Modernized high performance genomics analysis.

Introduction

DNA and RNA quantitation and sizing can be accomplished in seconds using the LabChip™ GX Touch™ nucleic acid analyzer. LabChip electrophoresis is performed using modern chip-based microfluidic technology. Less than 150 nL of sample is used for sizing and concentration analysis, generating high-resolution, reproducible data. The LabChip GX Touch nucleic acid analyzer can support a wide range of applications including verification of PCR amplicons, reporting of total DNA quantitation, and optimizing NGS workflows.

The LabChip GX Touch system offers:

- LabChip microfluidic technology to modernize gel electrophoresis
- Fully automated genomic samples analysis in real time, sample process in as fast as 30 seconds
- Digitized data format for convenient analysis, review, share and archive
- Quantitative metric of RNA and DNA sample integrity to ensure only the best samples go downstream
- Native high throughput capability to support up to 384 samples in a single run

If you are part of a sequencing lab running rare and precious samples, PCR-free libraries, or quantitating individual fragments for genotyping, the ease of use, low cost, and high-throughput capabilities of the LabChip GX Touch nucleic acid analyzer eases the burden of managing results from a growing numbers of samples.

LabChip GX Touch Nucleic Acid Analyzer

Run: Observe runs in real time

- Sample analysis in as few as 30 seconds (Figure 1)
- View electropherogram in real time during data collection (Figure 2)
- Overlay collected data in runtime environment to compare sample profiles
- Select from various run time analytical feature annotations

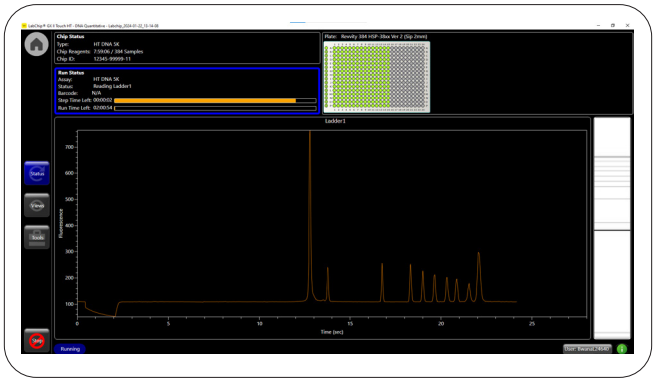


Figure 1: Samples can be run in as little as 30 seconds.

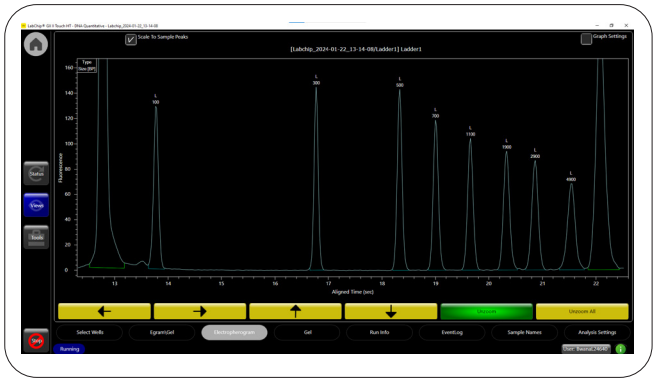


Figure 2: Review selected data in run time environment during data acquisition.

Review: See data in real time or export for later analysis

- Choose display in E-gram, virtual gel, or data table format (Figure 3)
- Pull multiple archived plates into data review collection for analytical comparisons (Figure 4)
- Apply data mining filter functions on key attributes
- Highlight expected peaks

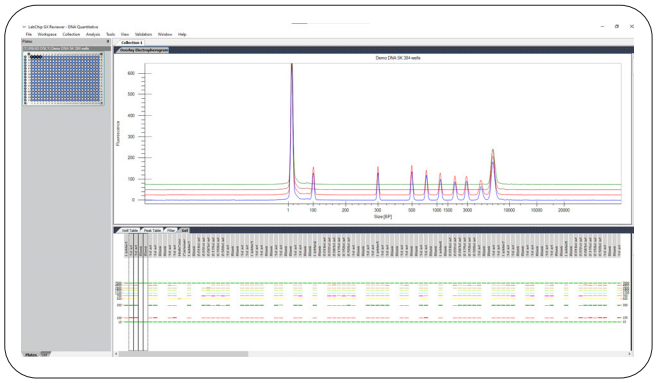


Figure 3: Choose display in e-gram, virtual gel, or data table for easy data analysis.

Figure 4: Import multiple archived plates into data review collection for direct analytical comparisons.

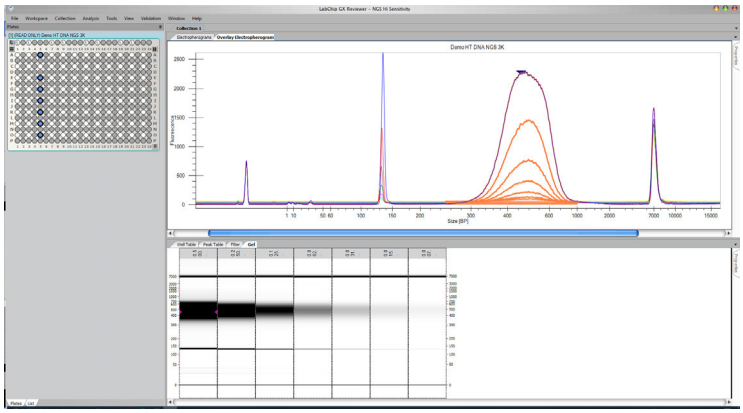
LabChip GX Touch software is designed to run an assay with a minimal number of operator inputs. Select the method to run, define which samples to be run and start. The data review software module enables scientists to review completed samples from a workspace remote from the lab. The software is supported by an unlimited license so data sets can be shared with colleagues to make project collaborations simple and straightforward.

Ensure only quality samples are sent downstream

Electrophoretic analysis assays are a core component of quality control (QC) for next generation sequencing libraries, providing assessment of both the size and quantity of DNA fragments in a sample. The LabChip GX Touch nucleic acid analyzer automates DNA and RNA sizing and quantitation of both fragments and smears. Both capabilities ensure NGS libraries are properly prepared. Fragments are typically used to cross check shearing and PCR steps. DNA from multiple libraries can be used for normalization.

Sample conservation

Reducing sample consumption during analysis is an important consideration for many laboratories. This is particularly critical for library preparations using ChIP-Seq and PCR-free library prep protocols where low concentration libraries are commonplace. The NGS 3K assay is specifically designed for use in these sequencing workflows. The LabChip instrument is designed to accurately quantitate smears down to 25 pg/µl and individual fragments down to 0.5 pg/µl enabling rapid assessment of rare or precious library samples (Figure 5, 8).



	Well Label	Peak Count	Sample Name	Region[300-800] On Plate Conc. (ng/ul)
▶	A05	16	0.5000 ng/uL TS Nano Library	0.3774
	E05	26	0.2500 ng/uL TS Nano Library	0.2200
	G05	18	0.1250 ng/uL TS Nano Library	0.1179
	I05	14	0.0625 ng/uL TS Nano Library	0.0623
	K05	17	0.0313 ng/uL TS Nano Library	0.0318
	M05	10	0.0156 ng/uL TS Nano Library	0.0153
	O05	10	0.0078 ng/uL TS Nano Library	0.0073

Figure 5: Smear analysis of an NGS library using the LabChip DNA NGS 3K assay.

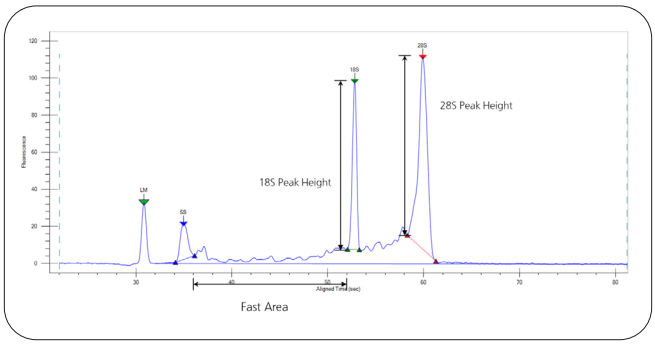


Figure 6: RNA electropherogram showing 18S and 28S peaks generated using the LabChip RNA assay.

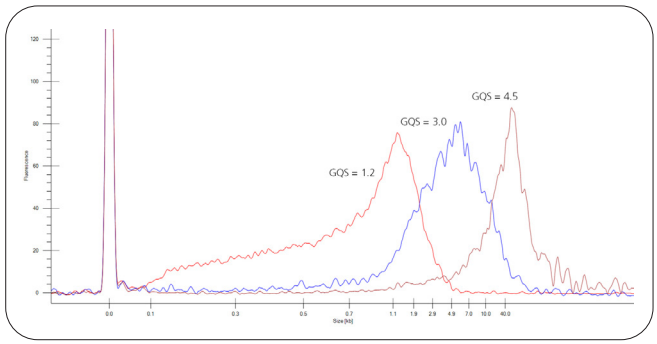


Figure 7: Genomic DNA quality assessment shown as an electropherogram generated using the LabChip gDNA assay.

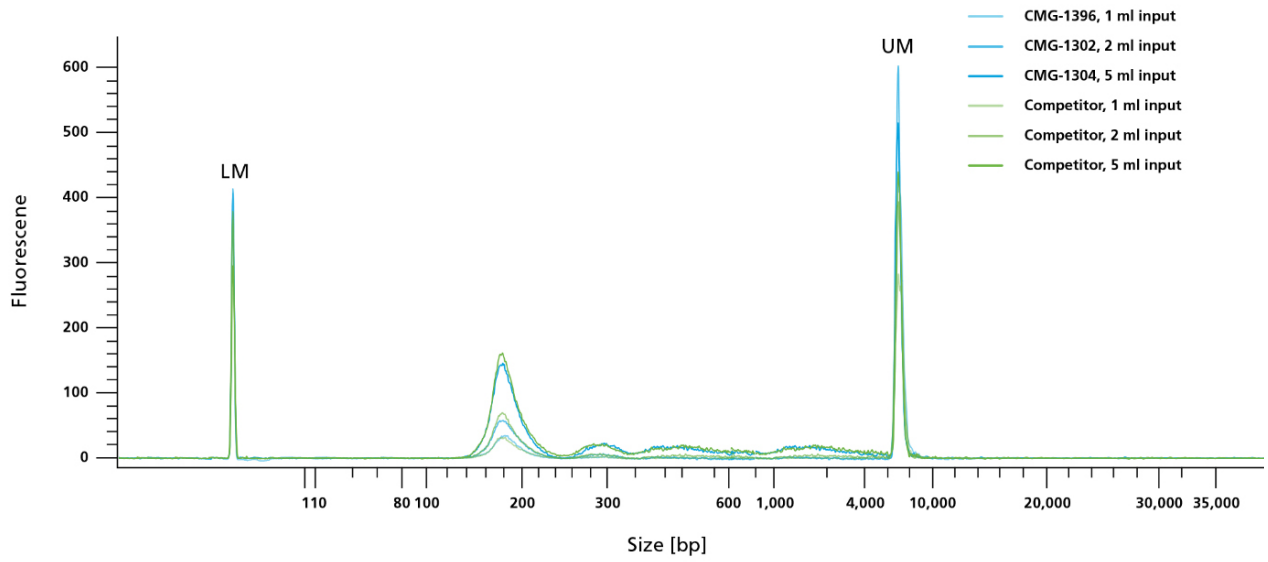


Figure 8: Cell free DNA quality assessment shown as an electropherogram generated using the LabChip DNA NGS 3K assay.

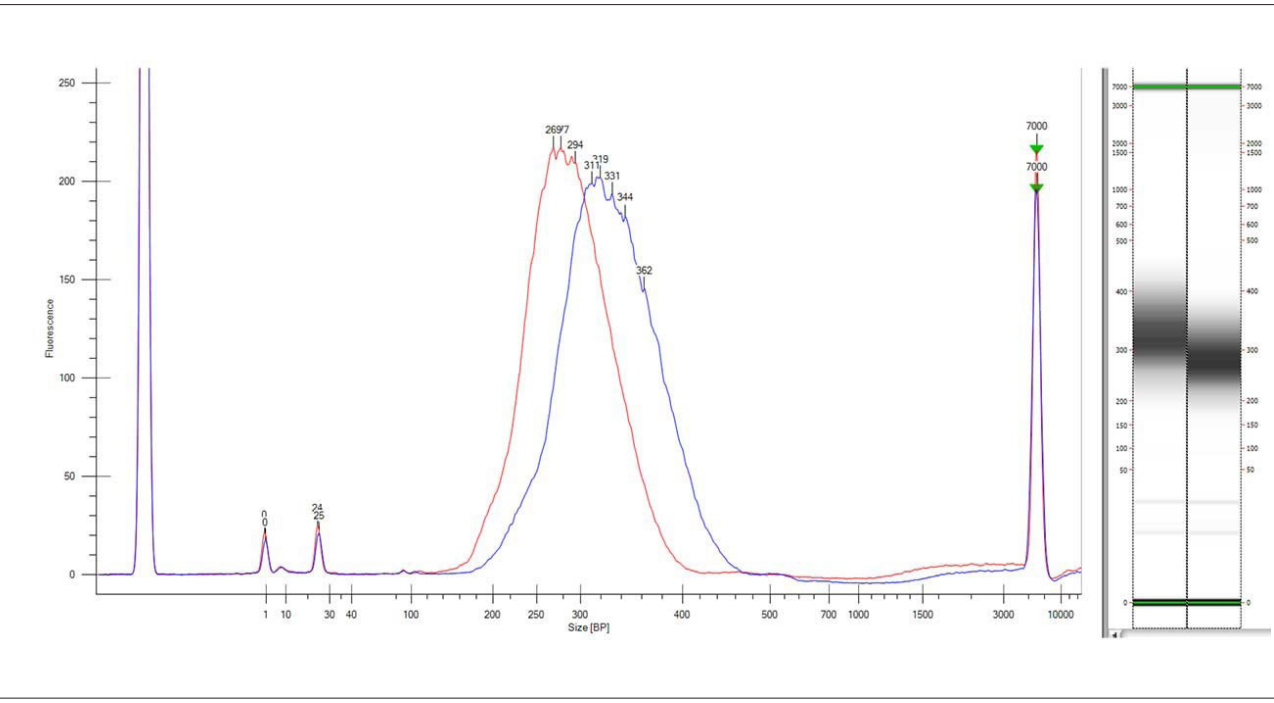


Figure 9: Validation of NEXTFLEX™ Variant Seq™ SARS-CoV-2 Libraries. Libraries of CoV+ samples were analyzed using the LabChip® DNA NGS 3K assay on the Lab- Chip® GX Touch nucleic acid analyzer: 200 ng pooled amplicon input (blue) and 1200 ng pooled amplicon input (red).

Rapid RNA analysis

The LabChip GX Touch platform provides easy to understand RNA concentration and ribosomal ratios as an indicator of integrity as an RNA Quality Score (Figure 6). The RNA Quality Score (RQS) quantifying quality and integrity of a sample is predictive of the likelihood of success for downstream gene expression experiments such as microarray analysis or realtime PCR (Figure 6).

Plasmid DNA characterization

The LabChip™ plasmid DNA assay is designed to streamline pDNA workflows. It separates the three primary isoforms of pDNA, supercoiled, linear, and open circular, providing both purity and sizing with a limit of detection down to 25 pg/µL (Figure 10). Compared to traditional methods this innovative solution offers faster run times, simplified instrument and chip preparation, accurate results, and minimal sample handling.

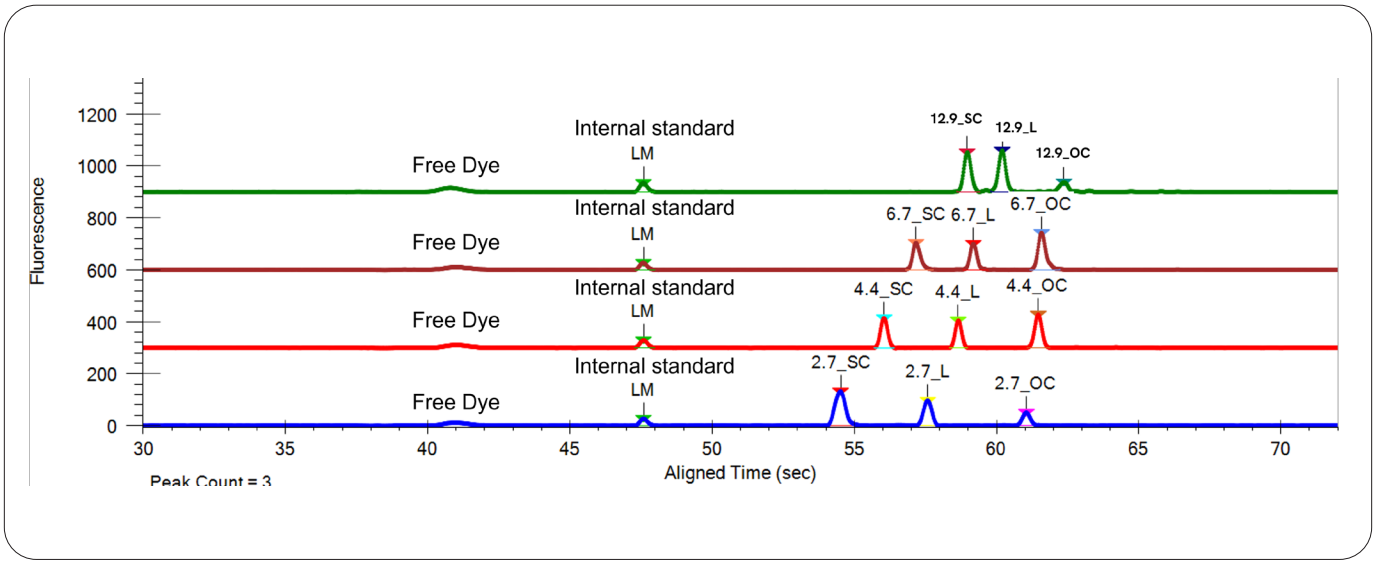


Figure 10: plasmid DNA mixed isoforms sample separation with LabChip pDNA assay.

Genomic DNA degradation scoring

A quantitative alternative to traditional gel electrophoresis is a genomic DNA assay developed for the LabChip GX Touch system which utilizes a Genomic DNA Quality Score (GQS). Data are provided in digital format, allowing for laboratory information management system compatibility, archiving, and distribution.

Quickly assess gDNA samples from 25-12,000 base pairs in 30-60 seconds with gDNA integrity checking up to 40,000 base pairs (Figure 7).

Ordering information

Instruments

CLS137031 LabChip GX Touch HT compatible with both 24 and HT Chips described below

CLS138162 LabChip GX Touch 24 compatible with 24 Chips described below

Assay	Size range and concentration	Reagent kit	24 chip	HT chip
DNA 1K	25 bp – 1000 bp, 0.1 – 50 ng/µl (Fragments)	CLS760673	CLS138948	760517
DNA 5K	50 bp- 5000 bp, 0.25 – 50 ng/µl (Fragments)	CLS760675	CLS138949	760435
DNA 12K	100 bp- 12,000 bp, 0.25 – 50 ng/µl (Fragments)	760569	CLS138948	760517
DNA High Sens	50 bp- 5000 bp, 10 pg/µl – 500 pg/µl (Fragments)	CLS760672	CLS138948	760517
Genomic DNA	50 bp - 40,000 bp, 0.2- 5 ng/µl (Total)	CLS760685	CLS138948	760517
DNA NGS 3K	50 bp- 3000 bp, 0.5 – 50 pg/µl (Fragments)	CLS960013	CLS145331	CLS144006
cfDNA	50 bp- 7000 bp, cfDNA QC	CLS157242	CLS145331	CLS144006
pDNA	2,000-13,000bp, 0.25-50 ng/uL	CLS160450	CLS160538	-
RNA	100 – 6,000 nt, 25 – 250 ng/µl (Total)	CLS960010	CLS138949	760435
RNA Pico	100 – 6,000 nt, 0.5 – 5 ng/µl (Total)	CLS960012	CLS138949	760435
Small RNA	20 – 150 nt, 0.1 – 10 ng/µl (Total)	CLS153530	CLS138949	760435

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