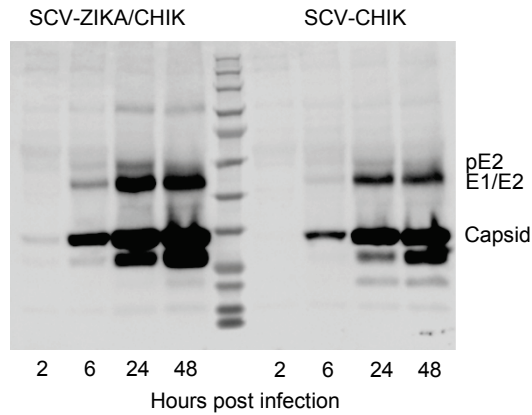
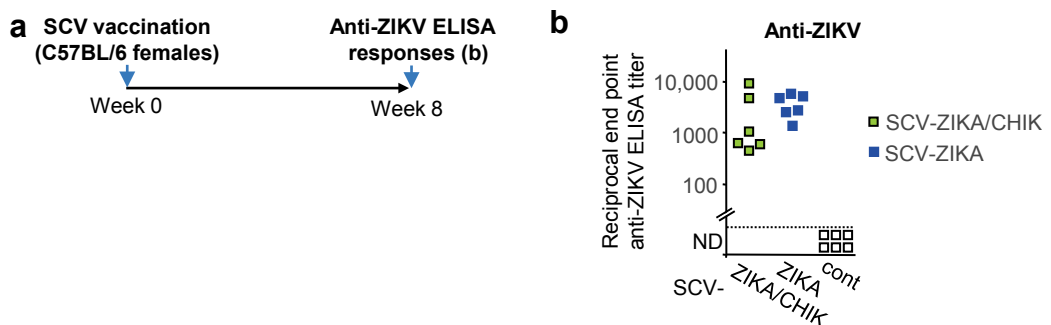


## Supplementary figures



**Supplementary Fig. 1.** Western blot using mouse polyclonal anti-CHIKV sera (as in Fig. 1e) of lysates of HeLa cells infected with SCV-ZIKA/CHIK or SCV-CHIK (MOI $\approx$ 5) and harvested at the indicated time points.

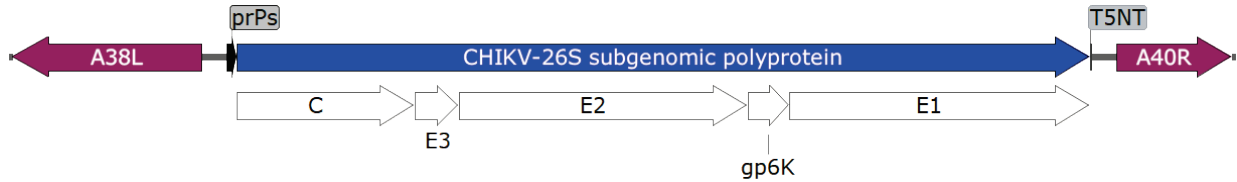


**Supplementary Fig. 2.** **a** Timeline of vaccination and antibody assays. Mice were vaccinated with SCV-ZIKA/CHIK as in Fig 2a, and the same dose and route of SCV-ZIKA or SCV-cont. **b** IgG ELISA titers determined as in Fig. 2b.

SCV-ZIKA was constructed by replacing the CHIKV structural gene cassette from SCV-ZIKA/CHIK with an EcoGPT/GFP expression cassette, with the EcoGPT/GFP expression cassette subsequently removed by intramolecular recombination.

**Supplementary Fig. 3.** Nucleotide sequences for the CHIKV and ZIKV immunogen inserts and D13L deletion for SCV-ZIKA/CHIK.

**CHIKV immunogen genes located between A38L and A40R ORFs**



LOCUS Exported 5381 bp ds-DNA linear VRL 27-FEB-2018  
 DEFINITION CHIKV-26S expression cassette within SCV1002.  
 ACCESSION .  
 VERSION .  
 KEYWORDS .  
 SOURCE SCV1002  
 ORGANISM SCV1002  
 REFERENCE 1 (bases 1 to 5381)  
 AUTHORS Paul Howley  
 TITLE Direct Submission  
 JOURNAL Exported Feb 27, 2018 from SnapGene 4.1.5  
<http://www.snapgene.com>  
 COMMENT CHIKV-26S expression cassette was inserted by homologous recombination to replace the A39R ORF  
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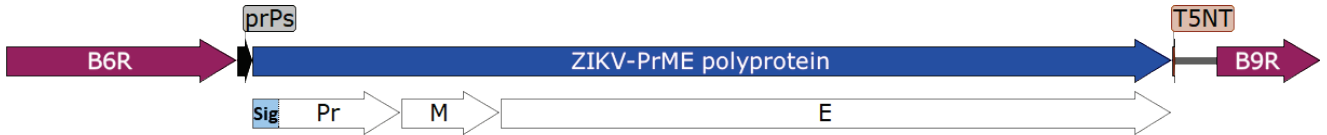
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### ZIKV-PrME immunogen genes located between B6R and B9R ORFs



LOCUS Exported 2968 bp ds-DNA linear UNA 27-FEB-2018  
 DEFINITION ZIKV-PrME expression cassette within SCV1002.  
 ACCESSION .  
 VERSION .  
 KEYWORDS .  
 SOURCE SCV1002  
 ORGANISM SCV1002  
 REFERENCE 1 (bases 1 to 2968)  
 AUTHORS Paul Howley  
 TITLE Direct Submission  
 JOURNAL Exported Feb 27, 2018 from SnapGene 4.1.5  
<http://www.snapgene.com>  
 COMMENT ZIKV-PrME expression cassette was inserted by homologous recombination to replace both B7R and B8R ORFs

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1981 acttgaaatg tgcctgaaa atggataaac ttagattgaa gggcgtgtca tactccttgt
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2161 acatgcaaac tctgaccca gttgggaggt tgataaccgc taaccccgta atcactgaaa
2221 gcaactgaaa ctctaagatg atgctggaac ttgatccacc atttggggac tcttaccattg
2281 tcataggagt cggggagaag aagatcacc accactggca caggagtggc agcaccattg
2341 gaaaagcatt tgaagccact gtgagaggtg ccaagagaat ggcagtcttg ggagacacag
2401 cctgggactt tggatcagtt ggaggcgtc tcaactcatt gggcaagggc atccatcaa
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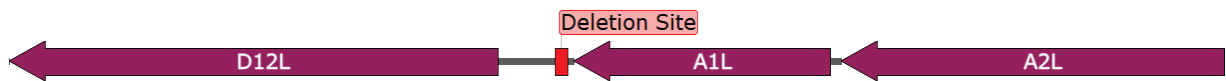
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2881 ttgcagtgtt catctcccaa ctgcaagtga aggattgata actgaaggca atggattcag
2941 ggatatacga aacaccgata aattataa

```

//

### D13L deletion site



```

LOCUS       Exported                2146 bp ds-DNA     linear     UNA 27-FEB-2018
DEFINITION  D13L deletion site of SCV1002.
ACCESSION   .
VERSION     .
KEYWORDS    .
SOURCE      SCV1002
  ORGANISM  SCV1002
REFERENCE   1  (bases 1 to 2146)
  AUTHORS   Paul Howley
  TITLE     Direct Submission
  JOURNAL   Exported Feb 27, 2018 from SnapGene 4.1.5
            http://www.snapgene.com
COMMENT     The D13L ORF was deleted by homologous recombination and rescue in a
            cell line expressing in trans the D13 protein
FEATURES             Location/Qualifiers
     source           1..2146
                     /organism="SCV1002"
                     /strain="Copenhagen"
                     /mol_type="genomic DNA"
     CDS              complement(1..864)
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                     /label=D12L
                     /note="VACV-COP-D12L"
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                     QISRVDLNRMPDMLKLFTHDIMLPESDLKVEYIILKINSVKYYGRSTKADAVVADLS
                     ARNKLFKRERDAIKSNHLTENNLYISDYKMLTFDVFRLPFDVNEKYCI IKLPTLFGR
                     GVIDTMRIYCSLFFKNVRLKCVSDSWLKDSAIMVASDVCKKNLDFMSHVKS SVTKSSSW
                     KDVNSVQFSILNDPVDTEFINKFLEFSNRVYEALYYVHSLLYSSMTSDSKSIENKHQRR
                     LVKLLL"
     misc_feature     965..988
                     /label=Deletion Site
                     /note="Remnants of the D13L deleted ORF"
     CDS              complement(999..1451)
                     /codon_start=1
                     /product=" late gene transcription factor VLTF-2"
                     /label=A1L
                     /note="VACV-COP-A1L"
                     /translation="MAKRVSLPDVVISAPKAVFKPAKEEALACILPKYYKSMADVSIKT
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CDS          complement(1472..2146)
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             /note="VACV-COP-A2L ORF"
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YKLVFEIINQVKDEKLNLSSTEKINEVVEIFKHLVFFCQENTPSKTIYNSFFLDKIFDIT
SVTKNLKPQTVKNYTKNNSNQLVWENFLAHMRSKRVTMVEDYGHEYVFDERFSTCSL
EV"

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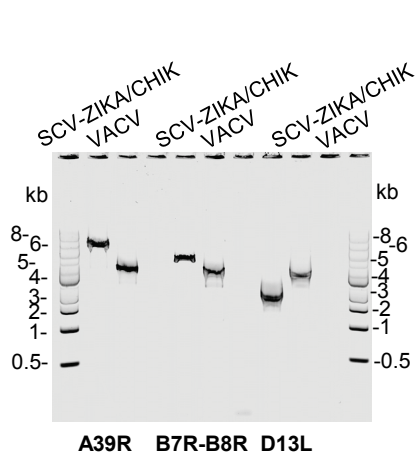
ORIGIN

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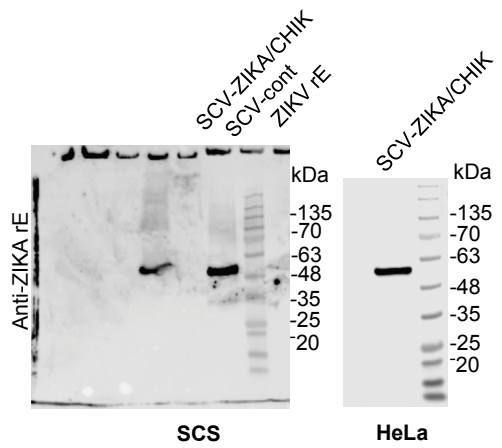
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541 tttattgctg gcgctgaggt cggcaactac ggcgtccgct ttagtactcc tcccataata
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841 gatatttttt acaatttcat ccatttacia ctctatagtt tgttttcatt attattagtt
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1261 ataggtctaa aaaccaaatac ttgattacia aaccaacact tatcaattac actatttgtc
1321 ttaatagaca catctgccat agatttataa tactttggta gtatacaagc gagtgcttct
1381 tcttttagcgg gcttaaagac tgcttttagt gctgaaataa ccacatctgg aaggcttact
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1741 gcttaaataat ttctactact tcattaactt tttctgtact cagattcagt ttctcatctt
1801 ttacttgatt gattatttca aagactaact tataatcctt tttatttatt ctctcgttag
1861 ccttaagaaa actagataca aaatttgcac ctacatcatc cgtggatatt tgattthttht
1921 catgatatc caagagthtcc gagataatth ctccagaaca ttgatgagac aataatctcc
1981 gcaatacatt tctcaaatga ataagthttag tagacacgtg gaagthtgac tttthtthtga
2041 cctthtgata tttthtgaat accgactcgc aaaaaataca atattcatat cctthtthtcag
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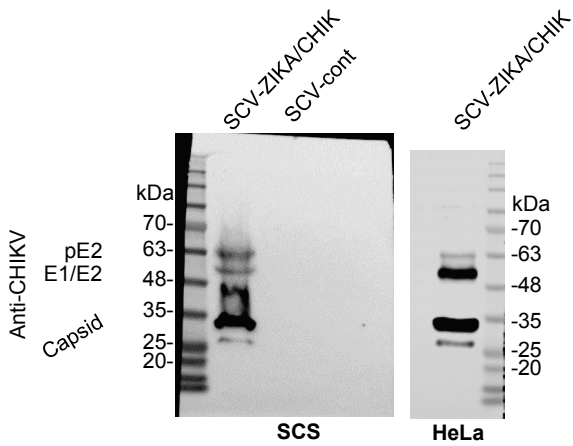




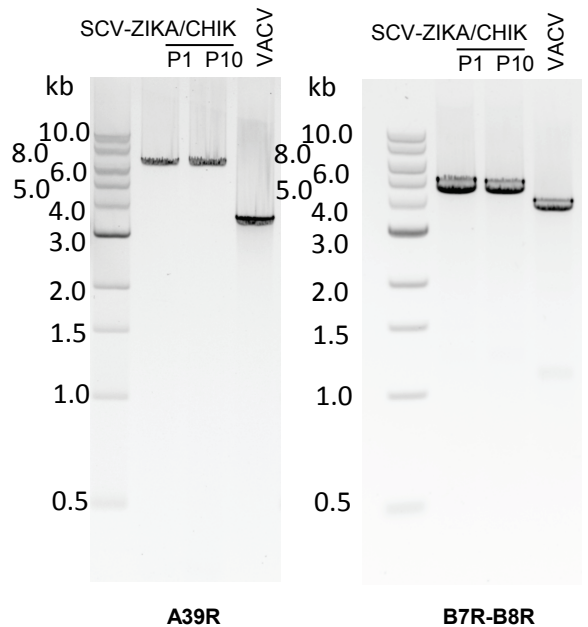
Corresponds to Figure 1c



Corresponds to Figure 1d



Corresponds to Figure 1e



Corresponds to Figure 1f

**Supplementary Fig. 4.** Uncropped Western blots and PCR gel images for Fig. 1.