

FIG. 1A

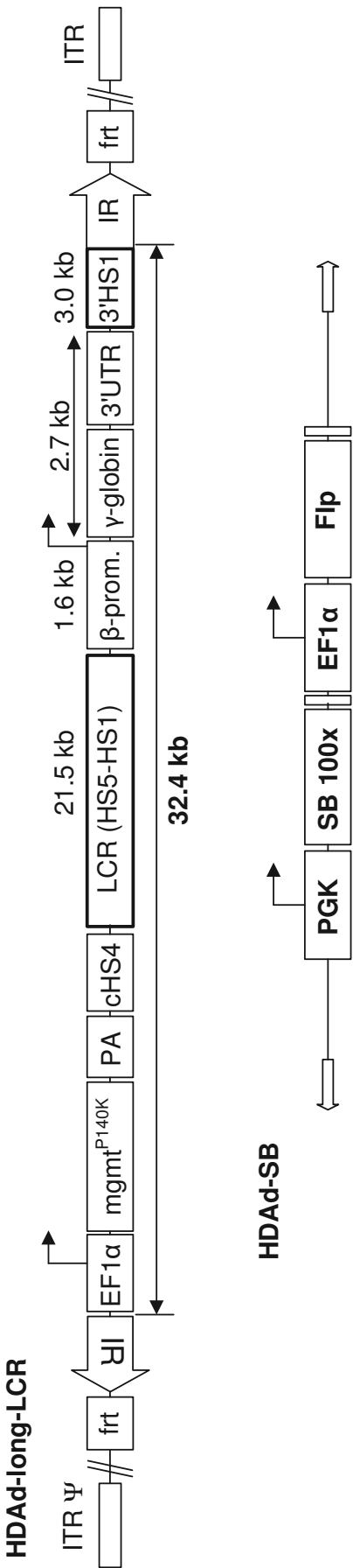


FIG. 1B

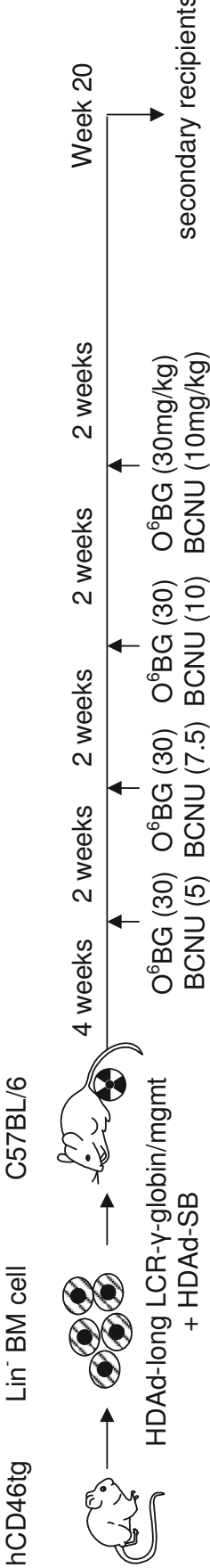


FIG. 1D

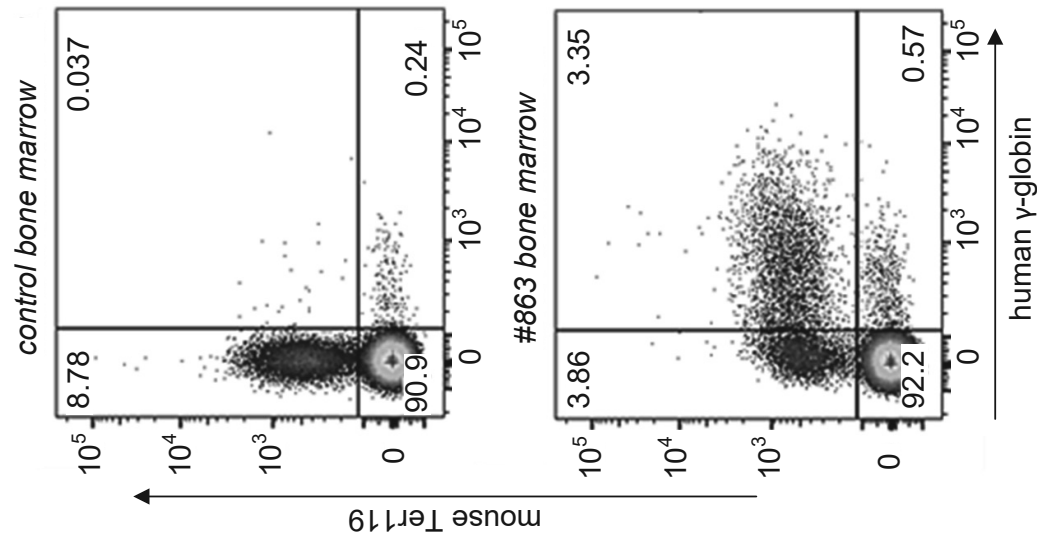


FIG. 1C

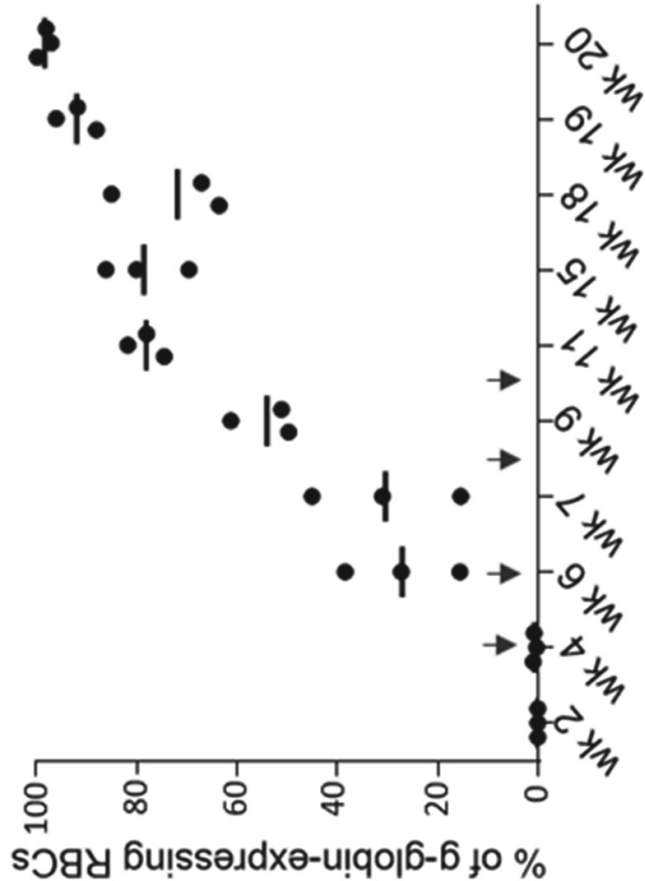


FIG. 2A

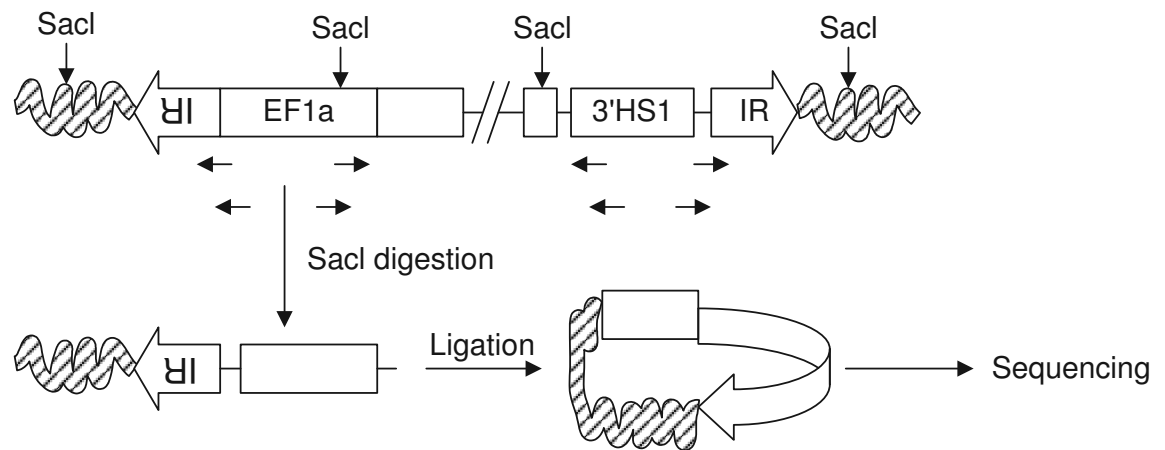
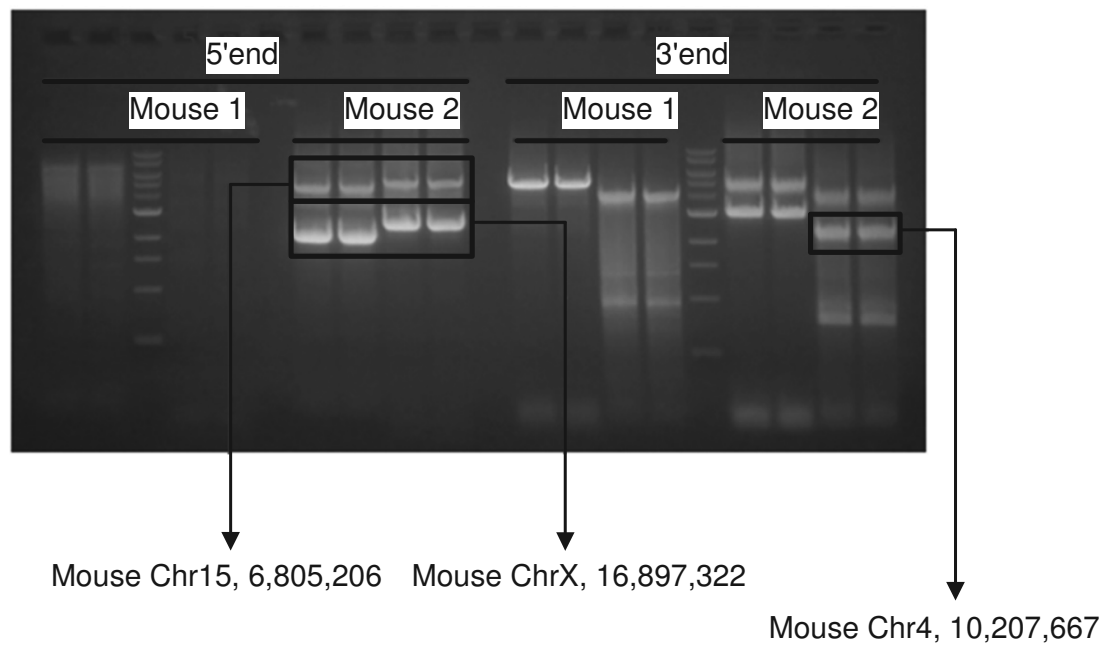


FIG. 2B



CCCTGGGATTCCTCCCAAGGCAGGGCGAGTCCTTTTGTATGAATTACTCAAATCGATAACTAGAAACTTTAAATTAACAACGA
 GATCTTATAATTTTGCATACCTCTGCCTGCTGGGGACTTCCACACCCCTAGCTGACACAAGAAATTTGAAATACATCCACAG
 GTACACCTCCAAATTGACTCAAAATGATGTCAAATTAGTCTATCATAATCTTCTAAAGCCATGACATCATTTTAACTGGAAATT
 TTCCAAGCTGTTTAAAGGCACAGTCAACTTAGTGTATGTAAGTCTTCTGACCCACACAGTGGAAATTGTGATACAGTGAATTATAA
 GTGAAATAATCTGTCTGTAAACAAATTGTTGGAAAAATGACTTGTGTGATGCACAAAGTAGATGTCTAACTGACTTGGCCA
 AAACATATTGTTTGTAAACAAGAAATTTGTGGAGTAGTTGAAAAACGAGTTTTTAATGACTCCAACCTTAAGTGTATGTAAAC
 TTCCGACTTCAACTG[TA] **AGAA** **TGGCCCATTCATCTATAGTAGCACACAATATTTGCATTTGTGCGACAGTATAAGGGACA**
ATTATGCTATCAGGCATTTTCCAAAGTGAGTAATCGAAGTTTTTATACCTTTGTGTGCCATGTTTGGCTACCATGGTGGG
ATAATCTTACACGCGTTCTCGCGACCGGCCAGGAAAGACGCAACAACCCGGAATCTTCTGCGGCAAAAGCCTTTATTGCTT

(SEQ ID NO: 1)

TAGAAACTTAATTAAACAACGAGATCTTATAATTTGCATACCTCTGCCTGCTGGGGACTTCCACACCCCTAGCTGACACAA
 GAATTTGAAATACATCCACAGGTACACCTCCAATTGACTCAAATGATGTCAATTAGTCTATCATAATCTTCTTAAAGCCAT
 GACATCATTTTAACTGGAAATTTCCAAAGCTGTTTAAAGGCACAGTCAACTTAGTGTATGTAAGTCTTCTGACCCACTGGAA
 TTGTGATACAGTGAATTATAAGTGAAATAATCTGTCTGTAAACAATTTGTGGAAAAATGACTTGTGTGATGCACAAAGTA
 GATGTCCTAACTGACTTGGCCAAAACATATTGTTTGTAAACAAGAAATTTGTGGAGTAGTTGAAAAACGAGTTTTTAAATGACT
 CCAACTTAAAGTGTATGTAAACCTCCGACTTCAACTG[TA] **CAAGTAGACCAAAATATCCATATACATAAAAGAAAAAATAGA**
AAAAATTTCTAGTGACAGAAAAATGACAAAGAACAATACCTGCTTTTATTACTACTATTAAGATGTTTGTCTTCCATTACACTC
ATATGAGTCATGATATTTTCTTCTCATTTTCTTCTANTNCACTNGAAAT

(SEQ ID NO: 2)

GTTGCTAGGAAAGCCCAAAATTCATCTGTATTAACAGTGGGAGCTTGTGGAAGGCTACTCGAAATGTTTGACCCCAAGTT
 AAACAAATTTAAAGGCAATGCTACCAAAATACTAATTGAGTGTATGTTAACTTCTGACCCCACTGGGAAATGTGATGAAAGAAA
 TAAAGCTGAAATGAATCATCTCTCTACTATTATTCTGATATTTACATTTCTTAAAAATAAAGTGGTGTATCCTAACTGAC
 CTTAAGACAGGGAATCTTTACTCGGATTAAATGTICAGGAAATGTGAAAAAGTGAGTTTAAATGTATTTGGCTAAGGIGTA
 TGTAAACTTCCGACTTCAACTG[TA] **TATCCTCCCCGTTGCACCCCTCTTGTATGATGCTGAGATGAACACAGATGCTCACTCC**
TTGAGGGTCTAAGCTTATGCTGACACAGACACAGGTGCTCACTTCTATGAATGGCCTAAGATTTGAGGACATCATGAGG
ACAAGTGTGATAAAATCTTGGAAACAACCTCCCAGAGGTCT

(SEQ ID NO: 3)

FIG. 2C

5' end vector
 sequence
Sleeping beauty
IR/DR sequence
Integration junction
(chr15, 6805206)

5' end vector
 sequence
Sleeping beauty
IR/DR sequence
Integration junction
(chrX, 16897322)

3' end vector
 sequence
Sleeping beauty
IR/DR sequence
Integration junction
(chr4, 10207667)

FIG. 3A

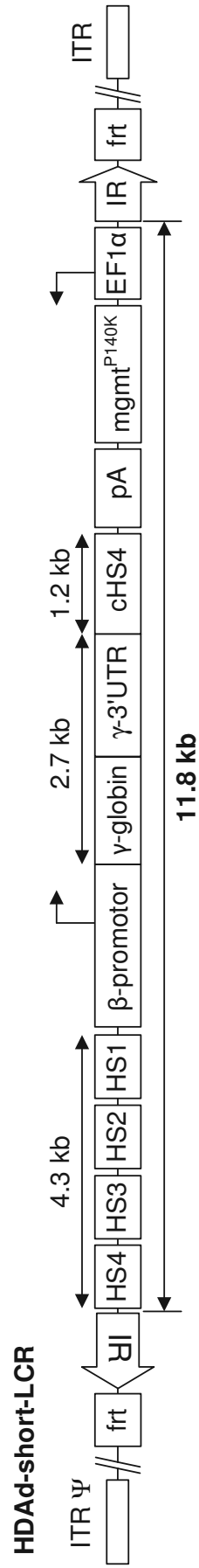


FIG. 3B



FIG. 3C

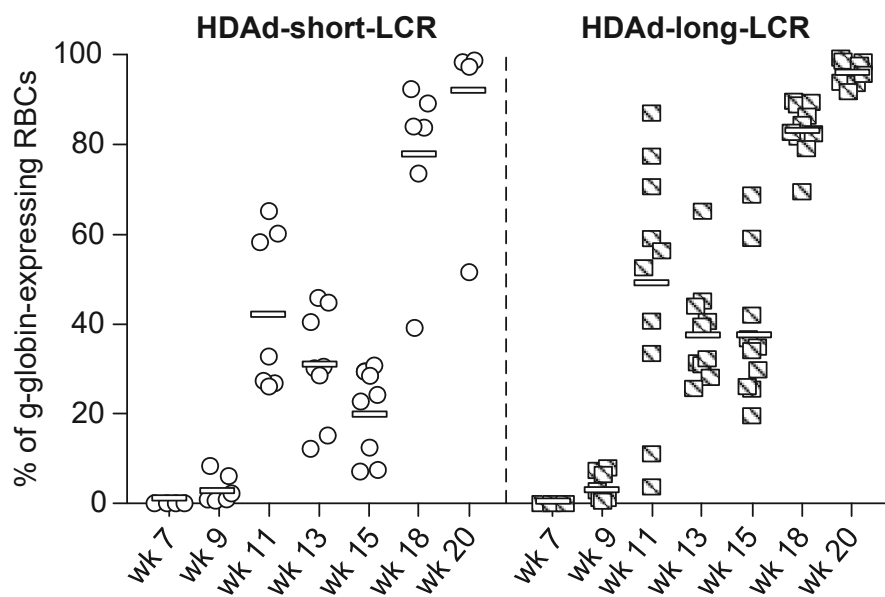


FIG. 3D

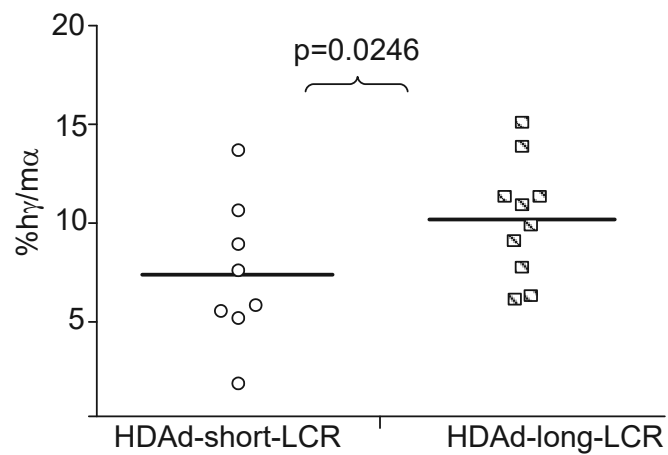


FIG. 3E

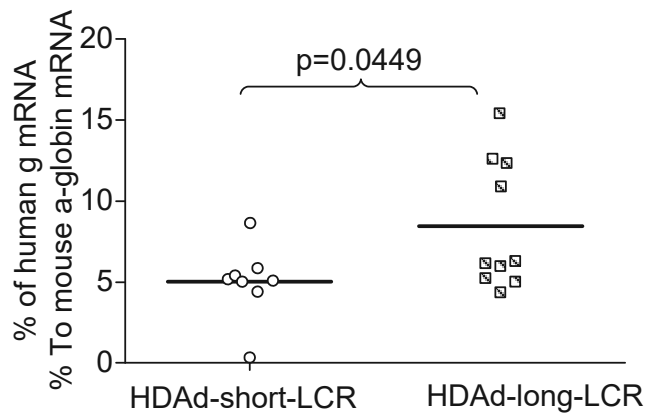


FIG. 4

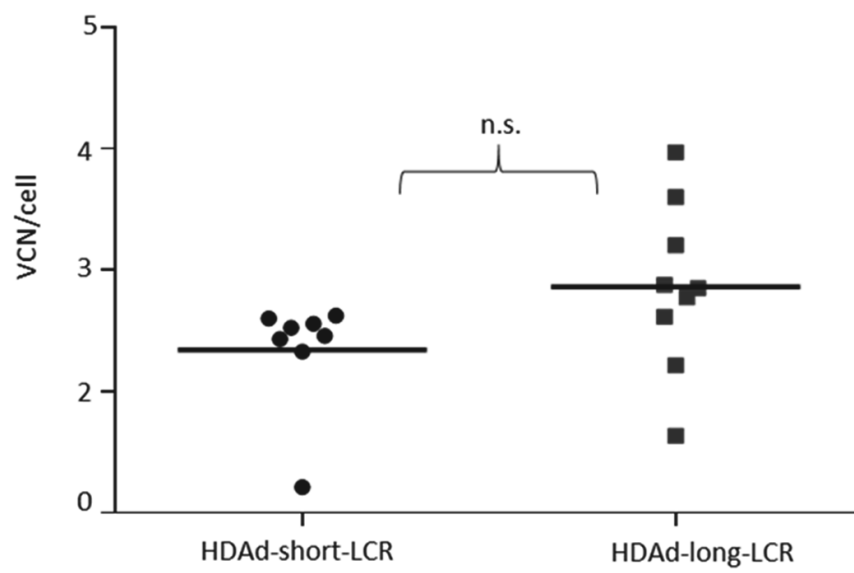


FIG. 5A

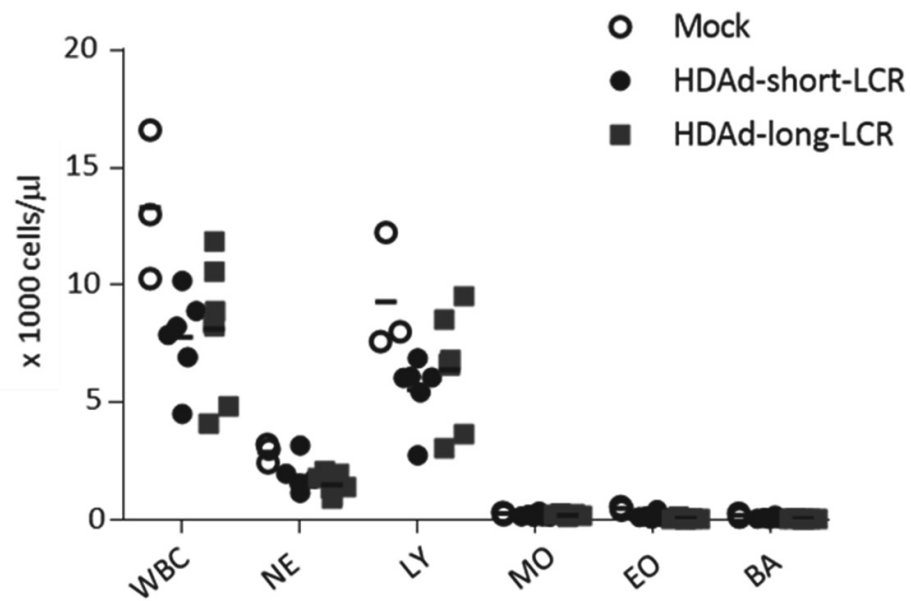


FIG. 5B

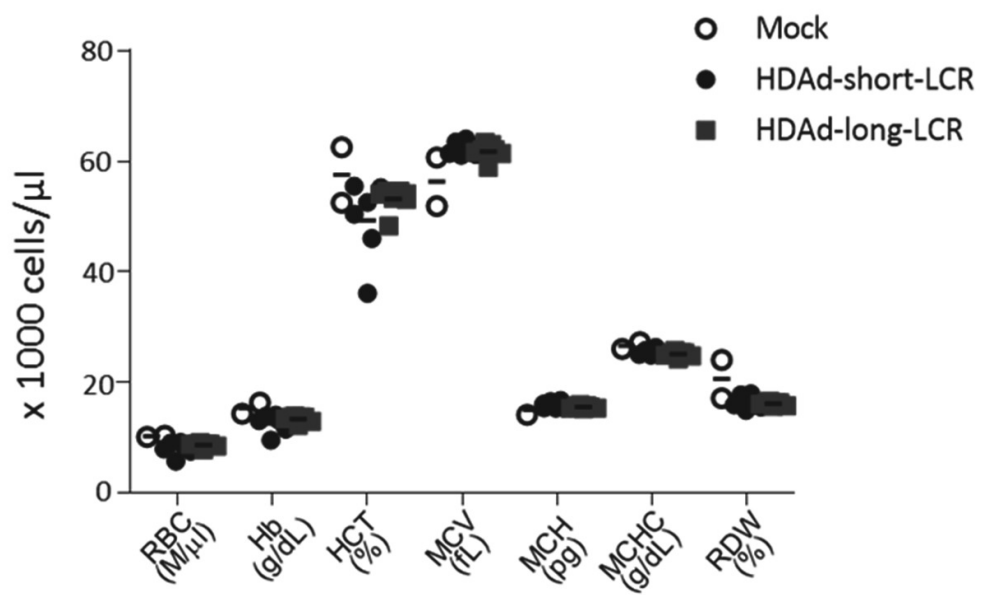


FIG. 5C

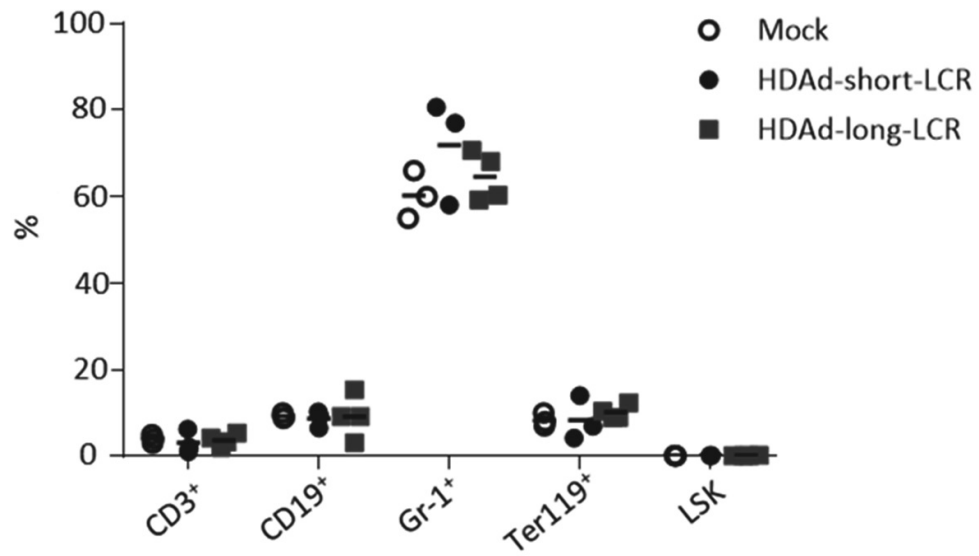


FIG. 5D

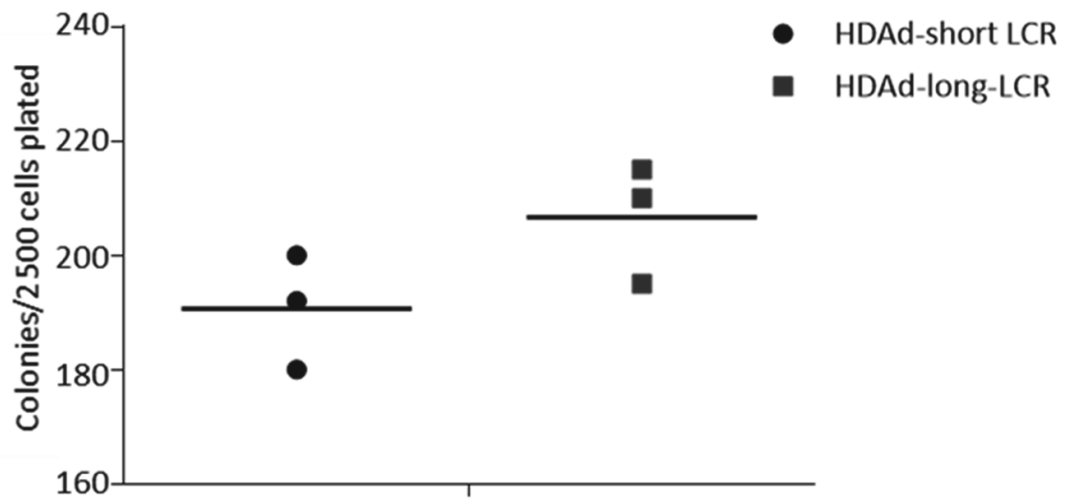


FIG. 6

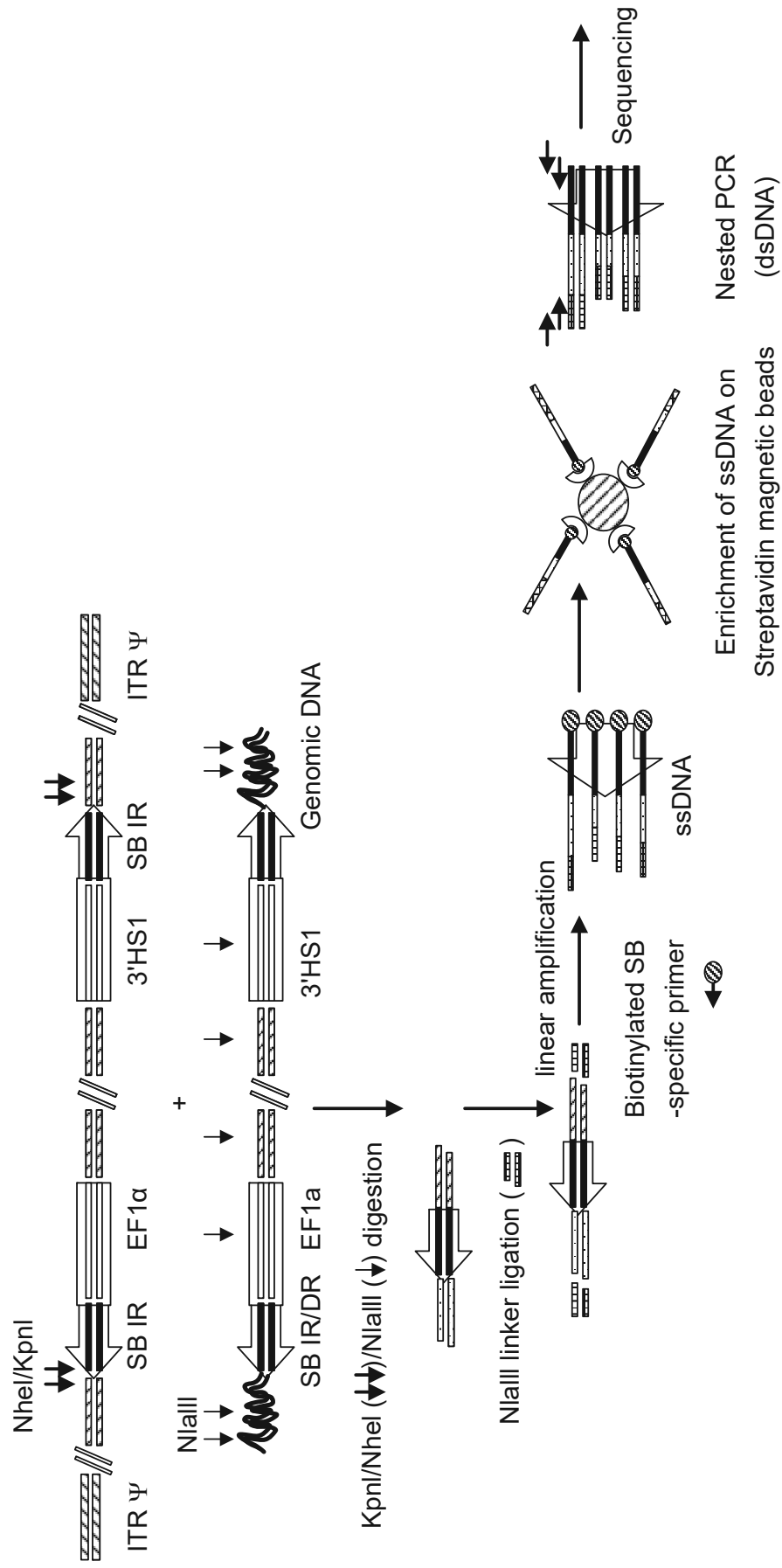


FIG. 7A

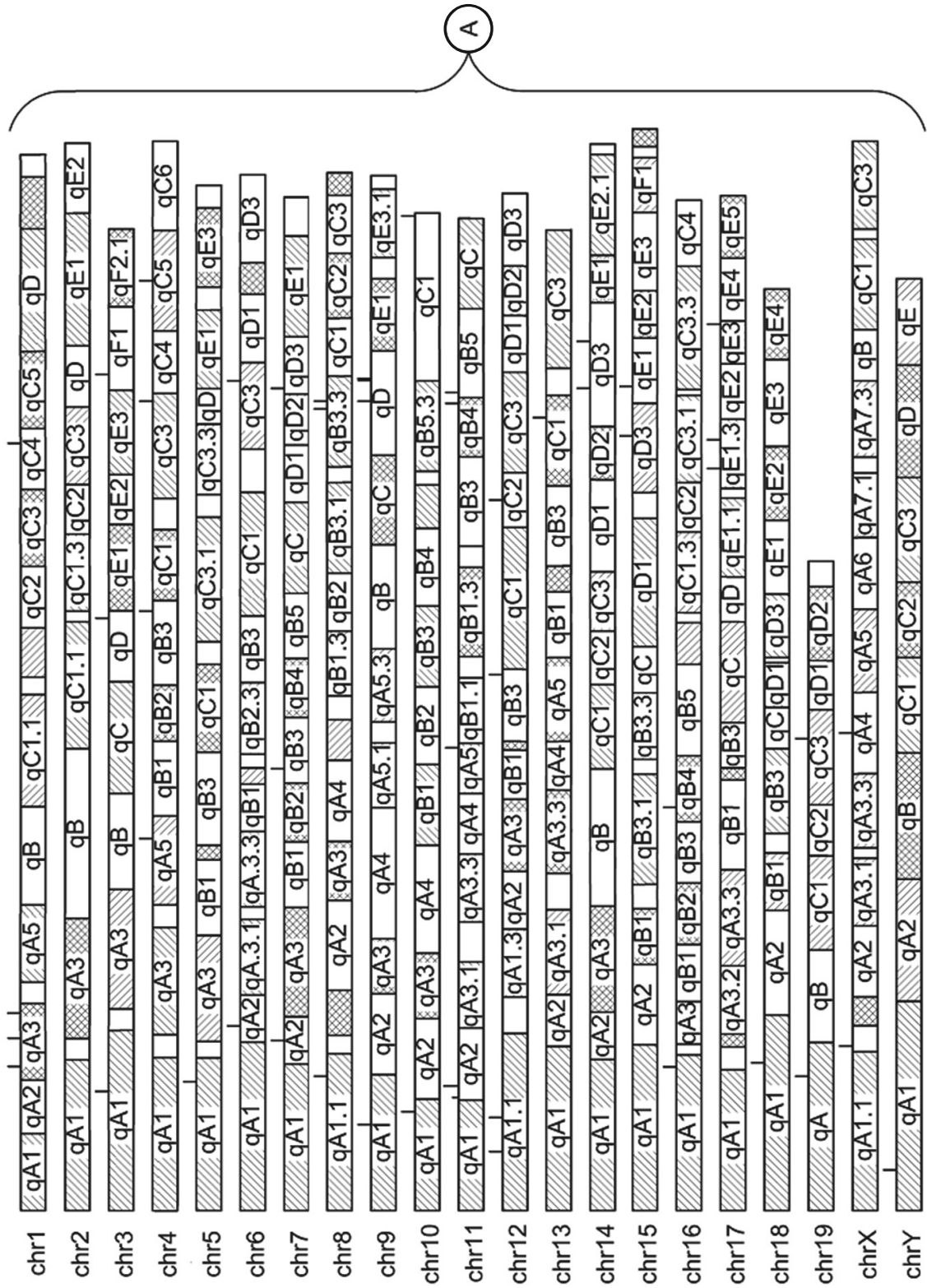


FIG. 7A (continued)

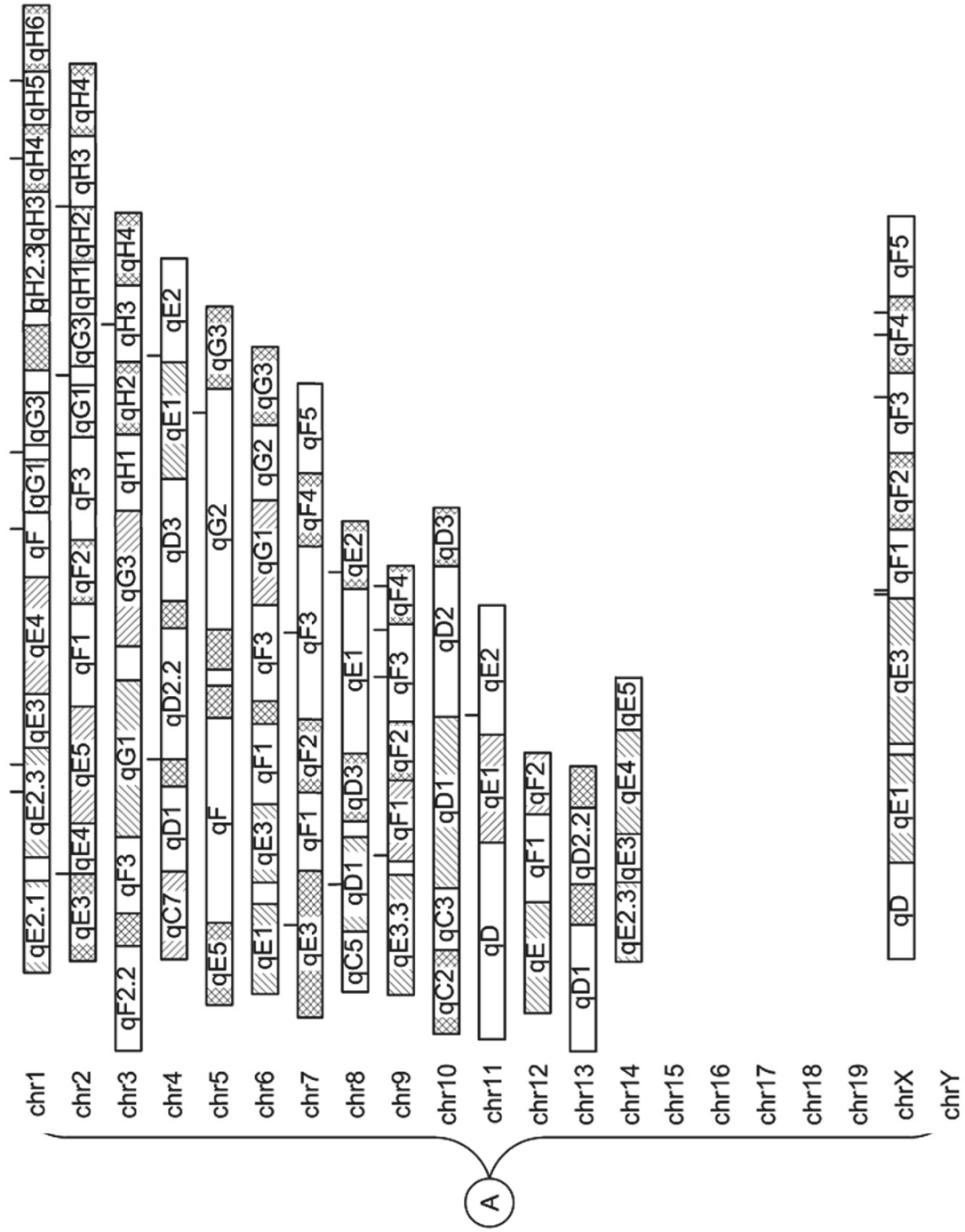


FIG. 7B

Sleeping beauty IR/DR sequence
Integration junction (chr7,79796094) ACTTAAAGTGT ATGTAAACTT CCGACTTCAA CTGTAGGGTA CCTGATTCTC TGGGCATCTC TGCCCACTAC CATG
SEQ ID NO: 4

Sleeping beauty IR/DR sequence
Integration junction (repeat region) ACTTAAAGTGT ATGTAAACTT CCGACTTCAA CTGTAAATT TCCACCTTTT TCAGTTTTTCC TCGCCATATT TCATG
SEQ ID NO: 5

FIG. 7C

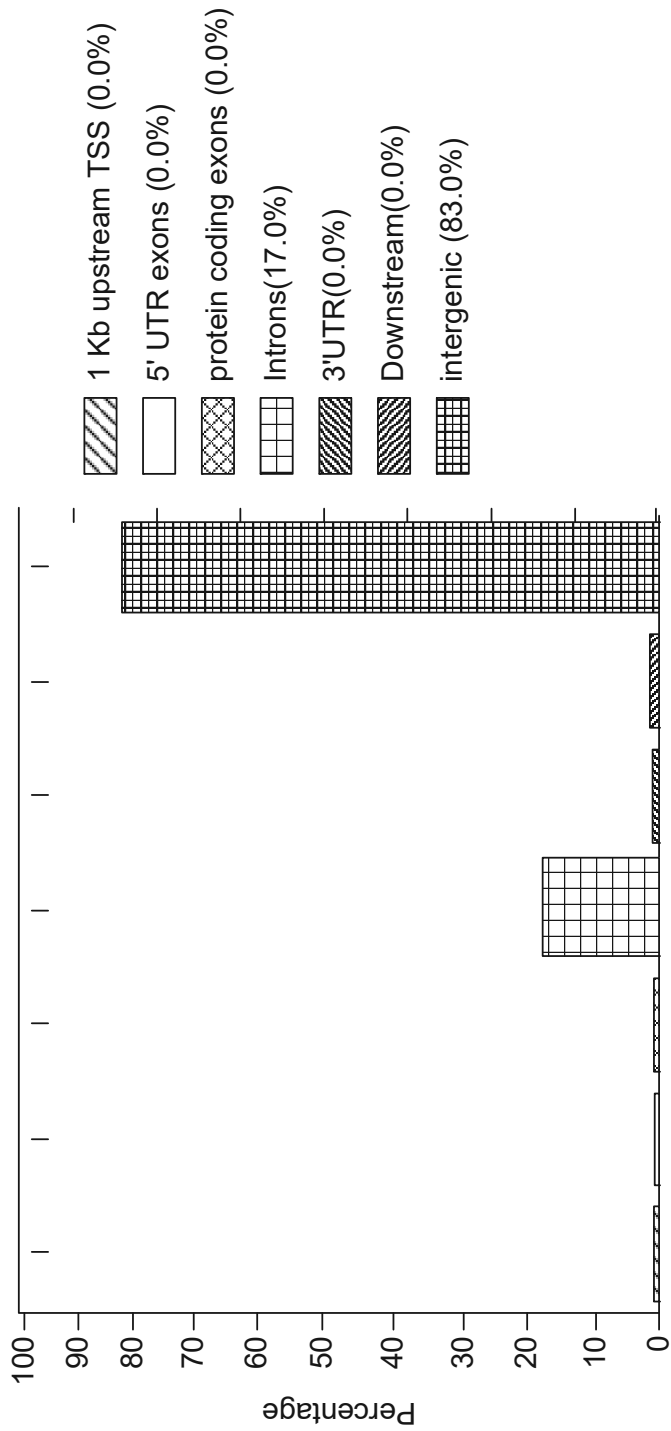


FIG. 7D

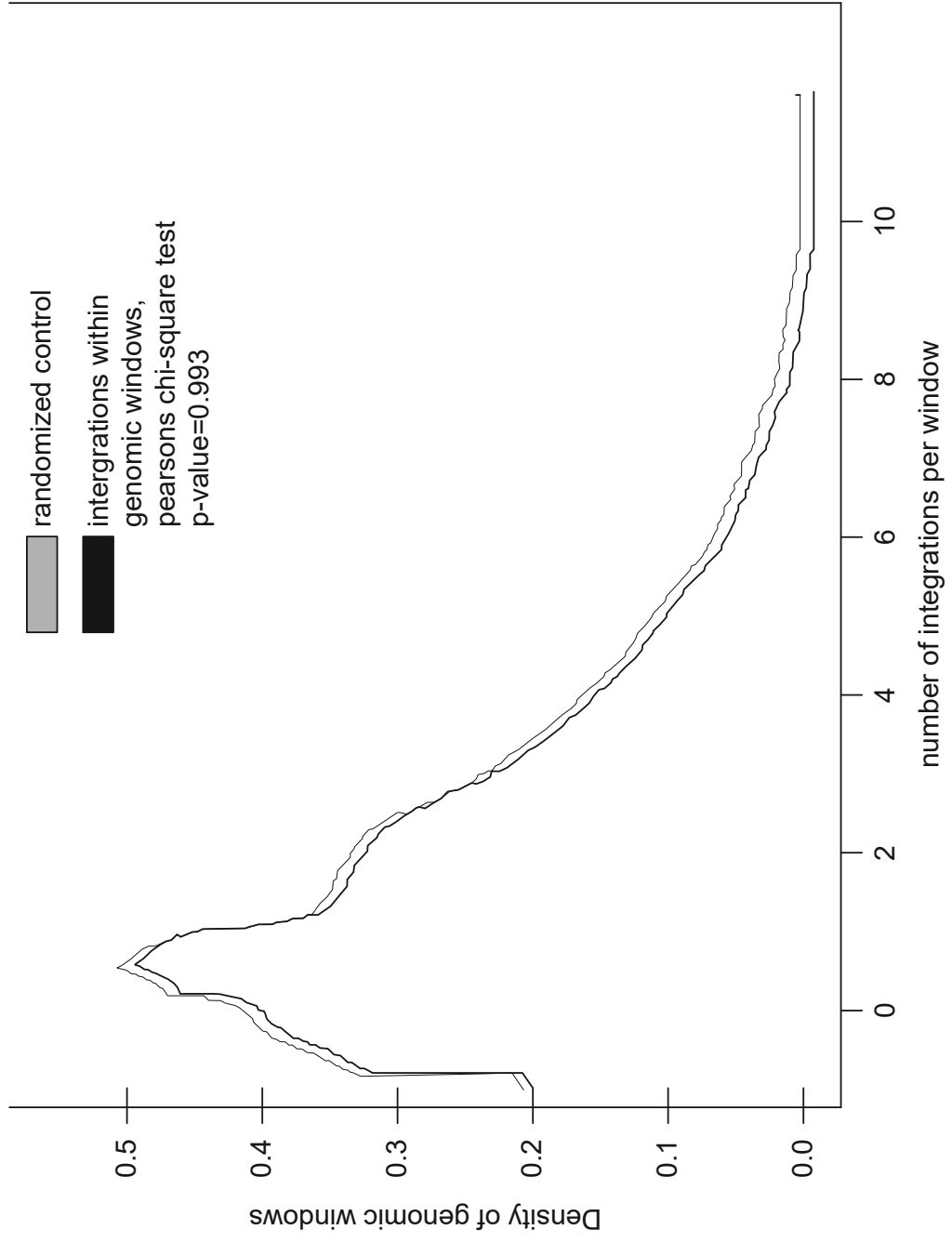


FIG. 8A

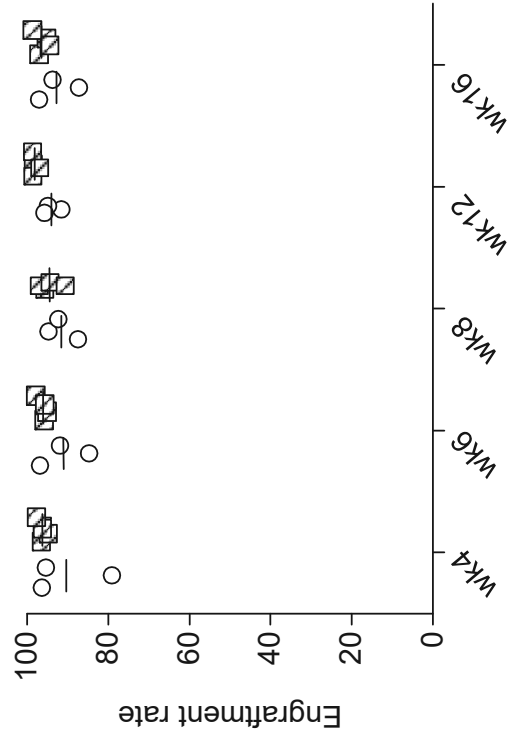


FIG. 8B

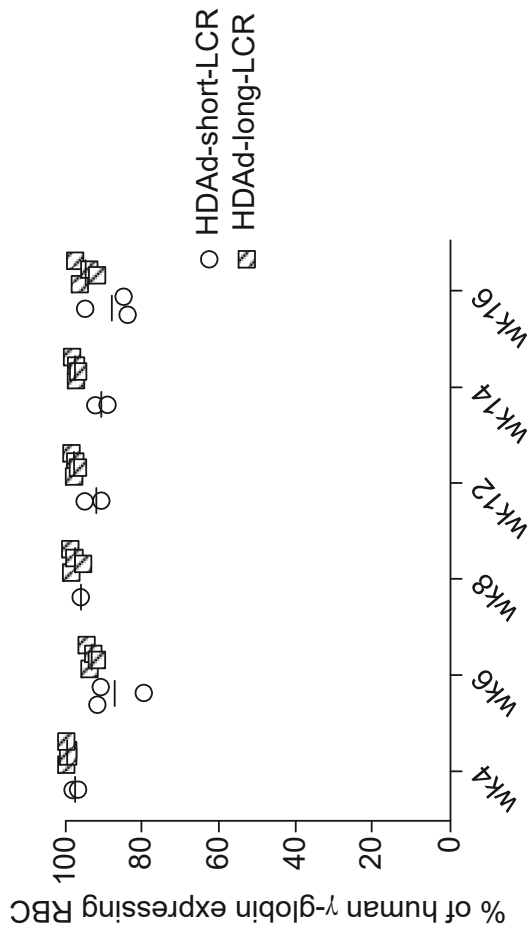


FIG. 8C

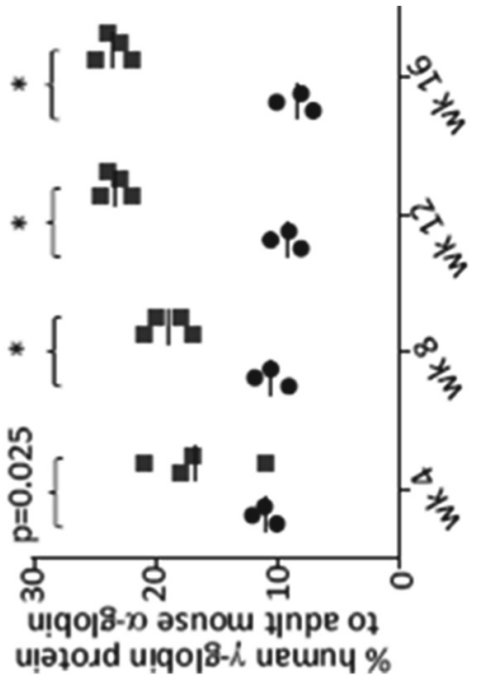


FIG. 8D

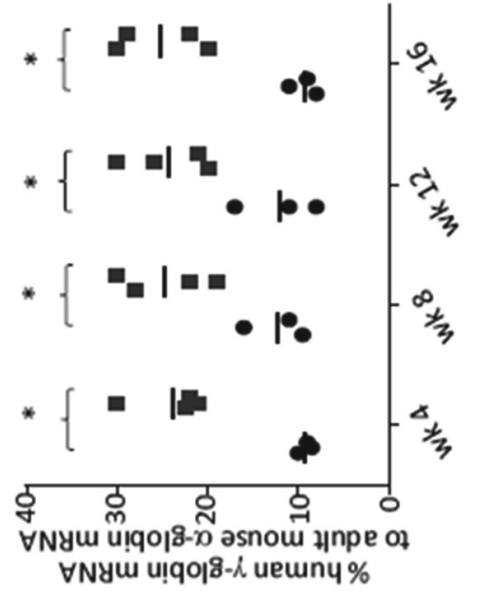


FIG. 8E

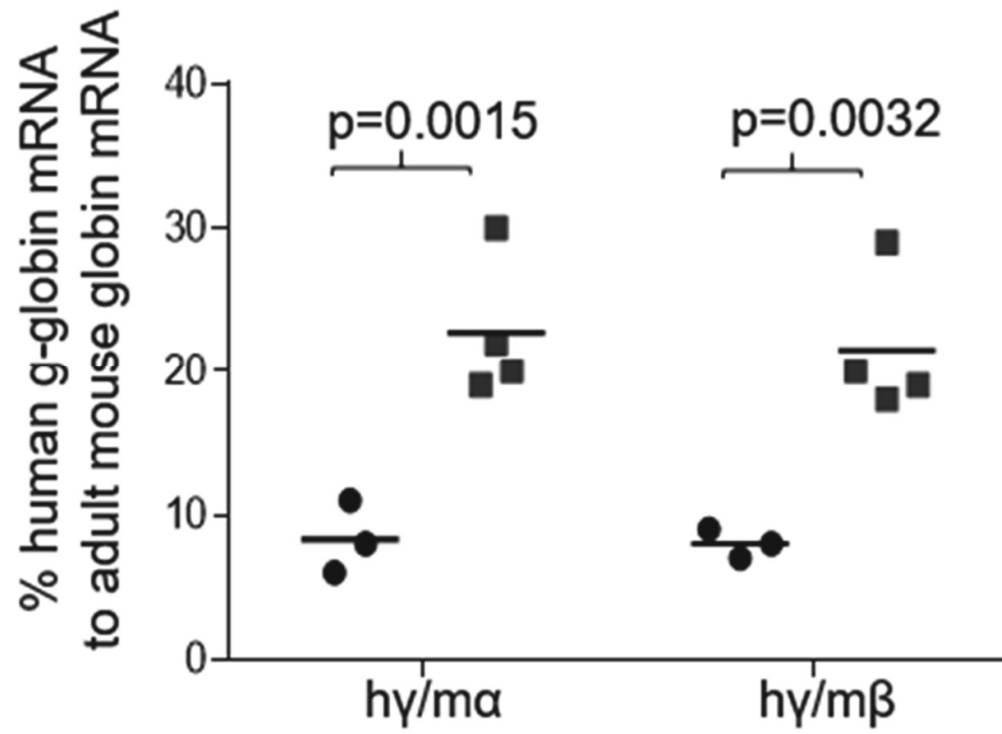


FIG. 9A

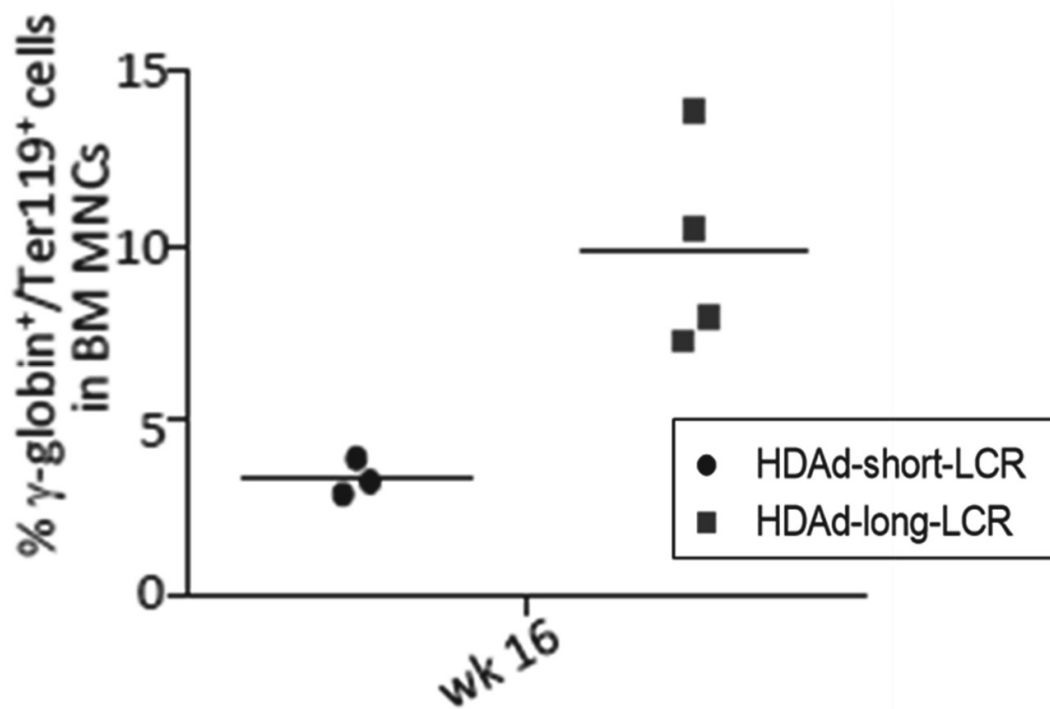


FIG. 9B

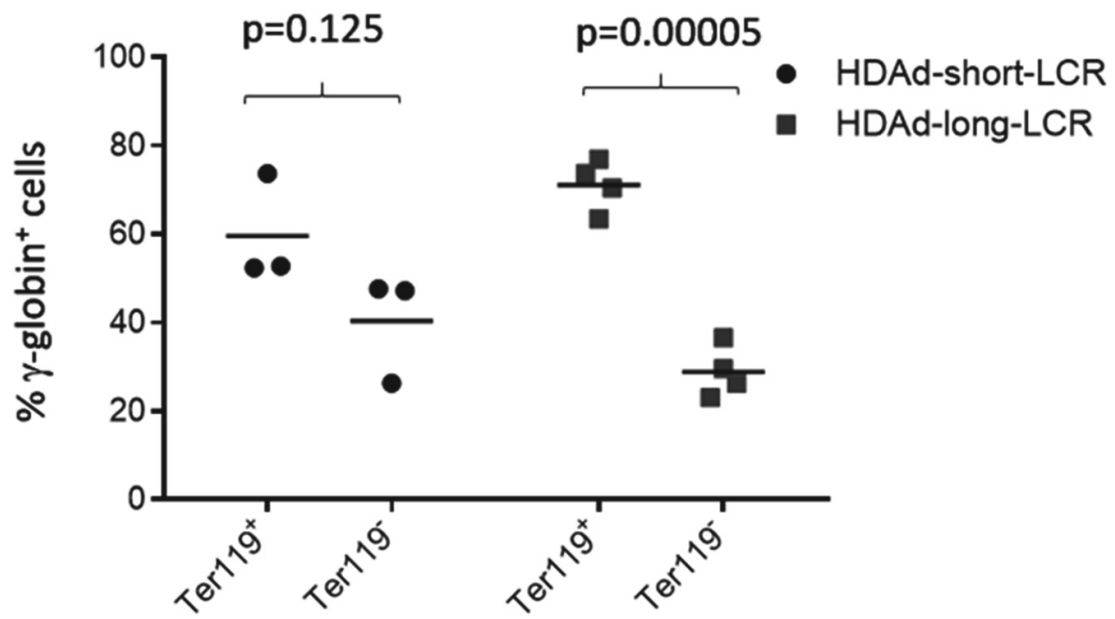


FIG. 9C

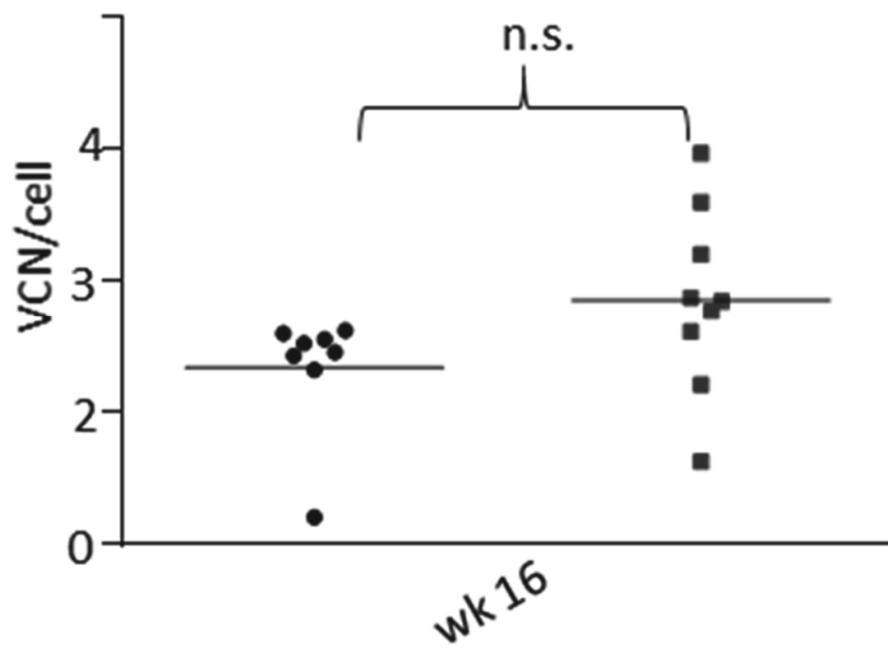


FIG. 10A

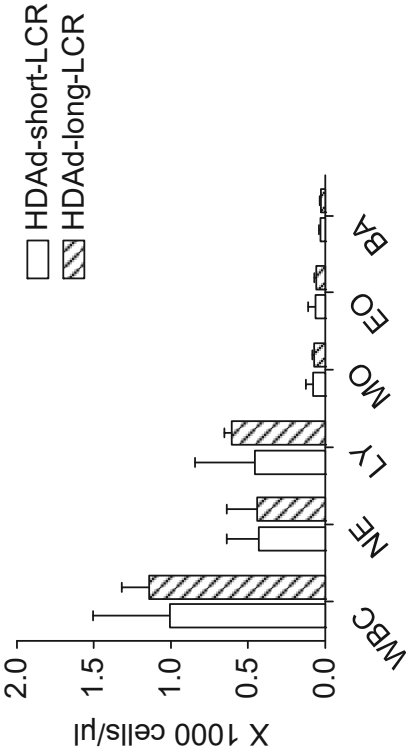


FIG. 10B

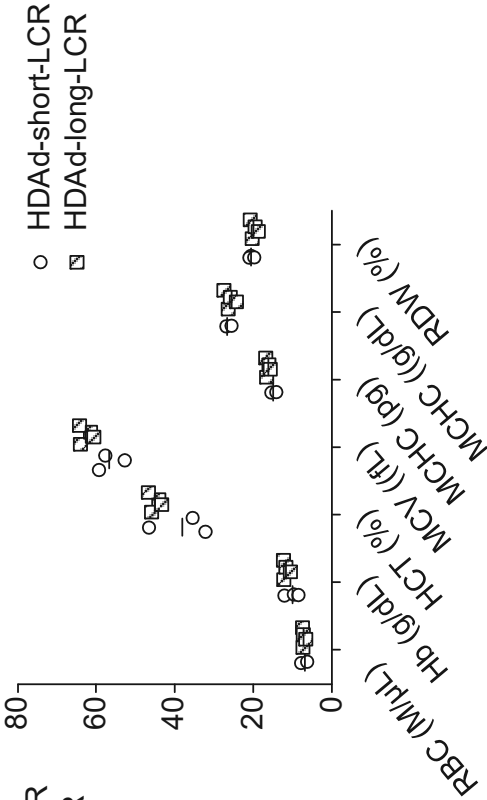


FIG. 10C

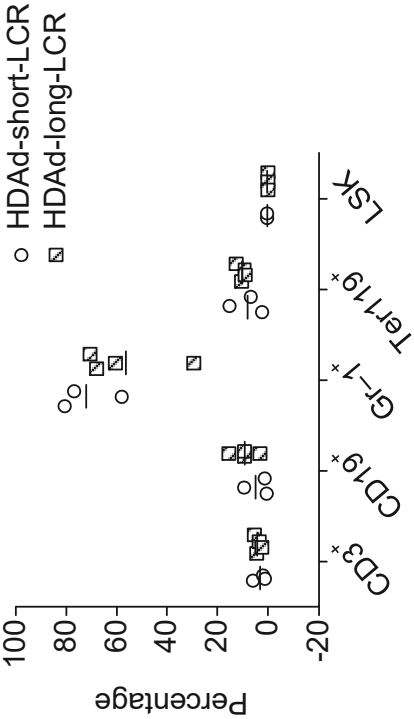


FIG. 10D

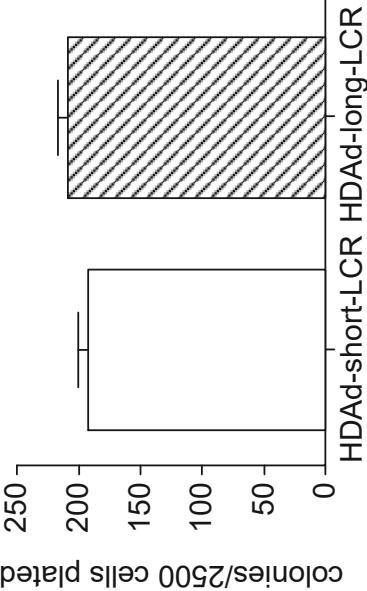


FIG. 11A

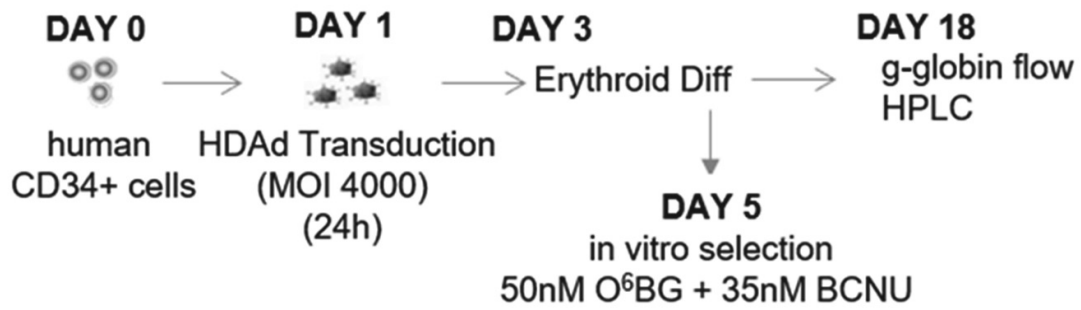


FIG. 11B

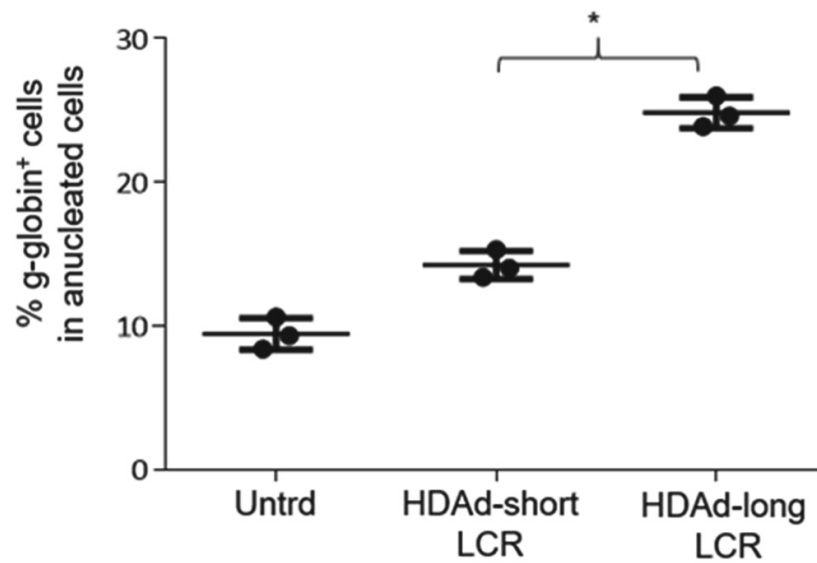


FIG. 11C

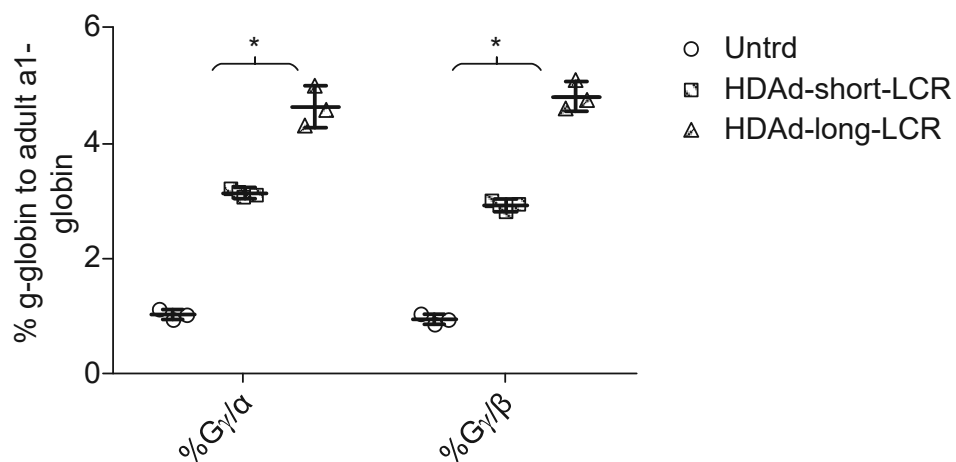


FIG. 12A

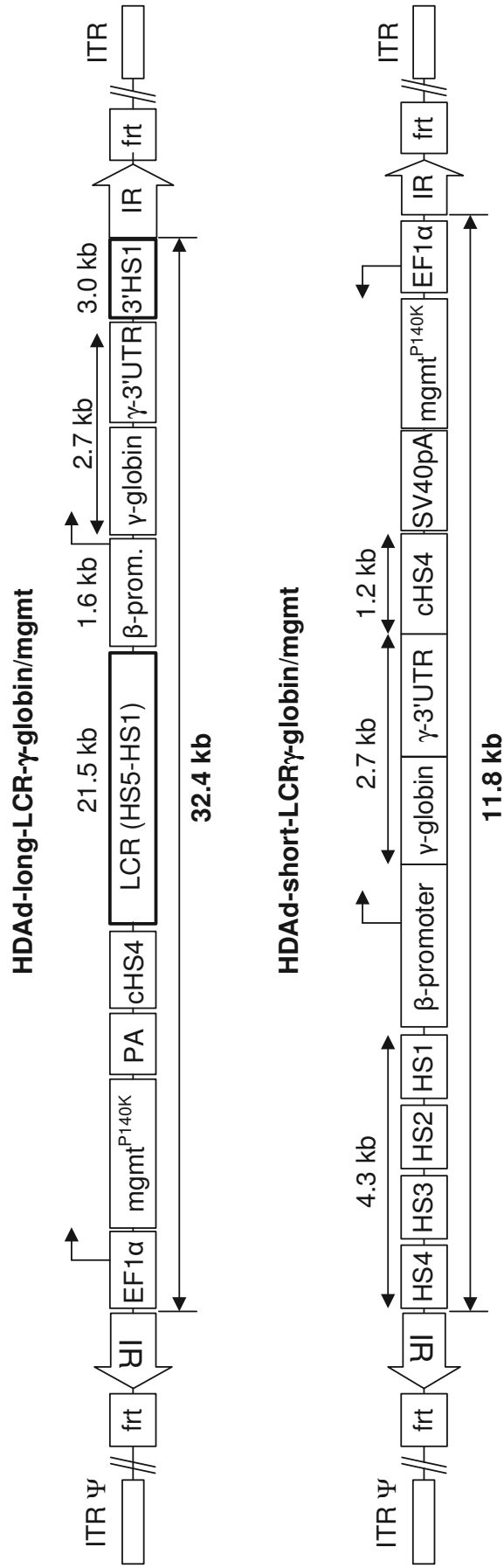


FIG. 12B

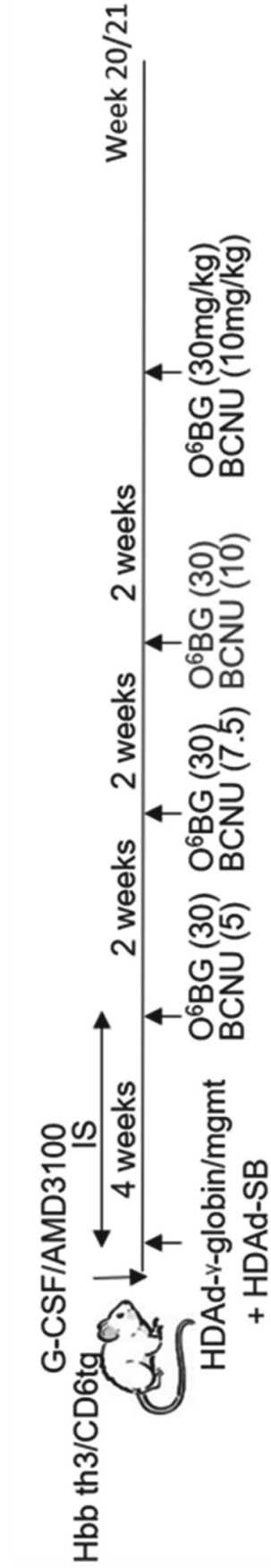


FIG. 13

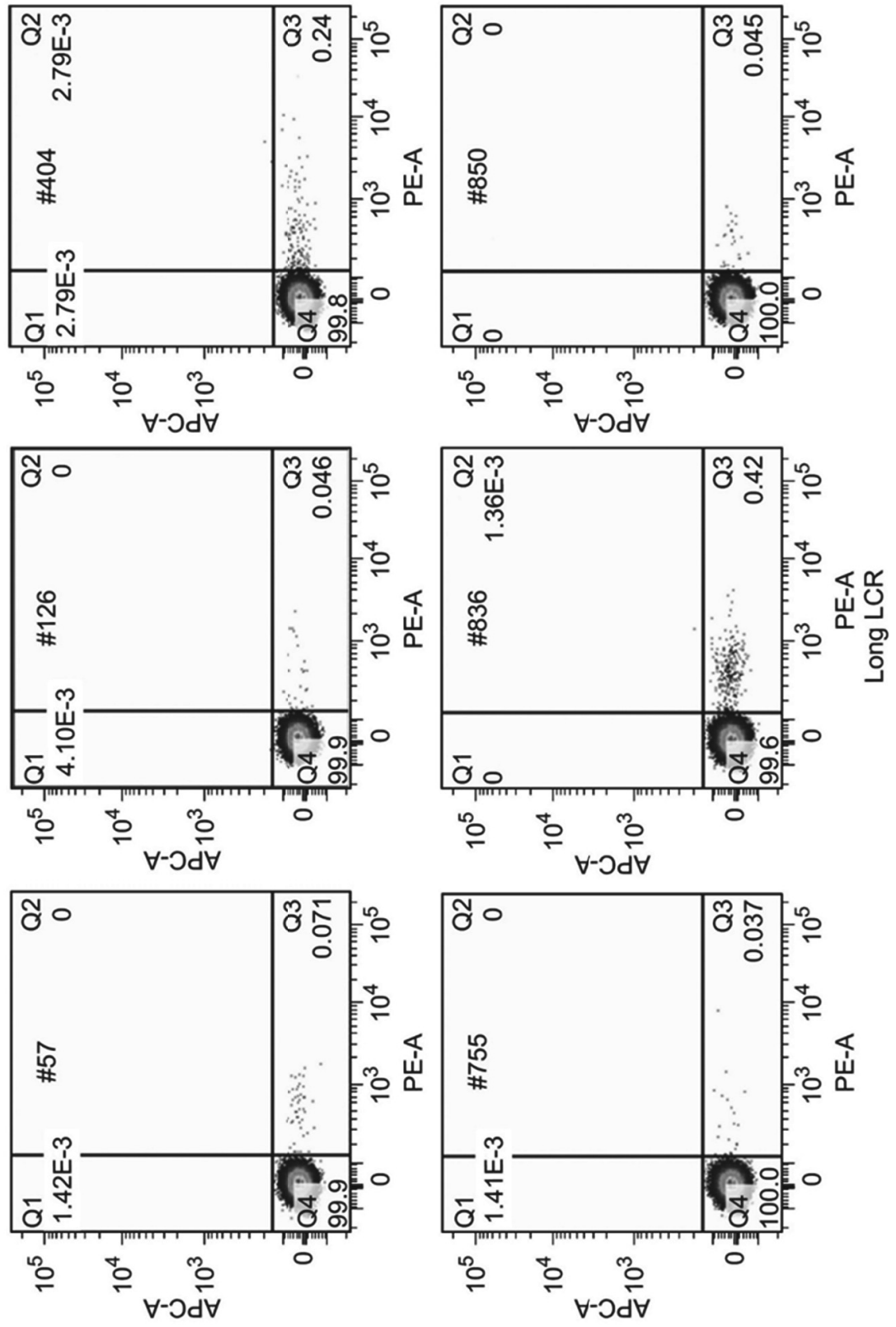


FIG. 13 (continued)

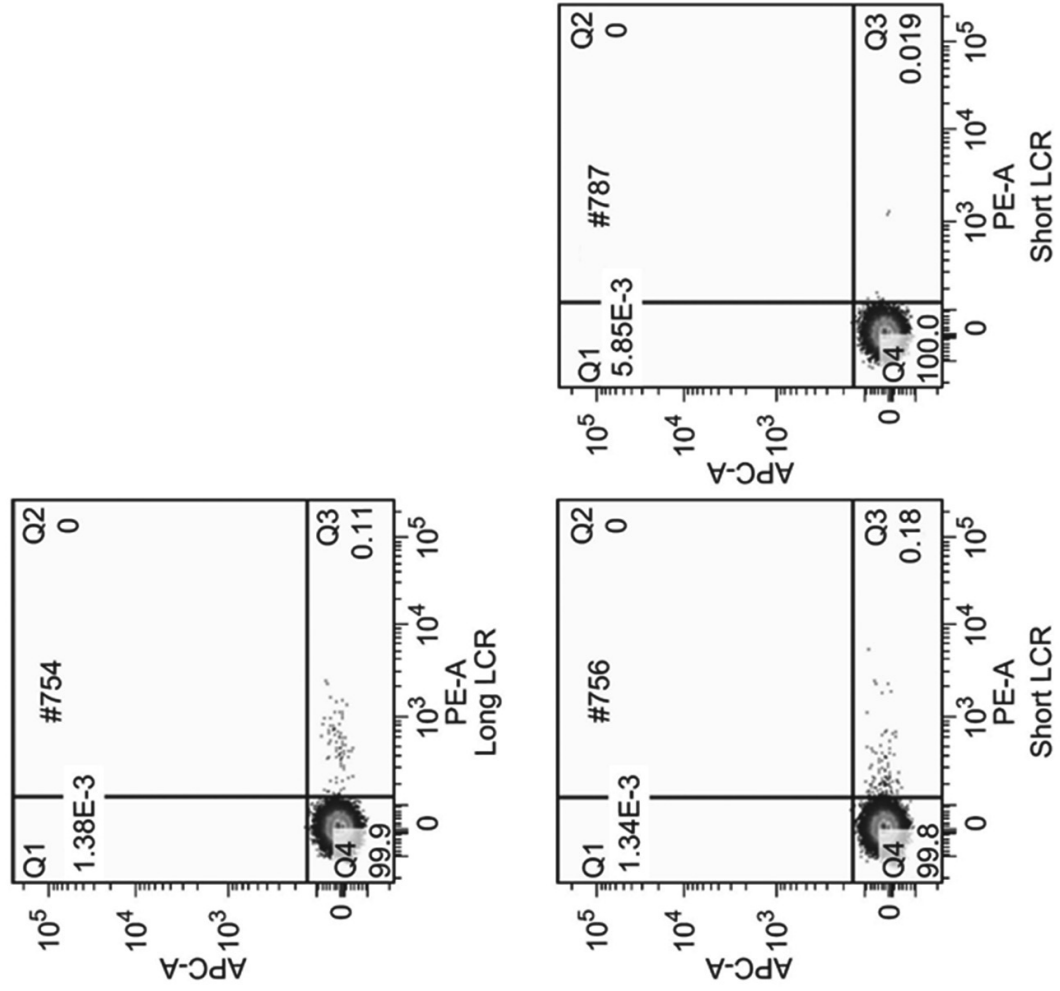


FIG. 14

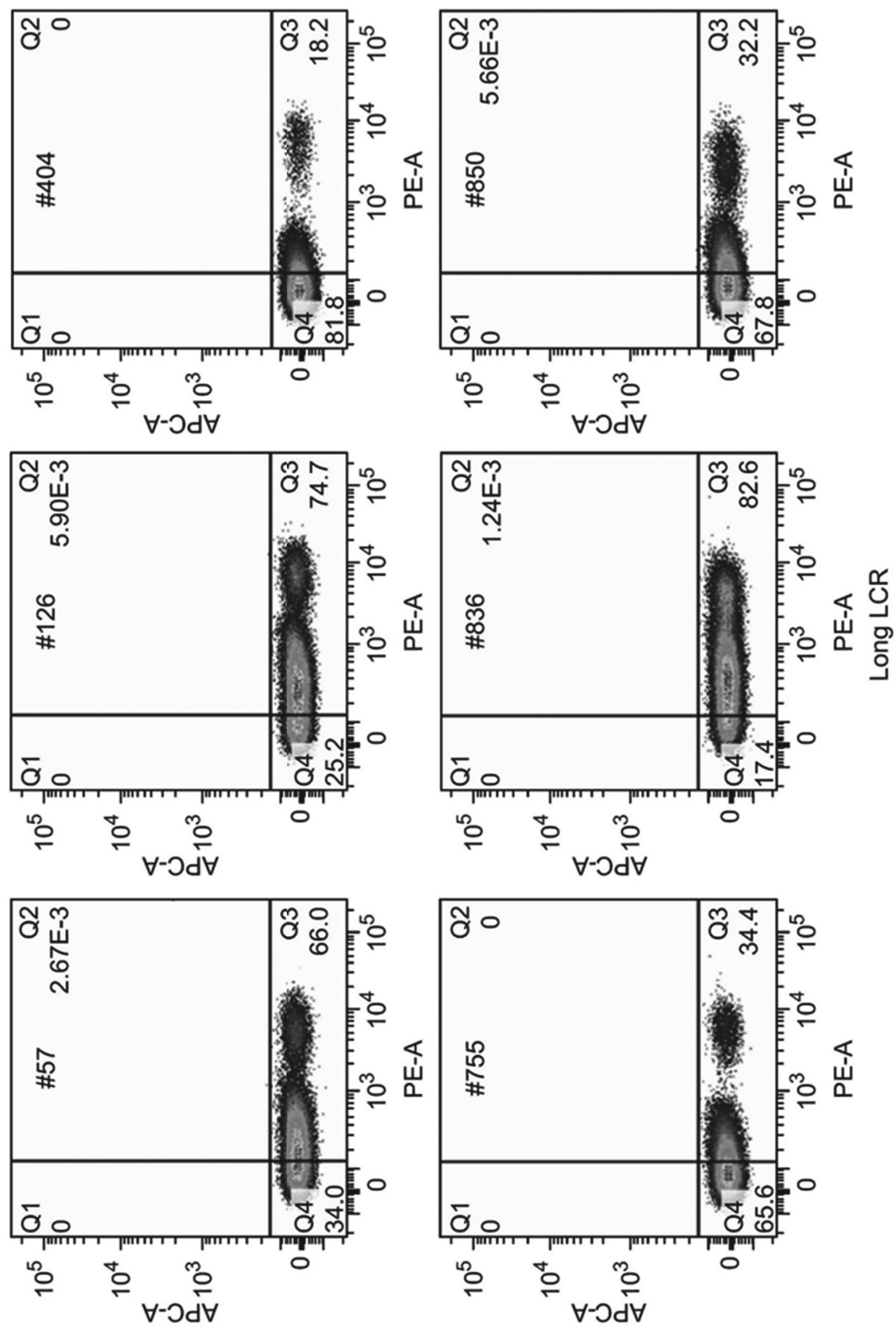


FIG. 14 (continued)

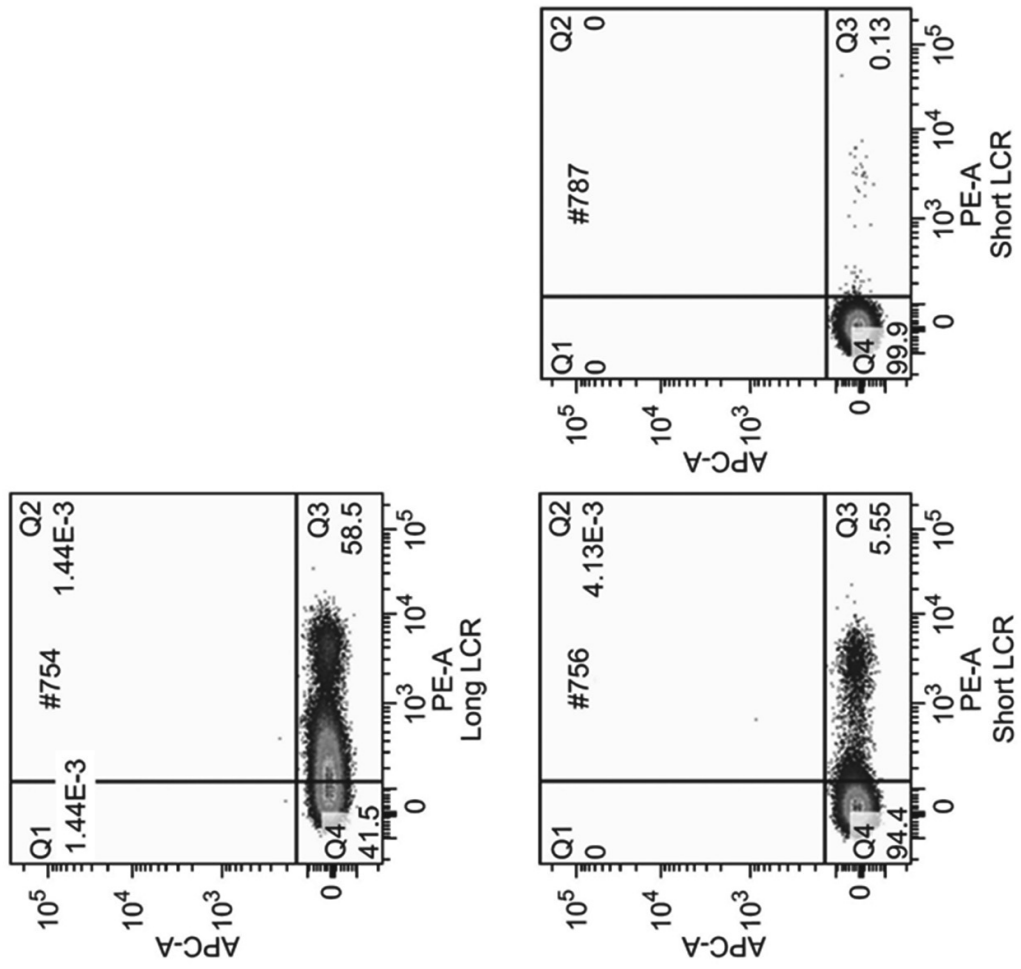


FIG. 15

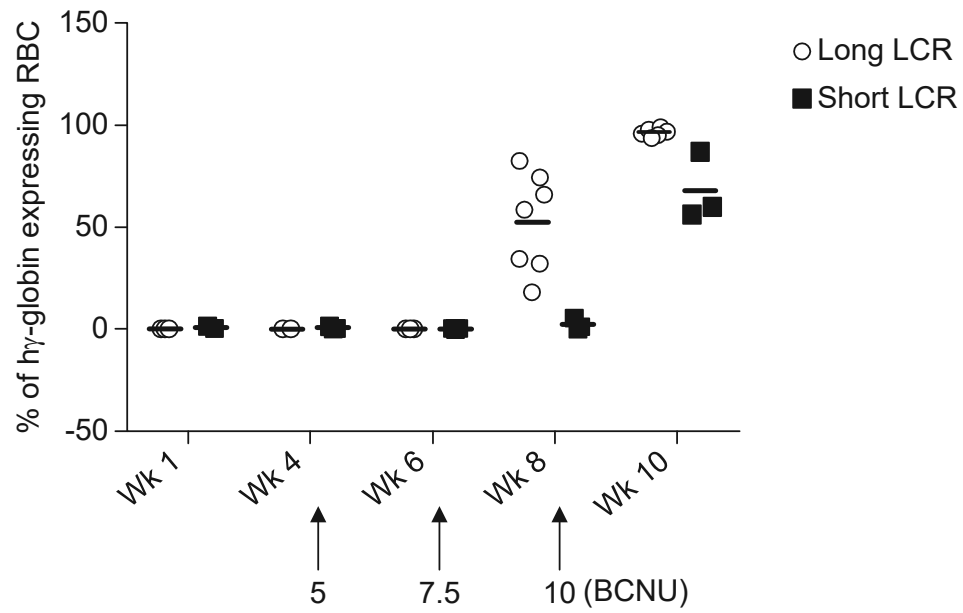
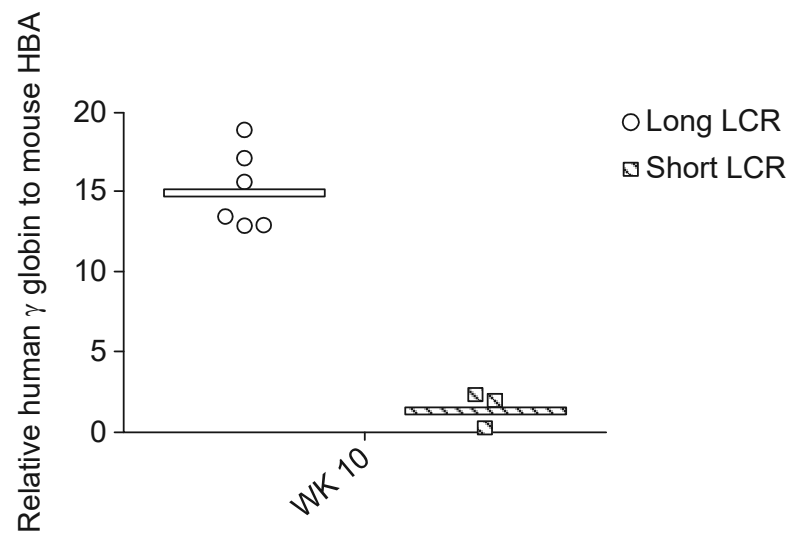


FIG. 16



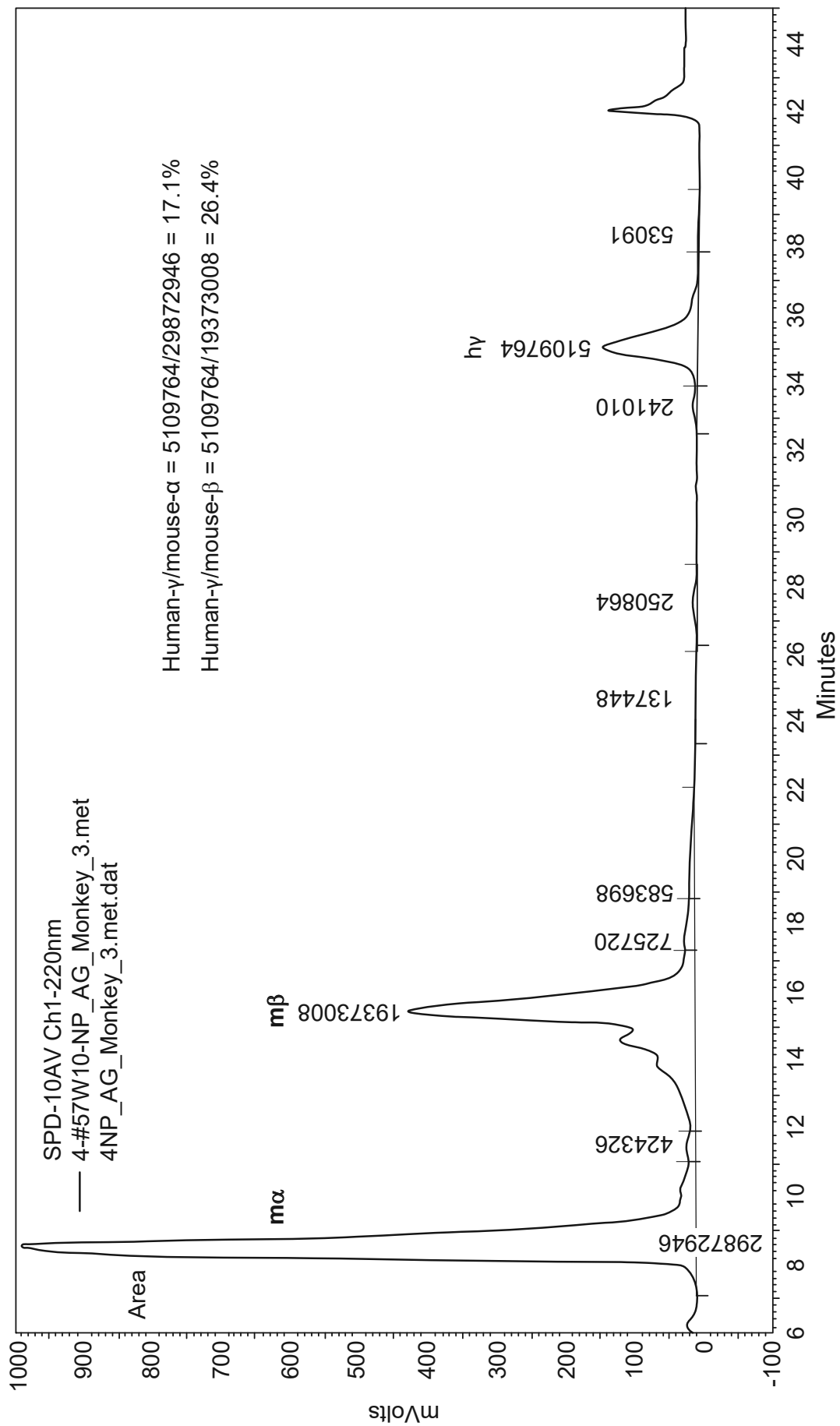


FIG. 17

FIG. 18A

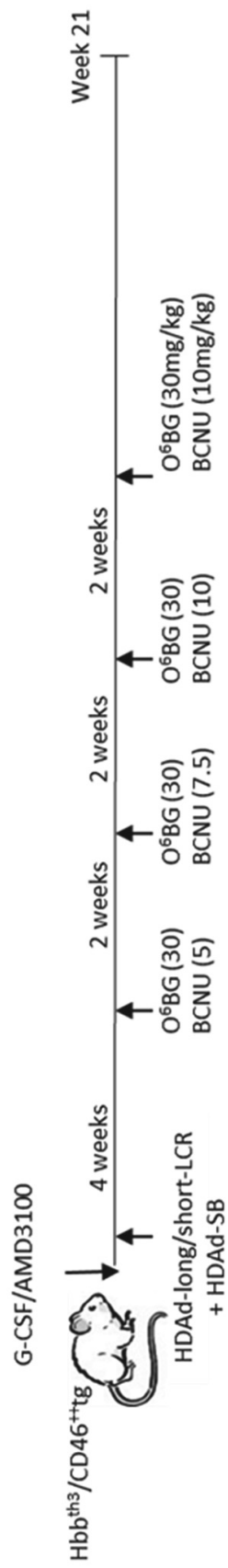


FIG. 18B

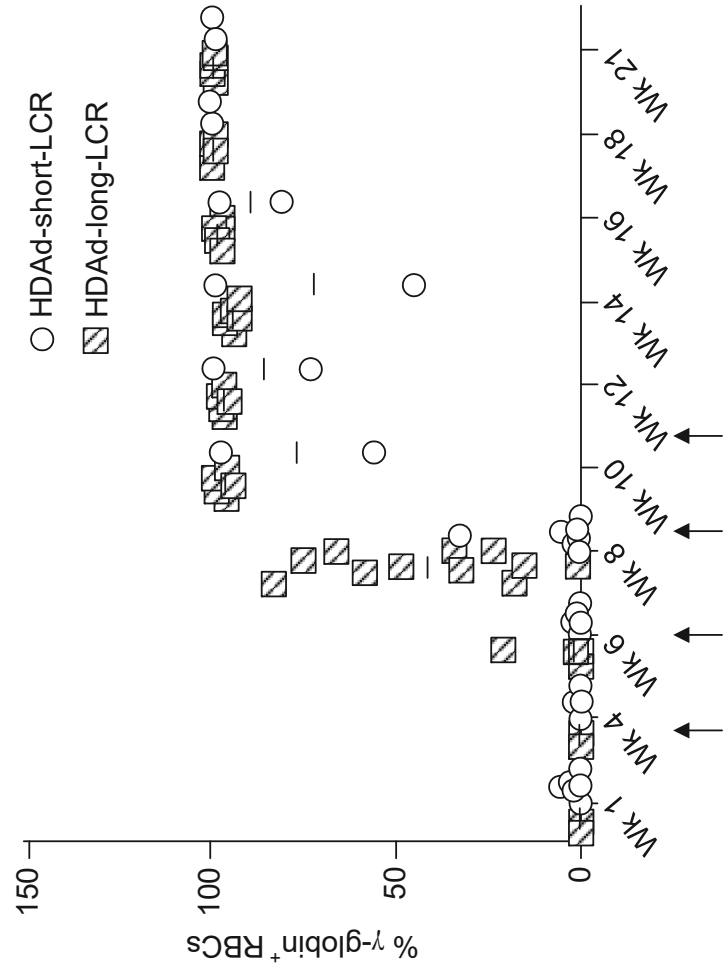


FIG. 18C

FIG. 18D

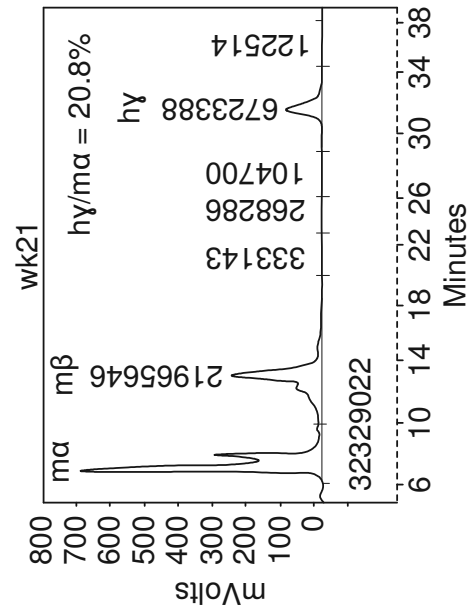


FIG. 19

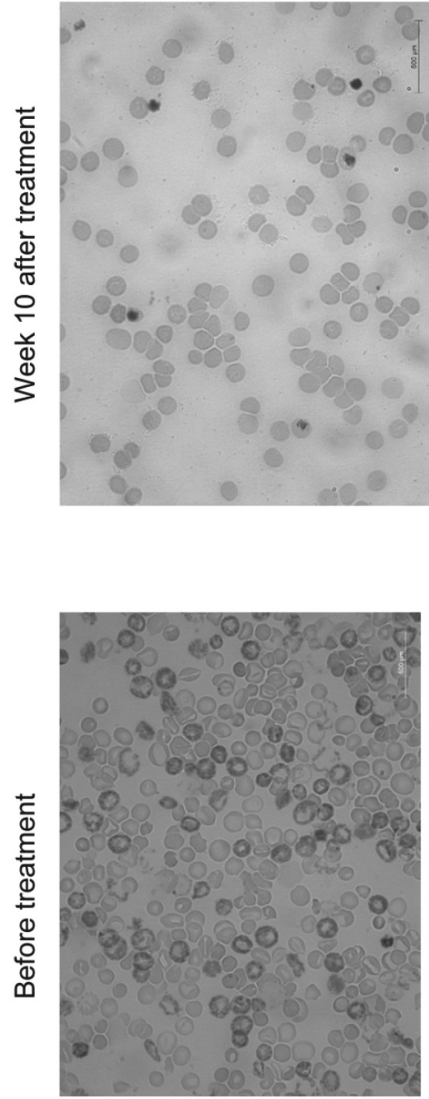


FIG. 20

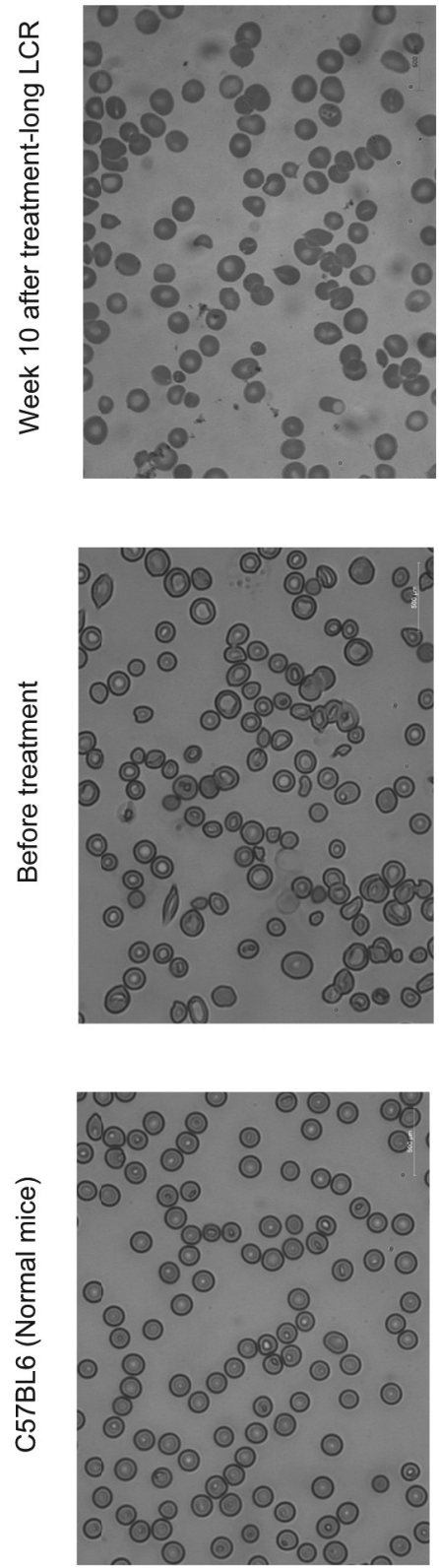


FIG. 21A

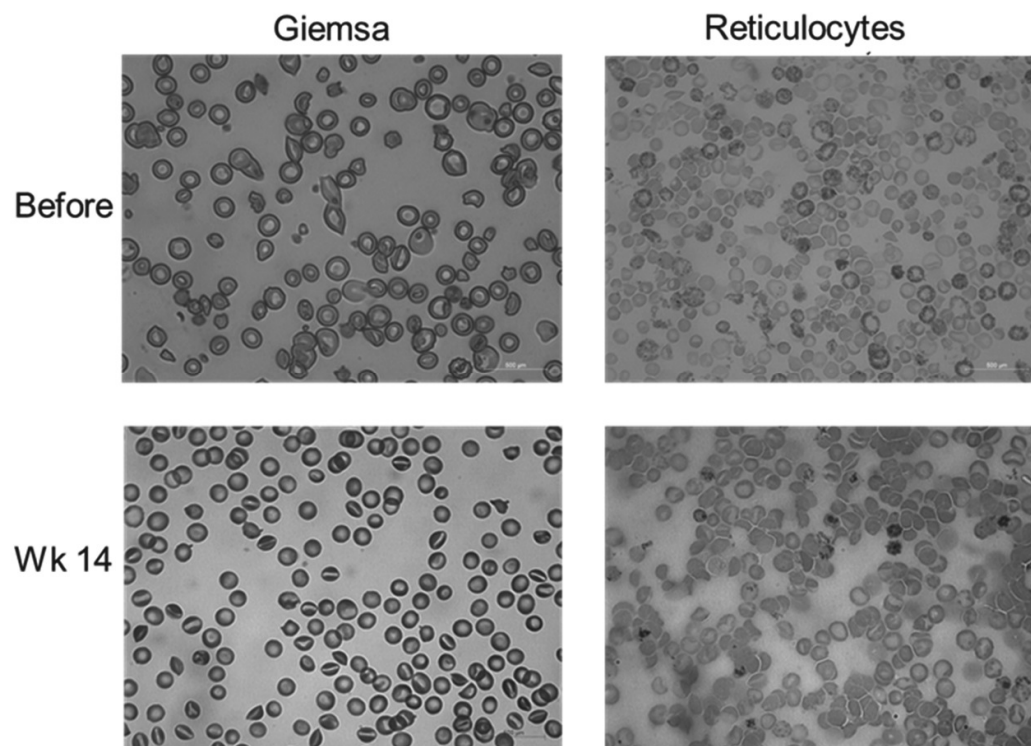


FIG. 21B

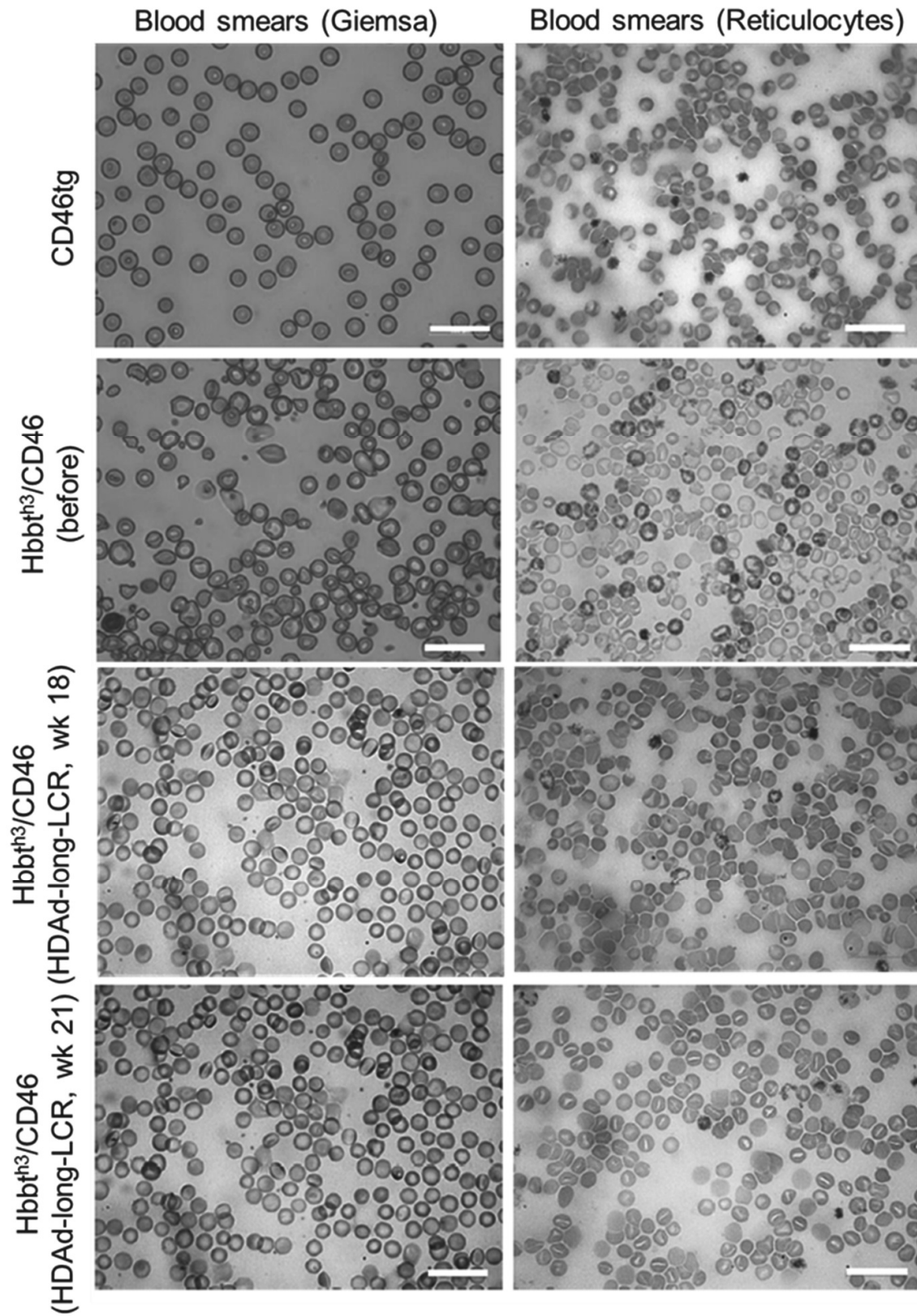


FIG. 21C

Bone marrow cytopins (Giemsa)

CD46tg

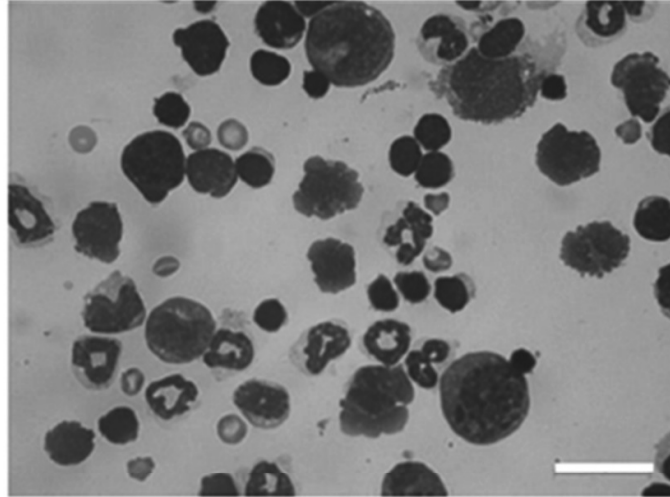
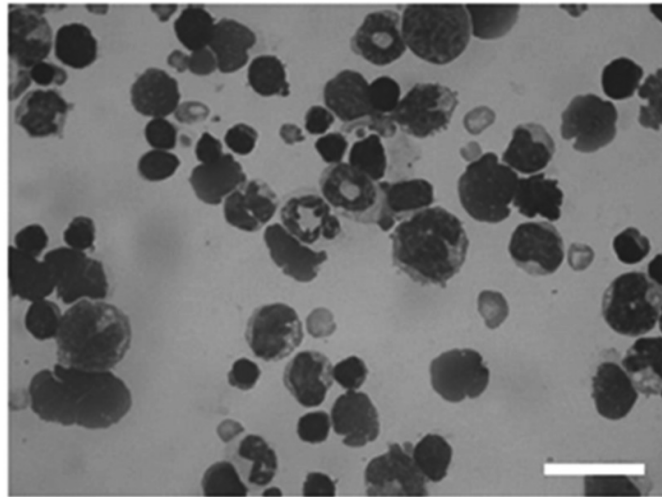
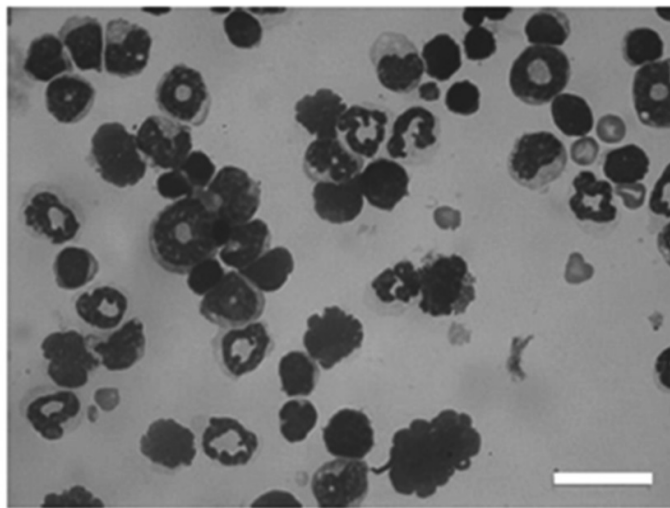
Hbb^{th3}/CD46
(before)Hbb^{th3}/CD46
(HDAd-long-LCR, wk 21)

FIG. 22

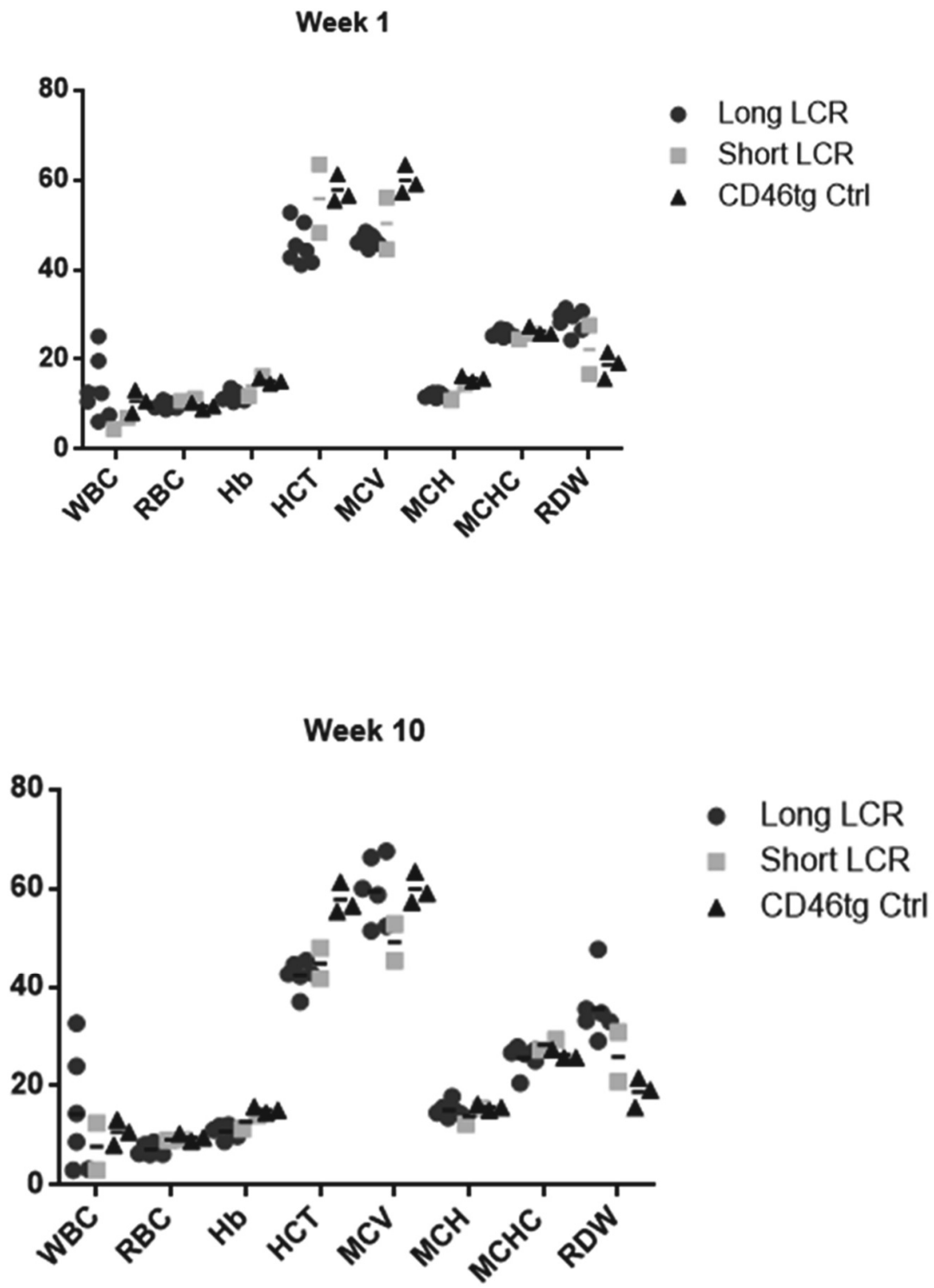


FIG. 23A

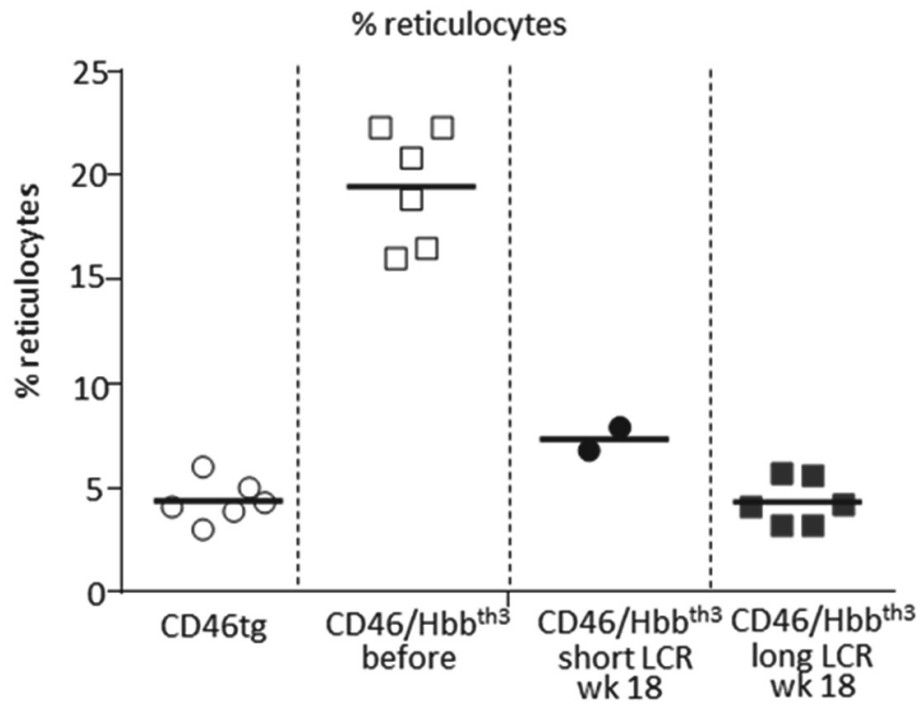


FIG. 23B

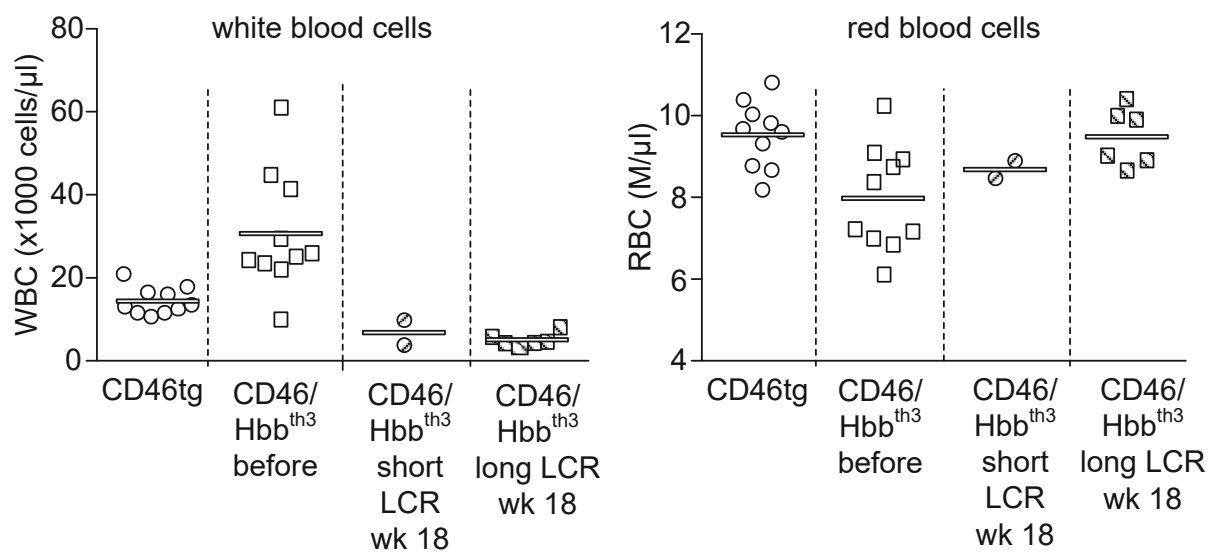


FIG. 23B cont'd

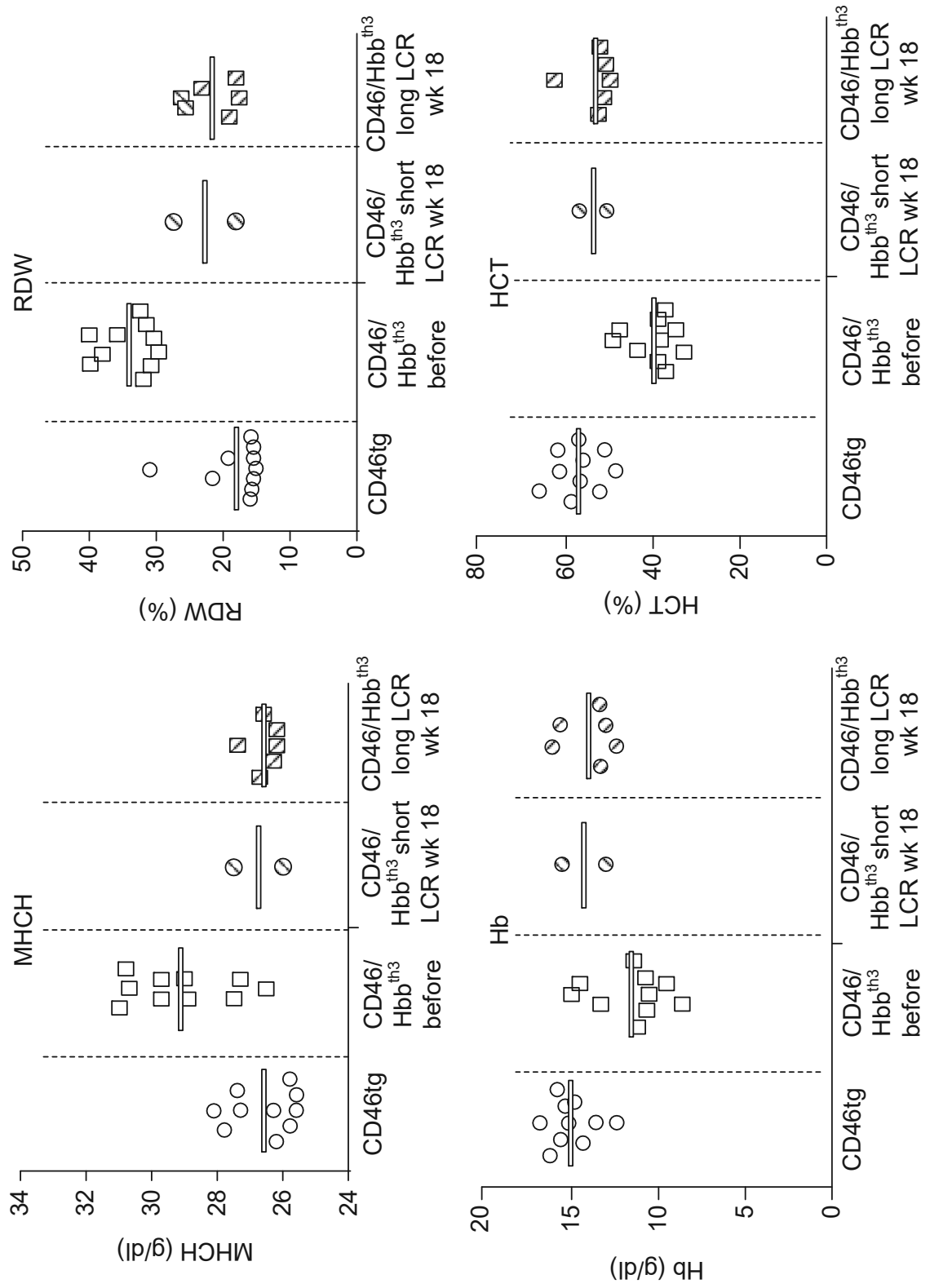


FIG. 23B (cont'd)

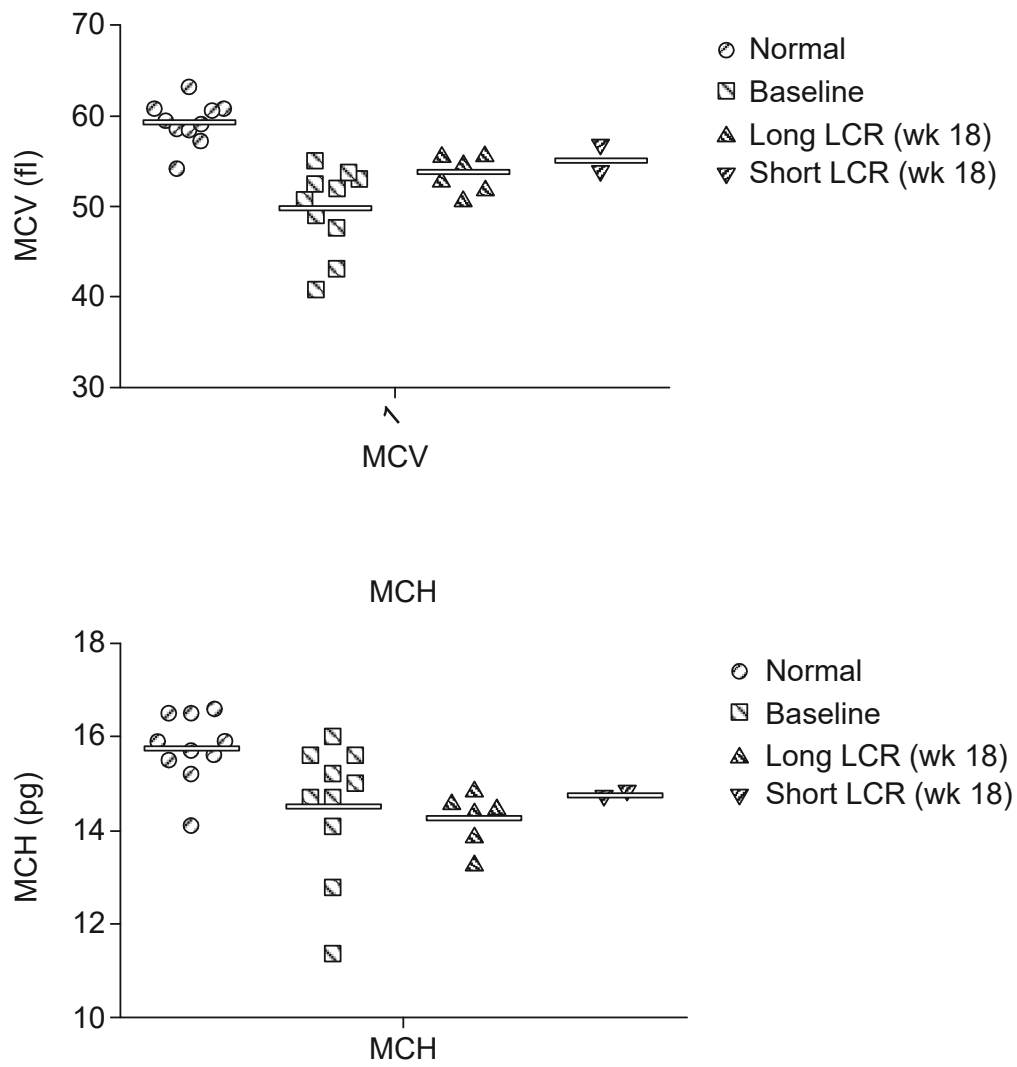


FIG. 24A

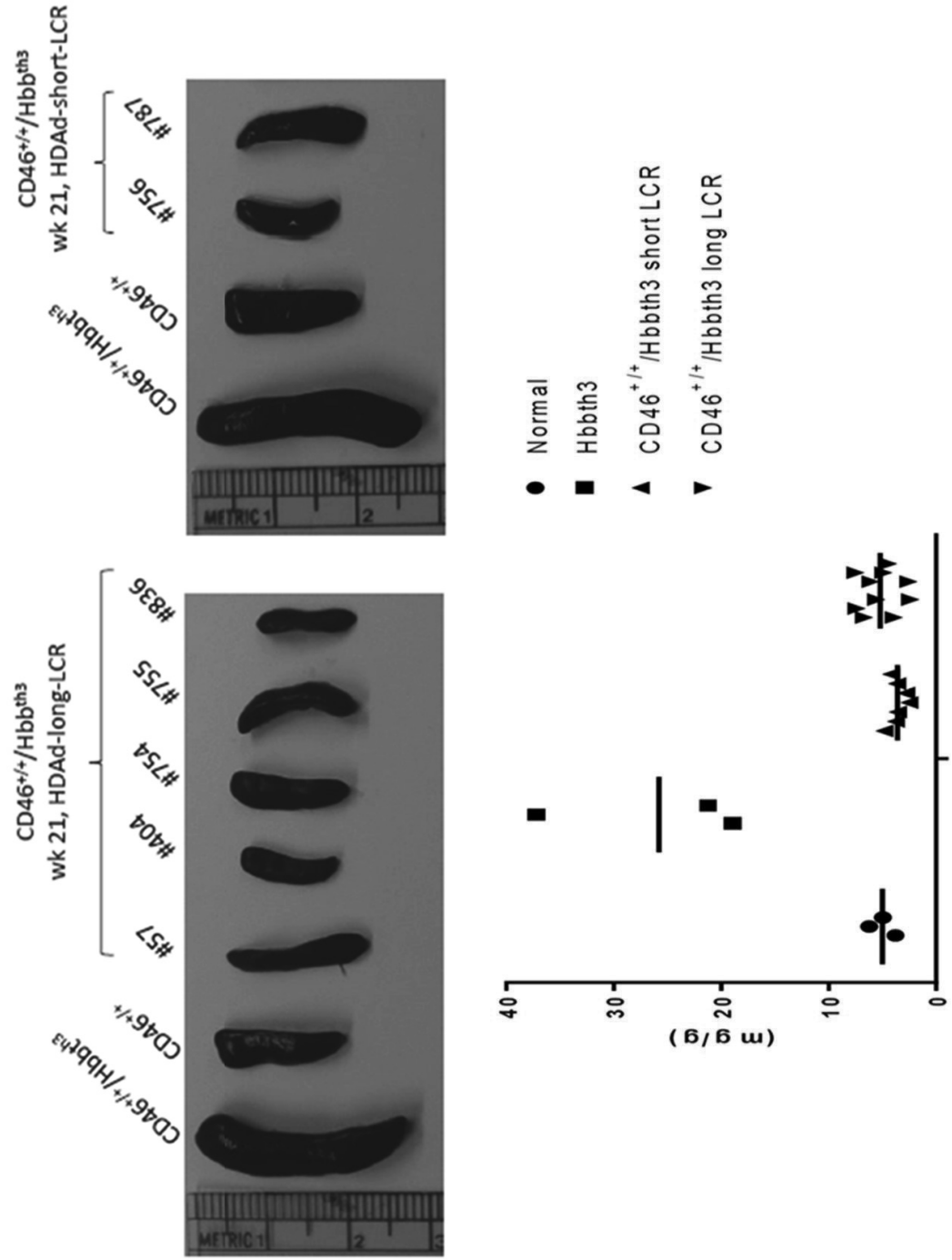


FIG. 24B

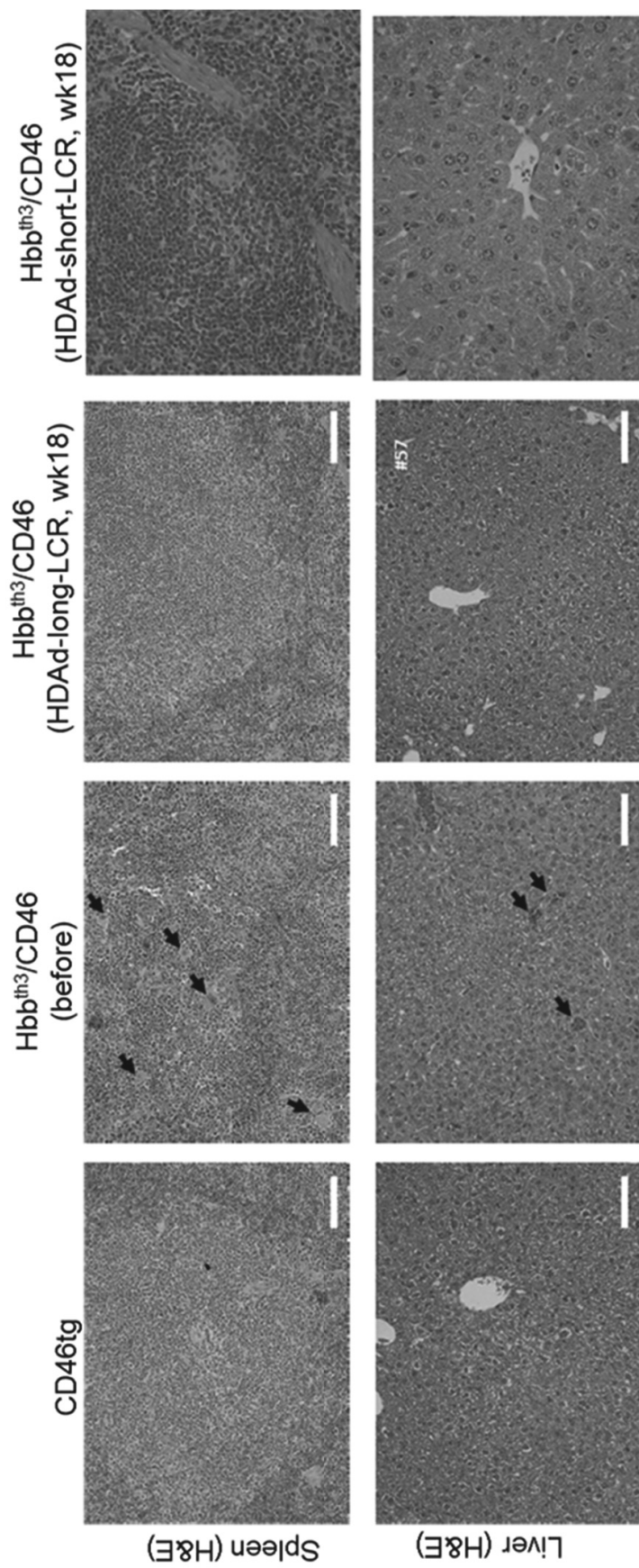


FIG. 25

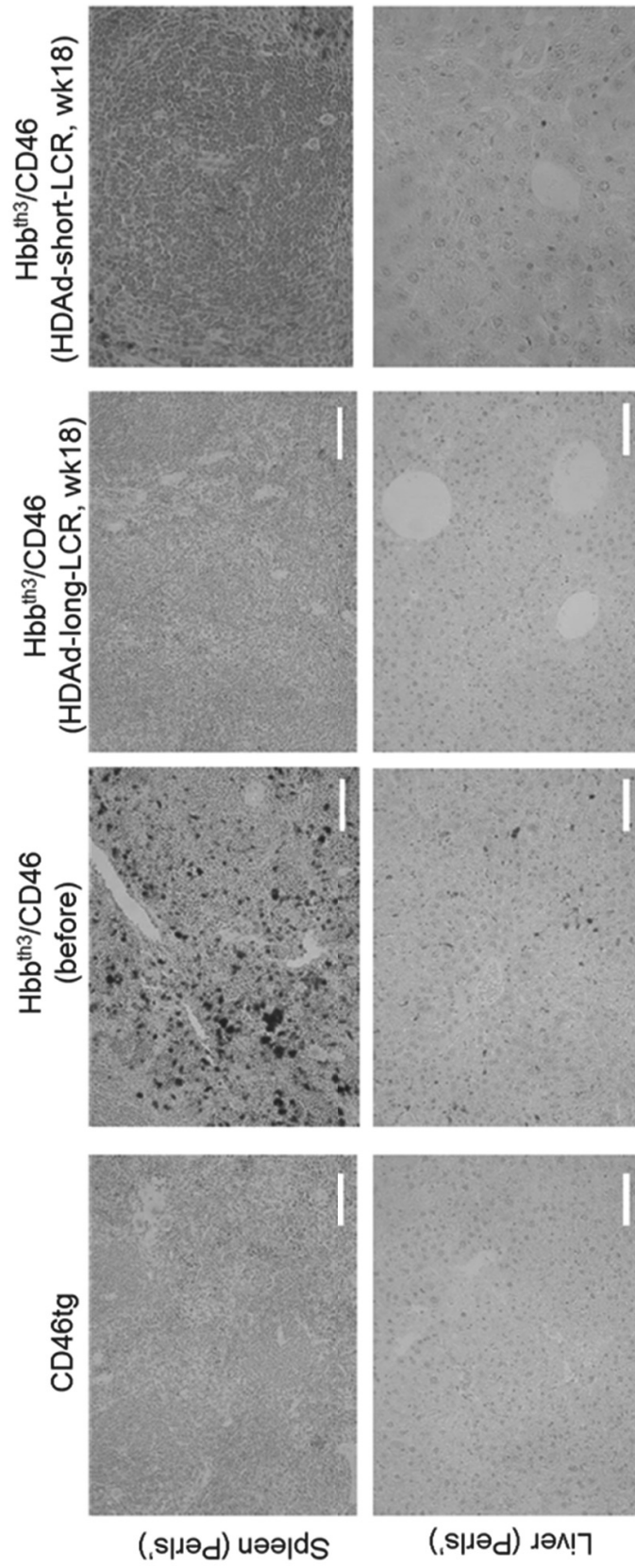


FIG. 26A

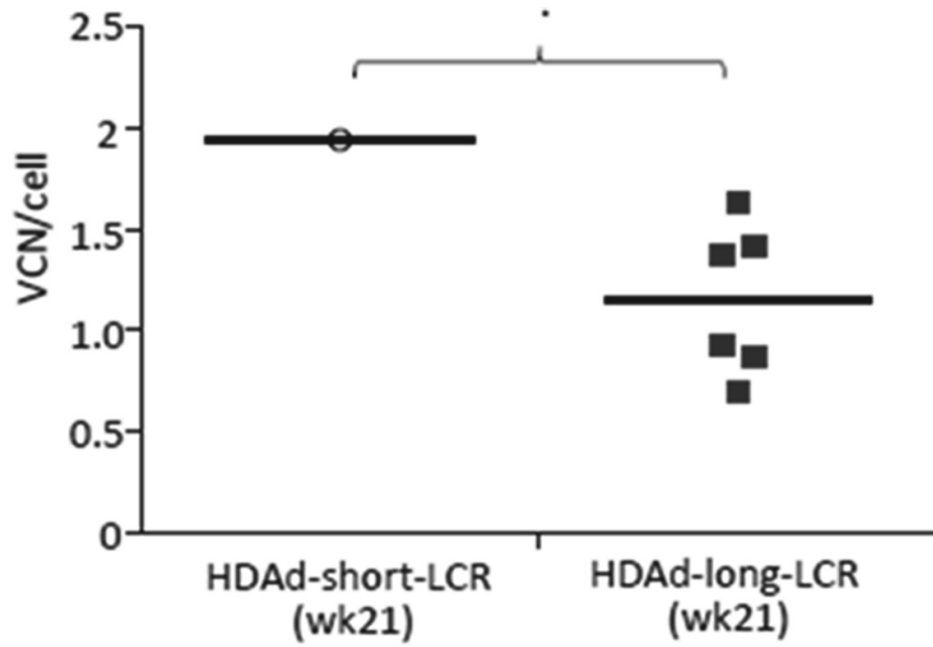


FIG. 26B

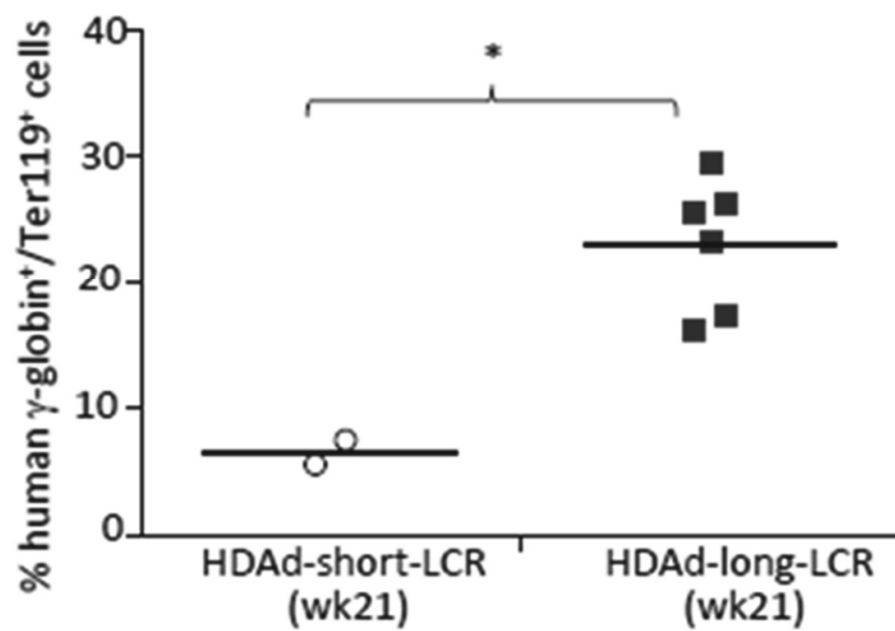


FIG. 26C

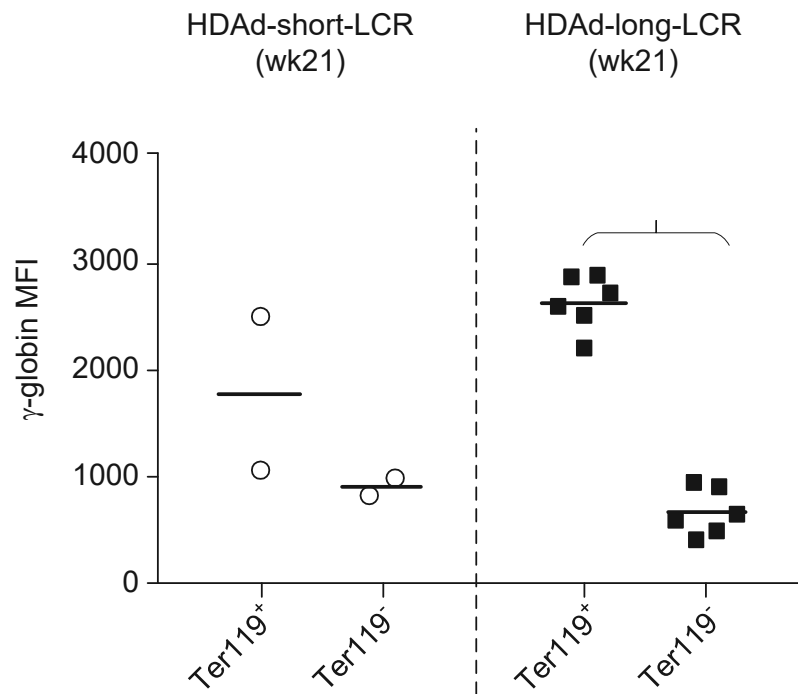


FIG. 27

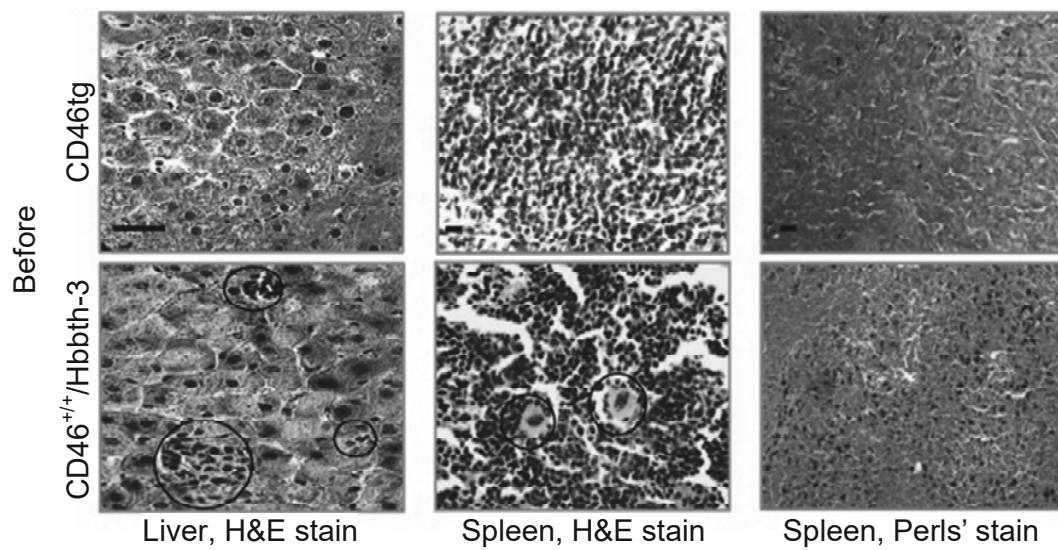


FIG. 28

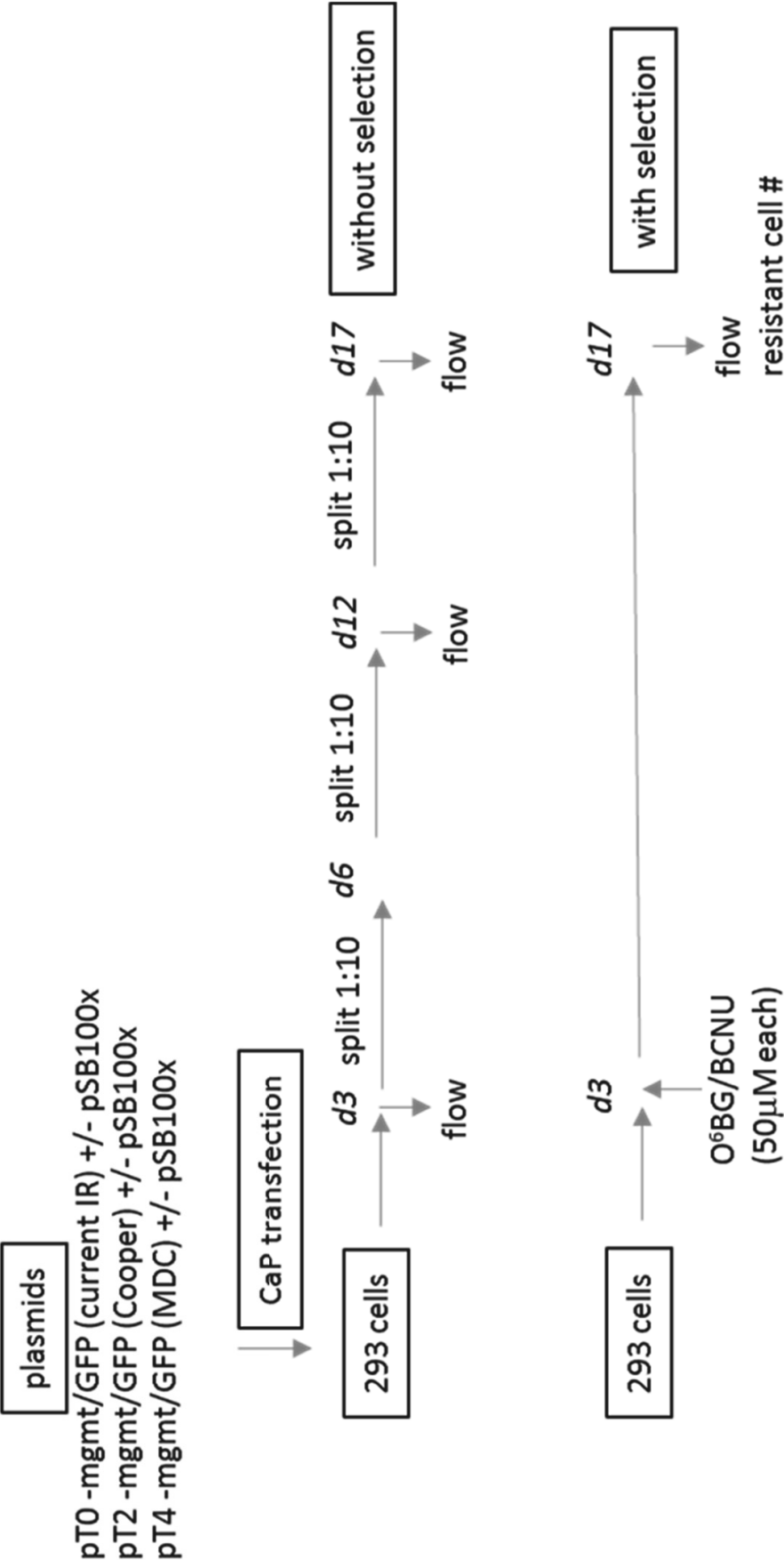


FIG. 29

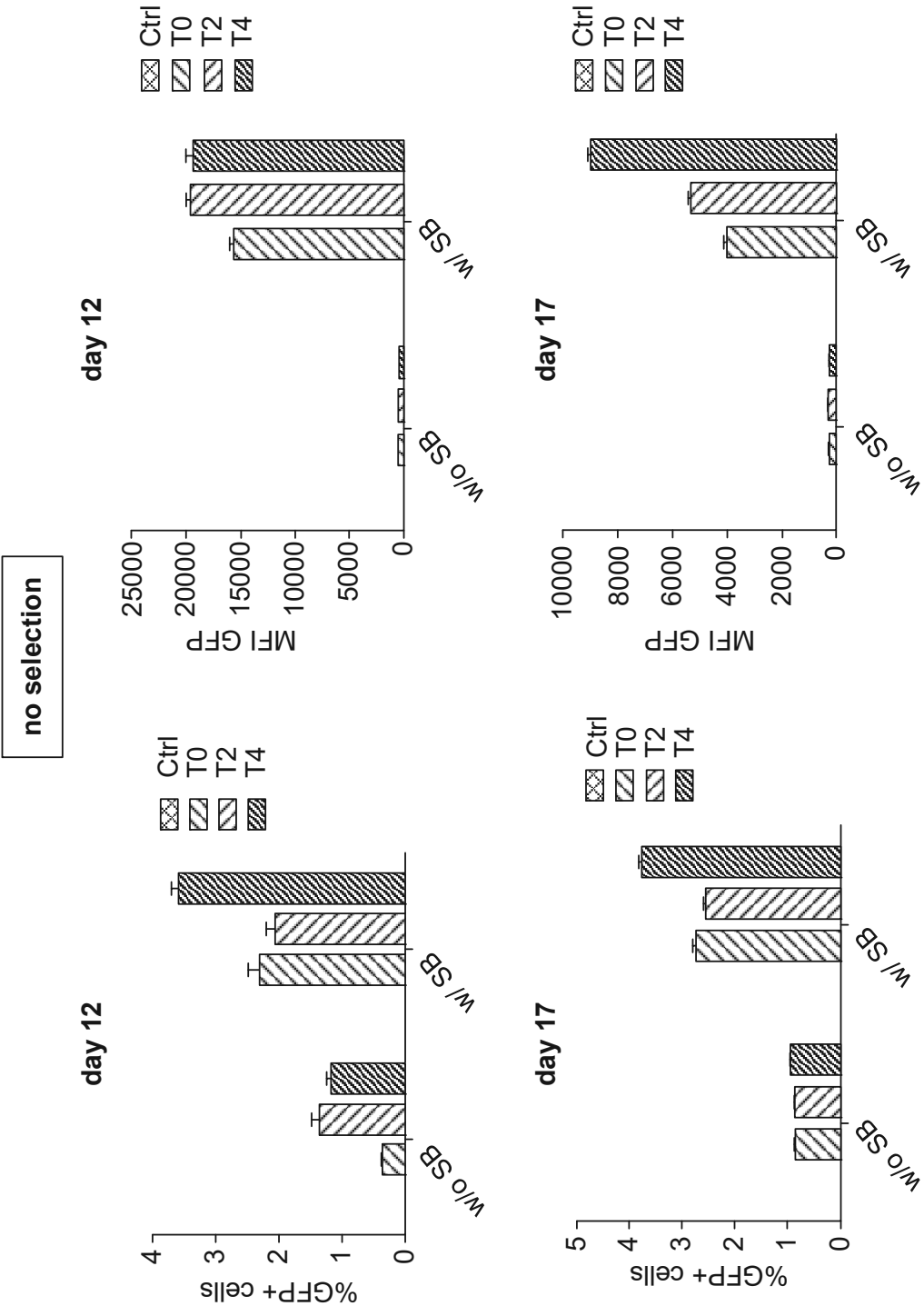


FIG. 30

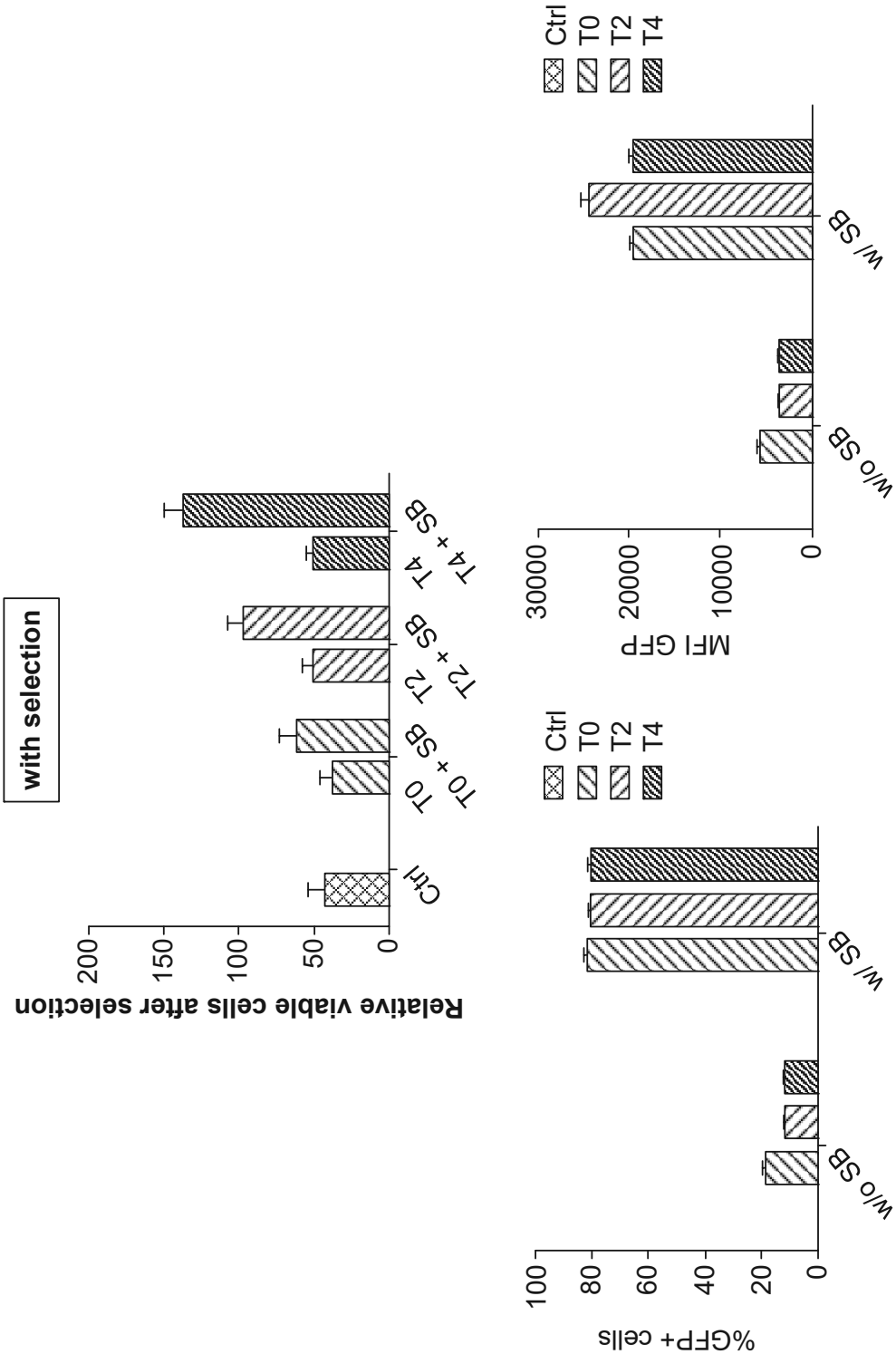
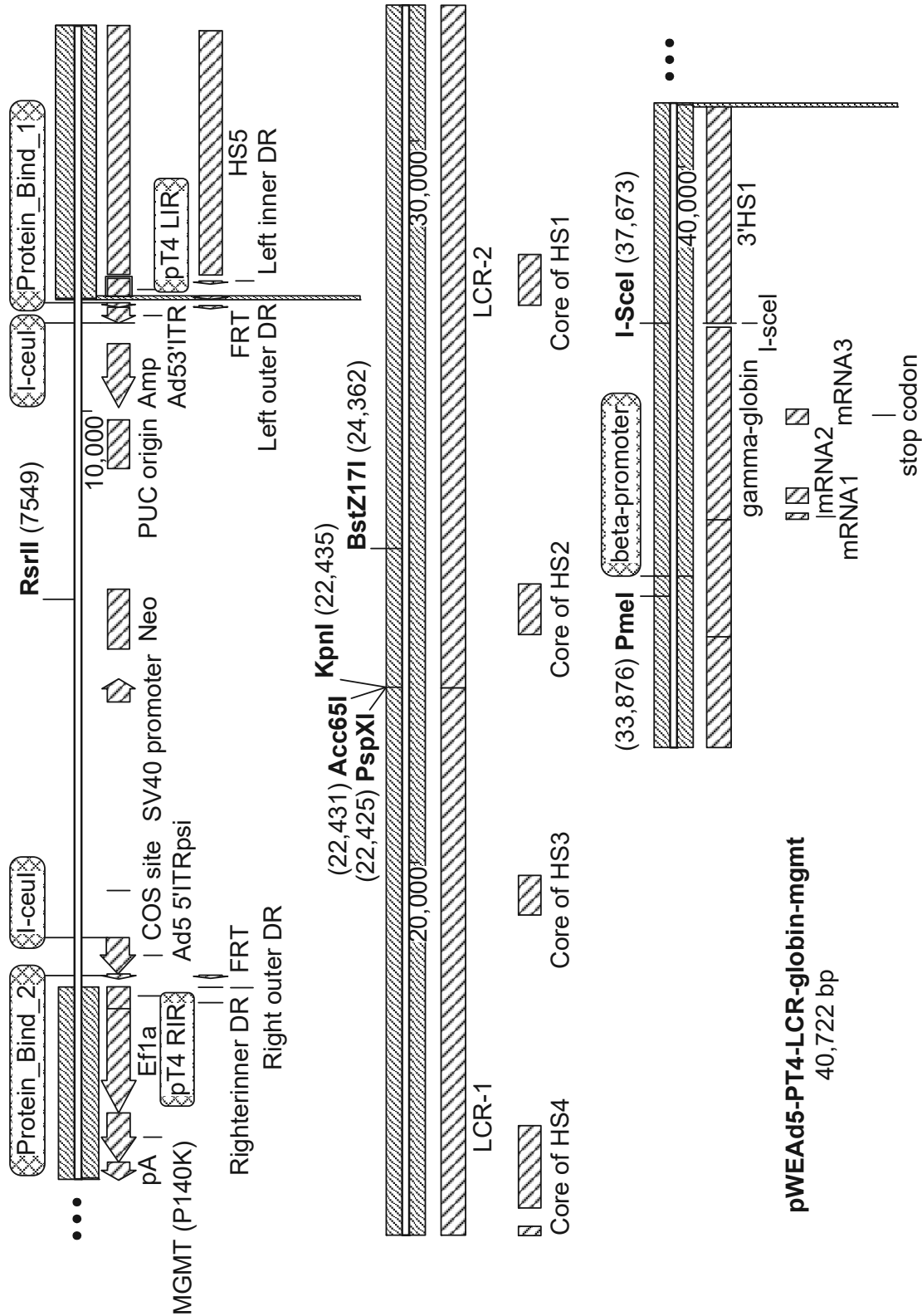


FIG. 31



pWEAd5-PT4-LCR-globin-mgmt
40,722 bp

FIG. 32

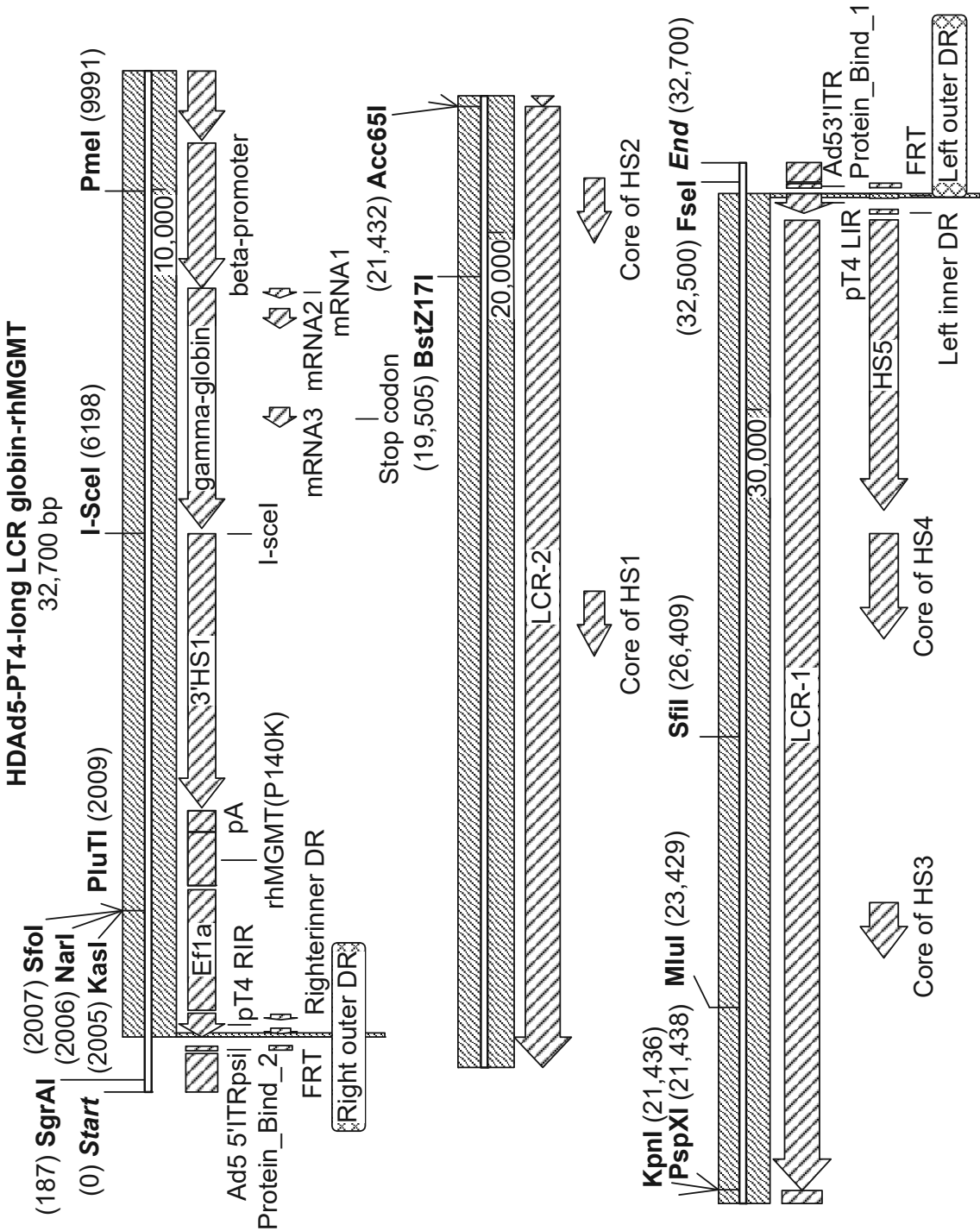


FIG. 33

HDAd-Ad5-PT4-LCR-hACE2/mgmt

31,269 bp

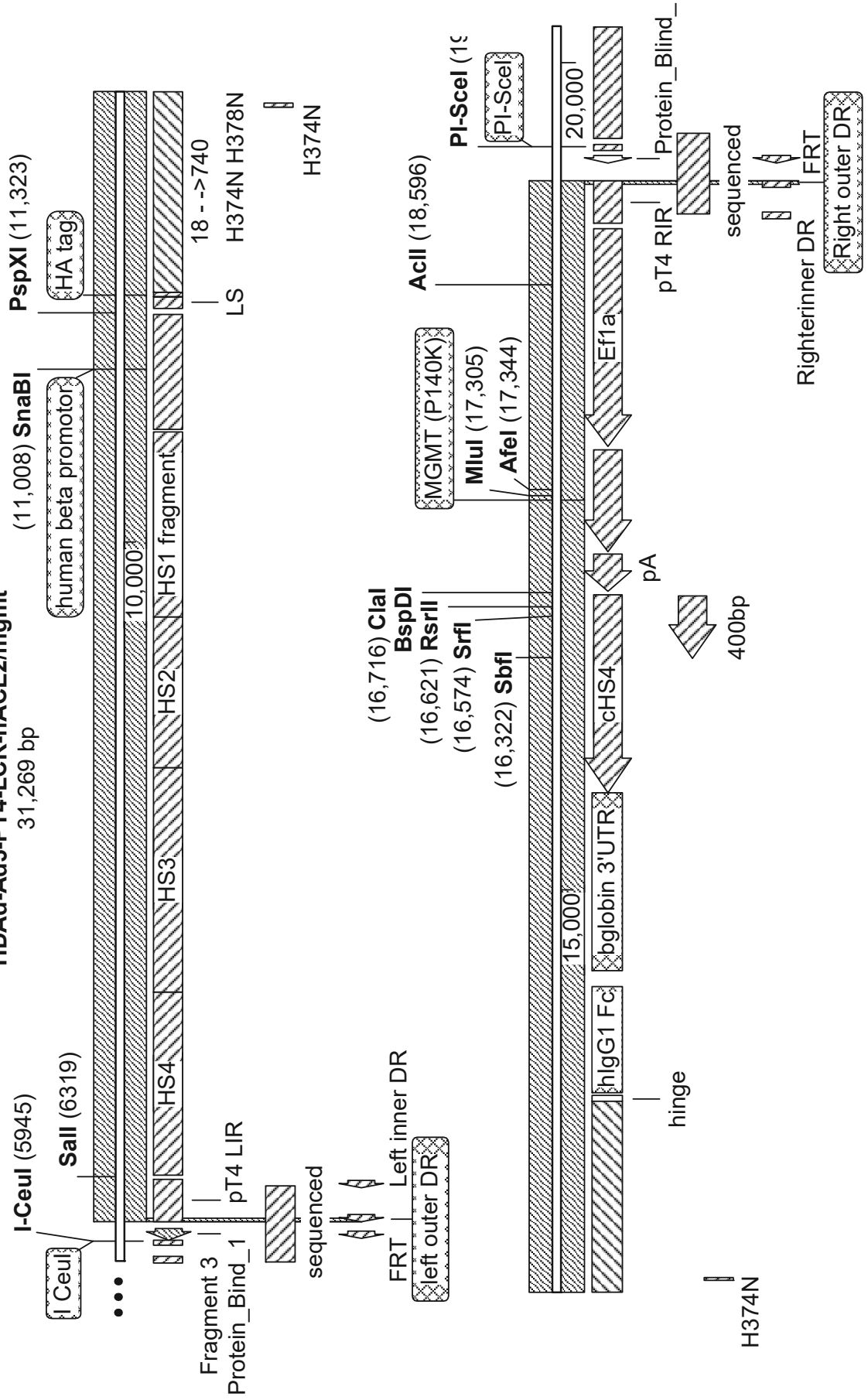


FIG. 34

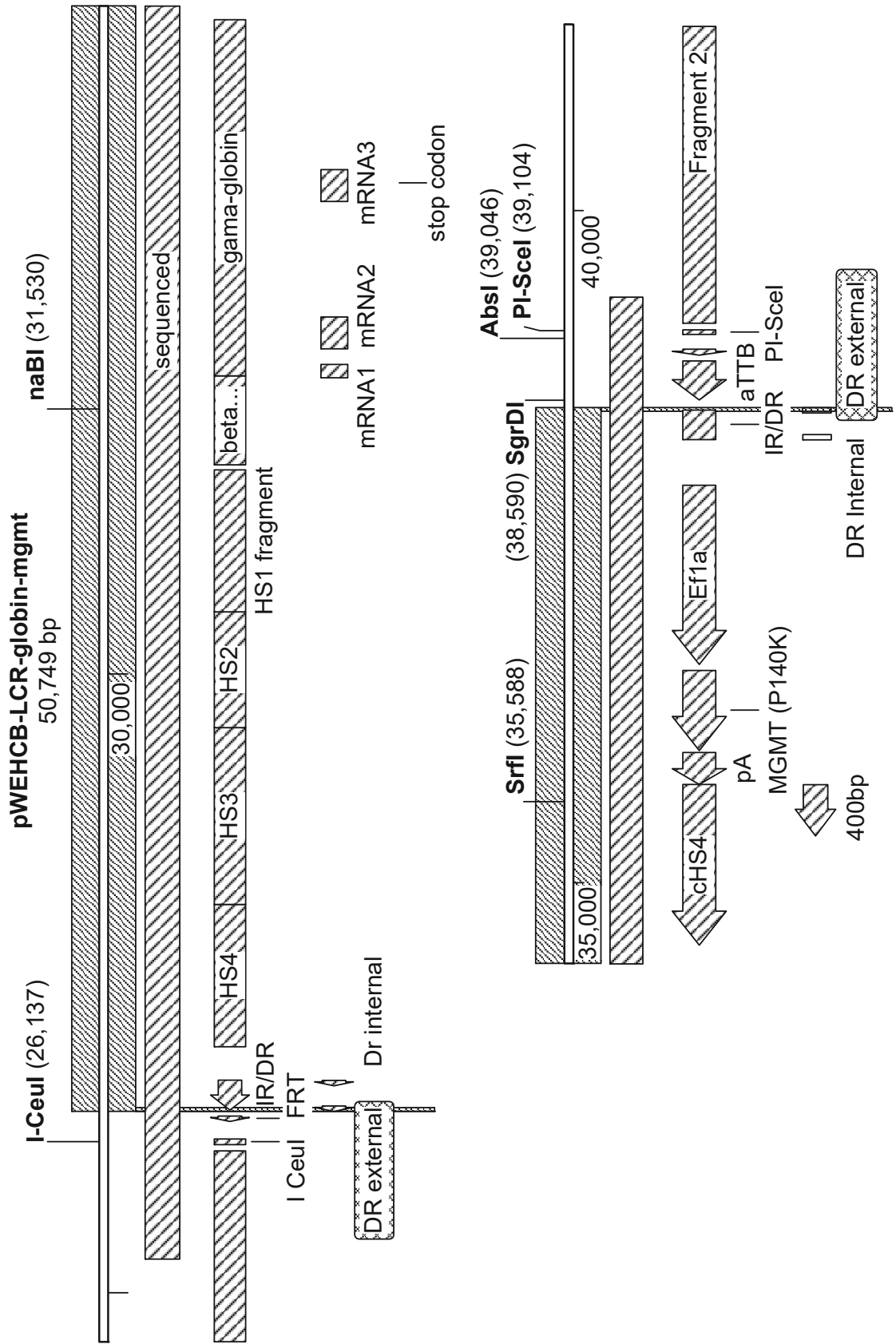


FIG. 35

pWEHCA-Faoni-GFP

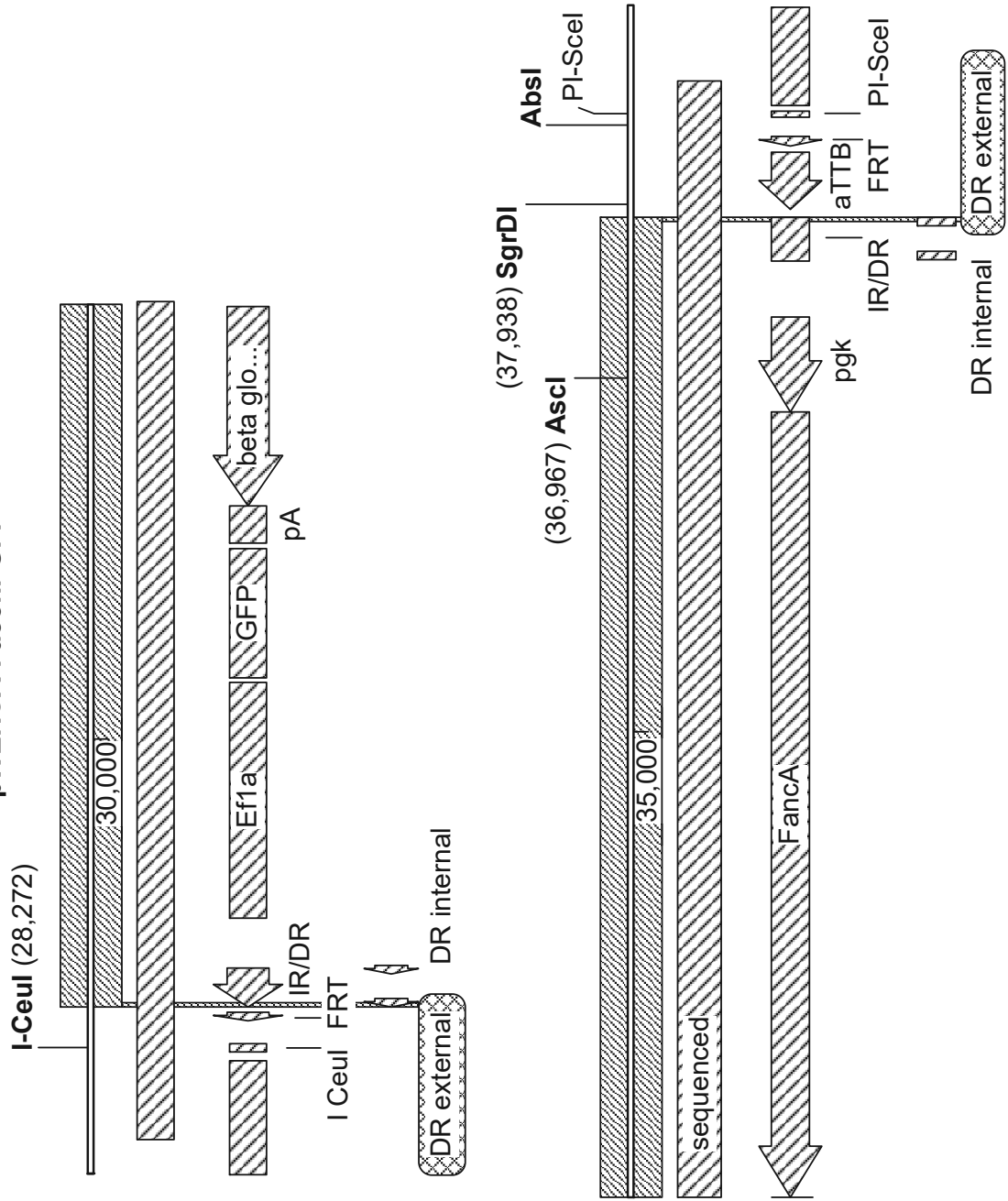


FIG. 36

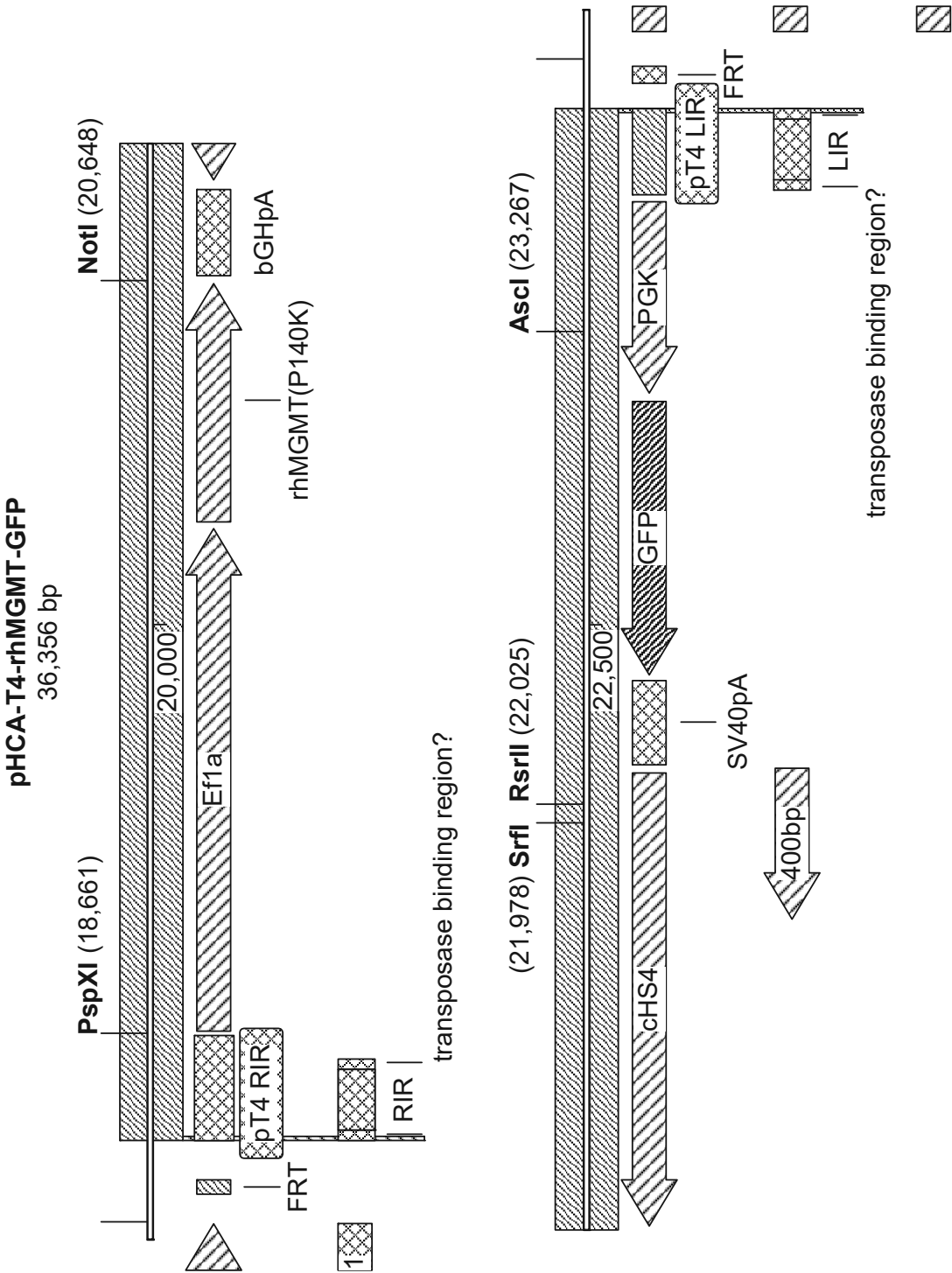


FIG. 37

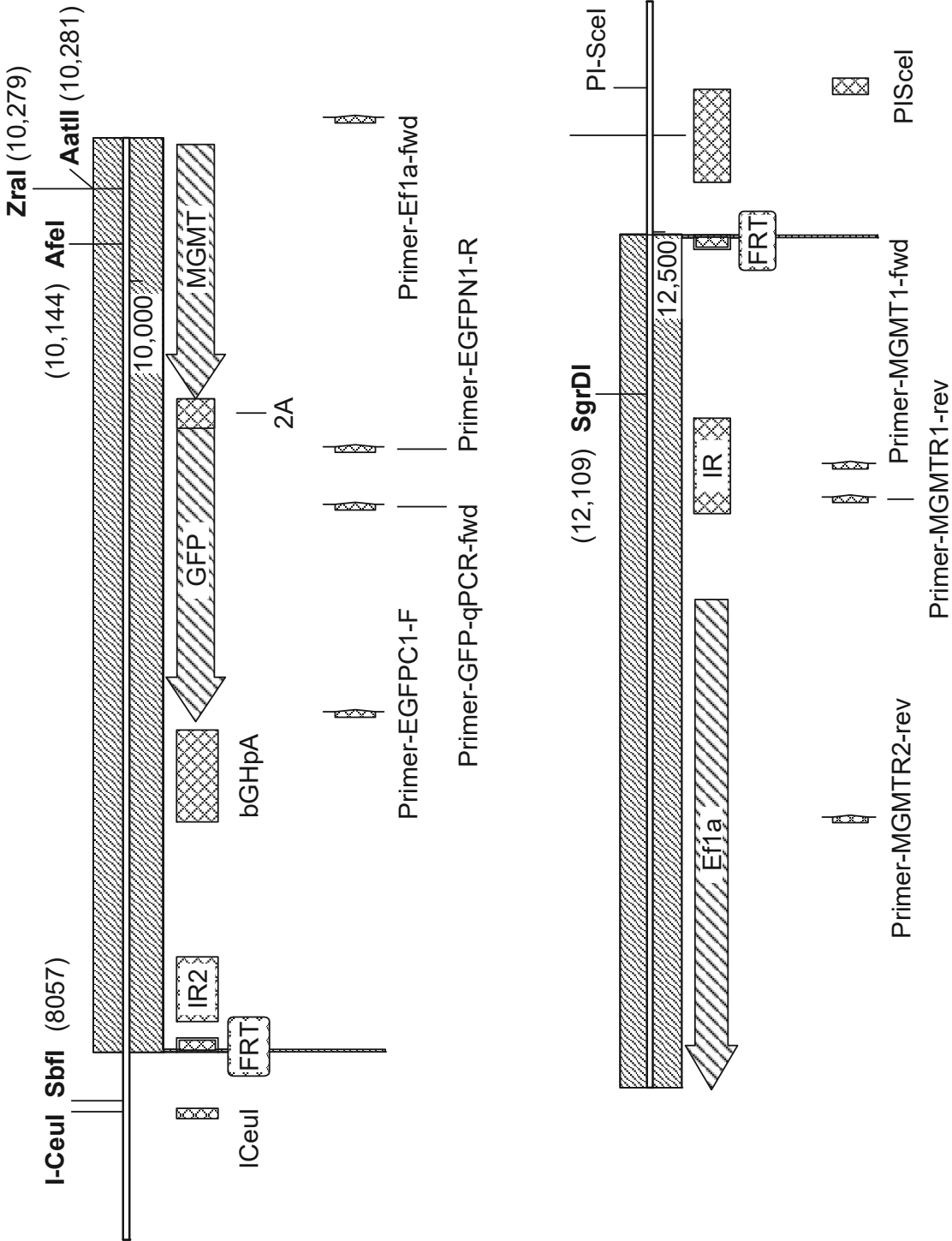


FIG. 38

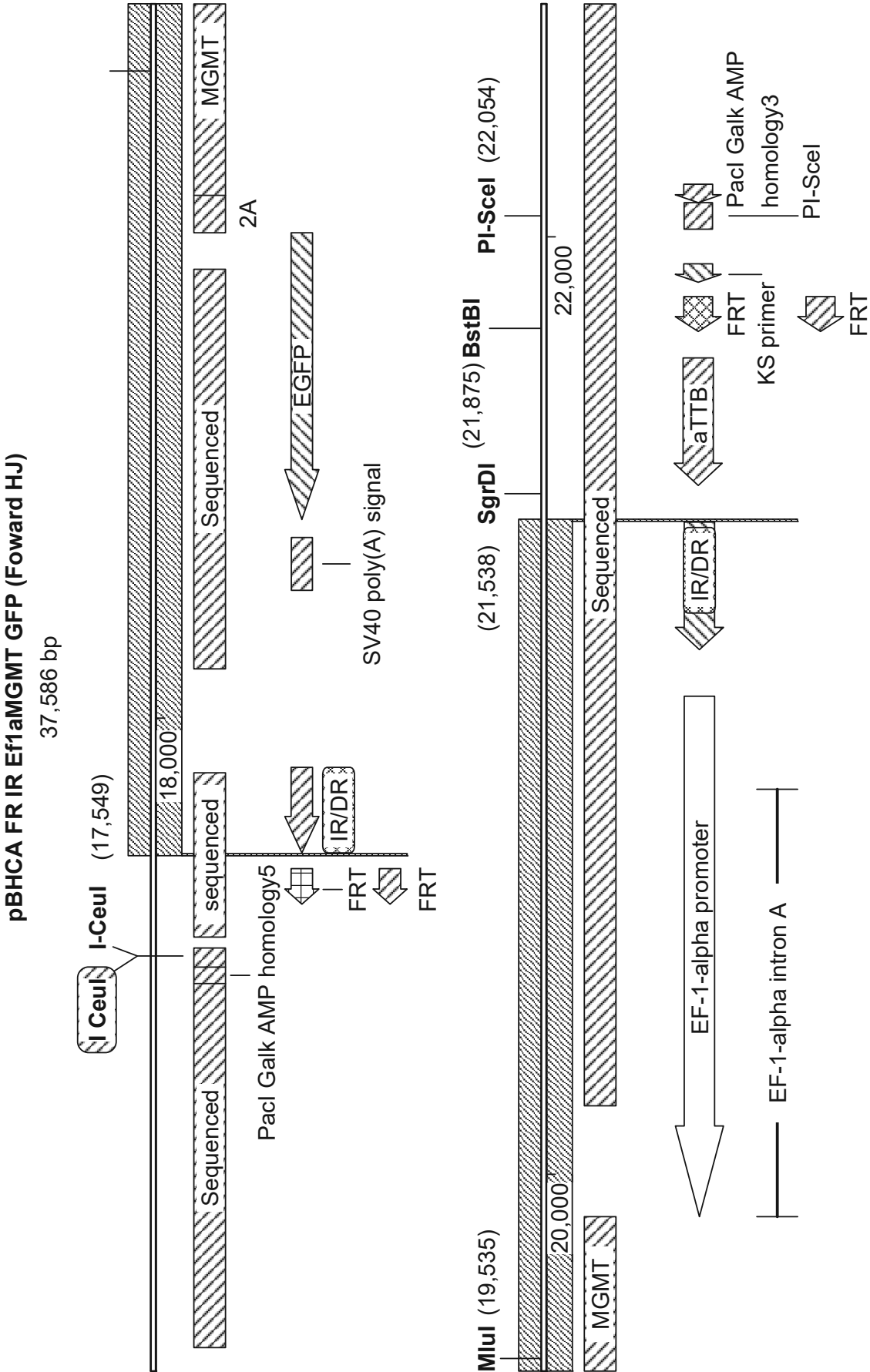


FIG. 39

pHCA (Ad35)PT4-Ef1a-mgmt-2A-GFP

32,924 bp

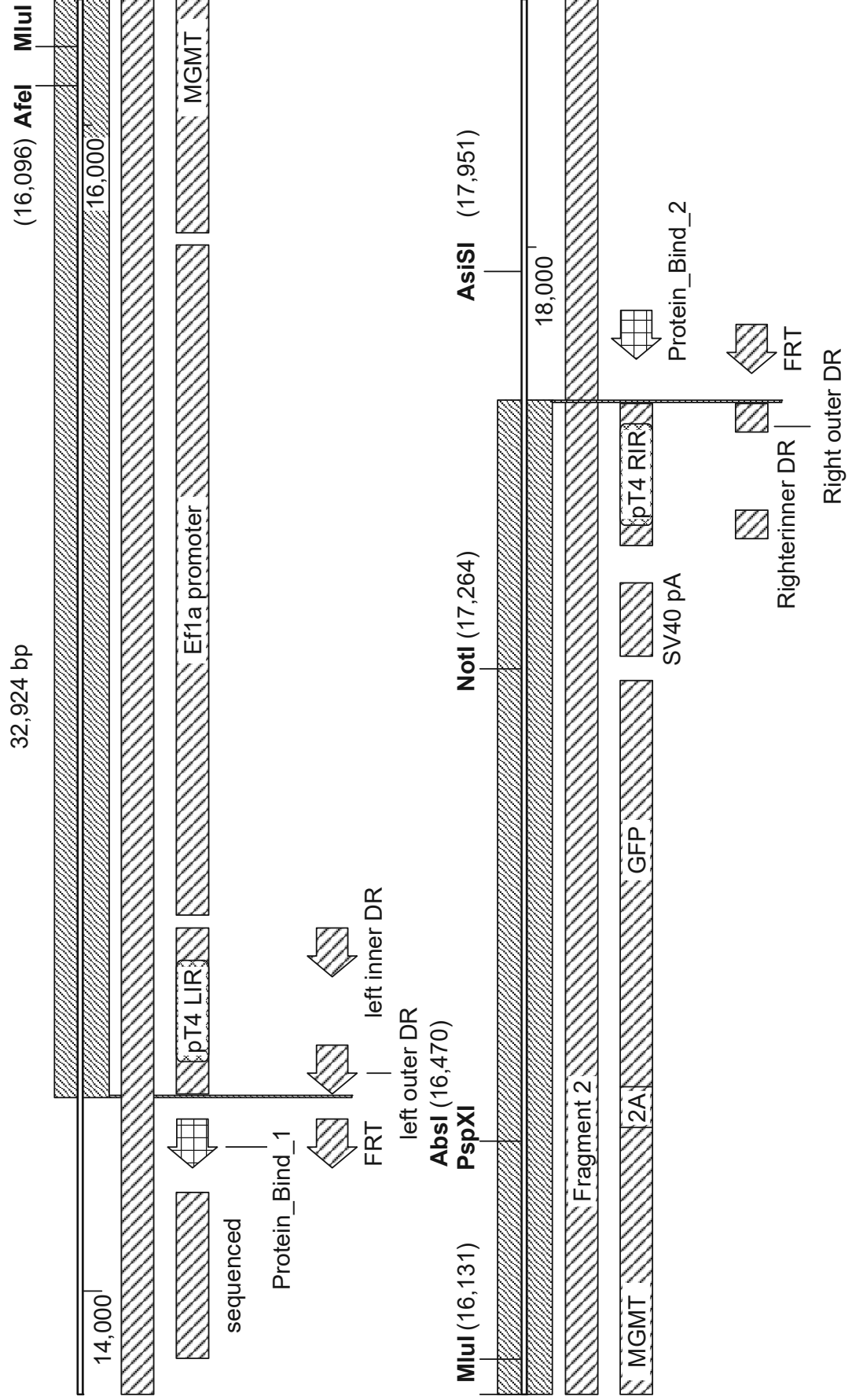


FIG. 40

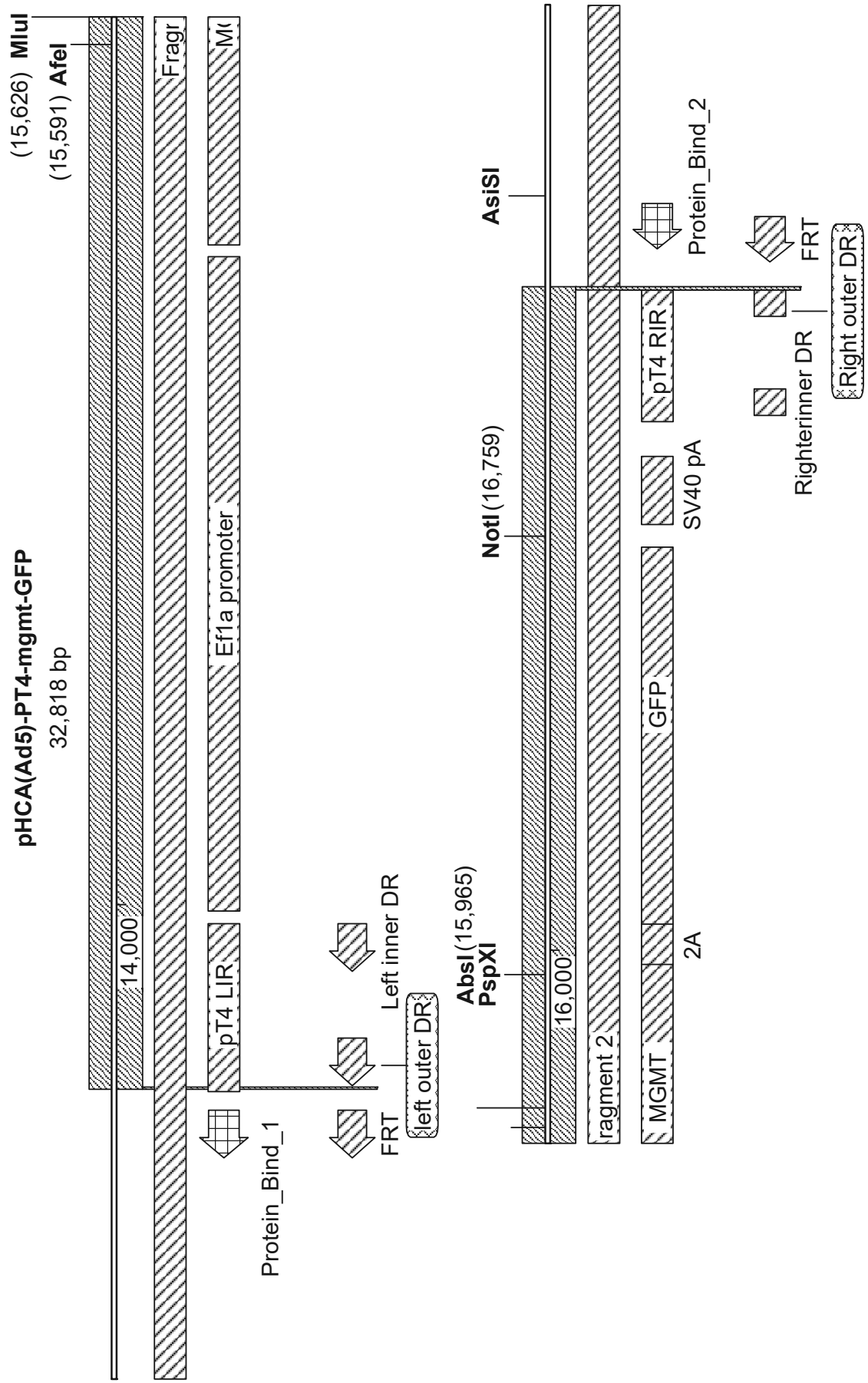


FIG. 41

pHCA (Ad35)PT4-Ef1a-mgmt

32,158 bp

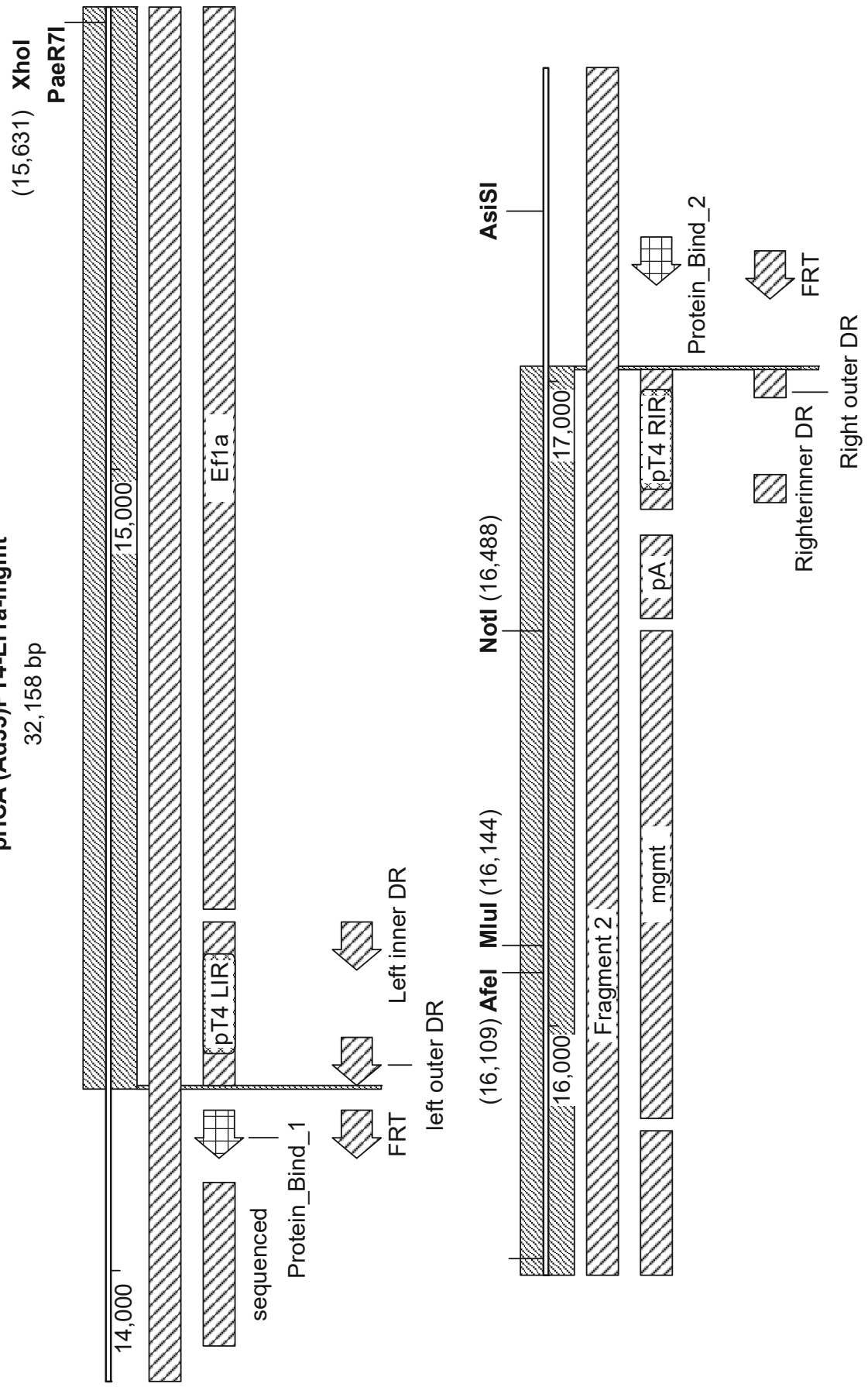


FIG. 42

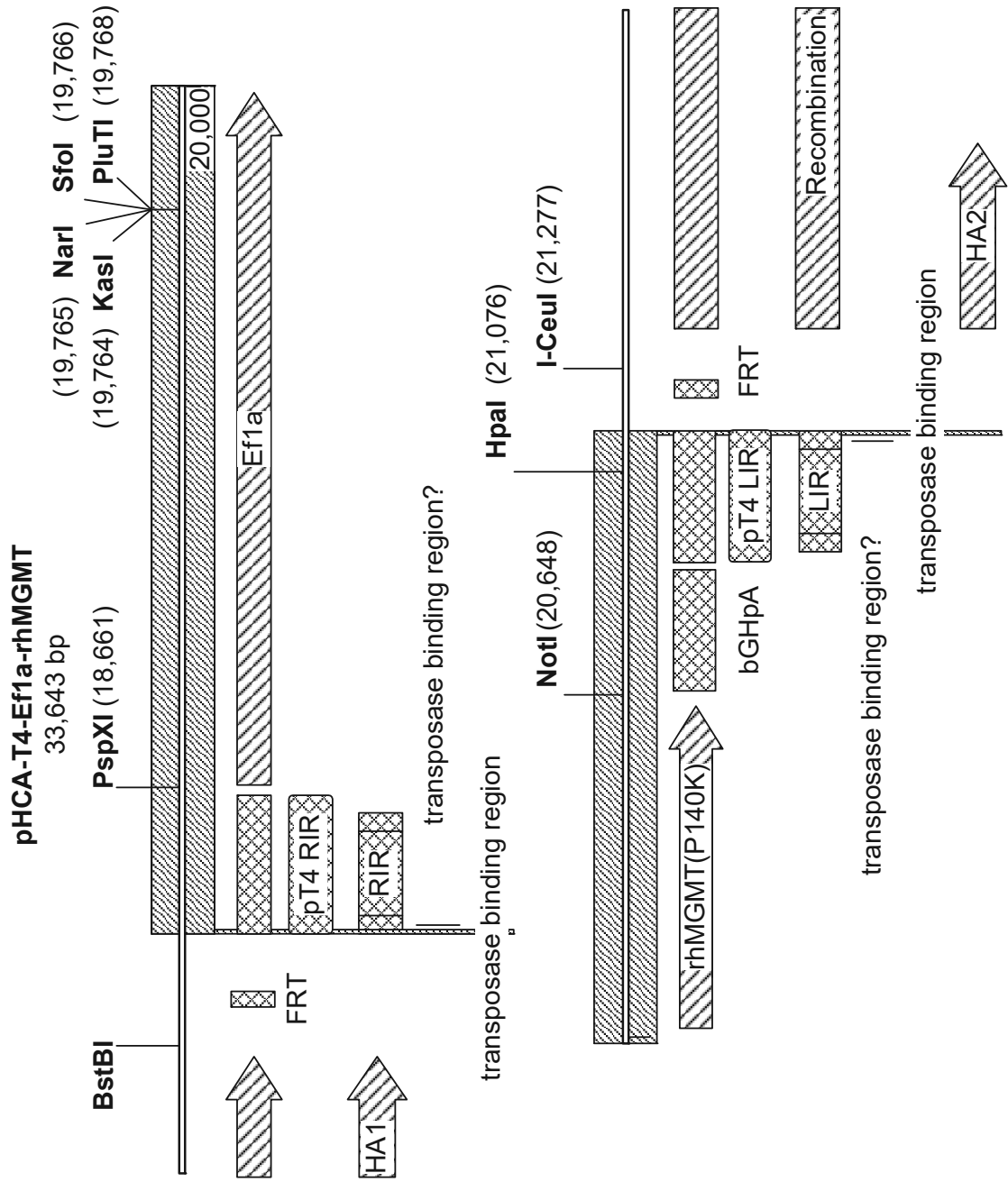


FIG. 43
pHCA(Ad5)-PT4-mgmt-GFP
 32,026 bp

