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A platform you can build on.

The ABI PRISM® 377 DNA Sequencer is the most successful biotechnology instrument ever built. Since 1995, laboratories throughout the world have established it as the standard for high-throughput DNA sequencing and fragment analysis.

And for good reason. The ABI PRISM 377 system was designed from the inside out to produce large quantities of superior results. It is extremely versatile, allowing you to automate applications from genome sequencing to heterozygote detection to microsatellite and STR analysis. As requirements change, the ABI PRISM 377 system meets them with new performance upgrades, reagent technology, and innovative software. And behind it all are nearly two decades of PE Biosystems leadership in automated sequencing, experience in thousands of installations, and a worldwide customer support organization that is second to none.

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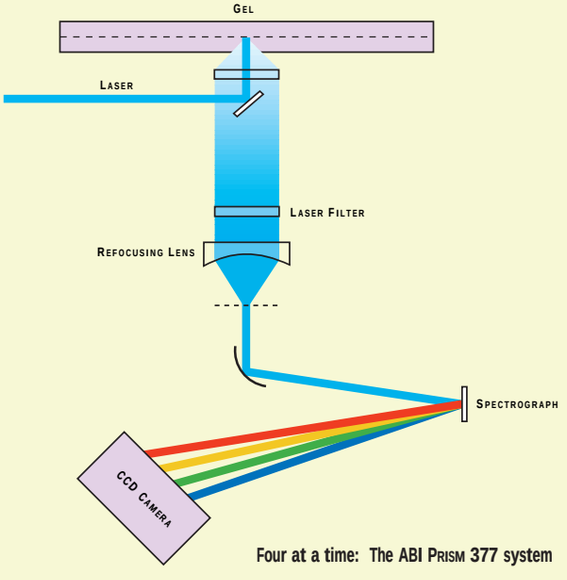
The power of four.

- *Proven four-dye, one-lane technology*
- *Simultaneous, multicolor detection*
- *High-throughput productivity*

The ABI PRISM® 377 DNA Sequencer collects sample data at rates up to 200 bases per hour. At that rate, up to three 36-cm gels can be run in less than eight hours. This throughput is a direct result of PE Biosystems' patented multi-color fluorescence labeling technology and four-dye, one-lane detection using a charge-coupled device (CCD) camera (U.S. patent number 5171534).

Made to fit: A self-aligning gel cassette helps to ensure that the laser light is focused precisely on the region of the gel that provides maximum sensitivity and reproducibility. The cassette accommodates 12-, 24-, 36-, and 48cm well-to-read gel lengths. By adjusting gel length and resolution, you can quickly optimize performance for your application.



Four at a time: The ABI PRISM 377 system detects the fluorescent emissions of labeled DNA fragments simultaneously by separating the wavelengths of individual dyes onto a CCD camera. CCD technology allows seamless adoption of new wavelength dyes without complicated and costly filters required by vacuum tube PMT systems.

One scan, four colors.

- *Fast, accurate electrophoresis*
- *Automated data collection*
- *Elimination of lane-to-lane variables*

Four-dye, one-lane technology set the standard for high-throughput DNA sequencing and analysis with fast, accurate automation of electrophoresis and data collection. By taking full advantage of that speed and accuracy, the ABI PRISM 377 system takes sample throughput to a new level, while also eliminating lane-to-lane variables that can compromise your results.

Global solutions: The ABI PRISM 377 DNA Sequencer is chosen by laboratories throughout the world for unmatched performance, reliability, and worldwide customer support.

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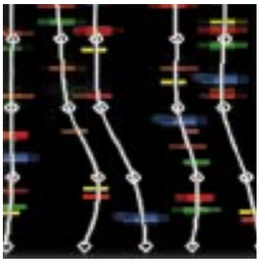
Applications of power: PE Biosystems offers an ever-growing range of convenient, application-specific kits that are optimized for use with the ABI PRISM 377 system.

Track a wide range of sequencing gels: The Neutral Net Tracker has been trained with hundreds of sequencing gels and can identify gel features from lane artifacts—significantly improving the number of gels that are tracked with greater than 95% accuracy.

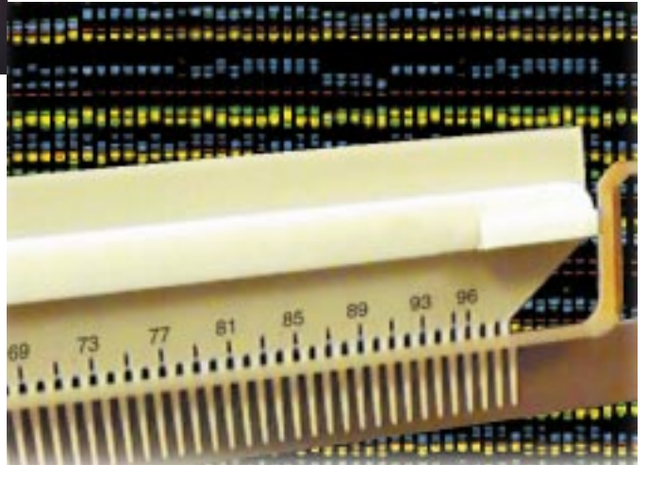


Continuous improvement.

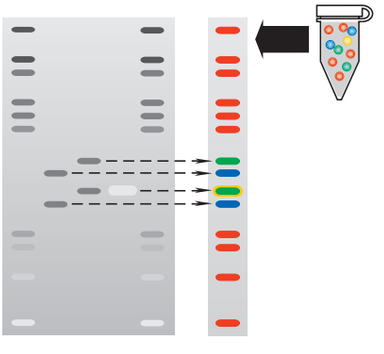
- *Leading-edge technology*
- *Fast, economical system upgrades*
- *Enhanced performance and reliability*
- *A growing line of reagents and kits*

Since the ABI PRISM 377 system was introduced, PE Biosystems has provided regular upgrades, new reagent technology, and software updates that expand and enhance the system's performance and reliability. This commitment to ongoing development ensures that your ABI PRISM 377 system will provide leading-edge DNA sequencing and fragment analysis capability for years to come.

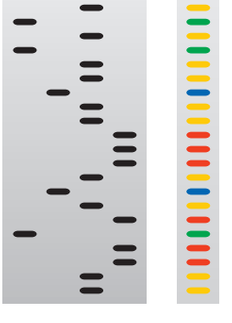
Easy to upgrade: The 377 system is available from 18 to 96 lanes. You can start with as few as 18 lanes and easily upgrade to 36-, 64-, or 96-lane systems at any time.



Multicolor fragment analysis: Single-label methods, such as autoradiography, require five lanes to yield as much information as one lane with the ABI PRISM 377 Sequencer. With the 377 system, DNA fragments and internal DNA standards labeled with different dyes are run in the same lane, with a single sample loading.



Four-dye, one-lane sequencing: Conventional sequencing methods use a separate lane for each extension reaction, which increases variability due to lane-to-lane variation. By running all four bases in a single lane, the ABI PRISM 377 system eliminates variables and increases sample throughput.



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- *Single-point control of all system functions*
- *Automatic data collection for high-throughput and reliability*
- *Your choice of ABI PRISM® DNA Sequencing Analysis or GeneScan® Fragment Analysis Software*

The ABI PRISM 377 system was designed for high-throughput productivity—and so was the system software. Depending upon your application requirements, you can configure the ABI PRISM 377 system with ABI PRISM DNA Sequencing Analysis Software, GeneScan® Analysis Software, or both.

Control central.

Single-point control: Automatic system control and data collection software make the ABI PRISM 377 system easy to use. All functions are controlled from the computer using graphical forms and windows to enter information and monitor samples, data, and instrument status.

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High-efficiency system management.

- *Streamlined operation*
- *Short learning curve*
- *Real-time system monitoring*
- *Powerful display options*

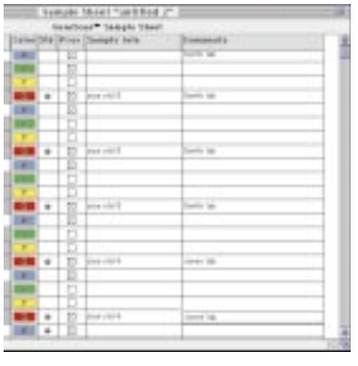
The ABI PRISM 377 Data Collection Software includes everything you need to set up the system, run a gel, and collect data for automatic transfer to ABI PRISM DNA Sequencing Analysis or GeneScan software. A streamlined graphical user interface makes training and operation fast and easy. First-time users can master the basics in just a few hours. More experienced users will appreciate the time-saving shortcuts, powerful display tools, and accelerators that help them speed through their work.

All instrument settings and sample information are stored in separate files for each lane position in a gel. During electrophoresis, the system monitors instrument conditions in real time and displays the gel image as it is collected, so you can quickly review and evaluate results at any time.

Fine-tuned electrophoresis.

- *Versatile parameter settings*
- *Optimized run modules*
- *Active temperature control*

The ABI PRISM 377 system gives you control over electrophoresis parameters, so you have control over the quality of your data. When setting up a run, the system control software allows you to choose a run module optimized for run speed, separation distance, gel thickness, gel temperature, and gel voltage. During the run, active temperature control ensures the reproducibility of your results by maintaining constant temperature. The system also allows the use of an external water bath for SSCP and other applications that require subambient gel temperatures.

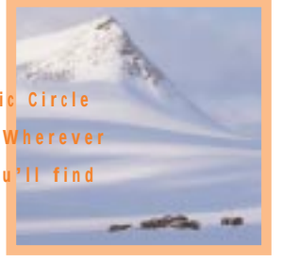


Enter sample information in the Sequencing Analysis or GeneScan software sample sheet (shown here).

Set run parameter and start run in the Sequencing Analysis or GeneScan software run sheet (shown here).

Check instrument conditions in the status window. (GeneScan software gel image shown in background.)

Going to extremes: From above the Arctic Circle to the rain forests of Central America... Wherever ABI PRISM 377 systems are installed, you'll find expert customer service and support.



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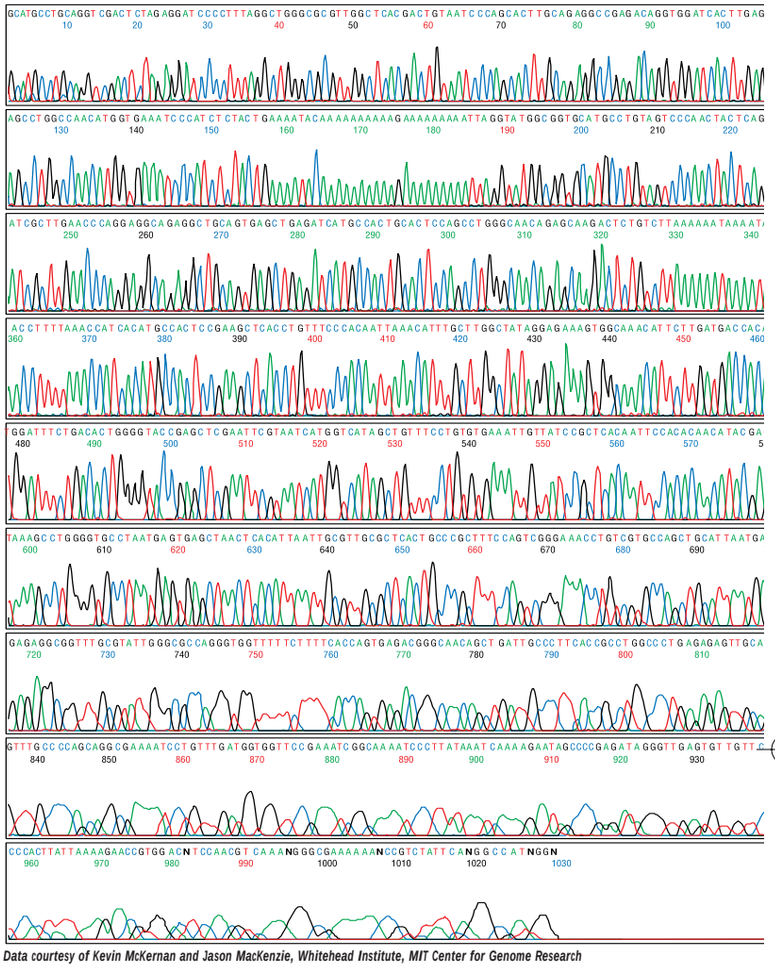
Accelerated DNA sequencing.

- *Fast, easy multicolor labeling*
- *Reduced pipetting and consumable costs*
- *Improved throughput and accuracy*

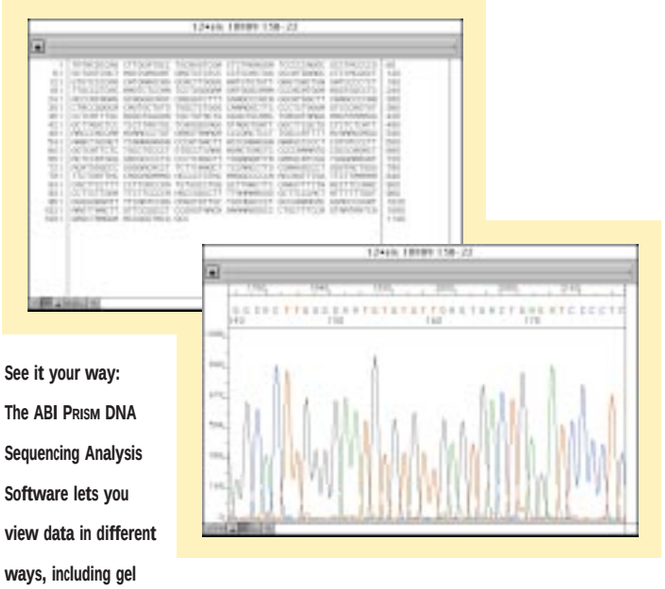
It all starts with the chemistry.

The exceptional accuracy of the ABI PRISM® 377 system is made possible by high-quality ABI PRISM DNA sequencing kits and multicolor detection technology. ABI PRISM DNA sequencing kits are based on ABI PRISM BigDye™ Cycle Sequencing Chemistry and AmpliTaq® DNA Polymerase, FS—the enzyme of choice for automated fluorescence sequencing. BigDye terminators and primers are single-molecule energy transfer systems that consist of energy donor and acceptor dyes connected by a highly efficient energy-transfer linker. The improved spectral resolution of the BigDye Chemistry reduces background noise, resulting in cleaner signal and greater basecalling accuracy at longer readlengths. BigDye terminators offer the added advantage of one-tube reactions.

Clean signal, long reads: An M13 clone containing a 2.0 kb human insert was sequenced using the BigDye Terminator Cycle Sequencing Kit with AmpliTaq® FS enzyme. These data show excellent sequencing performance—a read length of greater than 1000 bases with basecalling accuracy of 98.0%.



Data courtesy of Kevin McKernan and Jason MacKenzie, Whitehead Institute, MIT Center for Genome Research



See it your way: The ABI PRISM DNA Sequencing Analysis Software lets you view data in different ways, including gel format and color-coded electropherograms.

A new standard in basecalling performance.

- *A choice of algorithms*
- *Superior reliability*
- *Dynamic data measurement*

ABI PRISM® DNA Sequencing Analysis Software offers a new level of performance with basecalling algorithms that produce optimal results for different types of samples. For most samples, the standard algorithm offers the highest accuracy—even for G-C rich samples and peaks of varying widths. When peak spacing and mobility fall outside the standard range, new adaptive algorithms provide superior reliability and accuracy by dynamically measuring data characteristics prior to basecalling.

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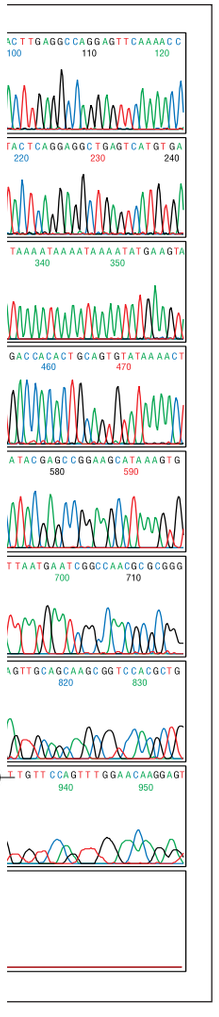


Ready to go: ABI PRISM BigDye Cycle Sequencing Kits combine the advantages of BigDye terminators or primers and AmpliTaq DNA Polymerase, FS in a ready-to-use format.

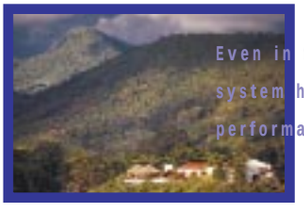
Better sequencing results, automatically.

- *From raw data to final sequences*
- *Automatic lane tracking using the Neural Net Tracker*
- *Convenient data display options*

During data collection, the ABI PRISM DNA Sequencing Analysis Software automatically stores the raw data for each template in the gel file, interprets the data, and calls the sequence with the algorithm you've selected. The software scales the data for presentation and creates a file containing the analyzed data and sequence. The results can then be displayed and transferred to ABI PRISM sequence analysis packages and other programs.

The Neural Net Tracker.

The Neural Net Tracker, part of the Sequencing Analysis Software, is a computational structure inspired by the study of biological neural processing. The tracker application has been trained with hundreds of sequencing gels and can identify essential gel features from lane artifacts. As a result, the Neural Net Tracker can identify and track a wide range of sequencing gels with greater than 95 percent accuracy.



Even in the harshest environments: The ABI PRISM 377 system has distinguished itself for consistent, dependable performance in all types of conditions and locations.

Tools to meet any sequencing challenge.

You can export results from ABI PRISM DNA Sequencing Analysis directly to these ABI PRISM software packages:

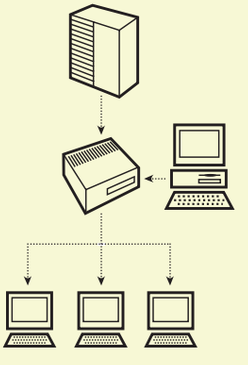
- *Factura™ software for vector identification*
- *AutoAssembler™ software for batch editing and assembly of consensus sequences*
- *Sequence Navigator® software for high-resolution sequence comparisons, heterozygote identification, and mutation analysis*

An open system.

The ABI PRISM 377 system generates sample files in a format that allows you to dynamically reorganize the data while maintaining quick access. A programmer's toolkit for building custom applications is available free of charge, giving you access to the sequence, sizing, or quantitation information contained in the sample files.

Automated information management.

The ABI PRISM BioLIMS™ system stores sequencing analysis files in a centralized relational database and automatically transfers the information to downstream analysis packages. The system can be linked to other databases and modified by editing the automation scripts.



Genetic information management: The ABI PRISM BioLIMS system allows multiple users to access sequence data from a centralized database and automatically identify vectors, assemble contigs, or search sequences.

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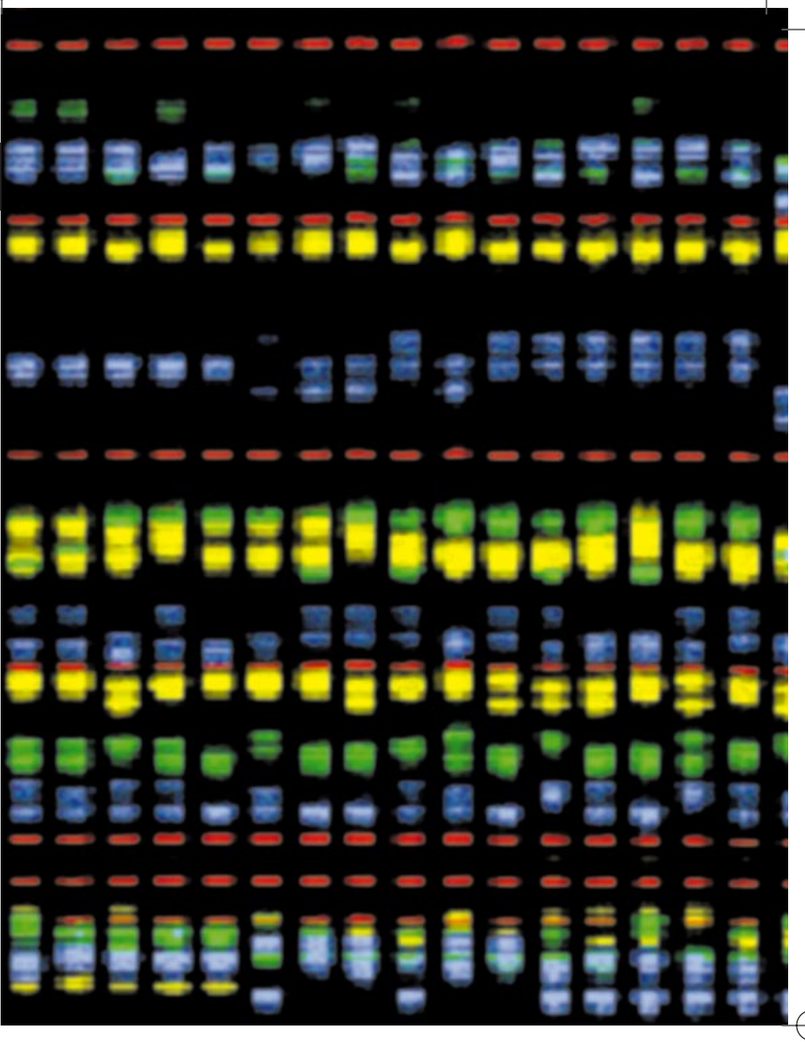
Comprehensive DNA fragment analysis.



Single-base resolution: ABI PRISM GeneScan software precisely sizes bands that differ by as little as one base.

- *High-throughput fragment sizing and quantitation*
- *The broadest range of optimized PCR labeling chemistries*
- *Integrated software for streamlined efficiency*
- *High sensitivity for PCR applications*

One-lane accuracy, multicolor productivity.

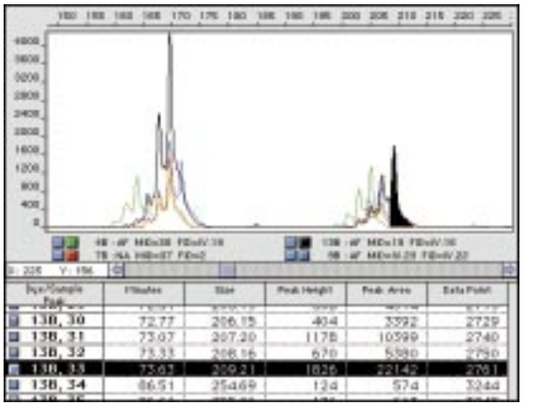
The ABI PRISM® 377 system has the power and flexibility to run any DNA fragment sizing, quantitation, or mutation detection method, including microsatellite analysis, SSCP, AFLP™ program, STRs, OLA, gene expression studies and more. Using ABI PRISM internal lane standards, the system can resolve fragments that vary by as little as one base in size and can detect the signal amplified from a single target molecule. A dynamic range of three orders of magnitude allows you to run samples with widely varying signal amounts on the same gel.

Unprecedented throughput.

- *Complete projects faster*
- *Run thousands of genotypes a day*
- *Improve accuracy and reproducibility*

The ABI PRISM 377 system automatically detects and records electrophoresis data from up to 36 lanes per gel and can easily run three 36cm gels or six 12cm gels—with fragments ranging from 50 to 350 bases—all in an eight-hour day. For linkage analysis and other high-throughput applications, up to 20 microsatellites can be multiplexed and run in the same lane. That's 2,160 genotypes per eight-hour day. And you can upgrade to 64- or 96-lane systems to increase easily your throughput as needed.

Fast genome screening: The ABI PRISM Linkage Mapping Set is a highly optimized, 10 cM human index map comprising dye-labeled primers that amplify specific microsatellite markers. When used on the ABI PRISM 377 system, the ABI PRISM Linkage Mapping Set provides unprecedented throughput and performance.



Display options: GeneScan software data can be displayed as an electropherogram or charted values.

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