



## PathoSEEK Pan *Fusarium* Detection Assay

QUICK GUIDE

The Pan *Fusarium* Detection Assay targets the *Fusarium* genus, including the following *Fusarium* species relevant to cannabis. For a full list of inclusivity/exclusivity organisms see the Pan *Fusarium* Validation Guide at <https://medicinalgenomics.com/validation-documents/>

1. *F. oxysporum*
2. *F. solani*
3. *F. avenaceum*
4. *F. equisiti*
5. *F. falciforme*
6. *F. graminearum*
7. *F. lichenicola*
8. *F. proliferatum*
9. *F. sporotrichioides*

### Test Kit Information

Assay Components:

1. PathoSEEK Pan *Fusarium* qPCR Detection Assay - P/N 420190
  - a. 1 tube (Store kit at -15 to -20°C). Expires 2 Years from Date of Manufacture.
2. PathoSEEK Pan *Fusarium* qPCR Assay Positive Control - P/N 420191
  - a. 1 tube (Store at -15 to -20°C). Expires 2 Years from Date of Manufacture.
3. Medicinal Genomics qPCR Master Kit v3 - P/N 420201
  - a. Kit (Store at -15 to -20°C). Expires 2 Years from Date of Manufacture
  - b. Reaction Buffer (10x)— 1 tube
  - c. Nuclease Free Water—2 tubes
  - d. qPCR Master Mix — 1 tube

Consumables:

1. 96-Well Optical qPCR plate - Medicinal Genomics P/N 100164
2. Adhesive optical seal for qPCR plates - Medicinal Genomics P/N 100177

**DNA Lysis/Purification**

For Plant Sampling and DNA lysis or purification instructions see the Sample Preparation Guide which should be followed *before* setting up the Pan *Fusarium* qPCR reactions.

**qPCR Setup:**

1. Prepare Assay Master Mix

## qPCR Reagent Volumes

Reagents	1 Reaction
qPCR Master Mix	3.75 $\mu$ L
Assay Probe Mix	1 $\mu$ L
Reaction Buffer	0.8 $\mu$ L
Water	8.2 $\mu$ L
<b>Total Assay Probe MM</b>	<b>13.75 <math>\mu</math>L</b>

- a. Prepare enough master mix for your samples plus two controls (positive and NTC). Add 10% overage to the master mix components to account for pipetting and dead volumes.
2. Prepare Positive Control Dilution
  - a. Dilute the stock assay positive control 1:10 with nuclease free water. 9  $\mu$ L water, 1  $\mu$ L positive control, vortex and spin down.
3. Transfer samples and master mix to PCR plate
  - a. Transfer 5  $\mu$ L of each sample, 5  $\mu$ L of diluted assay positive control and 5  $\mu$ L of water to separate wells of a qPCR plate
  - b. Transfer 13.75  $\mu$ L of freshly prepared qPCR Assay Master Mix to each well and slowly tip mix. Avoid adding bubbles to the mixture.
4. Seal plate, spin in plate centrifuge and load on qPCR instrument.
5. Set up Pan *Fusarium* - qPCR cycling parameters:
  - a. Hot Start at 95°C for 5 minutes  
Followed by 40 cycles of:

- b. 95°C for 15 seconds
  - c. **60°C** for 30 seconds.
  - d. Plate Read
6. Start the run.
7. When the run is complete, the plate can be discarded.
8. Proceed to data analysis.

**Data Analysis:**

Pan <i>Fusarium</i> Assay	Cq Value	Fluor	Negative Control (Cq)	Cq Threshold
Positive Pan <i>Fusarium</i> Result	< 35	FAM	No Value	Presence/Absence
Internal Cannabis Control*	<35	HEX	*Internal control verifies the presence or absence of cannabis DNA	
Assay Positive Control	<35	FAM		

1. Positive and No Template (NTC) Controls - Confirm Assay Positive control well and assay NTC well results are as expected.
  - a. Assay positive control should have a Cq value  $\leq 35$  for FAM.
    - i. No HEX signal should be observed in the control wells
      1. If HEX signal is observed a Cq of  $>35$  is acceptable.
  - b. Assay NTC should have no Cq value for FAM.
    - i. Cq values  $>35$  in FAM signal are acceptable
    - ii. No HEX signal should be observed in the control wells
      1. If HEX signal is observed a Cq of  $>35$  is acceptable.
  - c. Confirm Cq values against amplification plots.
2. Sample Analysis
  - a. Internal Cannabis Control (HEX)
    - i. HEX signals in sample wells should be  $\leq 35$
  - b. Pan *Fusarium* Positive samples (FAM)
    - i. FAM amplification which results in a Cq value  $\leq 35$
  - c. Confirm Cq values against amplification plots.

## REVISION HISTORY

Version	Date	Description
v1	November 2023	Quick Guide Format

## DISCLAIMER

This test was developed, and its performance characteristics determined by Medicinal Genomics Company, for laboratory use. Any deviations from this protocol are not supported by MGC. The results may vary based on laboratory conditions. All thresholds were determined based on the results using the Agilent AriaMX or BIO-RAD CFX96 Touch® Real-Time PCR Detection System.

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