

# Eliminate Fragment Analysis Bottlenecks

Agilent ZAG DNA Analyzer System





# Eliminate Bottlenecks From High-Throughput Fragment Analysis

DNA fragment analysis is a critical, though time-consuming, process in molecular biology. In high-throughput labs, this step often creates bottlenecks which are magnified by conventional analysis methods, such as agarose gel electrophoresis. The Agilent ZAG DNA Analyzer system is designed to alleviate fragment analysis bottlenecks by allowing labs to load up to 864 samples at once and separate more than 4,608 samples per day.

Using automated parallel capillary electrophoresis to separate 96-samples simultaneously, the ZAG DNA Analyzer system offers high-throughput fragment analysis for a range of applications, including PCR amplicon analysis, genotyping, restriction digest analysis, and microsatellite/SSR analysis.



## ZAG DNA Analyzer System

- Designed for high-throughput fragment analysis
- Low sample cost for routine fragment analysis
- Separation resolution as good as 3 bp
- Multiple kits for varying size ranges and applications

# Take Advantage of the Benefits of Automated Parallel Capillary Electrophoresis

A smooth workflow helps reduce user stress and increase efficiency. The ZAG DNA Analyzer system offers many benefits to users of all types such as allowing researchers to avoid over-running agarose gels and stacks of unorganized gel images.

## Easy set up and programming allows you to use your time efficiently.

- Unattended operation provides additional time for concentrating on other tasks
- Load up to nine, 96-well plates for analysis of 864 samples without user intervention
- Single dilution of a sample simplifies run preparation
- Complete electrophoretic separations in as little as 20 minutes for 96 samples

## Easily adapt to changes in your workflow with flexible options.

- Maximize for speed or resolution by choosing a shorter or longer array
- Minimize wait times with the capability to program additional sample trays during active runs
- Separate more than 4,608 samples per day
- Intuitive software features allow for batch processing and automatic flagging of wells meeting defined criteria



# Fragment Analysis Applications

Many facilities now require high-throughput solutions for handling time sensitive analysis needs and large data sets. The ZAG DNA Analyzer system allows for identification of DNA fragments during vector construction, clone selection, and synthetic biology applications.



## Genotyping

Streamline genotyping with automated analysis of PCR amplicons using parallel capillary electrophoresis. Easily identify wildtype, heterozygous or homozygous knockouts with intuitive flag analysis.

## PCR Fragment Sizing

Accurately size PCR fragments from 35 to 20,000 bp. Unique gel chemistry allows for separation of closely sized DNA fragments down to 3 bp difference at or below 300 bp.

## Microsatellite Detection

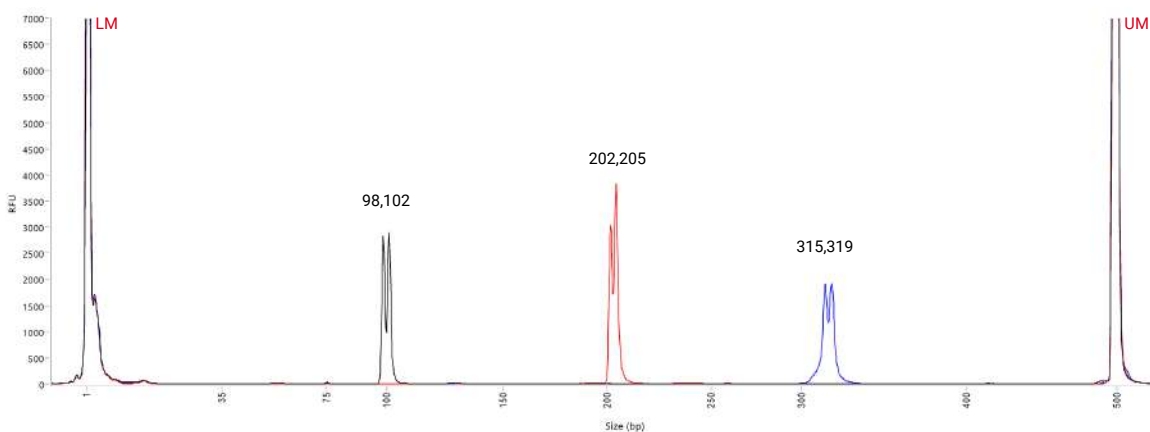
Quickly analyze microsatellites, which are short tracts of repetitive DNA also called short tandem repeats (STRs) or simple sequence repeats (SSRs). Repeats of 3 bp or greater can be detected in about an hour.

## Restriction Digests

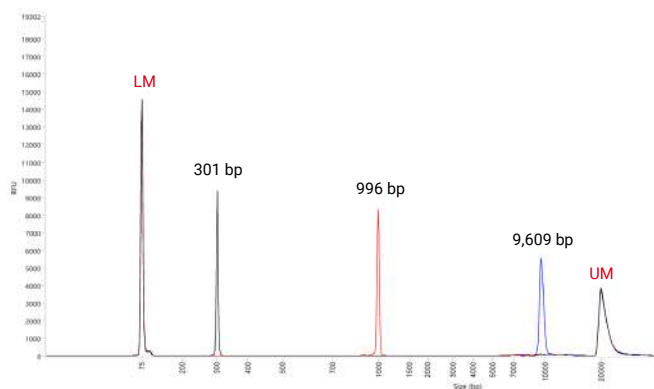
Rapidly screen restriction digests during plasmid preparation and other synthetic biology applications.

# Choose Your Size Range

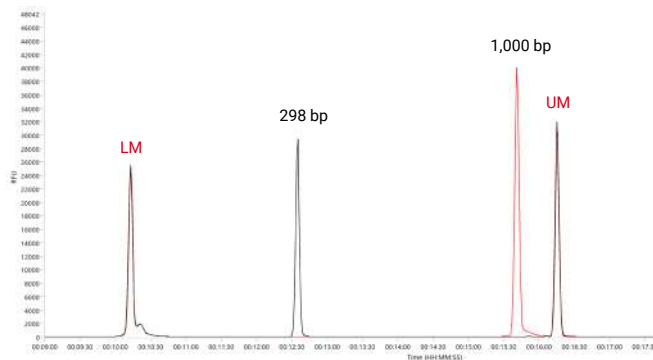
You have the option to choose between four qualitative fragment assessment kits that have been optimized for various size ranges and applications. Separations that allow for fragment resolution as good as 3 bp at or below 300 bp or for broad-range fragment analysis for sizing of fragments up to 20,000 bp are available. Additionally a kit is optimized for speed with electrophoresis through 1,500 bp in only 20 minutes.



**Figure 1.** Separation of fragment mixes on the Agilent ZAG DNA Analyzer system with the Agilent ZAG 105 dsDNA kit (1-500 bp) using the short 33 cm array. Known sizes are 101/104 bp, 201/204 bp, and 306/310 bp with a 3, 3, and 4 bp difference, respectively. Overlay shows average sizes. LM = lower marker; UM = upper marker.



**Figure 2.** Separation of 300, 1,000, and 10,000 bp DNA fragments with the ZAG 130 dsDNA kit (75-20000 bp) using the short 33 cm array with the observed sizes displayed. The ZAG 130 dsDNA kit (75-20000 bp). LM = lower marker; UM = upper marker.



**Figure 3.** Separation of 300 and 1,000 bp fragments with the ZAG 135 dsDNA kit (1-1500 bp) on the short 33 cm array with observed fragment sizes shown. Increased running voltage allows for complete separations in 20 minutes. LM = lower marker; UM = upper marker.

# Features of the ZAG DNA Analyzer System

The ZAG DNA Analyzer system was designed to improve the efficiency of DNA fragment analysis while keeping researchers in mind. The key features of the instrument allow you to perform analysis unattended, helping you minimize time to results.



## 96-Capillary array

Choose between two lengths of 96-capillary arrays optimized for faster run times or higher resolution.

## High sample capacity

Load up to nine, 96-well plates for unattended analysis of 864 samples.

## Versatility

Set up two different gels at the same time for automated separation of different size ranges.



# Key Features of the Capillary Array

The capillary array is the basis of the ZAG DNA Analyzer system. Once filled with gel, voltage is applied to first inject, then move DNA samples through individual capillaries in a size-dependent manner. Samples are detected by a sensitive Charged Couple Device (CCD) and translated to an electropherogram for sizing and analysis by ProSize data analysis software.

## Suitable for high-salt PCR samples

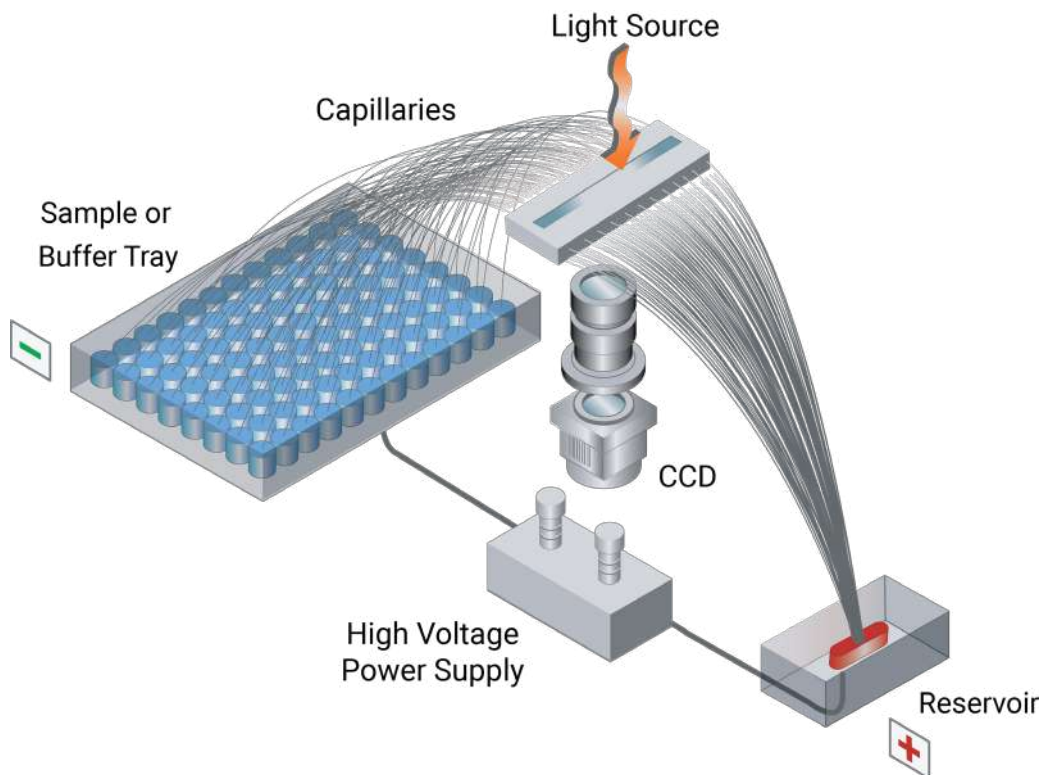
Every capillary is flushed with fresh separation gel between runs preventing salt buildup. This allows for PCR samples to be separated without cleanup steps.

## Prioritize separation resolution or separation time

Capillary arrays are available in two different lengths to optimize speed or resolution. The shorter capillaries offer faster separation times but reduce separation resolution, while the slower runs of the long capillaries offer improved separation resolution.

## Low maintenance

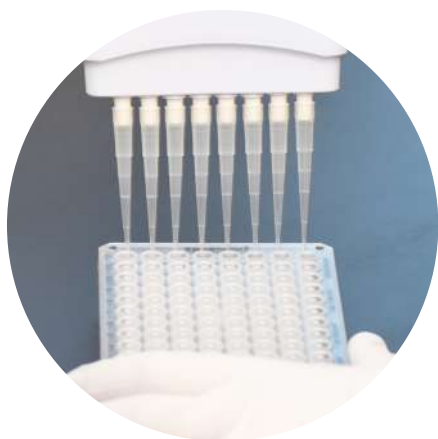
The durable design and construction of the array allows the capillaries to be stored on the instrument. Automated maintenance tasks including cleaning and conditioning reduce the need for array handling.





# Simple Preparation, Intuitive Operation

The ZAG DNA Analyzer system saves time through simple preparation and intuitive operation. This allows researchers to complete fragment analysis in just five easy steps: prepare the instrument, load your samples, select your method, start your run, and walk away until you are ready to analyze the results.



## Step 1: Prepare Instrument

Load gel and conditioning solution, change inlet buffer, and empty waste drawer/bottle.



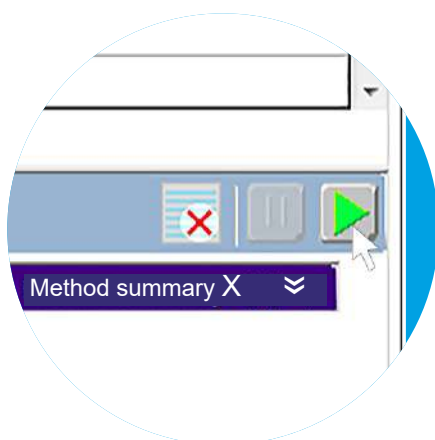
## Step 2: Load Sample

Load your runs with just a single dilution and 2  $\mu$ L of sample per well.



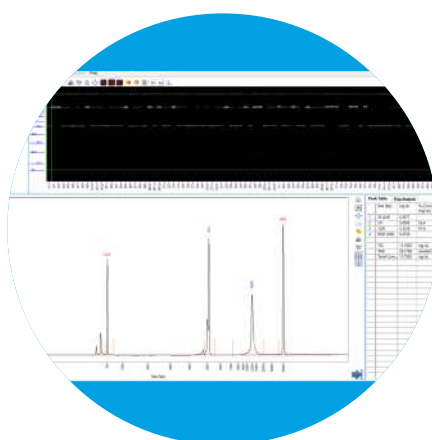
## Step 3: Choose Method

Select your method from the dropdown menu and enter any notes for the run.



## Step 4: Start Runs

Queue up to 864 samples and walk away.



## Step 5: Analyze Results

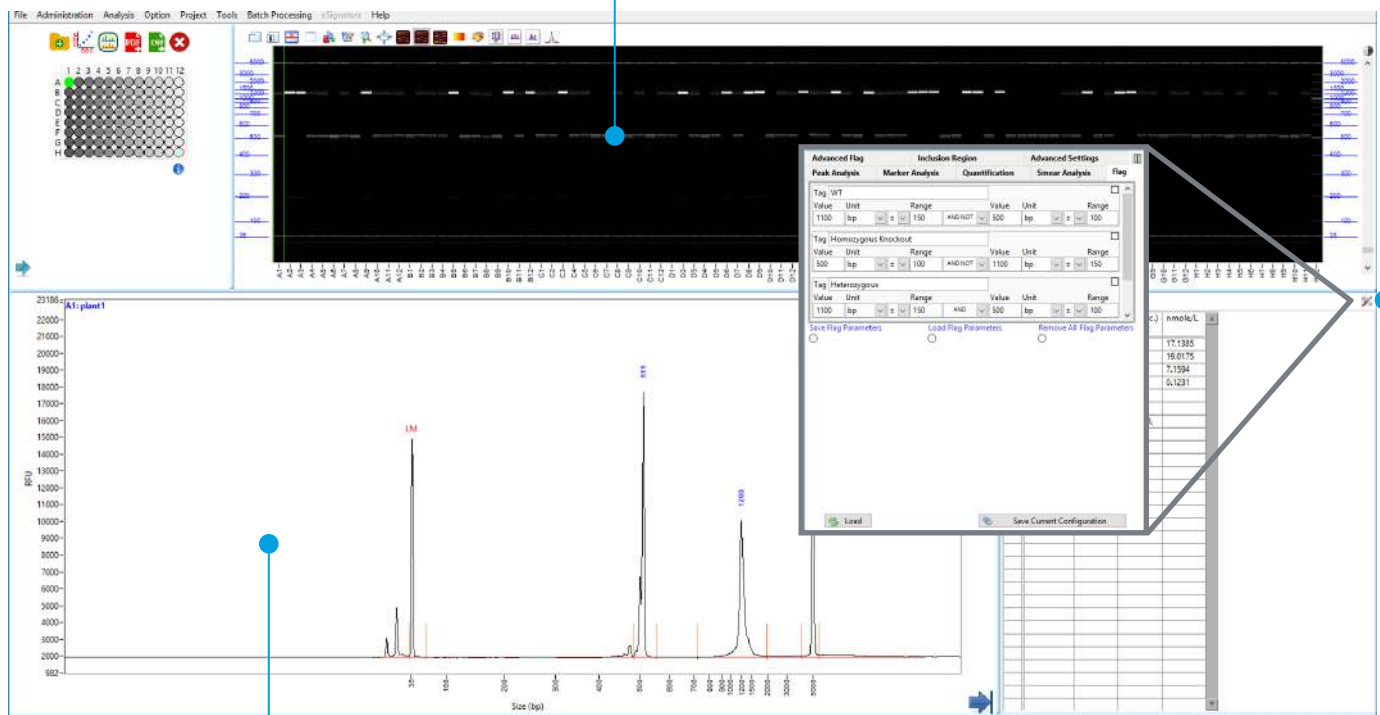
Process separation data with ProSize data analysis software.

# Key Aspects of ProSize Data Analysis Software

ProSize data analysis software is a robust, validated software package that simplifies the identification of DNA fragments. Designed with researchers in mind, ProSize software automatically displays the data in multiple formats and can identify wells meeting DNA fragment flagging criteria. Researchers can also easily share data with coworkers with options to export run files in PDF and CSV formats.

## Digital gel image

Data represented as an interactive digital gel image with tools for basic adjustments



## Electropherogram

Data represented as an interactive electropherogram with tools for basic adjustments

## Individual parameter

Set specific parameters to customize sample analysis, and flag wells meeting defined criteria



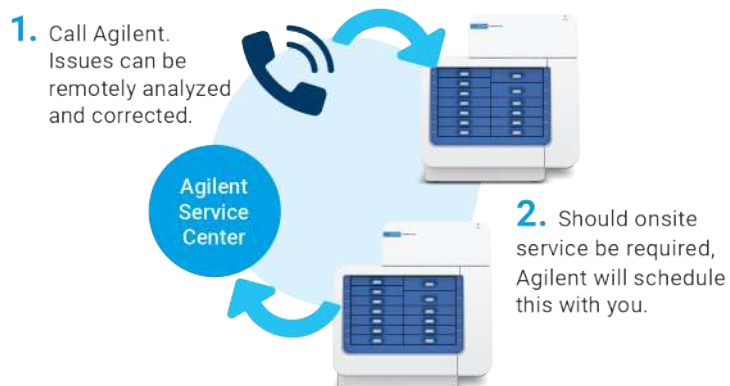
## Support Services for the ZAG DNA Analyzer System

### Get peace of mind through comprehensive instrument and assay familiarization

Agilent offers an onsite startup service to familiarize you with the instrument and software, as well as an assay of your choice. You can also choose from additional service options to suit your lab's specific service-level needs.

### Additional Support Services

A one-year standard warranty is included with all ZAG DNA Analyzer systems. This may be upgraded to CrossLab Silver level and extended to cover up to five years total warranty time. This premium service includes travel, labor, parts, onsite repair, and an annual system preventative maintenance service.



Learn more:

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Published in the USA, August 1, 2019  
5994-0426EN

