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Standard Operating Procedure (SOP) for Mosquito

1. PURPOSE

This SOP outlines the correct usage, maintenance, and shutdown procedures for the Mosquito liquid handling system to ensure safe and consistent operation.

2. SCOPE

This SOP applies to all authorized personnel operating the Mosquito system within the laboratory.

3. RESPONSIBILITIES

- Only trained personnel are permitted to operate the Mosquito system.
- Operators must adhere strictly to this SOP.Maintenance and troubleshooting issues should be reported to the designated facility manager.

4. EQUIPMENT AND MATERIALS NEEDED

- Mosquito liquid handling system
- Computer with Mosquito software installed
- 96-well MRC plates or SwissSci 3-well plates (as per experimental requirements)
- Premade screens (stored under the bench behind the Mosquito)
- Personal Protective Equipment (PPE): Lab coat, gloves, and safety glasses

5. SAFETY PRECAUTIONS

- Always wear appropriate personal protective equipment (PPE).
- Ensure the workspace around the Mosquito system is clean and free of obstructions.
- Handle reagents and samples in accordance with their respective Safety Data Sheets (SDS).
- Be cautious when handling used needles—dispose of them in the designated yellow bin.

6. OPERATION PROCEDURE:

6.1. Startup procedure

- Turn on the Mosquito system using the power switch located at the back left.
- Start the Mosquito software on the connected computer
- Click OK to dismiss the humidity control error.
- Click Yes when prompted to initialize the Mosquito.
- Click the Open File icon and select the appropriate protocol.
- Verify that the selected protocol matches the experimental setup.

6.2. programs

A variety of pre-written protocols are available for the Mosquito, most of which are optimized for 96-well MRC plates (2-well format) -Protocol names typically indicate:

- Plate type (e.g., MRC_2well, SwissSci 3well)
- Mixing ratio of protein to reservoir (protein first, then reservoir)
- Drop volume in nanoliters

ForExample: "*MRC_2well_1plus1_2plus_100nl.protocol*":

  - Designed for MRC 2-well plates
  - First drop: 100 nL protein + 100 nL reservoir
  - Second drop: 200 nL protein + 100 nL reservoir

6.3. Plate preparation

- Load Sample Strip
- Place a sample strip into the appropriate holder.
- Use the middle holder for single-protein experiments; use the left holder for multi-protein setups.
- Lock the strip in place using the magnetic cover.
- Add Protein Samples:
- Pipette protein into each well according to the selected protocol.
- Avoid bubbles by carefully checking required volumes per row.
- Load Reservoir Plate:
- Fill the rightmost plate position on the sample stage with the reservoir.
- Ensure the A1 position is at the top left.
- Start the Run:
- Click Run to begin the protocol.
- Monitor the run to ensure correct dispensing.
- Handle Used Needles Safely:
- Collect used needles into the yellow sharps bin.
- direct contact with needles to prevent injury and contamination.
- Seal and Store the Plate:
- After the protocol finishes, remove the plate and seal it with CrystalClear Tape.
- Store the plate in the plate hotel (4°C or 20°C) or the crystallization room.

6.4. Post-operation procedure

- Remove and discard used sample strips.
- Power off the Mosquito system.
- Ensure the workspace is left in a clean and organized state.
- Report any faults or incidents to the facility manager.

7. MAINTENANCE

Daily: Ensure the Mosquito system is clean and free of spills.
Weekly: Inspect the dispensing head for blockages.
Monthly: Perform a system calibration to maintain accuracy.
Annually: Schedule servicing by an authorized technician.

8. TROUBLESHOOTING

- If an error occurs, refer to the troubleshooting section in the Mosquito user manual.
- For unresolved issues, contact the facility manager.

9. REFERENCES

- Mosquito User Manual
- Laboratory Safety Guidelines
- Facility Manager’s Protocol Handbook