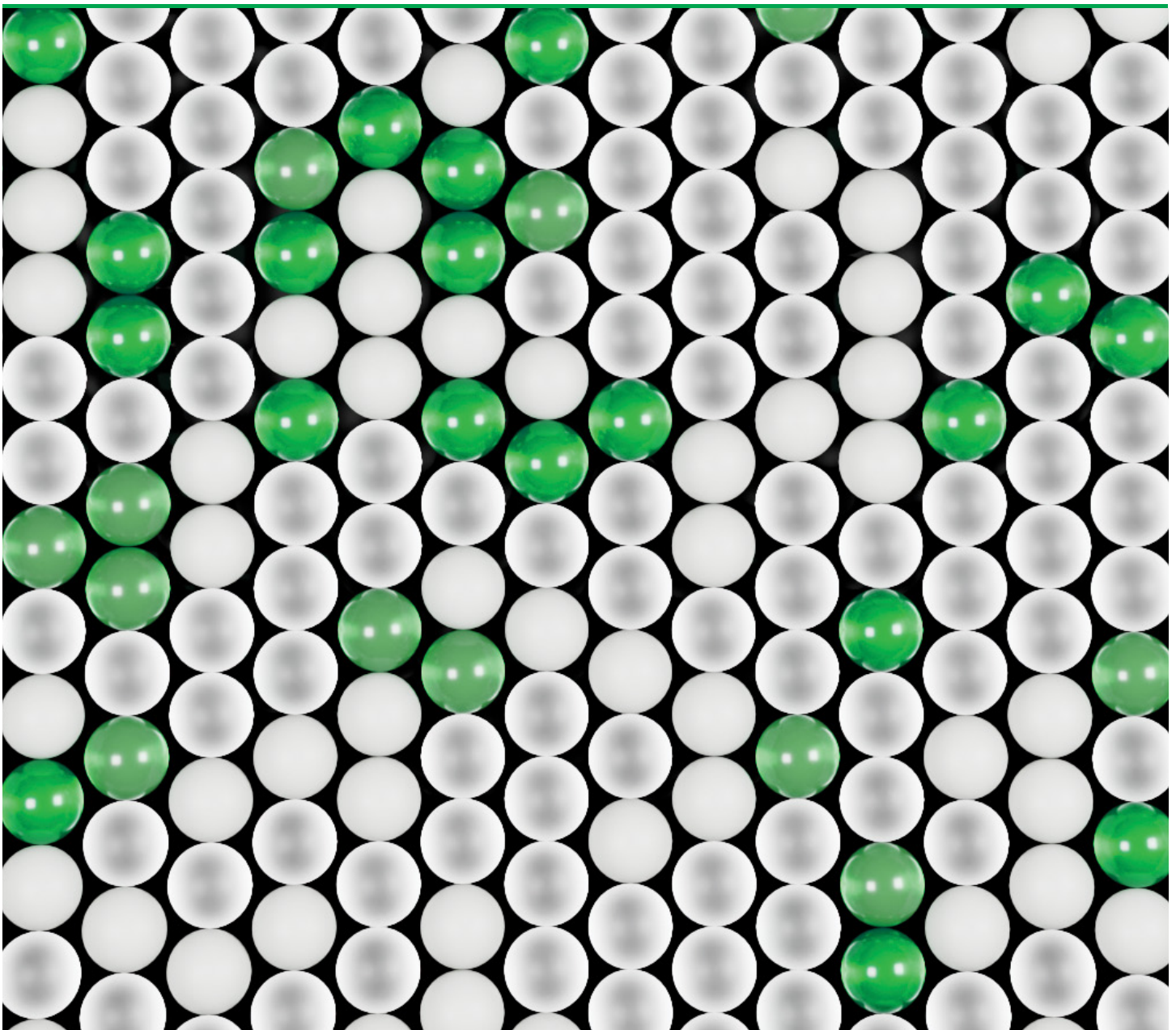


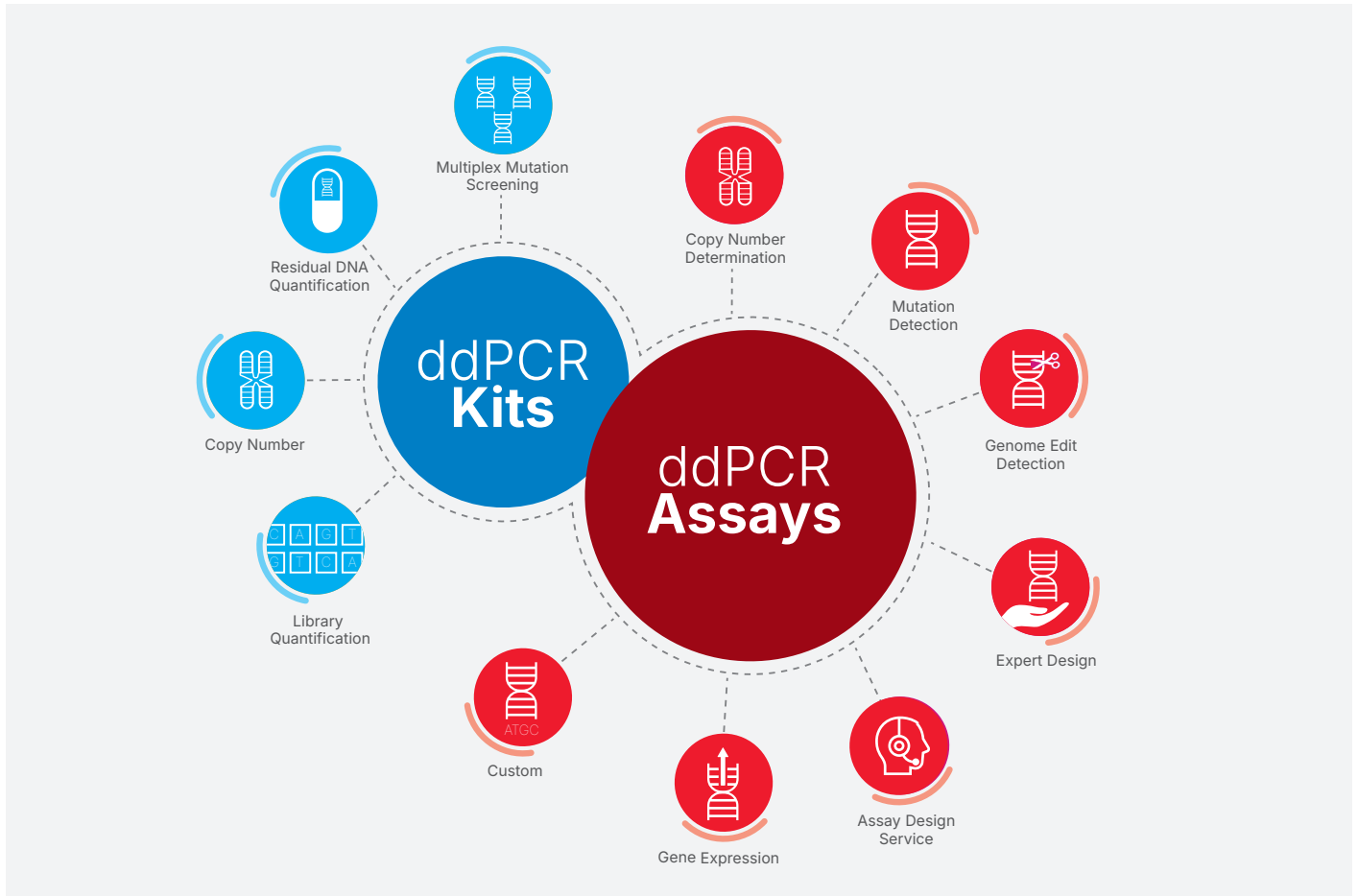
Assays for Droplet Digital™ PCR

Your Complete Solution for
Absolute Quantification





Flexible Solutions for Evolving Research Challenges



Bio-Rad offers a comprehensive and adaptable portfolio of digital PCR assays and kits to support a broad spectrum of applications, including mutation detection, copy number variation, genome edit detection, gene expression analysis, residual DNA quantification, and next-generation sequencing (NGS) library quantification.

Select from ready-to-use kits with all necessary reagents, or predesigned and validated

standalone assays. Alternatively, allow our powerful design engines to build you a custom assay, expertly tailored to your needs and workflow.

Whether you're looking for a single assay or an end-to-end solution, Bio-Rad delivers the performance, reliability, and versatility needed to advance your digital PCR experiments with precision.



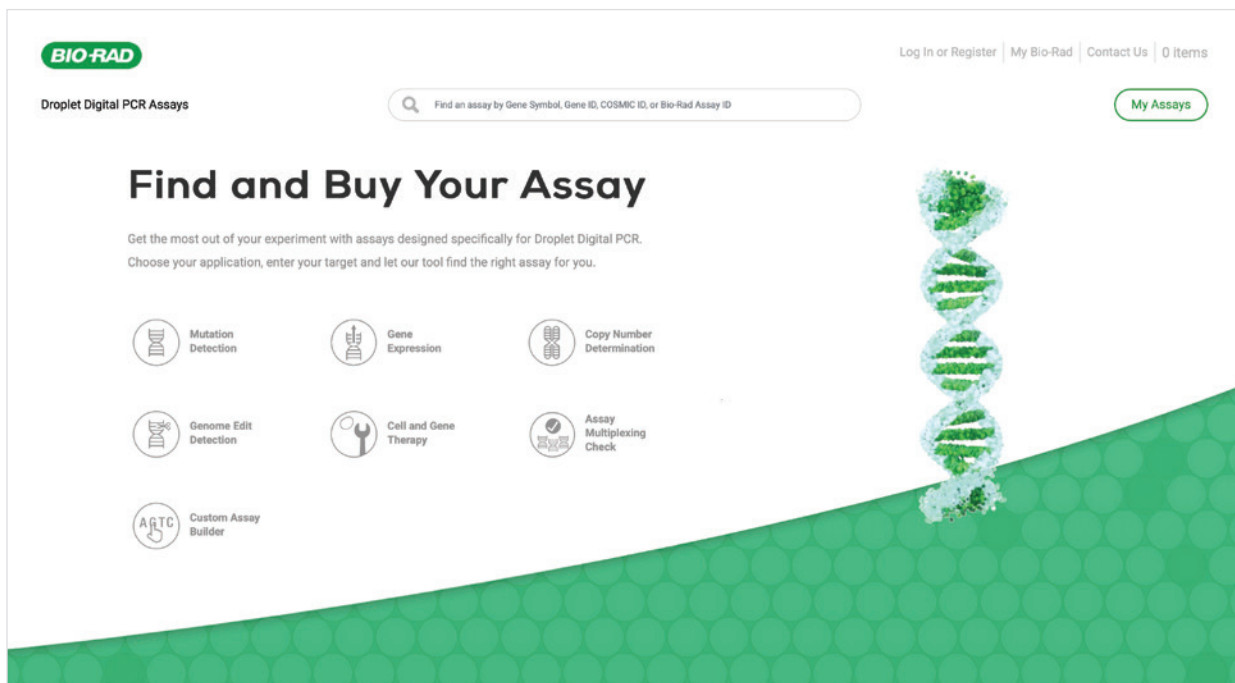
Streamlined Digital Assay Design

Design with confidence using our intuitive online Digital Assays Portal. Powered by specialized design engines and a database of more than 400,000 assays, the portal allows you to browse a wide selection of predesigned assays or create custom assays tailored to your specific targets and applications.

Whether you're working with well-characterized genes or novel sequences, the portal guides you through a seamless, end-to-end experience — from target

selection to checkout — saving you time and reducing your assay optimization burden.

Each design engine has been purpose-built and is backed by experimentally validated ddPCR data to support distinct experimental needs, ensuring high-quality, reliable assays optimized for Droplet Digital PCR. From single assays to scalable solutions for large studies, our flexible design and ordering options empower you to move forward with precision and speed.



Go to bio-rad.com/Digital-Assays for more information.



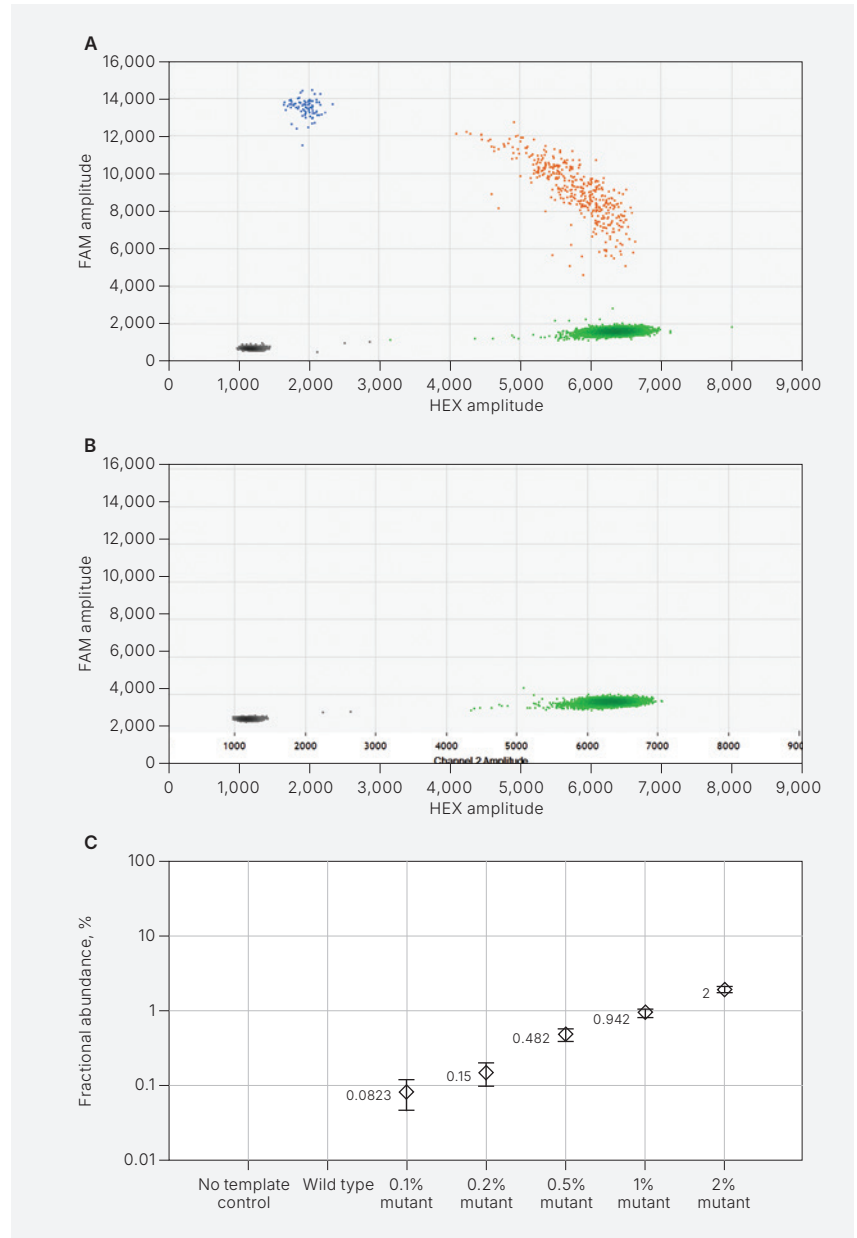
Quantifying Rare Cancer Mutations

Droplet Digital PCR enables mutation detection with sensitivity and precision levels beyond the capabilities of other methods. In identifying mutations, ddPCR Systems enable researchers to “find a needle in a haystack” by partitioning a sample into nanoliter-sized droplets.

Benefits of ddPCR Technology Over NGS

- Higher sensitivity—capable of detecting mutations at a minor allele frequency (MAF) rate as low as 0.001%
- Faster turnaround time—less hands-on time

ddPCR technology is currently utilized in targeted mutation screening and monitoring, therapy response tracking, and molecular relapse monitoring, and appears in over 2,000 peer-reviewed publications related to mutation detection and liquid biopsy.



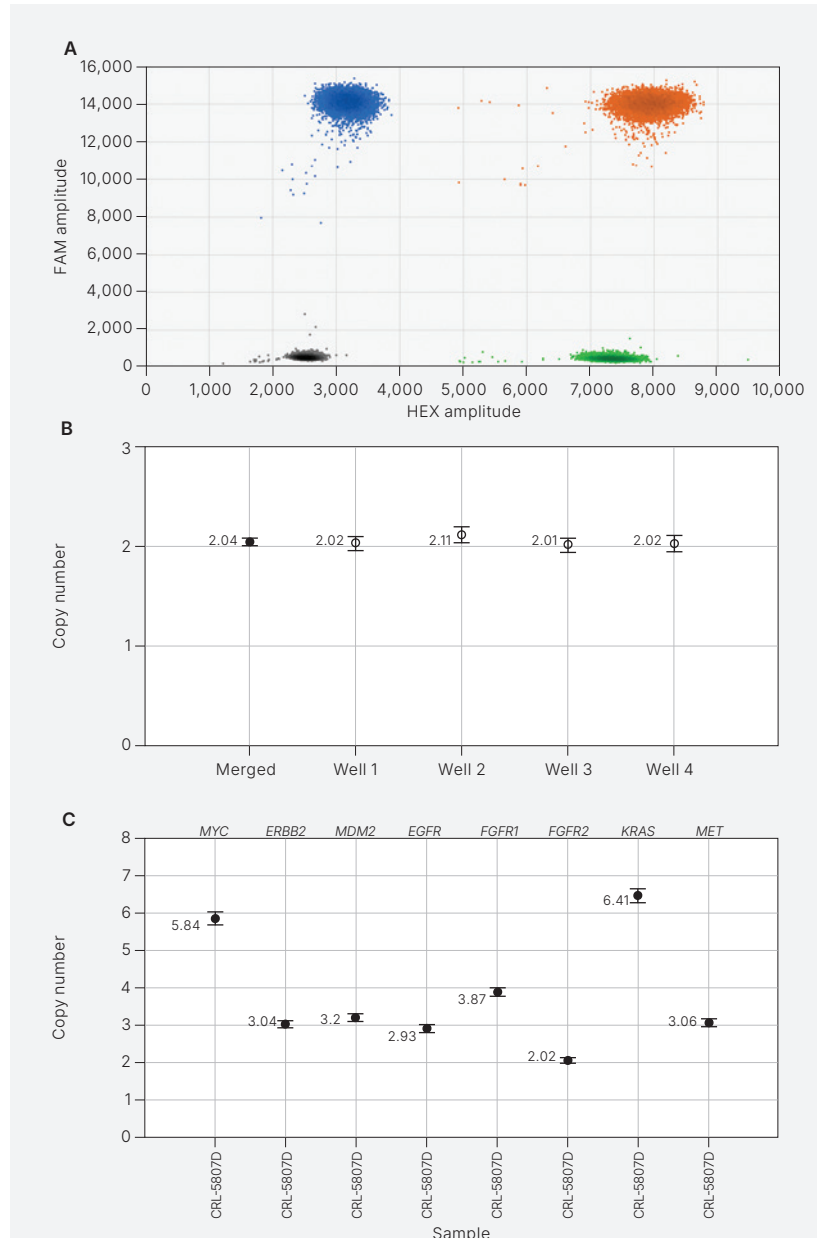
High sensitivity of ddPCR mutation detection assays provides precise quantification of JAK2 V617F mutation in the presence of wild-type DNA. **A**, 2-D fluorescence amplitude plot shows duplicate wells of a mixed mutant: wild-type sample across multiple percentage mutant blends. The black cluster on the plot represents the negative droplets, the green cluster represents the droplets that are positive for wild-type DNA only, the blue cluster represents the droplets that are positive for mutant DNA only, and the orange cluster represents the droplets that are positive for both targets. **B**, 2-D fluorescence amplitude plot shows duplicate wells of a wild-type-only sample. **C**, fractional abundance plot shows the percentage frequency (orange markers) of the mutant DNA in a wild-type DNA background. All error bars represent the 95% confidence interval.



Accurate and Reliable Copy Number Variation Analysis

The major technical challenge in copy number assessment is the ability to discriminate, with statistical confidence, between consecutive copy number states. Current methods to analyze copy number variation (CNV) include array comparative genomic hybridization (aCGH), quantitative PCR (qPCR), and sequencing. These methods lack the precision and resolution needed for this fine degree of quantitative discrimination in CNV analysis. The partitioning of a ddPCR reaction into thousands of droplets enables the discrimination required to resolve copy number.

Droplet Digital PCR copy number assays provide superior resolution and precision. **A**, 2-D fluorescence amplitude plot shows four replicate wells of a copy number sample duplexed with *ERBB2* and *RPP30* assays. The black cluster on the plot represents the negative droplets, the green cluster represents the droplets that are positive for *RPP30* reference only, the blue cluster represents the droplets that are positive for *ERBB2* only, and the orange cluster represents the droplets that are positive for both *ERBB2* and *RPP30* targets. **B**, copy number plot shows multiple wells at copy number 2 with precise replicate and merged well values. **C**, copy number plot shows multiple oncogene copy number determinations for various genes with the same NCI-H358 lung cancer sample. All error bars represent the 95% confidence interval.





Quantification of Small Fold Changes in Gene Expression

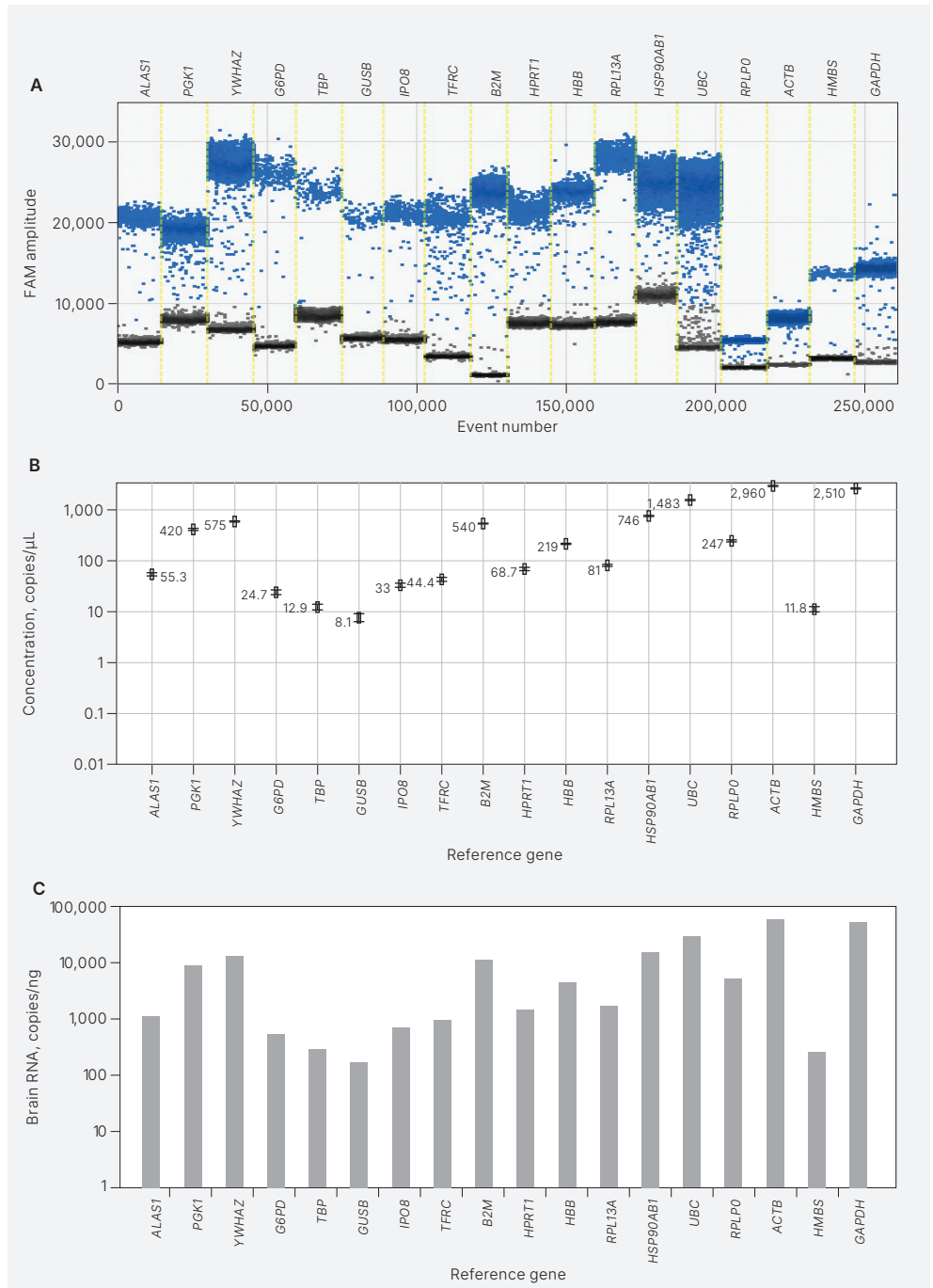
ddPCR Gene Expression Assays enable accurate quantification of small fold changes in gene expression — for example, expression differences that are twofold or lower — for detecting targets that may be present at low levels or samples that contain substances that can inhibit a PCR reaction. ddPCR Gene Expression Assays are available as probe or EvaGreen® Assays. The assays are compatible with both one-step and two-step RT-ddPCR methods.

Key Benefits

- Detection of small fold changes in expression
- More than 60,000 gene expression assays for human, rat, and mouse
- Probe or EvaGreen® chemistry

Robust gene expression assays used in ddPCR with EvaGreen® provide precise quantification of 18 reference genes.

A, 1-D fluorescence amplitude plot shows results of a two-step reverse transcription ddPCR reference assay panel run on human brain RNA. The black clusters on the plot represent the negative droplets and the blue clusters represent the droplets that are positive for the respective reference assay. **B**, concentration plot shows various gene concentrations of cDNA calculated as copies/μL on a log₁₀ scale. **C**, calculated RNA concentrations in the original human brain RNA sample for each reference gene. All error bars represent the 95% confidence interval.



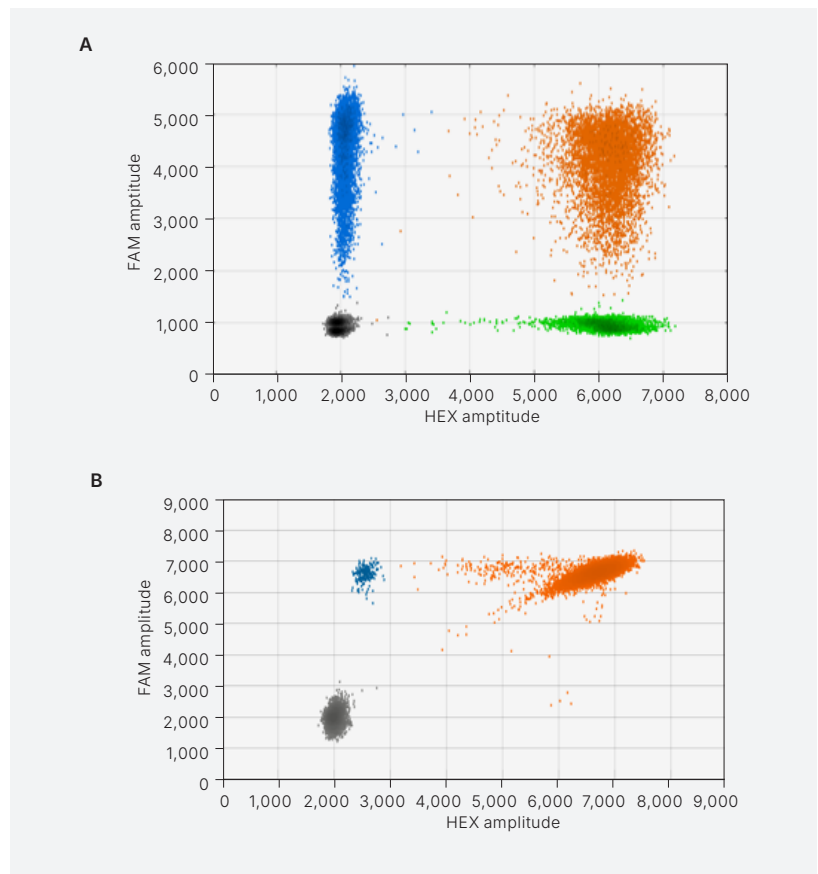


Quantitative Analysis of CRISPR Edits

ddPCR Genome Edit Detection Assays offer a fast, precise, simple, and cost-effective method for detection of genome editing events. Assays can be obtained for any target using Bio-Rad's easy-to-use, intuitive Digital Assay Site.

Key Benefits

- Enable rapid assessment of HDR (homology directed repair) and NHEJ (non-homologous end joining) edits generated by CRISPR-Cas9 or other genome editing tools
- Detect editing events present at frequencies of $\leq 0.5\%$
- Provide absolute quantification of genome editing events from as little as 5 ng of total gDNA (cells from single well of a 96-well plate)
- Distinguish between homozygous and heterozygous edits in clonal populations
- Analyze results easily using QX Manager Software



HDR and NHEJ assay readouts. **A**, HDR mutation-positive control (WT + 20% gblocks gene fragment containing a single base pair substitution) with HDR GED + HDR REF Assay. The HDR edits are FAM+HEX-, while the HEX+ and FAM+HEX+ clusters represent the total number of copies, including WT, NHEJ, and HDR edits. **B**, NHEJ mutation-positive control (WT + 1% gblocks gene fragment containing a one base pair deletion at the predicted cut site). The WT cluster is positive for both FAM and HEX, while the NHEJ mutant single-positive droplets are positive for FAM only. HDR, homology directed repair; HDR GED, HDR genome edit detection; HDR REF, HDR GED reference; NHEJ, non-homologous end joining; WT, wild type.



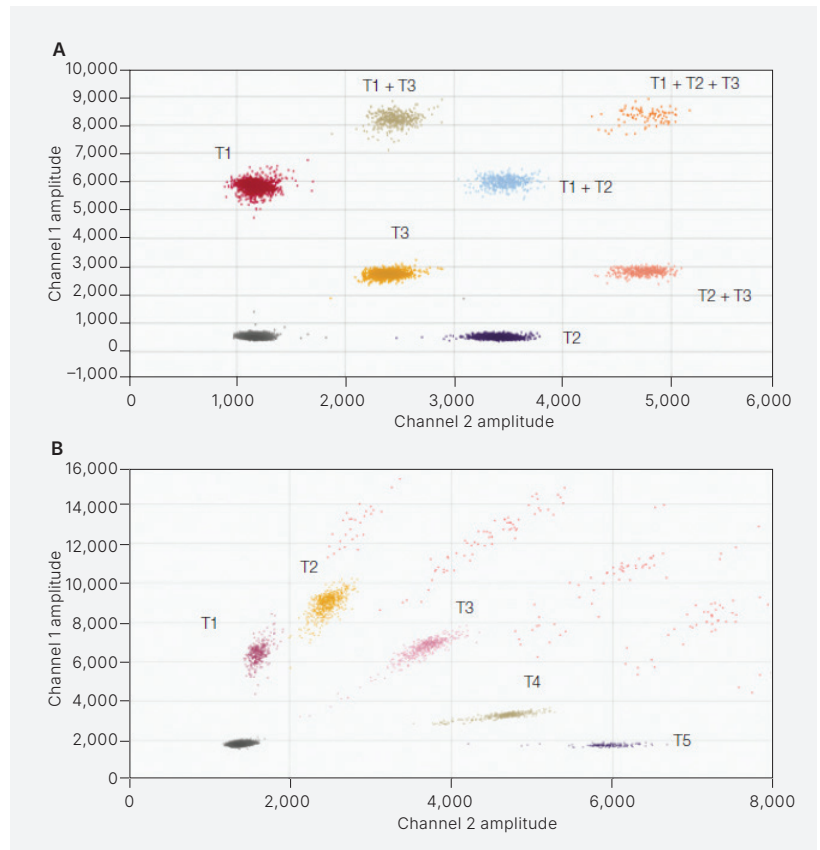
Optimized Strategies for Multiplexing

The number of targets measured in an assay need not be limited to the number of color channels available on Bio-Rad's Droplet Digital PCR Systems. Multiple targets can be measured in a single reaction, enabling higher-order multiplexing. Various strategies can be employed to maximize data generated from each channel:

- Radial/ratio-based multiplexing — targets are detected using probes mixed at different probe ratios to create unique endpoint fluorescence
- Nondiscriminating multiplexing — targets are detected but not uniquely identified

Use the Assay Multiplex Check Tool to:

- Quickly evaluate, *in silico*, ddPCR multiplex experimental designs
- Evaluate up to 6 of your Copy Number Determination and/or Gene Expression assays
- Identify potential adverse ddPCR assay interactions
- Logged-in users can select ddPCR assays directly from My Assays list



Multiplexing with two color channels. **A**, detection of three targets by radial/ratio-based multiplexing. Assay used the following ratios of FAM to HEX: T1, 1:0; T2, 0:1; T3, 1:1. **B**, detection of five targets by radial/ratio-based multiplexing. Assay used the following ratios of FAM to HEX: T1, 1:0; T2, 3:1; T3, 1:1; T4, 1:3; T5, 0:1.



Droplet Digital PCR Solutions for Oncology and Biopharma

Bio-Rad's ddPCR solutions provide ultrasensitive nucleic acid detection and absolute quantification, with widespread applications across the biopharma and translational research sectors.



VeriCheck ddPCR Contaminant Testing Solutions

Biologics and cell and gene therapies require rigorous testing for contaminants, impurities, and critical quality attributes (CQA) to ensure safety and efficacy.

VeriCheck ddPCR Contaminant Testing Solutions address key challenges with precision, providing confidence in results while meeting regulatory requirements. Solutions Include:

- AAV empty-full capsid ratio
- Mycoplasma detection
- Residual DNA quantification
- Replication competent virus testing

Learn More at bio-rad.com/vericheck



ddPCR Microsatellite Instability (MSI) Kit

The only kit designed to analyze both plasma and formalin-fixed paraffin-embedded (FFPE) tissue, it provides highly sensitive and reproducible results across all relevant cancer samples without the need for normal tissue. Automated analysis and a streamlined workflow make this the premier MSI solution.

Learn More at biorad.com/msikit



ddPLEX *ESR1* Mutation Detection Kit

The ddPLEX *ESR1* Mutation Detection Kit enables simultaneous discrimination of seven key *ESR1* mutations — multiplexed in a single well — from plasma and tissue samples with superior sensitivity, specificity, and reproducibility to help advance your clinical research. Powered by the streamlined workflow of the QX600 Droplet Digital System, this kit expedites reliable results in less than a day.

Learn more at bio-rad.com/esr1



ddPLEX *EGFR/KRAS/BRAF* Mutation Detection Kit

The ddPLEX *EGFR/KRAS/BRAF* Mutation Detection Kit detects and quantifies 37 key non-small cell lung cancer (NSCLC) variants and their wild-type counterparts, allowing for calculation of variant allele frequencies in both plasma and tumor tissue samples.

Learn more at bio-rad.com/NSCLC



High-Efficiency PCR Amplification with ddPCR Supermixes

Our digital PCR supermixes are optimized to deliver maximum PCR efficiency and sensitivity for the amplification and detection of DNA and RNA targets. These digital PCR supermixes are fully validated for use on Droplet Digital PCR Systems.



ddPCR Multiplex Supermix

4x concentrated, ready-to-use reaction mix that has been optimized to deliver maximum PCR efficiency, specificity, and sensitivity when used with the QX600™ or QX200™ Droplet Digital PCR System



Residual DNA Quantification Supermixes

Enables highly precise and sensitive quantification of residual host cell DNA (HCD) without the need for DNA purification



ddPCR Supermix for Probes (No dUTP)

Delivers maximum PCR efficiency and sensitivity for the amplification and detection of DNA targets using hydrolysis probe-based assays



1-Step RT-ddPCR Advanced Kit for Probes

Enables absolute quantification of target RNA molecules in a one-step format



ddPCR Supermix for Probes

Ready to use, ideal for uracil N-glycosylase (UNG) decontamination protocols to prevent the reamplification of carryover PCR products between experiments



QX200 ddPCR EvaGreen® Supermix

Enables double-stranded DNA detection following amplification using EvaGreen Assays

Visit [bio-rad.com/DropletDigitalPCRAssays](https://www.bio-rad.com/DropletDigitalPCRAssays) for more information.

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