Working with your LabChip System

<table>
<tr><th>Observation</th><th>Possible causes</th><th>What to do</th></tr>
<tr><td>General observation that data does not look as expected.</td><td>Did the chip prime properly?</td><td>Open and close the chip door without changing any of the reagents and restart the run. The chip will automatically reprime.</td></tr>
<tr><td>No ladder or sample peaks detected, but marker peaks are detected.
Note: The lower marker peak height will most likely be greater than normal height.</td><td>1. Air bubble or debris in sipper.
2. Insufficient volume or bubble in sample/ladder well.
3. Sipper height set too high.</td><td>1. Reprime the chip. See LabChip Kit Essential Practices in the assay user guide for instructions.
2. Ensure there is sufficient volume in wells and no bubbles are present.
3. If you suspect there may be debris in your samples, spin the sample plate down in a centrifuge (e.g. 3000 rcf for 5 minutes). Unclog the sipper by repriming the chip. See LabChip Kit Essential Practices in the assay user guide for instructions.</td></tr>
<tr><td>No marker peaks but sample peaks are present.</td><td>1. No marker added to chip well 4.
2. If there is marker solution in chip well 4, the problem may be due to a marker channel clog.</td><td>1. Add or replenish the marker solution in the chip.
2. Perform a marker channel unclogging procedure by repriming the chip. See LabChip Kit Essential Practices in the assay user guide for instructions.</td></tr>
<tr><td>Ladder traces show up in the lanes following the ladders (delayed sip).</td><td>1. Separation channel overloaded with sample.
2 Partial clog in the separation channel.</td><td>1. Lower the starting sample concentration.
2. Reprime the chip. See LabChip Kit Essential Practices in the assay user guide for instructions.</td></tr>
<tr><td>Peaks migrating much faster or slower than expected. No Upper Marker present for DNA.
Note: Some migration time variance between chips or within a plate is considered normal.
Turn off Analysis to determine migration times.
<table>
<tr><th>Assay</th><th>Lower Marker</th><th>Upper Marker</th></tr>
<tr><td>Protein Express</td><td>11-13.5 sec</td><td>N/A</td></tr>
<tr><td>Protein Clear HR</td><td>18-19 sec</td><td>N/A</td></tr>
<tr><td>Pico Protein</td><td>11-13.5 sec</td><td>N/A</td></tr>
<tr><td>DNA 1K</td><td>23-33 sec</td><td>41-67 sec</td></tr>
<tr><td>DNA 5K</td><td>9-12 sec</td><td>18-19 sec</td></tr>
<tr><td>DNA 12K</td><td>21-26 sec</td><td>47-60 sec</td></tr>
<tr><td>DNA HiSens</td><td>21-25 sec</td><td>54-64 sec</td></tr>
<tr><td>DNA NGS 3K</td><td>20-23 sec</td><td>50-55 sec</td></tr>
</table></td><td>1. Incorrect Gel-Dye ratio.
Note: Excess dye in the separation channel will slow down migration, and less dye in the separation channel will make peaks migrate faster.
2. Particulates from the samples may be clogging the separation channel (this will slow down migration).
3. Gel-Dye was not primed properly into the chip.</td><td>1. Prepare a fresh Gel-Dye solution. Wash and reprime the chip with the new Gel-Dye mixture. See LabChip Kit Essential Practices in the assay user guide for instructions.
2. If fast or slow migration is observed repeatedly on a new chip, contact technical support to arrange return of the chip to PerkinElmer Health Sciences, Inc.
3. Minimize the loading of particulates in the sample by performing a centrifuge spin of the sample plate (e.g. 3000 rcf for 5 minutes) before starting a new run. The debris may be flushed out of the chip by washing and repriming the chip. See LabChip Kit Essential Practices in the assay user guide for instructions.
4. Check the O-rings on the top surface of the chip interface and clean if necessary.</td></tr>
<tr><td>The steps above did not result in a good run.</td><td></td><td>Please send a description of the issue, a ‘xxx.gxd’ data file showing the issue, and the results of the Instrument Diagnostics to: global.techsupport@perkinelmer.com.</td></tr>
</table>

Daily Routines

Proper daily instrument maintenance and chip cleaning technique have been identified as key factors in maximizing the lifetime of chips. In order to routinely achieve optimum performance and reach the specified chip lifetimes, it is important keep the chip interface clean and free of dried reagents or debris. Please refer to the LabChip Chip Maintenance Quick Guide (CLS146025) for details on chip cleaning and preparation.

Best Practices Daily Checklist

Note: *Steps 13-15 do not apply to Protein Chips.*

1. Warm the chip and reagents at room temperature for 20-30 min. Ensure the dye is completely thawed.
2. **Purge the Pressure Lines on the instrument.**
3. **Clean the electrodes and O-rings by wiping them with a lint-free swab wet with DI water. Allow to dry.**
4. Prepare the gel/dye and samples according to the protocol for the assay.
5. Wash the active chip wells twice with water.
6. Aspirate all water and ensure the wells are completely dry.
7. Add reagents to the wells as specified in the protocol for the assay.
8. Ensure the tops of the chip wells are clean and dry. If necessary, clean the tops of the wells with water and the provided lint-free swab, then dry using the aspirator.
9. Insert the chip, select run parameters, and start the run.
10. **Upon completion of the run(s), promptly remove the chip.**
11. **Immediately wipe the electrodes with a lint-free swab to remove any residual gel.**
12. Wash the active chip wells with water.
13. Fill the active chip wells with Storage Buffer (100 µL per well).
14. Place the chip on the instrument and select Wash.
15. **Promptly remove the chip upon completion of the wash.** Do not repeat the chip wash without refreshing the contents of the wells.
16. Store the chip according to the protocol for the assay.
17. **Purge the Pressure Lines on the instrument.**
18. **Clean the electrodes and O-rings by wiping them with a lint-free swab wet with DI water.**
19. **Inspect the area around the chip holder and plate holder for dust/particles. Clean with a lint-free wipe moistened with DI water.**

Removing the O-rings for Cleaning

One time per month, or if current or pressure leaks are observed, the O-rings should be removed for thorough cleaning, and the O-ring seats should be wiped with a lint-free swab wet with DI water. Refer to the LabChip GX Touch/GXII Touch User Manual for the monthly cleaning procedure.

Inspecting the Objective Lens

If particles or smudges are found on the objective lens, clean the lens **GENTLY, USING OPTICAL WIPES AND DI WATER ONLY**. Use of other materials, or vigorous cleaning, can damage the objective.

Instrument Shutdown

The instrument should be properly shut down each night. Close the LabChip GX Touch software, and then click **Start → Shut Down** to shut down the computer.