



HCV NS5A Mutations

Test Name	Test Code	CPT Code
HCV Genotyping with NS5A Drug Resistance*	30380	87902
HCV NS5A Drug Resistance for Genotype 1a*	30700	
HCV NS5A Drug Resistance for Genotype 1b*	30701	
HCV NS5A Drug Resistance for Genotype 2*	30702	
HCV NS5A Drug Resistance for Genotype 3*	30703	

HCV genotype 1a						
CODON	Daclatasvir 1a	Elbasvir 1a	Ledipasvir 1a	Ombitasvir 1a	Velpatasvir 1a	Pibrentasvir 1a
Q30R + L31M						R 34
Q30R + H58D						R 34
Q30R + Y93C						R 34
L31M + Y93C						R 34
M28A	R 15	R 17, 33	R 9			
M28G		R 33	R 9			R 35
M28T	R 1, 2, 15, 16, 19, 24, 31	R 17, 29, 33	R 1, 20	R 18, 27, 32		R 34
M28V	S 1, 15	S 17	S 1	R 18, 27, 32		S 34
Q30 deletion	R 14					R 34, 35
Q30D	R 2	R 17, 33				R 34, 35
Q30E	R 1, 4, 14, 15, 20, 24, 31	R 29, 33	R 1, 9, 20, 30	R 27, 32		R 34
Q30G	R 2		R 9			
Q30H	R 1, 14, 15, 16, 19, 24, 31	R 6, 17, 33	R 1, 8, 9, 20	R 11		S 34
Q30K	R 14, 15, 24	R 33	R 9			
Q30L	R 2					
Q30R	R 1, 2, 13, 14, 15, 16, 24, 31	R 6, 17, 29, 33	R 1, 9, 20	R 18, 27, 32	R 23	S 34
L31F	R 24	R 6, 17				
L31I			R 9			
L31M	R 1, 14, 15, 16, 22, 24	R 17, 29, 33	R 1, 8, 9, 20	R 11		S 34
L31V	R 4, 14, 15, 16, 22, 24, 31	R 6, 17, 29, 33	R 9	R 27, 32	R 28	S 34
P32L	R 14, 24		R 9			S 34
H58D	R 1, 2, 15	R 17, 29, 33	R 1, 9	R 18, 27, 32		S 34
E62D	R 13, 22					
Y93C	R 1, 14, 16, 24, 31	R 6, 17, 33	R 1, 8, 9, 20	R 18, 27, 32		S 34
Y93D						R 34
Y93H	R 1, 14, 15, 20, 24, 31	R 6, 17, 29, 33	R 1, 8, 9, 20, 30	R 18, 27, 32	R 28	R 34, 35
Y93L				R 27, 32		
Y93N	R 1, 4, 14, 15, 24, 31	R 17, 29, 33	R 1, 9	R 11, 18, 27, 32	R 28	R 34, 35
Y93S			R 9	R 11		
Y93T			R 9			
H58D+Y93H						R 34
M28T+Y93C						R 34
Q30R+Y93H						R 34
L31V+Y93H						R 34
M28T+Q30R+L31M						R 34
Q30R+L31M+Y93C						R 34

R= Resistant S= Sensitive

HCV genotype 1b						
CODON	Daclatasvir 1b	Elbasvir 1b	Ledipasvir 1b	Ombitasvir 1b	Velpatasvir 1b	Pibrentasvir 1b
L31V + P58S	R 14					
L31V + Y93H					R 28	
L28M	R 14	R 17, 33		R 11, 25		
L28T	R 14, 24			R 11, 18, 27, 32		
R30E	R 14, 24					
R30H	R 19					
R30Q	S* 14, 19	R 6		S 11, 25		
L31F	R 14, 24	R 6, 17, 33		R 11, 18, 25, 27, 32		
L31I	S 22, 26		R 26			
L31M	R 14, 24, 26	S 17	R 26	S 11, 25		
L31V	R 2, 12, 15, 16, 24, 26, 31	R 6, 17	R 26	R 11, 18, 25, 27, 32		
L31W	R 2					
P32L	R 2, 14, 24					
P32del	R 12, 22, 31					R 35
P58D			R 9			
A92K	R 12		R 9			
Y93C	R 2, 24	S 6				
Y93H	R 2, 8, 15, 16, 20, 24, 26, 31	R 6, 17, 33	R 8, 9, 20, 26, 30	R 11, 18, 25, 27, 32		
Y93N	R 2, 14, 24					
Y93S			R 9	R 25		

R= Resistant

S= Sensitive

* Low-grade or variable resistance

HCV genotype 2			
CODON	Daclatasvir 2	Velpatasvir 2	Pibrentasvir 2
F28S + M31I			R 34, 35
P29S + K30G			R 34, 35
F28S	R 3, 21	R 28	
L31M	R 21		
C92R	R 21		
Y93H	R 3, 21	R 28	

HCV genotype 3				
CODON	Daclatasvir 3	Elbasvir 3	Velpatasvir 3	Pibrentasvir 3
F,M28S*	R 3			
A30K	R 5, 31	R 17		
L31F	R 31	R 17		
L31I	R 31			
L31M	R 5			
L31V	R 5			
S62L	R 5			
Y93H	R 3, 5, 31	R 17	R 28	R 34, 35
Y93S			R 28	

R= Resistant S= Sensitive

* Note: Reference sequence for F,M28S lists codone as M28, but research papers list mutation as F28S.

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