



Agilent RapidFire 365 High-throughput Mass Spectrometry System

# ACCELERATING PHARMACEUTICAL DRUG DISCOVERY

The Measure of Confidence

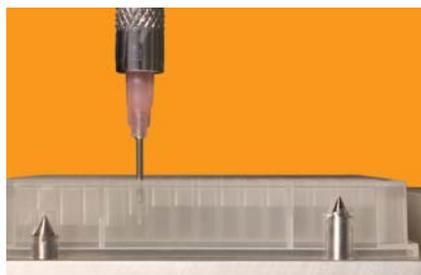


**Agilent Technologies**

## BRINGING PLATE READER SIMPLICITY TO MASS SPECTROMETRY

The RapidFire High-throughput MS System is a drug discovery platform that enables intractable targets for a variety of challenging therapeutic areas. It opens up new avenues for pursuing drug targets such as prostaglandins, lipids and fatty acids, peptides, proteins, and oligonucleotides—without the use of surrogates, radioactivity, coupled assays, or indirect measurements.

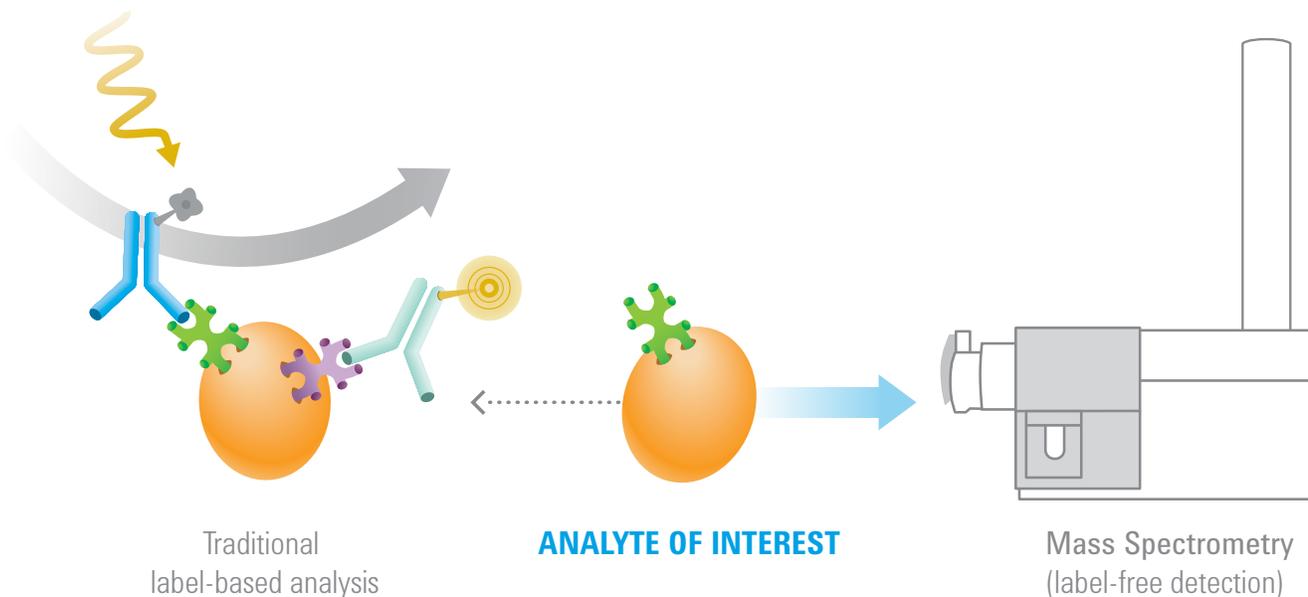
Lead discovery and ADME teams both benefit from shorter time-to-results and vastly more efficient use of staff and financial resources.



Innovative RapidFire technology delivers cycle times as fast as 8 seconds per sample.

Mass spectrometry offers the advantage of true label-free detection of native substrates and products in functional biochemical assays. The ultrafast RapidFire system delivers samples to the mass

spectrometer as fast as 8 seconds per sample. This combination of label-free detection and high-speed sample delivery provides an unparalleled methodology for drug discovery.



## Unlock Challenging Targets

For high-throughput screening labs, the RapidFire system performs primary and secondary screening of potentially high-value targets that are too costly or time consuming, or otherwise not amenable to screening by conventional assays. RapidFire native detection provides a reliable high-throughput alternative in experiments where surrogate substrates introduce confounding factors. New target classes in areas such as epigenetics can be explored by tracking multiple modification events on the same substrate.

## Shorten Time-to-Results

Unmatched cycle times as fast as 8 seconds per sample accelerate drug discovery decisions. No upfront sample preparation is required and assay developers are freed from the time-consuming task of antibody generation and validation.

## Maximize Productivity and Efficiency

Faster processing, less scientist intervention, and robust performance all significantly increase lab efficiency. With 12 cartridge capacity, 63-plate capacity, and automated plate handling via an integrated Agilent BenchBot Robot, researchers can perform weekend-long (60 hour) runs exceeding 20,000 injections. The RapidFire system features automated method development and solvent switching for different assays in a single batch, with innovative fluidics using three Agilent 1200 Series quaternary pumps.

## Reduce Costs

Substantial reductions in solvent and reagent usage and waste generation—including hazardous solvents requiring difficult disposal—contribute to markedly lower cost-per-well. The RapidFire system requires less than 0.5 ml of solvent per sample and each SPE cartridge is reusable for thousands of samples.



RapidFire can be used with Agilent's triple quadrupole (QQQ) and time-of-flight (TOF and Q-TOF) mass spectrometers.

# THE MOST EFFICIENT MS SYSTEM FOR LEAD DISCOVERY AND ADME ANALYSIS

The RapidFire High-throughput MS System is used by all of the top 10 global pharmaceutical organizations. Published data demonstrates how it has improved discovery outcomes for early stage discovery and *in vitro* ADME workflows.

## Fast, Efficient ADME Analysis

For ADME labs, the RapidFire system eliminates bottlenecks in high-throughput solubility analyses and *in vitro* ADME assays including P450 inhibition, metabolic stability, permeability, and PgP inhibition. As a replacement for HPLC, RapidFire technology reduces data acquisition time 10-fold and produces equivalent results to LC/MS as demonstrated by published data.

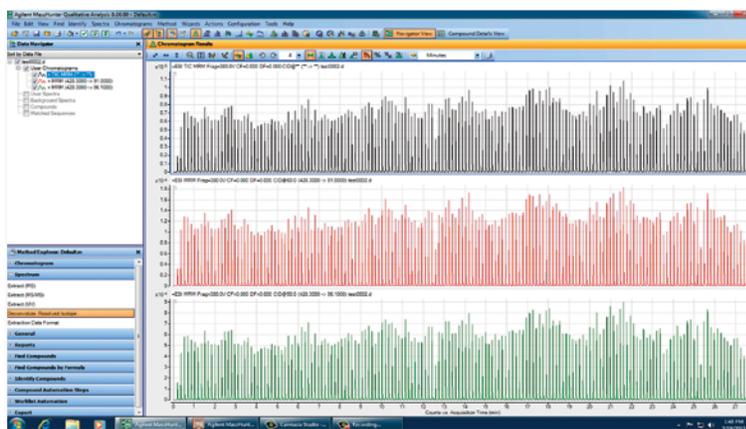
- Provides the fastest results, with cycle times of 8 sec per sample
- Generates 10x more data per FTE than LC/MS
- Maintains assay quality, without requiring off-line sample preparation
- Eliminates MRM method development using TOF or Q-TOF mass spectrometers

## Intuitive, Flexible Software Tools

Comprehensive and easy-to-use, Agilent MassHunter software provides data acquisition and analysis for the RapidFire system. Optional RapidFire Integrator 2.0 software provides comprehensive data visualization, facilitating the identification of data integrity issues at the experiment level, across thousands of injections.



RapidFire provides faster, more efficient ADME analysis.



Agilent MassHunter software provides powerful analysis tools for handling large data sets.

# TESTED APPLICATIONS GET YOU STRAIGHT TO RESULTS

Agilent provides a large library of downloadable application notes offering detailed guidance to help you achieve fast results using the powerful RapidFire High-throughput MS System.

## Lead Discovery Application Notes

High-throughput Analysis of Epigenetic Targets—  
Sirtuin (SIRT1 and SIRT2) Enzymes [5990-9345EN]

High-throughput Analysis of Epigenetic Targets—  
Histone H3 Demethylation by LSD1 [5990-9344EN]

High-throughput Analysis of Epigenetic Targets—  
Histone Acetyltransferase (HAT) [5990-9343EN]

Measuring DNA Modification Events Using the Agilent  
RapidFire High-throughput MS System

Analysis of Stearoyl-Coenzyme A Desaturase (SCD)  
[5990-9357EN]

Analysis of Acetyl-Coenzyme A Carboxylase (ACC)  
[5990-9356EN]

Fragment-Based Drug Discovery: Comparing Labeled  
and Label-Free Screening of  $\beta$ -Amyloid Secretase  
(BACE-1) Using Fluorescence Spectroscopy and  
Ultrafast SPE/MS/MS [5991-1338EN]

High-Throughput SISCAPA-Based Peptide Quantitation  
Using an Agilent RapidFire High-Throughput Mass  
Spectrometry System [5991-0380EN]

## ADME Analysis Application Notes

Ultrafast Analysis of Metabolic Stability Assays Using  
Agilent RapidFire High-resolution MS [5990-8344EN]

High-Throughput In Vitro ADME Analysis with Agilent  
RapidFire/MS Systems: Cytochrome P450 Inhibition  
[5990-9184EN]

Sensitive, High-Throughput In Vitro ADME  
P-Glycoprotein Inhibition With Agilent RapidFire/MS  
Systems [5990-9082EN]

High-Throughput In Vitro ADME Analysis with  
Agilent RapidFire/MS Systems: Permeability Assays  
[5990-9081EN]

Ultra-fast Solubility Sample Analysis using the  
RapidFire/MS System [Poster]

Ultrafast Plasma Protein Binding Analysis Using the  
Agilent RapidFire High-Throughput Mass Spectrometry  
System and Accurate Mass Q-TOF [5991-2497EN]

## Features of the RapidFire 365 High-throughput Mass Spectrometry System

Mass Spec Compatibility	Agilent 6400 Series Triple Quadrupole (QQQ) LC/MS Agilent 6200 Series Accurate-Mass Time-of-Flight (TOF) LC/MS Agilent 6500 Series Accurate-Mass Quadrupole Time-of-Flight (Q-TOF) LC/MS
Plate Handling	63-plate capacity automation by integrated Agilent Benchbot Robot 60 hours (weekend-long) unattended operation
Valves	<20 msec cycle time; rated for >2 million cycles Chemically resistant rotor and stator with DLC coating
Fluidics	System cycle time as fast as 8 seconds per sample; signal precision <5% 3x Agilent quaternary pumps allowing 4 solvents per channel All PEEK flow path tubing
In-line, Automated Cartridge Handling	12 SPE cartridge capacity Automated cartridge switching between injections 2000+ injection capacity per cartridge
Data Acquisition Software	RapidFire Control Software integrated with MassHunter Acquisition Software
Data Analysis Software	File output compatible with MassHunter Software RapidFire Integrator 2.0 Multiple file output formats for LIMS compatibility

## Contract Research Services Using RapidFire Technology

Agilent Discovery Services is at the forefront of CROs because we can deliver thousands of data points in just a couple of days. Our in-house PhD-level scientists bring decades of mass spectrometry expertise to your project. Gain access to revolutionary RapidFire technology for projects large and small, or during times when you need extended resources to meet short deadlines. Simply send your quenched 96- or 384-well plates and we'll do the rest. For more details, email [discoveryservices@agilent.com](mailto:discoveryservices@agilent.com).

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