LSA® Maintenance & Best Practices Guide

Required Maintenance

After Every Surface Prep Array or Capture Kinetics Experiment

- Prime the PH into H_2O + 0.05% T-20.

Weekly

- Check LSA PC for Windows Updates
  - Install any updates and enable the Pause Windows Updates for 7 Days feature.
- Restart LSA PC
  - Backup experiment data.
- Run a system prime
  - Ensure the cleaning slides are cleaned with DI H_2O and 70% IPA/EtOH before docking on slides.
  - Prime SFC and PH on the cleaning slides (H_2O + 0.05% T-20).
- Clean PH Face
  - A DI H_2O soaked Kimwipe can be used to gently blot the tip of the PH that interfaces with the cleaning slide.
- Run a System Clean
  - In Navigator, under "Cleaning and Maintenance," select Clean.

As Needed or After Supernatants

- Clean Face of SFC
  - A DI H_2O soaked Kimwipe can be used to gently blot and wipe the underside/gasket of the SFC to remove any buildup.
- Run a System Clean
  - In Navigator, under "Cleaning and Maintenance," select Clean.

Quarterly

- Run a System Sanitize
  - In Navigator, under "Cleaning and Maintenance," select Sanitize.
- Before running experiments, run 3 system primes with H_2O + 0.05% T-20.
  - Prime the SFC and PH on the cleaning slides, ensuring they are cleaned between each prime.

Before Extended Idle Time

- Run a Sanitize +Sleep
  - In Navigator, under "Cleaning and Maintenance," select Sanitize + Sleep. After the Sanitize, you will be prompted to move the lines to an empty bottle.
  - Close Navigator and leave the LSA and computer powered ON.

After Extended Idle Time

- Install any pending Windows updates and Reboot the LSA computer.
- Place all the lines (B1, B2, H_2O, C1, C2) in a bottle of H_2O + 0.05% T-20 and run a Sanitize under the "Cleaning and Maintenance" section.
  - Ensure the cleaning slides are cleaned with DI H_2O and 70% IPA/EtOH before docking on slides.

Best Practices

Before Every Prime

- Clean the glass slides with DI H_2O and 70% IPA/EtOH before docking on slides.

For Every Experiment

- Before the experiment, run 2 primes.
- After the experiment, prime into H_2O + 0.05% T-20.

Chip Preconditioning

- When loading a new chip, always perform a chip preconditioning experiment as the first experiment on that chip.

Buffer Preparation

- Ensure the buffer is fully homogenized by inverting the running buffer bottle at least 8 times to mix.
- Filter and degas the homogenized running buffer.
- Set some of the buffer aside for Sample Preparation.

Sample Preparation

- EDC/S-NHS
  - Mix the reagents together as close to the start of the experiment as possible.
- Buffer
  - Prepare fresh daily to avoid contamination.
  - Keep running buffer at room temperature.
- Ligand
  - Ensure the ligands are concentrated enough for at least a 10-fold dilution into 10mM Sodium Acetate for direct coupling.
  - When possible, immobilize at different densities and in replicates.
  - Supernatants should be diluted at minimum 2-fold.
- Analyte
  - Buffer exchange the proteins into running buffer to avoid refractive index mismatches.
  - Ensure the tubes and plates do not have bubbles at the bottom of the wells.

Thermals

- Allow the Interaction temperature to equilibrate to the set temperature with the SPR chip inserted for at least 45 min prior to starting the experiment.

Chip Reuse

- Do not use a capture lawn more than 15 times.
- When storing lawns for later use, fill the chip bath with 2 mL of 50% glycerol 50% running buffer in an airtight Tupperware container at 4˚C.
  - Ensure the glycerol solution is removed from the surface before reuse. Reusing capture lawns after storage significantly reduces the usability of the surface.
- When re-inserting a lawn in the LSA ensure the glass prism sides are clean and free of spots. If present, clean with a 70% IPA/EtOH solution.

Experimental Method

- Kinetics
  - Ensure the method includes enough leading buffer blanks to achieve a stable/flat injection profile to use as the leading blank when analyzing.
  - Keep kinetics R-max below 150 RU for lower ligand densities that result in more accurate measurements.
- Epitope
  - Immobilize ligand mAbs to at least 200 RU for robust signals.
  - Identify proper Regeneration conditions that achieve complete regeneration of the Ligands.
  - When binning > 192 Abs, break the experiment into two separate experiments.
  - Ensure two buffer or Ag controls are included at the start of each binning experiment.