Crystal Digital PCR® Assay

Information Sheet

For Research Use Only. Not for use in diagnostic procedures.

Product Name

TP53 (drop-off V272-A276/G280-R283) Crystal Digital PCR® Assay (R51023)

Description

Targets	Sample Type	Detection Channels	Multiplex
TP53 (drop-off V272-A276/G280-R283)	DNA	Blue/Green	2

TP53 (drop-off V272-A276/G280-R283) Crystal Digital PCR® Assay is a 10X assay designed to detect and quantify mutations between V272-A276 or G280-R283 of the TP53 gene using the Ruby Chip and based on the drop-off approach (refer to the technical note "Quantify Drop-off for digital PCR assays with Crystal Miner", https://www.stillatechnologies.com/). TP53 is pivotal in regulating cell division, thus an important tumor suppressor gene. This assay is available in 200 and 1000 reaction formats.

Assay configuration

The table below indicates with a "X" which channel(s) are used for each target in the assay:

Targets	Blue	Teal	Green	Yellow	Red	Infra-Red	Long-Shift
Wild-type (WT) TP53	X		X				
TP53 mutations (between V272 and A276)			X				
TP53 mutations (between G280 and R283)	X						

Components

TP53 (drop-off V272-A276/G280-R283) Crystal Digital PCR® Assay comprises two reagents: a pool of the assay specific primers and Crystal Flex Probes and a Positive Control. Please refer to the lot specific Certificate of Conformity for characterized concentration, available for download at the Technical Resources section of the Stilla Technologies website.

Component Name	Reference	Concentration	Description
TP53 (drop-off V272-A276/G280-R283) Crystal Digital PCR® Assay	R51023	10X	Detects mutations between codons V272 and A276 or G280 and R283 in the exon 8 of TP53 gene
TP53 Positive Control	R51023.PC0	10X	Contains: hgDNA, Synthetic TP53 mutants (R175C, R175H, C176R, Y205C, Y220C, C238Y, R248Q, R248W, V272L, R273H, R282W)

Thermocycling Programs

On the naica® system:

Step		Ramp rate
Step 1	Partition for Ruby Chip	-
Step 2	Temperature 95°C for 180 seconds	1°C/sec
Step 3	Begin Loop for 60 Iterations	-
Step 3.1	Temperature 95°C for 15 seconds	1°C/sec
Step 3.2	Temperature 58°C for 30 seconds	1°C/sec
Step 4	Release for Ruby Chip	-

On the Nio™ Digital PCR:

Step		Ramp rate
Step 1	Partition for Ruby Chip	-
Step 2	Temperature 95°C for 180 seconds	1°C/sec
Step 3	Begin Loop for 60 Iterations	-
Step 3.1	Temperature 95°C for 15 seconds	2°C/sec
Step 3.2	Temperature 60°C for 30 seconds	2°C/sec
Step 4	Temperature 58°C for 300 seconds	1°C/sec
Step 5	Release for Ruby Chip	-

Image Acquisition

Download the dedicated scanning file from the Technical Resources section of the Stilla Technologies website:

- ScanningTemplate_Prism3_TP53_R51023.ncx (3-color naica® system)
- ScanningTemplate_Prism6_TP53_R51023.ncx (6-color naica® system)
- NioProtocol_3C-60X-60°C-30s.nioprotocol (Nio™ Digital PCR)
- NioAssay_3C_TP53_R51023.nioassay (Nio™ Digital PCR)

Image Analysis

The following files are embedded in the dedicated scanning files listed above:

- CompensationMatrix_Prism3_TP53_R51023.ncm (3-color naica® system)
- UniversalCompMatrix_3C_Prism6-Nio.ncm (6-color naica® system, Nio™ Digital PCR)
- AnalysisConfiguration_Prism3_TP53_R51023_Polygones.nca (3-color naica® system)
- AnalysisConfiguration_Prism6_TP53_R51023_Polygones.nca (6-color naica® system)
- AnalysisConfiguration_Nio_TP53_R51023_Polygones.nca (Nio™ Digital PCR)

Consumables Required but Not Provided

- Ruby Chip (C16011)
- naica® PCR MIX 10X (R10106)
- Crystal Universal Reporters 3 (R41401 200 reactions, R41402 1000 reactions)
- Nuclease-free water

Instruction for PCR Mix Preparation

Specific instructions for preparing the PCR mix are given below.

Reagent Name	Initial Concentration	Final Concentration	Volume per reaction (µL)
naica® PCR MIX Buffer A	10x	1x	0.60
naica® PCR MIX Buffer B	100%	4%	0.24
Crystal Digital PCR® Assay	10x	1x	0.60
Crystal Universal Reporter Tube A	40x	1x	0.15
Nuclease-free water	NA	NA	Variable
Template DNA	**NA**	**NA**	**Variable**
or Positive Control	**10x**	**1x**	**0.60**
		Total reaction volume (µL)	***6.0***

Representative Data and Instructions for Analysis

In the menu “Analyze data, Plots & Populations”, view the results in 2D dot plot. Check or manually adjust the position of the polygons for each target population according to the Positive Control. If needed, select “individual per chamber” in the thresholding mode to adjust the polygons for each sample. Examples of results obtained on the Nio™+ are given below.

Wet lab testing was carried out using genomic hgDNA as a negative control and a positive control consisting of hgDNA and synthetic TP53 mutants (R175C, R175H, C176R, Y205C, Y220C, C238Y, R248Q, R248W, V272L, R273H, R282W). Synthetic TP53 mutants were also tested individually (V272L, R273C, R273H, R273L, R282W, R283P).

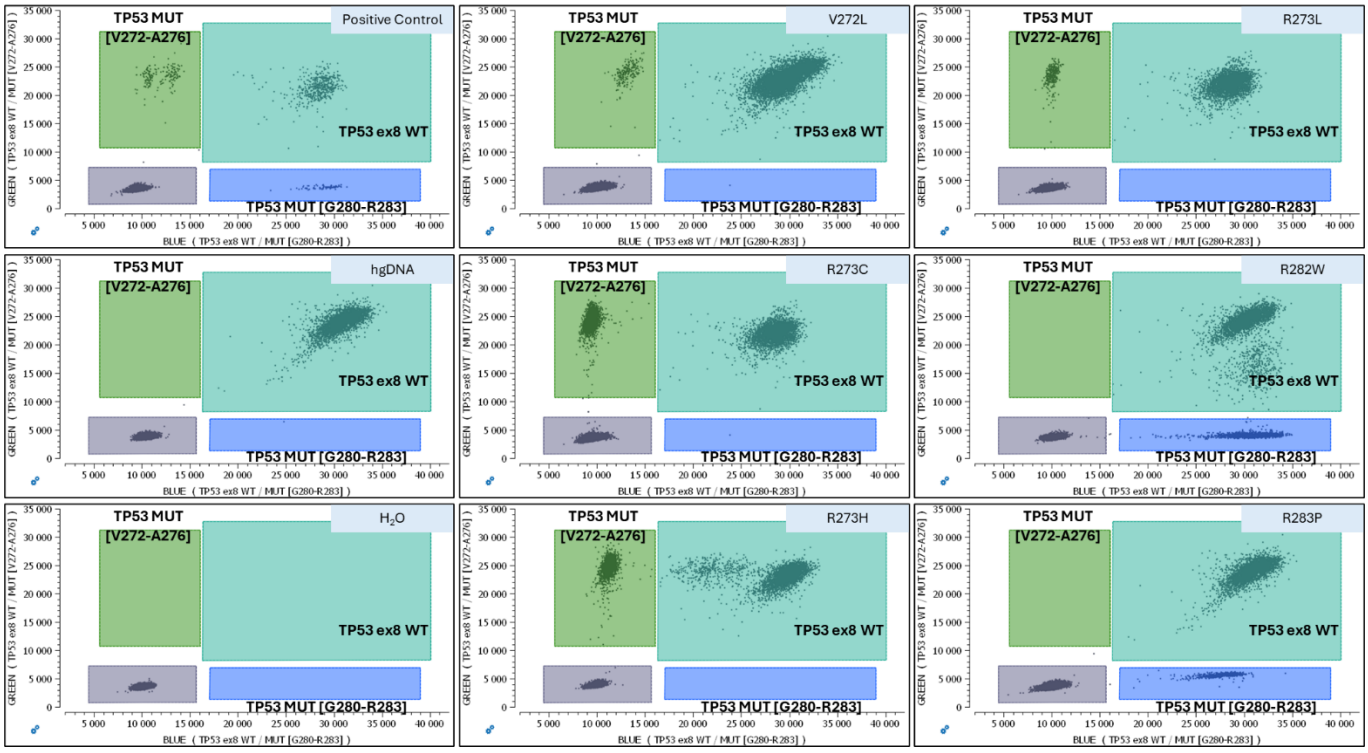

Figure 1: 2D plots obtained during wet lab testing on the Nio™+. *The polygons should be adjusted for each target population and for each sample.*

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