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# Product Data Sheet
# MPL W515L/K Primer Mixes

Cat. #: MPL-WT, MPL-L, MPL-K

## 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 *MPL*W515L or *MPL*W515K 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 *JAK2*V617F 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:

Primer mixes utilize TaqMan quantitative PCR technology and require the use of a multi-color quantitative PCR instrument. Each primer mix contains a forward primer, reverse primer and TaqMan probe specific for the indicated target (See Product Specifications). TaqMan probes are labeled with a FAM reporter and BHQ quencher. Primer mixes are provided at a 25X concentration.

Primer sets are available to detect the MPL wild type, W515L, and W515K mutations. The MPL W515L/K primers are designed for allelic discrimination of single base substitutions in the MPL gene. Therefore some cross amplification from non-target DNA is observed.

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# Product Specifications:

For each primer set the genomic DNA bases detected corresponding to MPL amino acid codon 515 are shown in the table below.

| Cat # | Item | Sequence Detected (At Indicated MPL gene Positions ) | | |
|---|---|---|---|---|
| | | 1543 | 1544 | 1545 |
| MPL-WT | MPL-WT Primer Mix | T | G | G |
| MPL-K | MPL-K Primer Mix | **A** | **A** | G |
| MPL-L | MPL-L Primer Mix | T | **T** | G |

Volume: 45µl
Reactions: 50 (0.8µl/ reaction)

# Procedure:

Researchers are advised to optimize the use of these primer mixes in any application. Primers should be diluted appropriately into a suitable PCR master mix containing Taq Polymerase. (Example: 0.8µl in a 20µl reaction)

# 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.