UK National Measurement Laboratory

Commercial Services

Digital PCR: quantification of nucleic acids

Can we help?

As the National Measurement Laboratory (NML) for chemical and bio-measurement we are uniquely placed to deliver novel measurement and testing solutions for quantification of nucleic acids using digital PCR (dPCR). We are the first UK laboratory, and one of only a few laboratories globally, to have obtained flexible scope ISO17025 accreditation for the quantification of DNA using digital PCR.

The unique ability of dPCR to count single nucleic acid molecules makes it more reproducible than existing molecular methods. Removing reliance on references and standards enables dPCR to act as a reference method for value assignment of calibration and quality control materials and external quality assurance schemes. Its highly sensitive nature allows it to be used for the detection of low levels of nucleic acids in complex mixtures and to provide information on small fold changes for applications such as monitoring viral load or circulating tumour cells in patients, or identifying the presence of GMOs in foods.

Our expert team will work with you to understand your nucleic acid quantification needs and propose and deliver innovative measurement solutions in accordance with your budget, timeline and quality requirements.

Our expertise

Our extensive digital PCR expertise for nucleic acid quantification is informing best practice guidance for end-users at a national and international level. We are at the forefront of the developing global measurement framework to underpin the standardisation of biological measurements and improve measurement comparability.

We can provide consultancy and advice on best measurement practice for dPCR analysis across a variety of applications. Our work helps promote translation of dPCR to the field, and supports regulatory compliance for our customers.

Impact of our work

Biomarkers for tuberculosis

Our dPCR reference method helped inform the multinational tuberculosis clinical trials consortium (PanACEA) on their choice of biomarkers.

Horizon Dx Multiplex I cfDNA Reference Standards

We provided independent validation of the allelic frequencies in these reference materials down to 0.1 %.

ATCC® MSA-4000™ Metagenomic Control Material

We quantified the bacterial DNA species in this mock microbial community to provide improved precision.

dPCR features

- Highly sensitive and specific
- Highly reproducible
- No calibration required

Our capabilities

What we can offer

- Inform assay design for a wide variety of applications
- dPCR assay validation
- Copy number concentration of DNA material
- Develop measurement uncertainty of copy number concentration
- Contract R&D using dPCR

Applications

- Absolute quantification of DNA extracted from a wide variety of samples
- Validation of DNA reference standards
- Low level mutation detection

Who can we help?

We can work for customers in a wide range of sectors including:

- Bio-pharma
- Clinical
- Environmental
- Diagnostics
- Food safety
- Advanced therapeutics

The NML is recognised internationally as being at the leading-edge of applying dPCR techniques to standardise and therefore improve diagnostic laboratory measurements so that we can better diagnose and treat patients and improve virus safety testing in blood transfusion.

Prof Heinz Zeichardt, Charité-Universitätsmedizin Berlin

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Department for Business, Energy & Industrial Strategy
FUNDED BY BEIS

SI/0055/CB/0718