Fig. 1

Genetic variations among D2/4 chimeras (compared to wt D2 16681 and D4-1036)

Genome	D2			junction	D4				junction	D2												
Genes	NCR	C		prM	E					NS1	NS2A			NS3			NS4A		NS4B	NS5	
Mutation types*	PDK-53	seed	Eng	MluI	seed	Marker	Eng	Eng	NgoMIV	PDK-53	seed	seed	PDK-53	PDK-53	seed	PDK-53	seed	PDK-53	seed	PDK53	seed
Genome NT position	C57T	A225T	A396C	A453G	C647G/C	A1401G	C2027T	A2275	TG2380/1CC	G2579A	A3674G	A3773A/G	C4018T	A5270T	C5391T	T5547C	C6437T	G6599C	T7026C/T	C8571T**	A9750C
Protein-AA position	NCR	C-silent	C-R100S	prM-silent	prM-T79R/T	E-silent	E-A364V	E-M447L	E-V482A	NS1-G53D	NS2A-D66G	NS2A-K99K/R	NS2A-L181F	NS3-E250V	NS3-silent	NS3-silent	NS4A-A21V	NS4A-G75A	NS4B-silent	NS5-silent	NS5-silent
D2-16681	C	A	A (R)	A					TG (V)	G (G0	A (D)	A (K)	C (L)	A (E)	C	T	C (A)	G (G)	T	C	A
D2-PDK-53	T	-	-							A (D)	-	-	**T (F)**	T (V)	-	c	-	**C (A)**	-	t	-
D4-1036					G (T)	A	C (A)	A (M)													
Cloned D2/4-V1 (pD2/4-VP1)	T	-	C (S)	g	-	g	T (V)	C (L)	CC (A)	A (D)	-	-	**T (F)**	T (V)	-	c	-	**C (A)**	-	-	-
DENVax-4 (MVS)	T	t	C (S)	g	-	g	T (V)	C (L)	CC (A)	A (D)	G (G)	A/G (K/R)	**T (F)**	T (V)	t	c	T (V)	**C (A)**	c/t	-	c

"-": same as wt D2 16681 or D4 1036; small nt letter: silent mutation in open reading region

*:PDK-53: D2-PDK-53 specific genotype (vs 16681), Red: major attenuation PDK-53 loci; Seed: mutations found only in specified virus seed and not in the original clone; Eng: Engineered mutations for the D2/4 clones; MIu and NgoMV: D2/4 junction engineered RE sites;

**: C8571T (PDK-53 silent mutation) was not included in most D2/4 chimeric clones

Fig. 10

Serotype	Strain	vrius origin	C57T 5'NCR	A524T prM-D29V	T900C[a] M (silent)	C2055T E (silent)	G2579A NS1-G53D	C4018T NS2A-L181	A5270T NS3-E250V	T5547C NS3(silent)	G6599C NS4A-G75A	C8571T NS5(silent)
DENV-2	16681	isolate from human	C	A	T	C	G	C	A	T	G	C
	PDK-53	PDK cell pass of 16681	T	T	-	t	A	T	T/A mix	c	C	t
	PDK53-V(VV45R)	Recombinant PDK-53-V	T	T	**c**	t	A	T	**T**	c	C	**C**
	PDK53-E(VE48R)	Recombinant PDK-53-E	T	T	**c**	t	A	T	**A**	c	C	**C**

Underlined Mutations: the 3 most important attenuation loci of PDK-53

Red font: PDK-53 specific sequence (change from 16681)

Bold font: Different nt sequence between PDK-53 and clone-derived V or E virus

[a] Engineered silent clone marker to differenciate original PDK-53 and recombinant (clone-derived) viruses