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# Background & Purpose

To describe how to properly use and maintain the Ella system.

# 2. Materials, Equipment & Preparation

* Ella SimplePlex System
* Cartridge Kit w/ Sample Diluent and Wash Buffer
* Specification Sheet per Analyte from ProteinSimple
* Microcentrifuge
* Tubes / Microplate for Sample Dilution
* Gloves / Lab Coat
* Pipettes and Sterile Pipette Tips

**BEFORE USING THE ELLA:**

Go to <https://academy.bio-techne.com/learn/signin> , make an account, and enroll in and complete the “Ella Learning Plan” – all components except for “Setting up you Ella” and “Running a 48-Digoxigenin Open Cartridge”. Show record of completion BEFORE using the Ella.

# 3. Using the Ella

1. Turn on the Ella 15 minutes before use to allow it to warm up
	1. Do not move the Ella to access the power switch – it can be found on the back left of the device
2. Consider running a self-test using the verification cartridge before use, especially if it has not been run that week
	1. This is not necessary but allows for validation that the machine is running properly should anyone question the data
	2. Place the plastic film back onto the bottom of the verification cartridge after use
3. Follow the Minimum Required Dilution (MRD) found on the Specification Sheet for each analyte
	1. Can be found in the cartridge shipment or on the ProteinSimple Assay page (<https://www.proteinsimple.com/simple_plex_assays.html>)
	2. Consider centrifuging your samples prior to dilution to remove particulates
4. If running the Training kit or if using controls, prepare them according to the included QC Control Sheet. Reconstitute a High and Low Control as instructed
	1. Lyophilized controls can be stored at 2-8°C for up to 12 months from date of receipt
	2. Reconstituted controls can be stored at -80°C for up to 6 months from date of preparation
	3. Aliquots of controls should be treated as one-use vials
	4. Do not store any materials at -20°C
5. Open the Runner on the Ella computer – This controls the Ella
	1. Scan the barcode found on the vacuum bag
	2. Open the cartridge box while wearing gloves
	3. Scan the cartridge barcode found on the front of the cartridge prior to loading
6. Load your diluted sample into the inlets in the volume specified – typically a minimum of 50 μL. You can overload, as the cartridge will only take what is needed for the assay
	1. Load sample diluent into unused inlets – never run with an empty inlet
7. Load wash buffer into the inlets labeled “Buffer” in the volume specified
8. Peel the plastic film off the bottom of the loaded cartridge and avoid touching the bottom once exposed
9. Place the cartridge in the Ella and close the clamp and instrument door
	1. Ensure the Ella is in “Cartridge Load Position” – this is the default position
10. Proceed through the software to assign sample names and dilutions and start your run
	1. Enter sample type as “Unknown” unless stated otherwise
	2. You can also drag sample info from a spreadsheet
	3. Ensure you complete the checklist at the bottom of the screen before pressing “Start”
11. After the run, results will automatically appear in concentration, RFUs, and coefficient of variability (CV)
	1. The %CV Threshold can be changed if desired at the bottom of the screen
12. Open the Explorer on the Ella computer – This is the data viewer
	1. Load the kit that contains your run – File > Load Kit
	2. Tools > Export Kits > Select the fields you would like and add them to the right column > Export
	3. Standard curves are generated at the factory, but one can generate a standard curve if desired – See Ella Learning Plan

# 4. Maintenance of the Ella

1. Should the Ella ever need to be moved:
	1. Ensure the Ella is placed on a bench with no machinery that moves / shakes rapidly
	2. Put the Ella into “Ship Position” before moving
		1. Can be done in Runner > Tools > Ship Position
		2. This puts the Ella into a secure state for moving
	3. Tools > Recalibrate Laser Position, using the verification cartridge
		1. Also use the level found on the verification cartridge to ensure the surface is level
2. If the window eye needs to be cleaned, Runner > Tools > Objective Window Position
	1. Use ethanol and a lint-free wipe
3. If data is reading all zeroes, consider spiking the sample into the standard curve range and see if it changes before contacting the manufacturer
4. If the scanner is not scanning the cartridge barcodes properly, it may have been reset to factory defaults
	1. Open Device Manager > Human Interface Devices
		1. It is likely listed as a generic “USB Input Device”
		2. Assuming no other USB devices are in the computer, find the device whose Location is a “Port” rather than a long string of numbers. You can also unplug the scanner to determine which it is
	2. Go to Driver > Update Driver > Browse my computer driver location > C:\Program Files (x86)\ProteinSimple\Simple Plex Runner\Driver
	3. After correcting the driver, the COM port may need to be set to “COM3”
5. Clean the fan and filters every 6 months (see user manual for more info)
	1. Remove fan guard and fan filter
	2. Vacuum fan filter
	3. If necessary, replace fan filter (PN 541401)
	4. Reinstall fan filter and guard