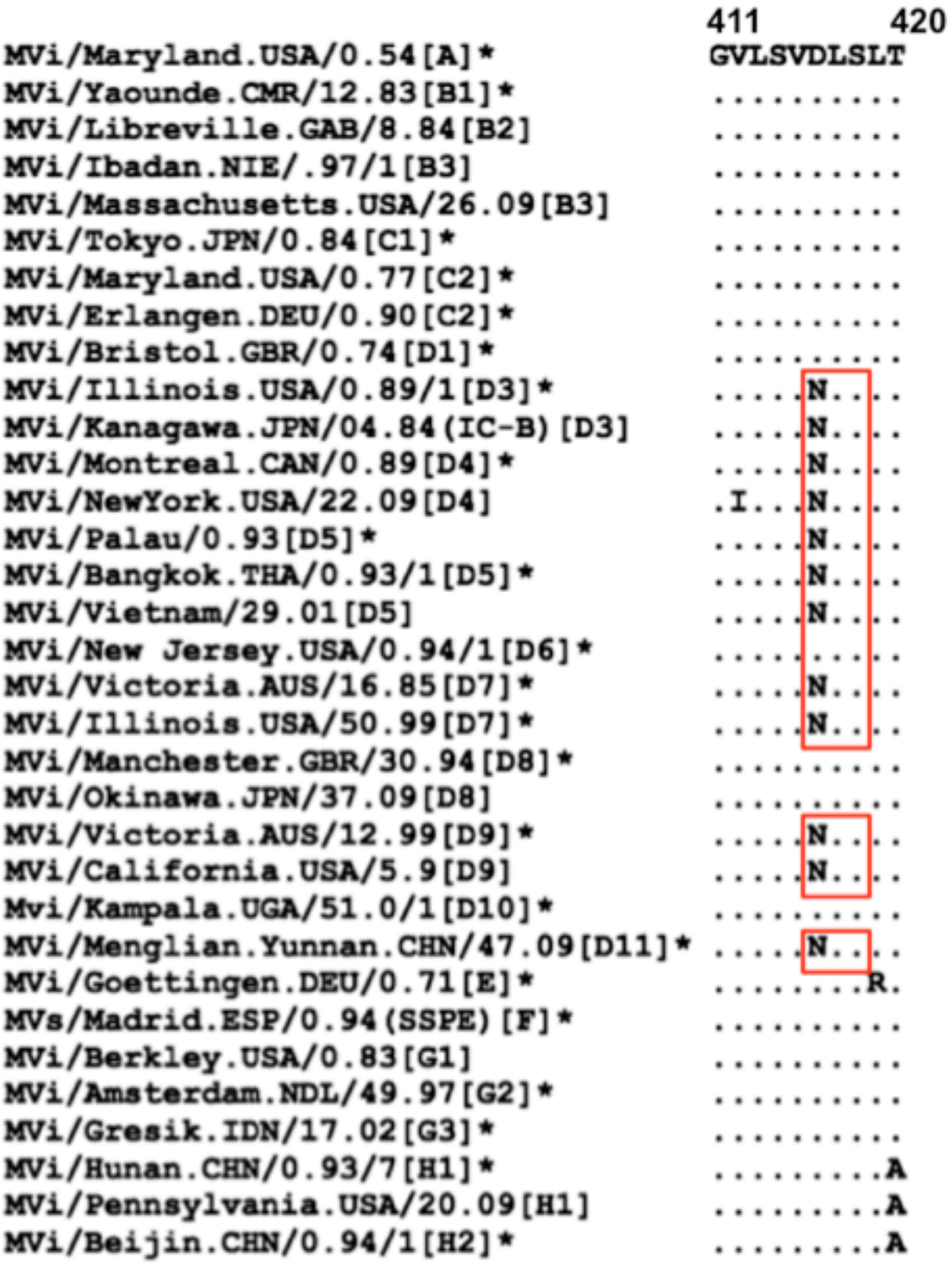

Figure S1. Amino acid sequence alignment of the H protein. An alignment of the amino acid sequences of residues 411–420 of various MV genotypes is shown. The asterisks indicate WHO reference strains of MV. The red boxes indicate predicted N-linked glycosylation sites.

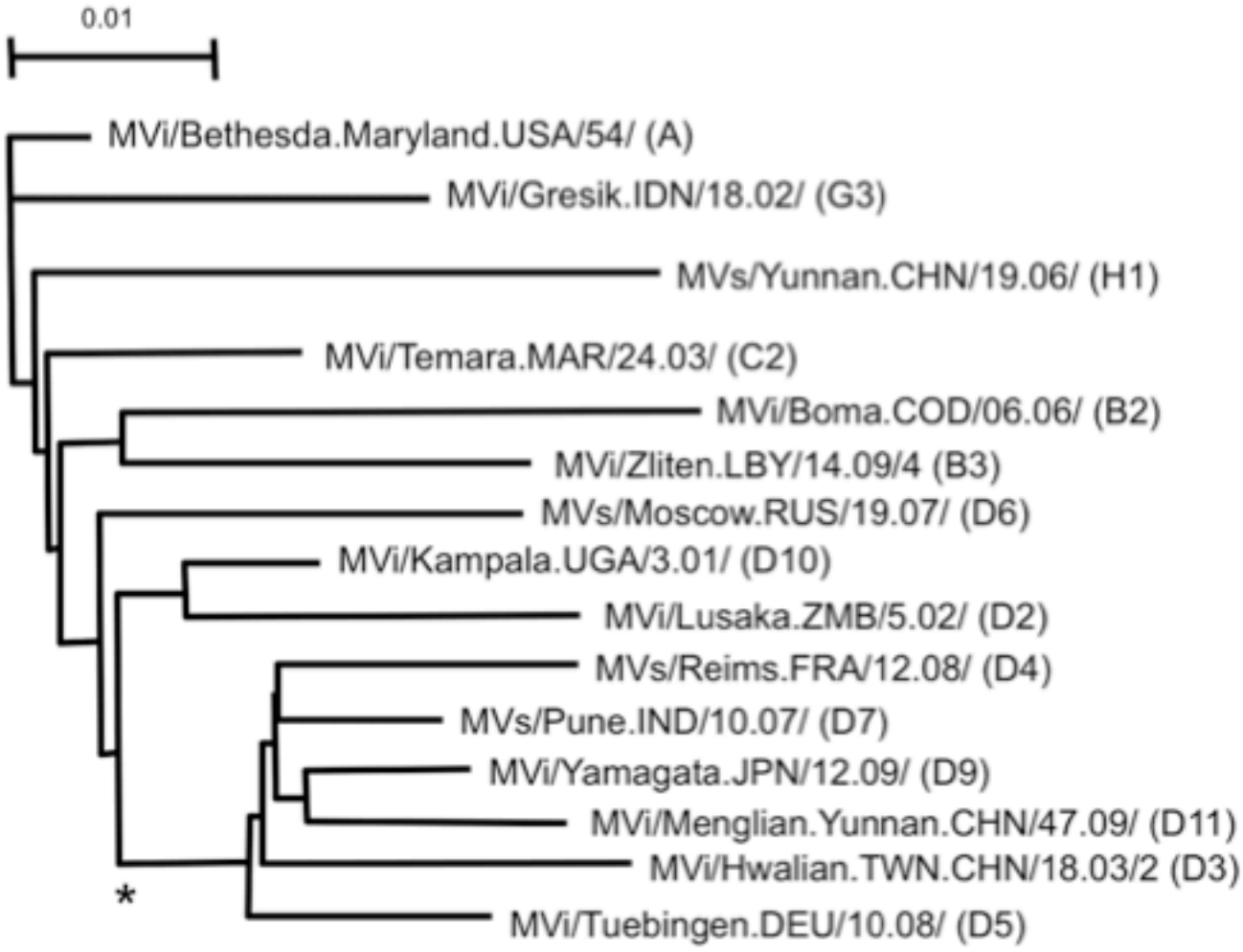

Figure S2. Phylogenetic tree based on the amino acid sequences of the H protein. The asterisk indicates the branching point where MV acquired the N-linked sugar at residue 416.

Supplementary Table 1. List of recombinant MVs used in the present study

Virus name in the present study	Backbone genome	Breif description	Reference	Virus nane in the reference
Genotype D3	IC323-Luci	Entirely genotype D3 virus	Takeda et al (2007)	IC323-Luci
Genotype A	IC323-Luci	H gene from genotype A	Takeda et al (2007)	IC/Ed-H-Luci
Genotype B3	IC323-Luci	H gene from genotype B3	the present study	
Genotype D4	IC323-Luci	H gene from genotype D4	the present study	
Genotype D5	IC323-Luci	H gene from genotype D5	the present study	
Genotype D8	IC323-Luci	H gene from genotype D8	the present study	
Genotype D9	IC323-Luci	H gene from genotype D9	the present study	
Genotype H1	IC323-Luci	H gene from genotype H1	the present study	
IC323-Luci-H(Q391R)	IC323-Luci	Q391R point mutation	the present study	
IC323-Luci-H(Q311R)	IC323-Luci	Q311R point mutation	the present study	
Genotype D3	IC323-EGFP	Entirely genotype D3 virus	Hashimoto et al. (2002)	IC323-EGFP
Genotype A	IC323-EGFP	H gene for genotype A	Hashimoto et al. (2002)	IC323/EdH-EGFP
MV323-EGFP-H-β12(N481Y)	IC323-EGFP	a chimeric H gene between genotype A and D3	Tahara et al. (2007)	MV323-EGFP-H-β12(N481Y)
MV323-EGFP-H8	IC323-EGFP	a chimeric H gene between genotype A and D3	Tahara et al. (2007)	MV323-EGFP-H8
MV323-EGFP-H9	IC323-EGFP	a chimeric H gene between genotype A and D3	Tahara et al. (2007)	MV323-EGFP-H9
MV323-EGFP-H10	IC323-EGFP	a chimeric H gene between genotype A and D3	Tahara et al. (2007)	MV323-EGFP-H10
MV323-EGFP-H11	IC323-EGFP	a chimeric H gene between genotype A and D3	Tahara et al. (2007)	MV323-EGFP-H11
G211S	IC/Ed-H-Luci	G211S point mutation	the present study	
E235G	IC/Ed-H-Luci	E235G point mutation	the present study	
Y252H	IC/Ed-H-Luci	Y252H point mutation	the present study	
L284F	IC/Ed-H-Luci	L284F point mutation	the present study	
L296F	IC/Ed-H-Luci	L296F point mutation	the present study	
G302R	IC/Ed-H-Luci	G302R point mutation	the present study	