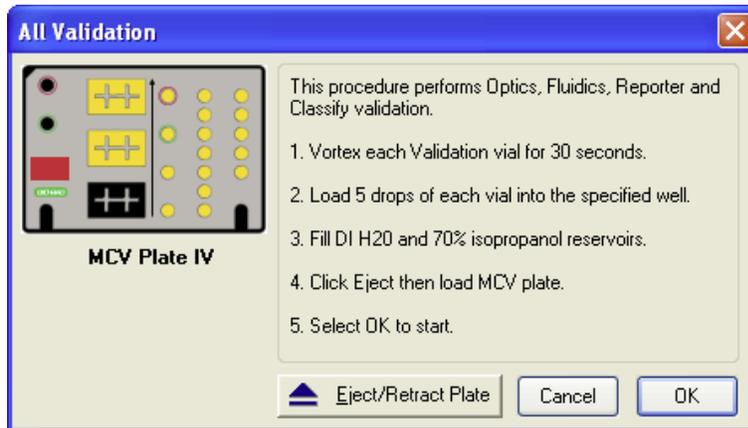
- 12.2. Verify that the radio button is checked for “All (Optics + Fluidics + Reporter + Classify)” and the control number and expiration date matches the BioRad validation kit. If a new validation lot is started, use the miniCD supplied with the Validation kit to upload the bead specifications.

Note: Always treat Validation kits as complete sets, never mix reagents from different lot numbers.

Note: Only check “Use High RP1 Target” if testing for phospho-analytes. (FYI- we have never tested for these types of analytes)

- 12.3. Click on the OK toggle button.
- 12.4. Follow the instructions on the pop-up screen.

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- 12.5. After adding the appropriate reagents to the Bio-Plex MCV Plate IV (see pop-up screen), click on the OK toggle button to start the procedure.

Note: Let the validation kit sit at room temperature for at least 20 minutes prior to vortexing.

Note: Validation is performed once a week on an instrument that will be used during the week. If an instrument is not needed for an extended amount of time, then validation will be prior to next use.

- 12.6. Print report and verify that all parameters passed.
- 12.6.1. If any event failed, report problem to supervisor and repeat calibration/verification procedure.
 - 12.6.2. Printed reports are to be stored in the logbook associated Raw Data Binder.
 - 12.6.3. Save reports in the following folder: O:\HSL\Equipment Verification\Bioplex 100.

13. ATTACHMENTS

Not applicable.

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14. REVISION HISTORY

Revision Start Date	Version #	Changes	Reasons
01Aug17	New	Create new SOP to describe the use and maintenance of the BioRad BioPlex 100 instrument.	New SOP.

