



CMV Resistance Sequencing

TEST CODES:
5600, 30721,
30722

CPT CODE:
87910

CATEGORY
Infectious Disease

Reportable Mutations - UL54 (DNA Polymerase)¹

Viral Phenotype Confirmed by Marker Transfer ²				
Mutation	Cidofovir	Foscarnet	Ganciclovir	REFERENCE
D301N	R	S	R	19,33,56
N408D	R	S	R	9,12,23,31,33,35,56,72
N408K	R	S	R	13, 74
N408S	R	S	R	84, 88
N410K	R	S	R	19, 23
F412C	R	S	R	2,9,20,23,33,35,65,72
F412L	R	S	R	74
F412S	R	S	R	25,74
F412V	R	S	R	9,23,72
D413A	R	S	R	69,73
D413E	R	S	R	19,23,31,33,52,56,72,73
D413N	R	S	R	89
P488R	R	S	R	79
N495K	S	R	S	73, 76
K500N	R	S	R	79
L501I	R	S	R	2,9,12,23,33,64,72
T503I	R	S	R	12,19,33,35,72,73
K513N	R	S	R	23,33,35,56,72
K513E	R	S	R	9,23,33,34,35,72
K513R	R	S	R	35, 72, 89
D515E	S	S	R	90
D515Y	S	R	R	91
L516R	R	S	R	19, 33
I521T	R	S	R	66, 68, 72
P522A	R	S	R	9,19,25,33,37,68,72
P522S	R	S	R	68, 72
del524	R	S	R	88
V526L	R	S	R	82
C539G	R	S	R	89
C539R	R	S	R	79

¹ Most UL54 mutations also have UL97 mutations.

² R and S denote resistant and sensitive, respectively. ND indicates Not Determined.

Reportable Mutations - UL54 (DNA Polymerase)¹

Viral Phenotype Confirmed by Marker Transfer ²				
Mutation	Cidofovir	Foscarnet	Ganciclovir	REFERENCE
D542E ⁴	R	S	S	81
L545S	R	S	R	9,12,33,72
L545W	R	S	R	74
T552N	S	R	S	79
Q578H	R	R	R	24, 74
Q578L	S	R	S	83
S585A	S	R	S	79
D588E	S	R	S	9,12,23,35,72
D588N	S	R	R	12,23,27,33, 74
F595I	S	R	S	79
T700A	S	R	S	5,9,18,33,47,72
V715M	S	R	S	5,9,18,25,33,37,47,72
I726T	S	S	R	83
E756K	R or S ³	R	R or S ³	12,19,23,33,36,74, 82
E756D	S	R	S	12,19,31,33
E756Q	S	R	S	12,18,33,37
L773V	R	R	R	24, 89
L776M	S	R	R	67,73
V781I	S	R	R ³	9,23,74
V787A	S	R	R	91
V787L	S	R	R	18,37,48,73
L802M	S	R	R or S ³	9,12,18,20,23,27,33,35,65,73
K805Q	R	S	S	9,18,28,35,72
A809V	S	R	R	18,19,25,28,33,47,72
V812L	R	R	R	12,18,20,27,28,33,72,73,78
T813S	R	R	R	28,73
T821I	S	R	R	9,18,28,33,35,72,73
P829S	S	S	R	79
A834P	R	R	R	13,73
T838A	S	R	S	27, 28,73
G841A	R	R	R	28, 72,73
G841S	S	R	R	83
V946L	S	R	S	79
L957F	ND	ND	R	79
del981 to 982	R	R	R	11,19,33,63,72,73
A987G	R	S	R	1,9,22,23,25,43,72

¹ Most UL54 mutations also have UL97 mutations.

² R and S denote resistant and sensitive, respectively. ND indicates Not Determined.

³ Low-grade or variable resistance.

⁴ Also confers resistance to CMX001.

Reportable Mutations - UL54 (DNA Polymerase)¹

Viral Phenotype found in Clinical Isolates (Unconfirmed by Marker Transfer) ²				
Mutation	Cidofovir	Foscarnet	Ganciclovir	REFERENCE
M393R	R	R	R	20, 72
M393K	R	R	R	20, 72
T419M	S	R	S	24
L501F	R	S	R	23,25,31,56,72
Y(I)722V	R	S	R	35, 72
H729Y	S	R	S	74
Y751H	R	S	R	35, 72
V787I	S	R	S	33

¹ Most UL54 mutations also have UL97 mutations.

² R and S denote resistant and sensitive, respectively. ND indicates Not Determined.

³ Low-grade or variable resistance.

⁴ Also confers resistance to CMX001.

For the most up to date list of assays, please visit our website at www.Viracor-Eurofins.com. This test was developed and its performance characteristics determined by Viracor Eurofins. It has not been cleared or approved by the U.S. Food and Drug Administration.

The CPT codes provided are based on Viracor Eurofins' interpretation of the American Medical Association's Current Procedural Terminology (CPT) codes and are provided for informational purposes only. CPT coding is the sole responsibility of the billing party. Questions regarding coding should be addressed to your local Medicare carrier. Viracor Eurofins assumes no responsibility for billing errors due to reliance on the CPT codes illustrated in this material.

Reportable Mutations - UL56 (Terminase)

Viral Phenotype Confirmed by Marker Transfer ¹		
Mutation	Letermovir	REFERENCE
S229F	R	99
V231A	R	97
V231L	R	93, 97, 99
N232Y	R	100
V236L	R	97
V236M	R	92, 93, 99
E237D	R	97, 100
L241P	R	93, 97, 98, 99
T244K	R	97, 99
L254F	R	99
L257F	R	99
L257I	R	97, 99
K258E	R	100
F261L	R	97, 99, 100
Y321C	R	97
C325F	R	97
C325R	R	97
C325Y	R	93, 97
M329T	R	97, 100
N368D	R	99
R369G	R	93
R369M	R	93, 99
R369S	R	93, 98
E237D, T244K, F261L	R	97
V236L, L257I	R	97
V236M, L257I, M329T	R	97
S229F, L254F, L257I	R	99

¹ R denotes resistance.

For the most up to date list of assays, please visit our website at www.Viracor-Eurofins.com.com. This test was developed and its performance characteristics determined by Viracor Eurofins. It has not been cleared or approved by the U.S. Food and Drug Administration.

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Reportable Mutations - UL97 (Phosphotransferase)

Viral Phenotype Confirmed by Marker Transfer ¹		
Mutation	Ganciclovir	REFERENCE
L405P	R	75
M460I	R	3,5,6,7,8,10,12,23,25,33
M460T	R	75
M460V	R	6,7,8,10,11,17,24,33,43,50
V466G	R	73,77
C518Y	R	84,85
H520Q	R	6,7,10,25,33,43
del590 to 593	R	12, 72
del591 to 594	R	8,10,33,34,35,72
del591 to 607	R	51, 72
C592G	R ²	6,8,10,11,20,23,27,33,51
A594E	R	73,75
A594G	R	84, 86
A594P	R	6,25,59,72
A594T	R	10,25,33,36,50,51,54
A594V	R	5,6,8,10,11,17,25,27,33,50
L595F	R	10,33,41,72
L595S	R	5,6,8,10,11,12,17,23,25,33
L595W	R	6,8,10,25,33,51,72
del595	R	4,10,17,72
del595 to 603	R	14,33,48,72
E596G	R	10,20,33,35,36,51,72
E596Y	R	90
G598S	R	33,58,72
K599T	R	60,72
del600	R	10,33,36,51,72
del601 to 603	R	69
C603R	R	73,77
C603W	R	6,8,10,20,23,25,33,35,72
C607F	R	8,50,51,72
C607Y	R	10,25,33,34,35,39,51,72
I610T	R	90
A613V	R	84, 87

¹ R denotes resistance.

² Alone confers modest resistance. When found in conjunction with UL54 del 981 to 982, there is a much higher level of resistance.

Reportable Mutations - UL97 (Phosphotransferase)

Viral Phenotype found in Clinical Isolates (Unconfirmed by Marker Transfer) ¹		
Mutation	Ganciclovir	REFERENCE
M460L	R	49, 72
A590T	R	10,49,72
del590 to 600	R	17, 72
del590 to 603	R	56, 72
A591D	R	10,49,72
C592F	R	72
del594 to 601	R	unpublished clinical isolate
L595T	R	10,35,72
N597I	R	10,49,72
del597 to 603	R	25
G598V	R	10,49,72
K599M	R	10,49,72
del600 to 601	R	48,72
del601	R	80
del601 to 602	R	25
C603Y	R	6,10,49,72
A606D	R	10,49,72

¹ R denotes resistance.

² Alone confers modest resistance. When found in conjunction with UL54 del 981 to 982, there is a much higher level of resistance.

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