Droplet Digital PCR

Precise Quantification without a Reference Standard

It can be challenging to use quantitative PCR (qPCR) to achieve absolute quantification of nucleic acid sequences from patient samples for analytical development, manufacturing, quality control, and lot release of gene and cell therapies. The quality of qPCR assays can be impacted by PCR inhibitors and the reference standard, affecting accuracy, sensitivity, and reproducibility. With qPCR, the difference between operators and labs can be over 100x.*

In contrast, Bio-Rad's Droplet Digital PCR (ddPCR) technology provides reproducible results with absolute quantification, eliminating the need for standard curves. By partitioning PCR reactions into droplets, ddPCR permits direct counting of target sequences, giving you unparalleled sensitivity and accuracy while reducing variability.

Leverage ddPCR technology to overcome quantification challenges reported with existing methods for a wide range of applications, including:

- **Viral titer quantification** — improve quality control methods by minimizing the influence of PCR inhibitors
- **Vector copy number determination** — accurately calculate copy number by using probe chemistry with required specificity
- **Detection of residual host cell DNA** — achieve absolute quantification without the use of reference genes, enabling testing of more samples per plate

* Ayuso E et al. (2014). Hum Gene Ther 25, 977–987.

Bio-Rad's QX200 and QX ONE ddPCR Systems now include U.S. FDA 21 CFR Part 11 compliant software.

Visit **bio-rad.com/DropletDigitalPCRAssays** for more information.

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More than 4,000 studies have been published describing research breakthroughs made using Droplet Digital PCR technology. Browse selected publications below or visit **bio-rad.com/ddPCR/publications** for the complete updated list.

Publications

Click icon to read online article.

Vector Copy Number

Lin HT et al. (2016).
Application of Droplet Digital PCR for estimating vector copy number states in stem cell gene therapy.
Hum Gene Ther Methods 27, 197–208.

Nakagaki A et al. (2018).
Application of Droplet Digital PCR in the analysis of genome integration and organization of the transgene in BAC transgenic mice.
Sci Rep 8, 6,638.

Residual DNA

Wang Y et al. (2018).
Quantification of residual BHK DNA by a novel Droplet Digital PCR technology.
J Pharm Biomed Anal 159, 477–482.

Hussain M and Bowers J (2017).
A Droplet Digital PCR method for CHO host residual DNA quantification in biologic drugs.
J Anal Pharm Res 4, 00107.

Viral Titer

Dobnik D et al. (2019).
Accurate quantification and characterization of adeno-associated viral vectors.
Front Microbiol 10, 1,570.

Lock M et al. (2014).
Absolute determination of single-stranded and self-complementary adeno-associated viral vector genome titers by Droplet Digital PCR.
Hum Gene Ther Methods 25, 115–125.

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