GENOMICS WORKFLOW SOLUTIONS THAT GO WHERE THE SCIENCE LEADS
WORKFLOW SOLUTIONS FROM EXTRACTION TO ANALYSIS
Application-based answers for every step of your workflow

Scientists working in genomics research know that providing higher quality DNA for downstream analysis is a critical aspect of the workflow. Our next generation of DNA analysis solutions reduces the complexity and bottlenecks of nucleic acid quantitation and analysis presented by today’s sequencing technologies. We’re the only partner that can offer technologies upstream and downstream of the genomics workflow, including our automation, microfluidics, and bioinformatics platforms to help scientists analyze nucleic acid efficiently, at the lowest price per sample.

Standardized hardware configurations with prevalidated protocols and instrumentation to measure the fundamental characteristics of nucleic acids provide the flexibility and quality control to support novel approaches and chemistries in the NGS process.

With our best-in-class nucleic acid extraction, liquid handling, sample preparation, DNA/RNA quantitation, and applications expertise, you have an ally who understands your underlying science and can provide the solutions that address the full breadth of your scientific requirements. All from a single-source who delivers the application support you need to be up and productive right from the start.

Applications Support – From DNA to Data

- Next-generation sequencing (whole genome, exome, targeted amplicon sequencing)
- Epigenomics
- Transcriptomics
- cDNA synthesis
- PCR/qPCR
- Sample prep from FFPE
- Genotyping
- De novo assembly and detection of structural variants

Next-Generation Sequencing Workflow

![Next-Generation Sequencing Workflow Diagram](image)
Getting the highest quality DNA is the critical first step in any genomics sample workflow. You need to be able to extract from a wide range of sample volumes and types and measure for purity, integrity, and concentration.

Our solutions for extraction and quantitation ensure that only DNA/RNA of the highest purity and integrity are used in library generation.

**Automated high-yield nucleic acid extraction**

The JANUS® G3 chemagic automated workstation combines best-in-class magnetic bead nucleic acid isolation technology with a fully flexible liquid handler to offer reproducible, high-throughput extraction of the highest purity from a variety of blood, plasma and saliva sample types. The system accommodates blood sample volumes from 10 µL to 4 mL with increased throughput and yield when compared to alternative platforms. Independent liquid-handling extraction enables additional flexibility for primary sample transfer, sample normalization, and PCR setup.

**Fast quantitative analysis of DNA/RNA samples**

Our innovative LabChip® GX Touch microfluidics technology delivers unparalleled electrophoresis separation for high-sensitivity DNA/RNA analysis, DNA smear analysis, and RNA and gDNA integrity analysis all on one platform, in as few as 30 seconds per sample. The system is available in both a 24-sample platform, saving time and reagent expense, and in an HT platform, accommodating up to 384 wells for high-throughput workflows. You choose the right data output for your application: electropherogram, virtual gel, or data table format. And our exclusive genomic quality score (GQS) and RNA quality score (RQS) offer objective guidelines for determining sample integrity.

**Full-spectrum UV/VIS analysis of small droplets**

The LabChip DS system analyzes 96 samples in under five minutes, even with volumes as low as 1 µL, allowing for fast, full-spectrum assessment of sample impurities before expensive downstream processing begins. The low volume requirement and broad dynamic range (DNA/RNA: 5 ng to 5,500 ng/µL; protein 0.01 to 200 OD) enable the rapid quantitation of samples.
Our next-generation sequencing sample preparation solutions eliminate the processing bottlenecks presented by today’s sequencing technologies. Open-platform and application expertise enables support for a diverse set of vendor reagent chemistries across our sample preparation portfolio.

**Sample prep with dozens of validated methods**

The Sciclone® G3 NGSx workstation is the high-throughput solution for library prep, sequence capture, and normalization. The system makes it possible to prep samples for up to 480 libraries or 192 exome captures per week, with the flexibility to handle up to 96 samples per run. Plus, the Sciclone G3 NGSx Workstation is a fully enclosed system, so cross-contamination is kept to a minimum.

**Benchtop, adaptable liquid handling**

The JANUS G3 NGS Express workstation uses an intuitive library-prep interface for fragment library preparation, amplicon sequencing, target capture, and sample normalization. It’s the perfect complement for benchtop sequencers such as the Ion Torrent PGM™ and MiSeq® systems.

**Post-PCR NGS liquid handling made simple**

The Zephyr® G3 liquid handling platform is a simple, easy-to-use library prep system specifically designed and preprogrammed to address post-PCR steps in next-generation sequencing sample preparation workflows – magnetic bead-based purifications, qPCR setup, sample normalization, and sample pooling (multiplexing) protocols.
EVERYTHING YOU NEED FROM LIBRARY PREP TO ANALYSIS

Eliminate library preparation bottlenecks

Geared toward upfront sample preparation and tracking and downstream data analysis, our solutions offer complete front- and back-end support for commercially available DNA sequencers. We provide easy-to-understand methods to support dozens of premier DNA sequencing applications, such as exome, targeted, microbial, and whole genome. Our highly experienced staff can walk you through high-throughput library preparation, multiplex barcoding, and target capture. With state-of-the-art sequencing using Illumina HiSeq™ and MiSeq™ instrumentation, and a tiered approach to bioinformatic support, our application services can enhance your ability to focus on critical discovery.

More than 50 open-platform, automation-friendly library prep sequencing methods get you up and running samples in just one week. You can choose from a large selection of available protocols for the chemistry or sequencing platforms you rely on most, including:

- Agilent
- Illumina
- KAPA Biosystems
- Life Technologies
- New England Bio Labs
- NimbleGen
- Nugen
- Pacific Biosystems
- And many more

Methods are available for the JANUS G3 NGS Express, Sciclone G3 NGSx and Zephyr G3 workstations.

Genomic data visualization and analysis

The OmicsOffice® Suite leverages TIBCO Spotfire® technology’s easy-to-use interface to analyze data from large genomic studies, perform comprehensive quality control and use interactive filtering and visualizations to enhance your data analysis. With OmicsOffice Suite, you can seamlessly integrate advanced statistics and annotation management extracting meaningful biological signals and easily identify biomarkers and gene signatures – even from your in-house or third party analysis tools. It’s an ideal solution for functional genomics, including mRNA expression profiling, biomarker discovery, as well as next generation sequencing applications such as RNA-Seq and ChiP-Seq.
THE INTEGRATED WAY TO BETTER RESULTS

Explore the possibilities

The cell::explorer™ robotic automation platform leverages our leading liquid-handling extraction and detection expertise to dramatically increase process throughput while improving overall data quality.

The integrated cell::explorer gene pro platform provides walkaway automation for all genotyping processes – everything from DNA extraction and normalization to PCR plate preparation and real-time PCR – all in a compact, space-saving format. And while the cell::explorer platform is an off-the-shelf solution, it’s flexible and adaptable to your changing scientific requirements.

Microfluidics made easy

The LabChip GX Touch supports a complete portfolio of quantitative DNA and RNA assays for fragment and NGS smear analysis. Assays vary in size and sensitivity range, depending on the application. For example, the LabChip DNA NGS 3K assay offers the highest sensitivity for low-input samples at very low concentrations (5 to 500 pg/µL) – exceeding that of other DNA fluorescent-labeling technologies.

Application-specific consumable kits

Take the hassle out of buying consumables for your Sciclone G3 NGS/NGSx Workstation with customized application-specific consumable kits. These kits provide exactly what you need to run sample preparation workflows for standard reagent platforms. That means less time and money wasted and greater productivity. Sciclone G3 NGS and NGSx workstations run from eight to 96 samples (in multiples of eight). The number of plates, lids, and reservoirs required to complete the run is constant, regardless of the number of samples.

This integrated systems includes JANUS automation, LabChip microfluidics, chemagic nucleic acid extraction, plate:handler™ barcode labeler and scanner, and a Roche® Lightcycler®.

LabChip for genomic research applications

StorPlate-96V
For research use only. Not intended for diagnostic procedures.

For more information, please visit www.perkinelmer.com/genomics