

衛生微生物技術協議会 第33回研究会 横浜

ノロウイルス（ノーウォークウイルス）
レファレンスセンター活動報告

国立感染症研究所ウイルス第二部第一室

片山和彦

Fields Virology 6th edition に収載予定のGI ORF2 標準配列

Reference Virus	Genogroup	Genotype	Accession Number
Hu/NoV/GI.1/Norwalk/1968/US	I	1	M87661
Hu/NoV/GI.2/Southampton/1991/UK	I	2	L07418
Hu/NoV/GI.3/Desert Shield 395/1990/SA	I	3	U04469
Hu/NoV/GI.4/Chiba 407/1987/JP	I	4	AB022679
Hu/NoV/GI.5/Musgrove/1989/UK	I	5	AJ277614
Hu/NoV/GI.6/BS5(Hesse3)/1997/DE	I	6	AF093797
Hu/NoV/GI.7/Winchester/1994/UK	I	7	AJ277609
Hu/NoV/GI.8/Boxer/2001/US	I	8	AF538679
Hu/NoV/GI.9/Vancouver730/2004/CA	I	9	HQ637267

NoV GI のORF2領域を用いたジェノタイプは9種類

NoV GII standard strains

Reference Virus	Genogroup	Genotype	Accession
Hu/NoV/GII.1/Hawaii/1971/US	II	1	U07611
Hu/NoV/GII.2/Melksham/1994/UK	II	2	X81879
Hu/NoV/GII.3/Toronto 24/1991/CA	II	3	U02030
Hu/NoV/GII.4/Bristol/1993/UK	II	4	X76716
Hu/NoV/GII.5/Hillingdon/1990/UK	II	5	AJ277607
Hu/NoV/GII.6/Seacroft/1990/UK	II	6	AJ277620
Hu/NoV/GII.7/Leeds/1990/UK	II	7	AJ277608
Hu/NoV/GII.8/Amsterdam/1998/NL	II	8	AF195848
Hu/NoV/GII.9/VA97207/1996/US	II	9	AY038599
Hu/NoV/GII.10/Erfurt546/2000/DE	II	10	AF427118
Po/NoV/GII.11/Sw918/1997/JP	II	11	AB074893
Hu/NoV/GII.12/Wortley/1990/UK	II	12	AJ277618
Hu/NoV/GII.13/Fayetteville/1998/US	II	13	AY113106
Hu/NoV/GII.14/M7/1999/US	II	14	AY130761
Hu/NoV/GII.15/J23/1999/US	II	15	AY130762
Hu/NoV/GII.16/Tiffin/1999/US	II	16	AY502010
Hu/NoV/GII.17/CS-E1/2002/US	II	17	AY502009
Po/NoV/GII.18/OH-QW101/2003/US	II	18	AY823304
Po/NoV/GII.19/OH-QW170/2003/US	II	19	AY823306
Hu/NoV/GII.20/Luckenwalde591/2002/DE	II	20	EU373815
Hu/NoV/GII.21/IF1998/2003/IR	II	21	AY675554
Hu/NoV/GII.22/YURI/JP	II	22	AB083780

NoV GII のORF2領域を用いたジェノタイプは22種類



NoV GI, GIIのORF2領域の基準配列とORF1領域の基準配列

ORF2 (capsid)	ORF1 (polymerase)	GenBank nrs.					
Proposed types	types in [22]	types in [6]	types in [4]	Prototype strain	Proposed types	Prototype strain	ORF2 ORF1
I.1	I.1	I.1	I.1	Hu/NoV/GLP1/GL1/Norwalk/1968/US	IP1	Same as ORF2	M87661
I.2	I.2	I.2	I.2	Hu/NoV/GLP2/GL2/Southampton/1991/UK	IP2	Same as ORF2	L07418
I.3	I.3	I.3, I.11, I.12, I.13, I.14	I.3	Hu/NoV/GLPa/GL3/Desert Shield 395/1990/SA	IP3	Hu/NoV/GLP3/GL3 / VA98115/1998	U04469 AY038598
I.4	I.4	I.4	I.4	Hu/NoV/GLP4/GL4/Chiba 407/1987/JP	IP4	Same as ORF2	AB042808
I.5	I.5	I.5, I.9	I.5	Hu/NoV/GL5/Musgrove/1989/UK	IP5	Hu/NoV/GLP5/ OB2005138/2005/NL	AJ277614 NS
I.6	I.6	I.6, I.8	I.6	Hu/NoV/GLP6/GL6/ BS5/1997/DE	IP6	Same as ORF2	AF093797
I.7	I.7	I.7	I.7	Hu/NoV/GL7/Winchester/1994/UK	IP7	Hu/NoV/GLP7/ OB20030541/2003/NL	AJ277609 NS ¹
I.8	I.8	I.10	I.8	Hu/NoV/GL8/Boxer/2001/US	IP8	?/NoV/GLP8/SW104506	AF538679 NS ¹
I.9				Hu/NoV/GLP9/GL9/ Vancouver730/2004/ CA	I.Pe9	Hu/NoV/GL9/GLP9/ Chatellerault709/2004/France	HQ637267 EF529737

GI

ORF2

ORF1

ORF2 (capsid)	ORF1 (polymerase)	GenBank nrs.					
Proposed types	types in [22]	types in [6]	types in [4]	Prototype strain	Proposed types	Prototype strain	ORF2 ORF1
II.1	II.1	II.1	II.1	Hu/NoV/GIL.P1/GIL.11/Hawaii/1971/US	II.P1	Same as ORF2	
II.2	II.2	II.2	II.2	Hu/NoV/GIL.P2/GIL.2/Melksham/1994/UK	II.P2	Same as ORF2	X81879
II.3	II.3	II.3	II.3	Hu/NoV/GIL.P3/GIL.3/Toronto 24/1991/CA	II.P3	Same as ORF2	U02030
II.4	II.4	II.4	II.4	Hu/NoV/GIL.P4/GIL.4/Bristol/1993/UK	II.P4	Same as ORF2	X76716
II.5	II.5	II.5	II.5	Hu/NoV/GIL.5/Hillingdon/1990/UK	II.P5	Hu/NoV/GIL.P5/GIL.5/NLV/MOH/99/1999/ILU	AJ277607 AF397156
II.6	II.6	II.6	II.6	Hu/NoV/GIL.6/Seacroft/1990/UK	II.P6	Hu/NoV/GIL.P6/GIL.6/Saitama U16/JP	AJ277620 AB039778
II.7	II.7	II.7	II.7	Hu/NoV/GIL.7/Leeds/1990/UK	II.P7	Hu/NoV/GIL.P7/GIL.6/Saitama U4/JP	AJ277608 AB039777
II.8	II.8	II.8	II.8	Hu/NoV/GIL.8/Amsterdam/1998/NL	II.P8	Hu/NoV/GIL.P8/GIL.8/Saitama U25/JP	AF195848 AB039780
II.9	II.9	II.9	II.9	Hu/NoV/GIL.P7/GIL.9/VA97207/1996/US	ND		AY038599 ND
II.10	II.10	II.10	II.10	Hu/NoV/GIL.10/Erfurt546/2000/DE	ND		AF427118 ND
II.11	II.11			Po/NoV/GIL.P19/GIL.11/Sw918/1997/JP	II.P11	Po/NoV/GIL.P11/GIL.11/Sw918/1997/JP	AB126320 AB074893
II.12	II.12	II.12	II.12	Hu/NoV/GIL.12/Wortley/1990/UK	II.P12	Hu/NoV/GIL.P12/GIL.3/5017.34/2003/JP	AJ277618 EU187437
II.13	II.13	II.14	II.13	Hu/NoV/GIL.13/Fayetteville/1998/US	ND		AY113106 ND
II.14	II.14	II.13	II.14	Hu/NoV/GIL.14/M7/1999/US	ND		AY130761 ND
II.15	II.15		II.15	Hu/NoV/GIL.15/J23/1999/US	II.P15	Hu/NoV/GIL.P15/GIL.15/Hiroshima/66-1110/2006/JP	AY130762 AB360387
II.16	II.16	II.15	II.16	Hu/NoV/GIL.P16/GIL.16/Tiffin/1999/US	II.P16	Hu/NoV/GIL.P16/GIL.16/Hiroshima/60-1015/2005/JP	AY502010 AY772730
II.17	II.17	II.11	II.17	Hu/NoV/GIL.P16/GIL.17/CS-E1/2002/US	II.P17	Hu/NoV/GIL.P17/GIL.17/Briancon870/2004/FR	AY502009 EF529741
II.18	II.18			Po/NoV/GIL.P18/GIL.18/OH-QW101/2003/US	II.P18	Same as ORF2	AY823304
II.19	II.19			Po/NoV/GIL.P19/GIL.19/OH-QW170/2003/US	II.P19	Same as ORF2	AY823306
II.20				Hu/NoV/GIL.20/Luckenwalde591/2002/DE	II.P20	Hu/GIL.P20/GIL.20/Leverkusen267/2005/DE	EU373815EU424333
II.21		II.16		Hu/NoV/GIL.21/IF1998/2003/IR	ND		AY675554 ND
II.22				Hu/NoV/GIL.P22/GIL.22/YURI/JP	II.P22	Hu/NoV/GIL.P22/GIL.22/Minato/N1/6/1999/JP	AB083780 AB233471

ノロウイルスの命名法の標準化

Strain designation

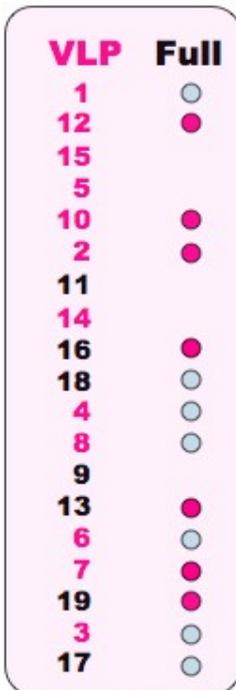
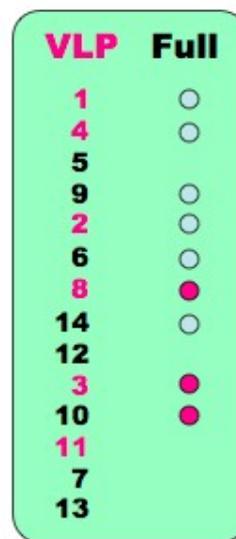
A cryptogram previously proposed for caliciviruses [27] would further facilitate communication by inclusion of the genogroup and genotype assignment as follows:

host/	hu, bo, po, fe, ca etc
genus/	NoV, SaV
genogroup/	GI, GII etc
genotype/	1, 2 etc. P1, P2 etc
name/	assigned by investigator
year of occurrence/	
country	NL, US, etc

For example: Hu/NoV/GII.P4/GII.4/Amsterdam/2004/NL, or if only the capsid sequence is known: Hu/NoV/GII.4/Amsterdam/2004/NL

Variant names will not be included in the cryptogram.

ORF1を標的領域とする場合、情報が足りない



抗原性

病原性

増殖力

宿主域

新たに18株の全長塩基配列を決定し、クラスターの7割をカバーした。



New Standard NoV-Plasmids



Polymerase region primer set - Capsid N/S region primer set

GI/1 NV68 prototype	4265-5796	1530nt
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GII/4 2006b Saga1 strain	4169-5623	1453nt
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Polymerase領域YGDDモチーフの上流に存在する高度保存領域から、Capsid NS領域下流までを含む。

キメラウイルスに対応。

活動にご協力いただいているノロウイルスレファレンスセンターブロック委員の先生方

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敬称略