

# 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