

Product Data Sheet

MPL W515L/K Controls

Cat. #: MPL-NC, MPL-PC

MPL W515L/K Clinical Relevance:

Myeloproliferative disorders (MPD) are a group of haematological malignant diseases characterized by proliferation of one or more hematologic cell lines in the bone marrow. This group includes; Chronic myelogenous leukemia (CML), Polycythaemia Vera (PV), Essential Thrombocythaemia (ET), and Primary Myelofibrosis (PMF), and others. The JAK2 V617F mutation is found in virtually all PV cases and 50-70% of ET and PMF cases. Detection of the JAK2 V617F mutation is an aid in the classification of MPD. A less frequent mutation found in MPD disorders is the MPL W515K or L mutation. The JAK2 V617 and MPL W515K mutations induce constitutive, cytokine-independent activation of the JAK-STAT pathway contributing to uncontrolled cell growth. Researchers have discovered that *MPLW515L* or *MPLW515K* mutations are present in patients with PMF or ET at a frequency of approximately 5% and 1%, respectively, but are not observed in patients with polycythemia vera (PV) or other myeloid disorders. Consequently, detecting MPL515 mutations in JAK2 V617F-negative samples can assist in MPD classification. Studies have also shown that *MPL* mutations may occur concurrently with the *JAK2V617F* mutation, and therefore may provide additional information regarding the characteristics of these MPD cases.

CytoGenes offers primer mixes, standards, and controls allowing laboratories to detect the MPL W515L and W515K mutations by quantitative PCR.

Product Description:

DNA controls can be utilized to evaluate assay performance. Researchers are advised to include controls in each run of samples and evaluate control results for acceptable performance in relation to expected and historical results. Each control contains DNA to yield positive results for the indicated mutations (See Product Specifications).

The Negative Control contains normal genomic DNA and should yield positive results with the MPL-WT primer set only.

The Low Positive Control contains synthetic DNA for both the MPL W515L and W515K mutations each at 6.5% of MPL wild type copies/ul.

For Investigational Use Only. The performance characteristics of this product have not been established.

Product Specifications:

The table below indicates the assay targets and concentrations for each of the DNA Controls.

Cat #	Item	Assay Targets Included	Concentration
MPL-NC	MPL Negative Control	MPL WT	10ng/ul
MPL-PC	MPL Low Positive Control	MPL (WT, W515K, W515L)	6.5% MPL W515L and W515K in normal DNA background

Volume: 45µl
Reactions: 20 (2µl/ reaction)

Procedure:

Researchers are advised to optimize the use of these controls in any application. DNA controls should be tested utilizing the same conditions as utilized for test samples. The volume of DNA controls used in a PCR reaction should be the same as all other test samples.

Storage:

Store at -20°C. Once open store at 4°C. Repeated freezing/thaw cycles should be avoided.

References:

1. Pardanani AD, Levine RL, Lasho T, Pikman Y, Mesa RA, Wadleigh M, Steensma DP, Elliott MA, Wolanskyj AP, Hogan WJ, McClure RF, Litzow MR, Gilliland DG, Tefferi A. MPL515 mutations in myeloproliferative and other myeloid disorders: a study of 1182 patients. *Blood*. 2006 Nov 15;108(10):3472-6. Epub 2006 Jul 25. PubMed PMID: 16868251.
2. Pikman Y, Lee BH, Mercher T, McDowell E, Ebert BL, Gozo M, Cuker A, Wernig G, Moore S, Galinsky I, DeAngelo DJ, Clark JJ, Lee SJ, Golub TR, Wadleigh M, Gilliland DG, Levine RL. MPLW515L is a novel somatic activating mutation in myelofibrosis with myeloid metaplasia. *PLoS Med*. 2006 Jul;3(7):e270. PubMed PMID: 16834459; PubMed Central PMCID: PMC1502153.