FASTFACTS

Key considerations when adopting Droplet Digital PCR for viral vector manufacture

Mark White, PhD, Associate Director of Biopharma Product Marketing, BIO-RAD

APPLICATIONS:

"Vector copy number and viral titer are the applications where people generally start their journey with ddPCR. In addition, we now offer a kit for mycoplasma detection. We're also closely watching other application areas such as residual DNA and plasmid as well as potency, with a view to hopefully supporting those in future."

WHAT DO END USERS SEE AS THE KEY ADVANTAGES?

"What it really comes down to with everyone we work with is the data quality. While it can be an additional cost to implement ddPCR over some other methods, the reliability of getting high-quality data and having tight coefficients of variation, especially when transferring from one lab to another, is key. We know many of our customers now start their process in-house and then they move it out to scale-up - having that go smoothly and quickly is so important."

"A lot of companies that have really embraced ddPCR have thought about the entire cost of ownership of the assay - not just in their own group, but for the organization as a whole as they move through the entire clinical process. That calculation really brings home why this has become such a gold standard in the gene therapy realm. In particular, where the accuracy of the viral titer measurement determines your patient dose, having that data quality is paramount."

WHAT ARE THE PAIN POINTS OF TRANSITION TO ddPCR?

"It is often the case that end users have to unlearn some things they know that are fundamentally related to qPCR, because it's a very different way of measuring. There is definitely a short learning curve, but once you are up and running, the benefits justify the transition."

HOW DOES BIO-RAD SUPPORT END USERS MAKING THE TRANSITION TO ddPCR?

"At Bio-Rad we make sure that the transition is as easy and as seamless as possible for end users. We make sure that we have really high-quality products going in, but also that for some of the newer assays that we have on market, we are developing data packages that can help guide our customers. They provide a starting point, which makes it easier for end users to replicate in their labs."

WHERE WILL ddPCR TECHNOLOGY BE APPLIED IN FUTURE?

"The obvious next step as people find the value in titer will be to look at where else ddPCR can be applied. I think we will see more and more creative ways to apply droplet digital going forward, now that it is becoming more of a widely used standard. When you do a restriction digest it all looks the same; with droplet digital, though, you are actually counting molecules. This opens up several emerging applications, such as measuring incoming plasmid quality."

HOW WILL EVOLVING REGULATORY EVOLUTION IN THE ADVANCED THERAPIES SPACE IMPACT THE USE OF ddPCR?

"There is going to be a renewed focus on the fact that it is not just about the gene of interest. The whole cassette – promoter, gene of interest, and poly(A) - is required to deliver the therapeutic molecule, and that needs to be demonstrated. I think that as multiplexing is enabled, there might be a higher level of scrutiny on those parts of the genome that are actually getting into the gene therapy, and into the patient.

The identity and integrity of your plasmids and your vectors after they are packaged is going to be an interesting area of focus in the next 5 years."

CELL & GENE THERAPY INSIGHTS

Cell & Gene Therapy Insights 2022; 8(1), 161; DOI: 10.18609/cgti.2022.007

In partnership with: BIO-RAD