



# LabChip | XT/XTe

## Advanced Nucleic Acid Size Selection and Collection

- Reduce wasted “non-align” reads with tight size selection
- Increase average read length by excluding shorter fragments
- Faster sample processing maximizes use of sequencer
- Reduce waste and exposure to harmful reagents
- Improve efficiency with high recovery

Current next generation sequencing workflows have numerous manual processes that bottleneck throughput and contribute to process inefficiency. One of the most time consuming tasks is gel-based size-selection during the library generation process. In addition to being labor intensive and not scalable, manual methods introduce run-to-run and operator-to-operator variability. The imprecision of manual excision results in low precision and low sizing accuracy.

The LabChip XT and XTe perform fast, automated nucleic acid fractionation accurately and reproducibly using Caliper’s proprietary microfluidics. By using intersecting microfluidic channels, optical detection and computer control, we can automatically extract a target band during separation and route the selected material to a collection well. The resulting sample is accurately sized and is delivered in a sequencing compatible buffer. The XT and XTe improves laboratory efficiency and provides sizing that is difficult to obtain using manual methods.

## Automated Nucleic Acid Fractionation



### How Does it Work?

The LabChip XT and XTe use a microfluidic network to extract a target band during separation and route the selected material to a collection well on a disposable plastic chip. DNA samples are mixed with a sample buffer and are loaded into the individual sample wells

of the chip. When the chip is loaded into the LabChip XT or XTe system, the electrodes on top of the chip interface with the pins of the instrument to provide voltage and current control.

Individual samples are separated electrophoretically and the DNA is stained with a DNA intercalating dye, which is detected via laser induced fluorescence at the detection point. Sizing and concentration for the sample is determined using both a ladder and an internal marker. A switch is located downstream of the optical detection which divides the channel into the waste arm and collection arm. At the appropriate time, the voltage is switched to the collection arm causing migration of the selected sample to the collection well. Because each of the 4 channels operate independent of each other and there is no direct buffer contact, cross-contamination is eliminated.

## Dry Electrode Contact

The LabChip XT and XTe use chips that incorporate disposable electrodes that makes dry metal to metal contact with the instrument. The disposable pin electrodes are sealed to the surface of the chip and extend below into the buffer. The buffer from the chips or DNA sample does not touch the instrument interface.

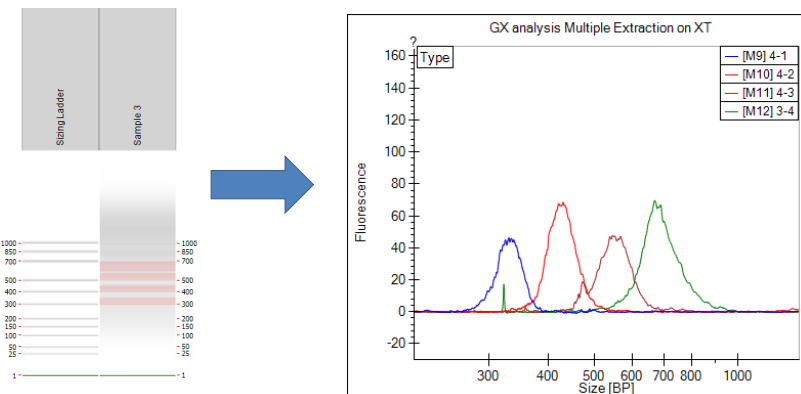
Reusable electrodes that dip into the liquid can potentially cause cross contamination. The LabChip XT and XTe allow for the collection of the unselected nucleic acids from the recovery port since there is no concern about cross-contamination with the dry electrode contact. This allows the use of precious samples to be maximized.

The wet electrode contact also requires the electrodes to be washed for proper maintenance of the instrument. No washing of electrodes required for the LabChip XT, which allows the runs to be completed back to back chips without tedious instrument cleaning in between.



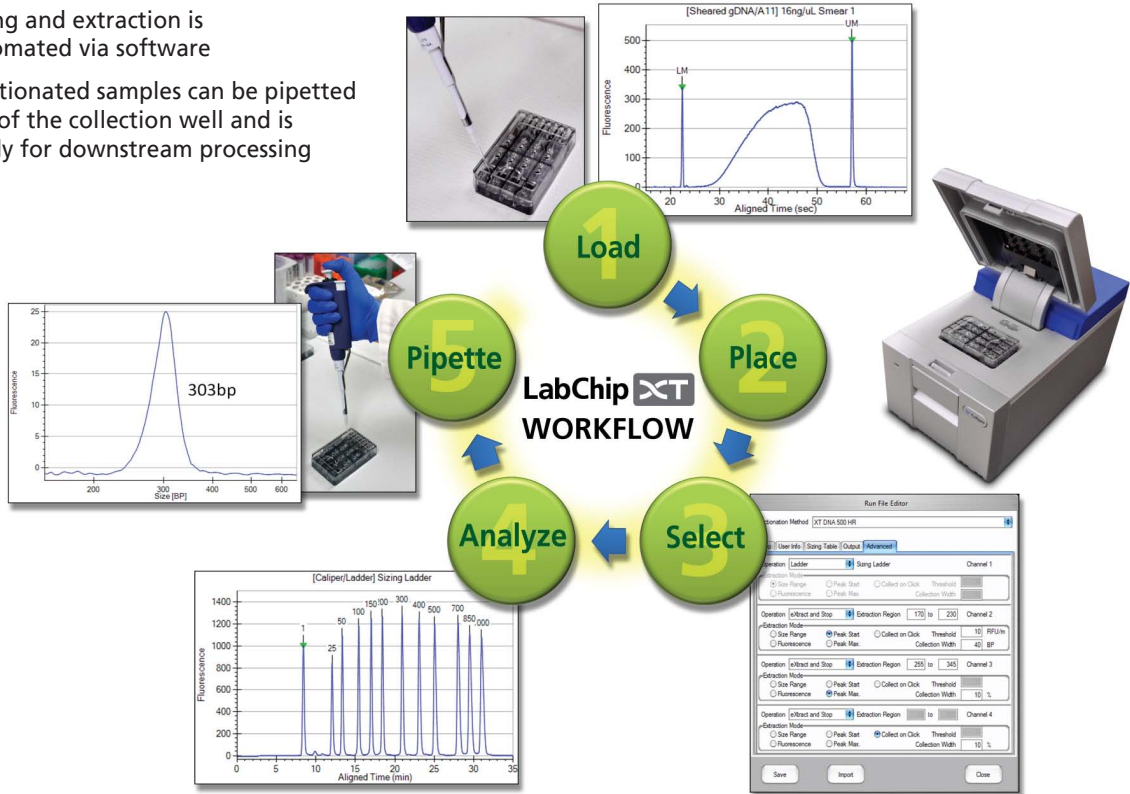
## Advanced Software Control

The LabChip XT and XTe software allows for precise control of the fractionation. A built in method ladder allows for sizing without using a physical ladder, maximizing throughput. Extractions can be selected by size range, peak or manually using the Collect on Click feature. Multiple collections can be taken for each channel.



## Five Simple Steps Makes the LabChip XT Easy to Use

- 1) Samples are loaded onto the prepared chip
- 2) Place chip on instrument. Barcode reader identifies chip and assay
- 3) Select sizes for Extraction. Choose from several different collection modes
- 4) Sizing and extraction is automated via software
- 5) Fractionated samples can be pipetted out of the collection well and is ready for downstream processing



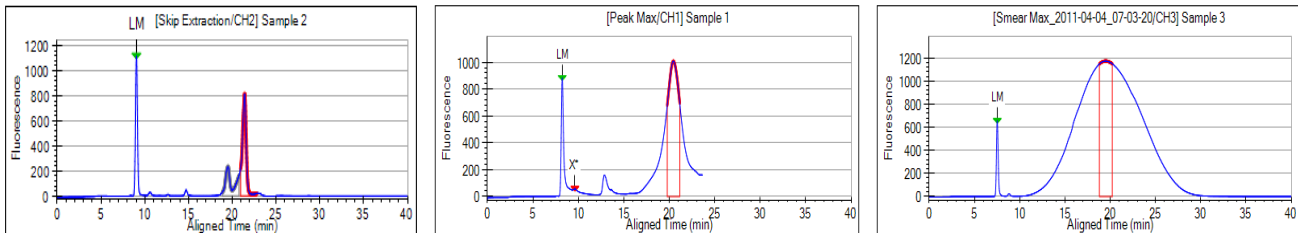
## Additional Features Only on the XT

The LabChip XT offers additional software features for data analysis and sample tracking needs.

- Sample Quantitation and smear analysis allows for comparison of samples within a chip as well as across multiple chips
- Data can be displayed in Virtual Gel, Graph, or Data Summary table formats.
- Data can be filtered by variable and value range
- Formatted results tables can be exported to reports or LIMS

4 additional features are available on the LabChip XT to enhance the amount of recovered material for different applications

- **Extraction by Fluorescence:** Extract when an optical threshold is reached
- **Extraction by Peak Max:** Ideal for samples with a narrow distribution (i.e., samples that have previously been size selected)
- **Extraction by Smear Max:** Ideal for samples that are sheared to a broad distribution in which no defined peak can be found
- **Skip Extraction:** Ideal for avoiding adapter dimer peaks generated during library construction.



## Supporting Regulatory Compliance

The LabChip XT with LabChip GxP Software is a computerized system designed to automate the analysis and size selection of DNA. The system allows the users to create, modify, and maintain the records in electronic form and allow the users to perform electronic signatures on the records generated from the system. It takes a combination of administrative controls, procedural controls, and technical controls for the users of a computerized system to comply with 21 CFR Part 11 regulations. The LabChip GxP Software contains built-in technical controls and features specifically designed to support the users for 21 CFR Part 11 compliance. These technical controls and features include user account management and access controls, device check, enforcing permitted sequencing of steps, audit trails, record copying, record retention, system documentation, and electronic signature controls.

### Compliance Features:

- User Account Management
- Audit trails
- Electronic Signature Controls
- Central Data Repository

## LabChip **XT** and LabChip **XT<sub>e</sub>** Features

- Fast and reproducible size selection
- < 30 minute processing
- Up to 4 samples processed simultaneously per chip
- Independent channels and dry electrode contact minimizes potential for cross contamination

*XT<sub>e</sub> perfectly matches the workflow of most low throughput users*

*XT is ideal for users that have data analysis and sample tracking needs*

	XT <sub>e</sub>	XT
Dry Electrode Contact	✓	✓
Multiple Collections	✓	✓
Ethidium Bromide Free	✓	✓
Waste Recovery	✓	✓
High Instrument Throughput (Fast Assays)	✓	✓
Sample Tracking		✓
Quantitation of Data		✓
21 CFR Part 11		✓
Advanced Collection Modes (Smear Max, Skip Peak)		✓

## LabChip XT and XT<sub>e</sub> Specifications

Dimensions: 180mm (7.09 in) H-closed x 180mm (7.09 in) W x 330mm (12.99 in) D

Excitation/Emission Wavelengths: 532 nm (Class 1 Laser)

Barcode Reader: Integrated 2-D Barcode Reader (Class 1M LED)

Weight: 2.5 kg (10 lbs)

Power: 90-264 V AC, 50-60 Hz

Power Consumption: 24VDC, 1.2A max

Operating Humidity Range: 10-70%, relative, noncondensing

Operating Temperature Range: 18-28 °C (64-82 °F)

Storage Temperature: 10-40 °C

## Ordering Information:

LabChip XT System: P/N 127229

LabChip XT<sub>e</sub> System: P/N 133285

LabChip GxP Security Kit: P/N 125416

LabChip XT DNA 750 Assay Kit: P/N 760541

LabChip XT DNA 300 Assay Kit : P/N 760601



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