Introducing the most sensitive 1536-well HTS system for biomolecular and cell-based assays.
We’ve redefined 1536. In the past decade, a whole new world of drug discovery opportunities has opened up. For example, developments in combinatorial chemistry have enabled companies to create libraries with hundreds of thousands — if not millions — of molecular screening candidates. The implications for identifying more lead compounds are staggering. Unfortunately, so are the implications for creating more process bottlenecks.

In today’s highly competitive environment, the challenge is to develop assays reliable enough to work at higher throughput — without missing critical data. After all, undetected compound target interactions can truly have “make-or-break” consequences.

Not surprisingly, a 1536-well format has great allure. But a 1536-well instrument that fails to balance speed with sensitivity and specificity will likewise fail to accelerate time-to-market.

That’s why you need the new NorthStar™ HTS Workstation from Applied Biosystems. It’s a solution that’s implemented on-site — so you retain control over compound libraries. And it’s flexible enough to work with 96-, 384-, and 1536-well plates. But most importantly, the NorthStar™ represents the fastest, most productive, and most cost-efficient way to get from “here” to “there” in the drug discovery process.

So you’ll be able to capitalize on emerging opportunities — for optimized competitive advantage.
Unparalleled Screening Expertise with Applied Biosystems Chemiluminescence

The NorthStar™ HTS Workstation leverages the proven performance of Applied Biosystems HTS solutions. Quite simply, we’ve helped develop the industry’s most sensitive and reliable assays. Our pioneering chemiluminescence technology remains the most sensitive assay detection modality available.

That means NorthStar™ can handle cell-based and biomolecular assays, and more difficult targets, better than any other instrument. Period.

In addition, our experience in custom assay development ensures your assays match strictly defined research parameters. With a panel of robust screening assays optimized for use with the NorthStar™ platform — and optimized to generate relevant hits against specific targets — you save time, money, and resources.

And — ultimately — you help accelerate the drug discovery process.

Not just more hits ... better hits

Given the complexity of the drug discovery process, it’s little wonder that only a small percent of candidate compounds are ultimately approved for marketing. Yet the NorthStar™ HTS Workstation enhances overall productivity by taking an integrated system approach — one that encompasses the multitude of factors affecting process outcome.

As such, you don’t just get increased hits — you get decreased false hits.

The system’s unique detection technology is based on a high-density, 1536-well format. In fact, NorthStar™ has an average run rate of more than 0.5 million assays per day — with typical read-times of 3–5 minutes for 1536-well-density plates. By multiplexing, NorthStar™ extracts more data in less time than conventional HTS systems.

The result is unprecedented sample throughput. Consistently.

NorthStar™ is engineered to handle miniaturized assays that can be critical for screening. As part of an integrated, leading-edge HTS system, NorthStar™ extends the life of chemical libraries; decreases the costs of reagents; and reduces use of scarce proteins, cells, and reagents.

With NorthStar™, you experience the power of a 1536-well format — without experiencing the problems common to competitive systems. For example, NorthStar™ is the most reliable instrumentation of its kind, with exceptional meantime-between-failures (MTBF) performance. Its total system approach allows walkaway automation, including easy integration with existing automation equipment. And it virtually eliminates liquid handling concerns.

What’s more, NorthStar™ has built-in functionality to read 96- and 384-well microplate formats. So it’s flexible enough to meet your sample needs. Today. Tomorrow. And well into the future.

Speed of Discovery: Throughput Comparison

<table>
<thead>
<tr>
<th>Format</th>
<th># of assays per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>96 PMT</td>
<td>34,560</td>
</tr>
<tr>
<td>384 PMT</td>
<td>138,240</td>
</tr>
<tr>
<td>NorthStar™</td>
<td>276,480</td>
</tr>
<tr>
<td>1536 PMT</td>
<td>552,960</td>
</tr>
</tbody>
</table>

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And — ultimately — you help accelerate the drug discovery process.
A comprehensive HTS solution

Applied Biosystems is a total HTS solutions provider. That’s why the NorthStar™ HTS Workstation is a fully integrated HTS system, providing proven screening assays, detection, and data analysis capabilities.

Optical detection system

The NorthStar™ HTS system is optimized for imaging and analysis of sample plates containing Applied Biosystems “glow” and/or injection-based “flash” luminescence reagents. Since this proprietary chemiluminescence technology is the most sensitive detection method available — and since NorthStar™ utilizes assays that deliver the highest signal-to-noise ratio — you can detect lead-target interactions typically missed by other detection methods.

NorthStar™ Optics Path

In addition to the filter wheel, charge-coupled device (CCD) camera, and camera lens discussed below, the optical detection system includes a collimator with integrated Fresnel field lens. The collimator functions to segregate light emanating from each sample well and is positioned to minimize crosstalk between areas.

The spatial resolution of the liquid-cooled charge-coupled device (CCD) camera is designed to provide high-quality imaging of high-density sample plates.

The large-aperture, low-distortion Nikkor™ lens — measuring 52mm in diameter — has a 35mm focal length with F/1.4.

The “read chamber” under the camera features programmable temperature control to optimize reagent activity.

The Fresnel lens creates telecentric optics that image straight down into the sample well. The collimator/Fresnel assembly is designed for specific plate formats and can easily be changed or removed to allow imaging of flat membrane samples.
**integrated system**

*Multiplex detection*

A motor-driven filter wheel allows the selection of different wavelength ranges. The NorthStar™ platform can measure two enzymes per sample with proprietary Applied Biosystems substrates using specific bandpass filters for signal discrimination.

*Hardware/software specifications*

For optimal control and data collection/analysis, the computer is a powerful Dell® PC desktop unit with Windows user interface and Windows NT® operating system. The software includes provisions to enter sample-plate setups, image plates, and analyze data.

*Injection/liquid handling system and interface capabilities*

The NorthStar™ HTS Workstation is compatible with several interface options, including a computer-controlled injector array to enable "flash" luminescence imaging and buffer additions prior to signal measurement; an automated plate handler robot to provide automated loading; and additional robotic devices.

*Transport mechanism*

The transport mechanism moves plates from a robotics-compatible load position, centers them precisely on the self-aligning plate carrier, stops at intermediate positions (as applicable) for reagent injection, and moves to the imaging position under the CCD camera optics. By utilizing a computer-controlled stepper motor with controlled acceleration, the transport mechanism moves trays quickly — without spilling liquid.

The NorthStar™ HTS system features **bar code detection** of microplates to match samples with data files.

The NorthStar™ HTS system is optimized for compatibility with both rotary and linear robotic systems and is available with an optional **Twister™** plate handler for automated plate delivery.
Combining the speed of 1536-well plates with unprecedented sensitivity

THE NORTHSTAR™ HTS WORKSTATION OFFERS:

- an exceptional MTBF rate
- a dynamic range of 5–7 orders of magnitude that enables measurement of more sample concentrations in a given run, without multiple dilutions
- injection capability for 96- and 384-wells
- superior uniformity for consistency across plates
- decreased crosstalk to maintain data integrity
- luminescence technology, the industry’s leading detection method
- unmatched data collection and analysis capabilities
- compatibility with existing robotic systems

Tap the power

A 1536-well format has tremendous potential in today’s competitive marketplace. However, such potential isn’t due to microplate quantity per se. In fact, an increase in throughput without corresponding increases in sensitivity and accuracy can severely impede drug discovery efforts … and dramatically erode competitive advantage.

To meet the demanding challenges of HTS environments, you need more than 1536 technology — you need a total system approach.

And that’s why you need the NorthStar™ HTS Workstation. Using NorthStar™ also means working in close partnership with AB for custom assay development, cell-based and biomolecular assay screening, and HTS reagent testing. In addition, you get the dedicated support of our parent company, Applera, and Applied Biosystems — the world leader in life science systems and instrumentation.

Faster time-to-market
So the time to act is now

With the NorthStar™ HTS system, you get more hits and more leads — for more meaningful data. The result is a more productive, more cost-efficient drug discovery process — with more qualified candidates in the pipeline.

And less time needed to get them there.

To learn more about the new NorthStar™ HTS Workstation from Applied Biosystems please call (USA only) or 1-800-345-5224 or visit www.appliedbiosystems.com.
About Applied Biosystems

AB pioneered the development and application of chemiluminescence technology for ultrasensitive biological detection. AB continues to advance the luminescent detection field by offering innovative reagents and assays and ultrasensitive high-throughput instrument systems. The Advanced Discovery Sciences group provides unique, proprietary high-throughput screening assays and ultrahigh-throughput screening services for accelerated pharmaceutical drug discovery.

Worldwide Sales Offices

Applied Biosystems vast distribution and service network, composed of highly trained support and applications personnel, reaches into 150 countries on five continents. For international office locations, please call headquarters or refer to our website at www.pebiosystems.com.

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