FIGURE 1

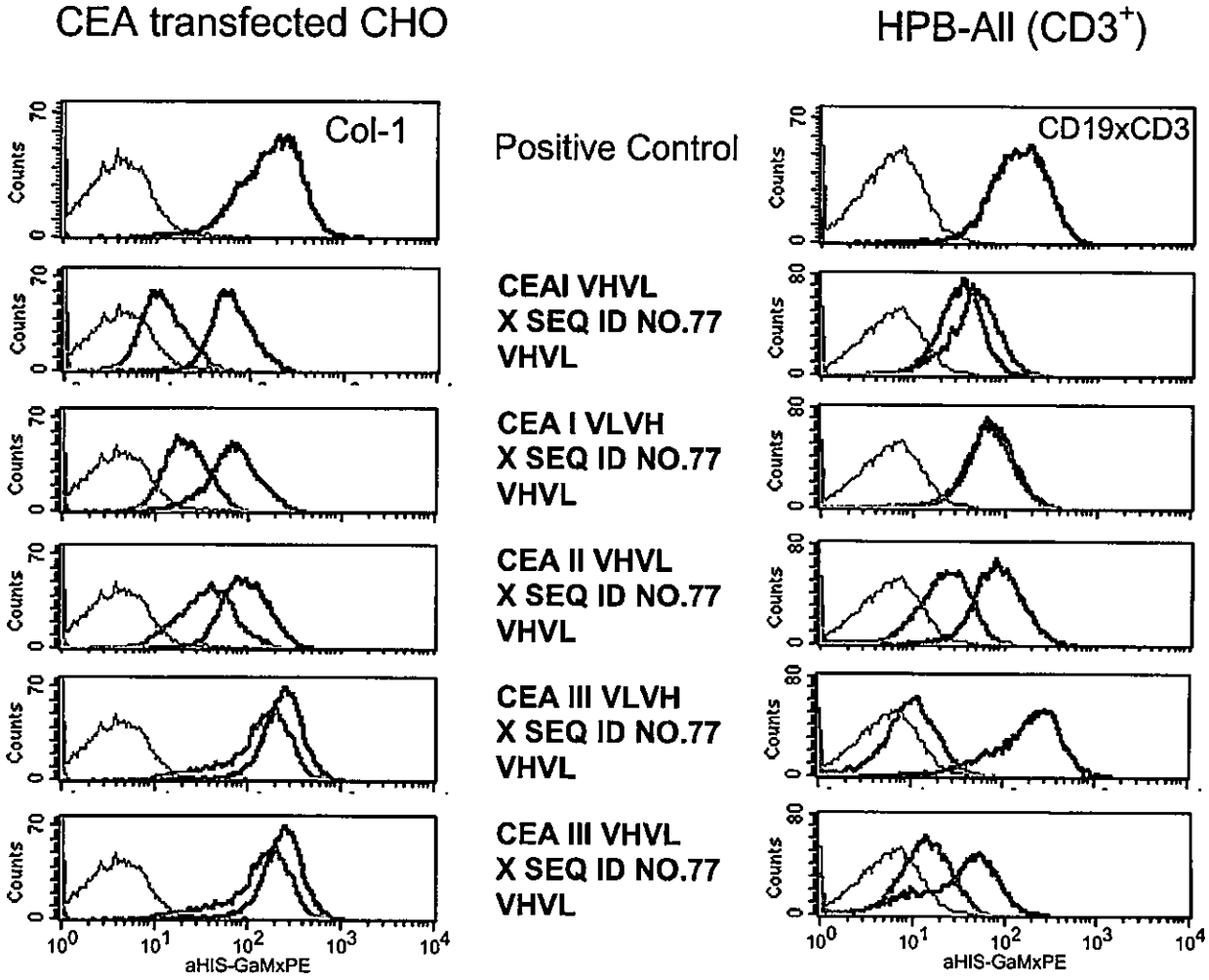

CEA transfected CHO
HPB-All (CD3+)
Col-1
CD19xCD3
Positive Control
CEAI VHVL
X SEQ ID NO.77
VHVL
CEA I VLVH
X SEQ ID NO.77
VHVL
CEA II VHVL
X SEQ ID NO.77
VHVL
CEA III VLVH
X SEQ ID NO.77
VHVL
CEA III VHVL
X SEQ ID NO.77
VHVL
Counts
aHIS-GaMxPE

FIGURE 2

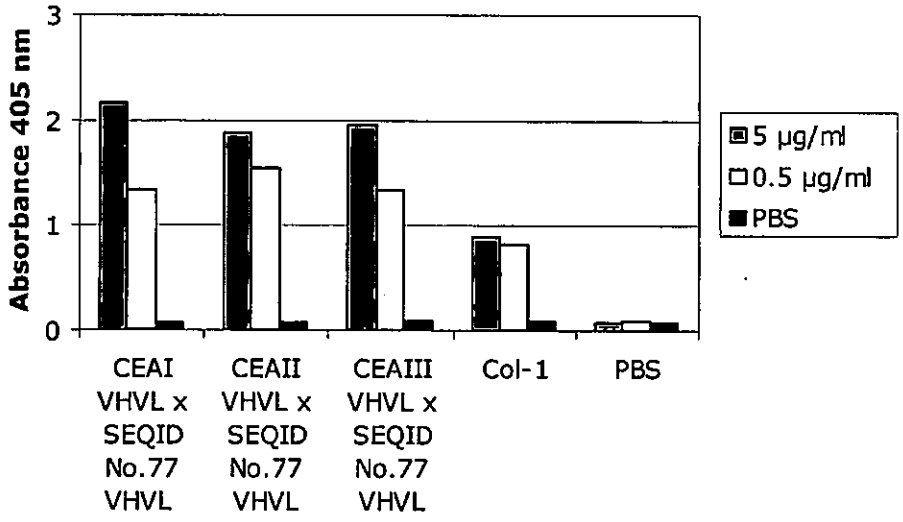
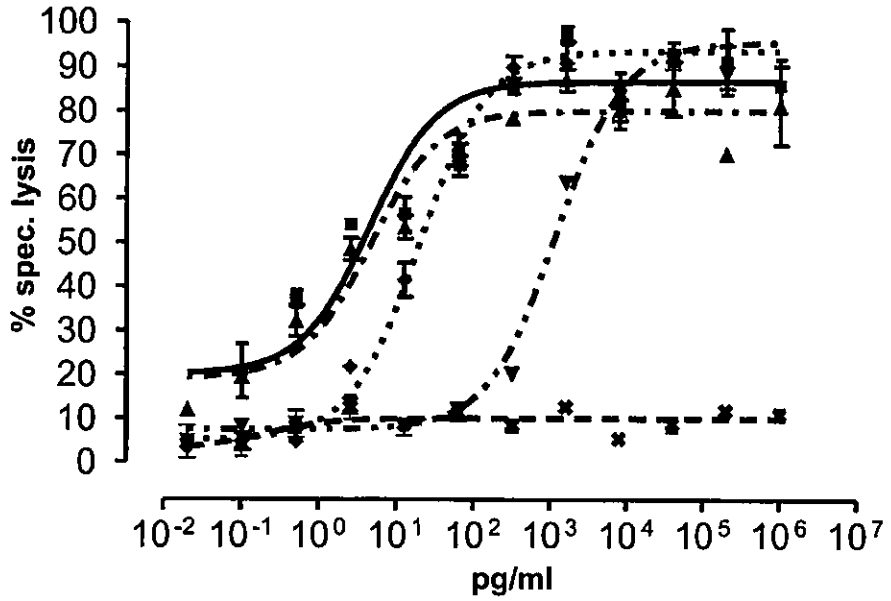
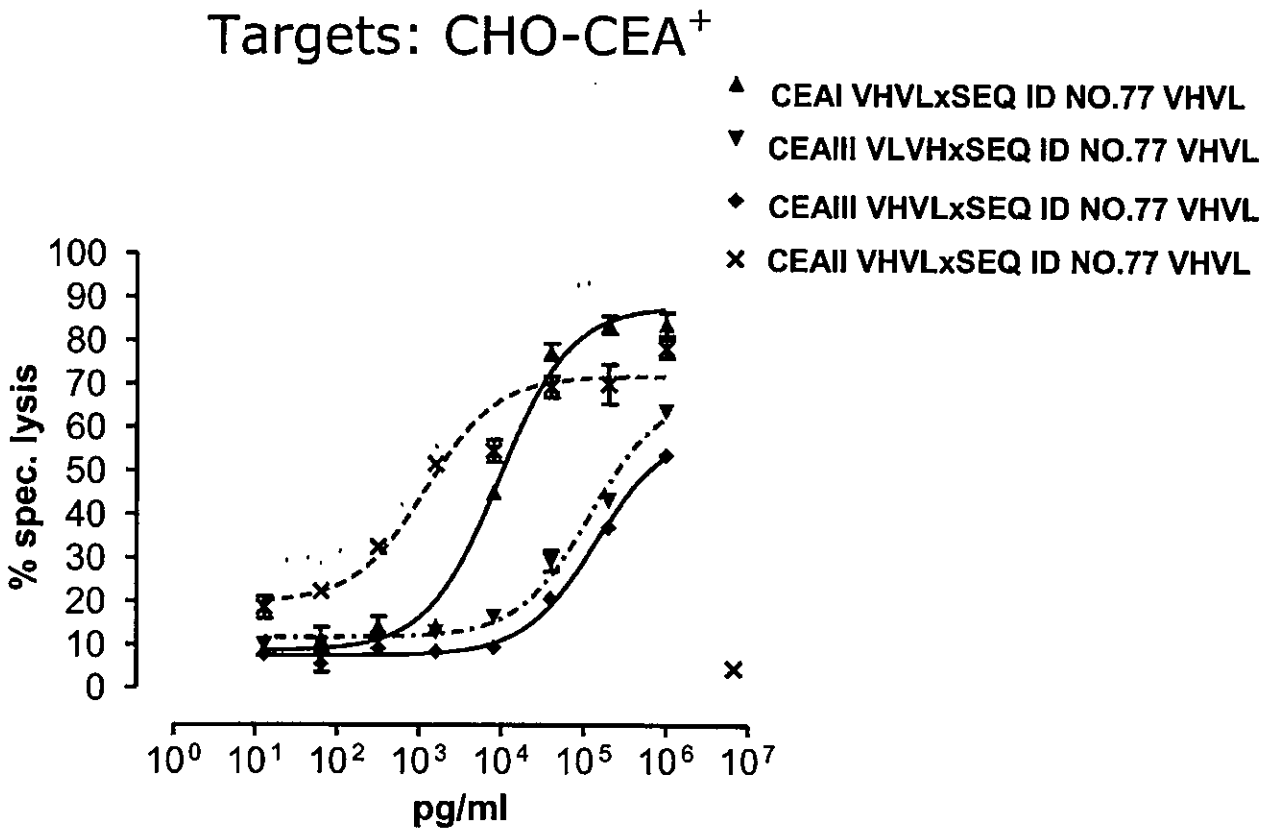

Absorbance 405 nm
3
2
1
0
5 µg/ml
0.5 µg/ml
PBS
CEAI VHVL x SEQID No.77 VHVL
CEAII VHVL x SEQID No.77 VHVL
CEAIII VHVL x SEQID No.77 VHVL
Col-1
PBS

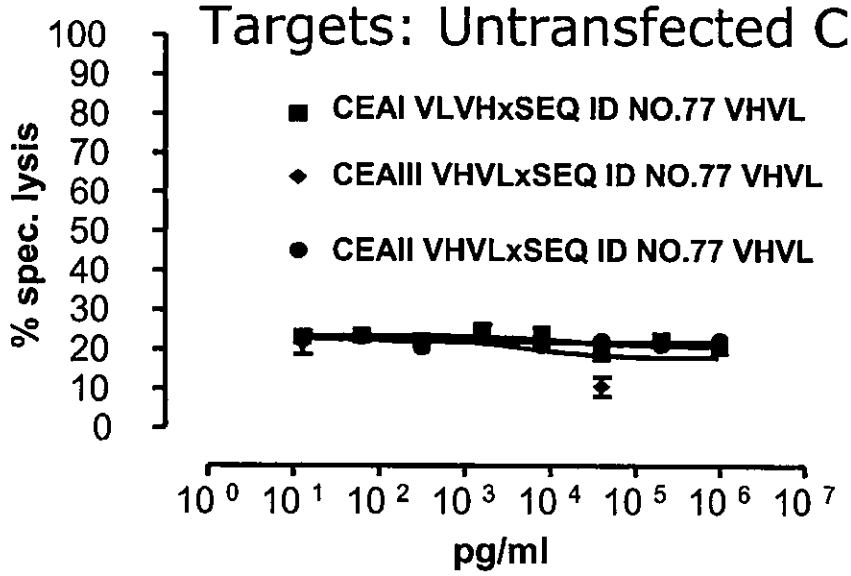
FIGURE 3



		EC 50 [ng/ml]
■	SEQ ID NO. 77 VHVL x CEAI VHVL	0.0045
▲	SEQ ID NO. 77 VHVL x CEAI VLVH	0.0035
◆	CEAI VLVH x SEQ ID NO. 77 VHVL	0.0196
▼	CEAI VHVL x SEQ ID NO. 77 VHVL	1.2
✖	Negative control	n.a.

FIGURE 4

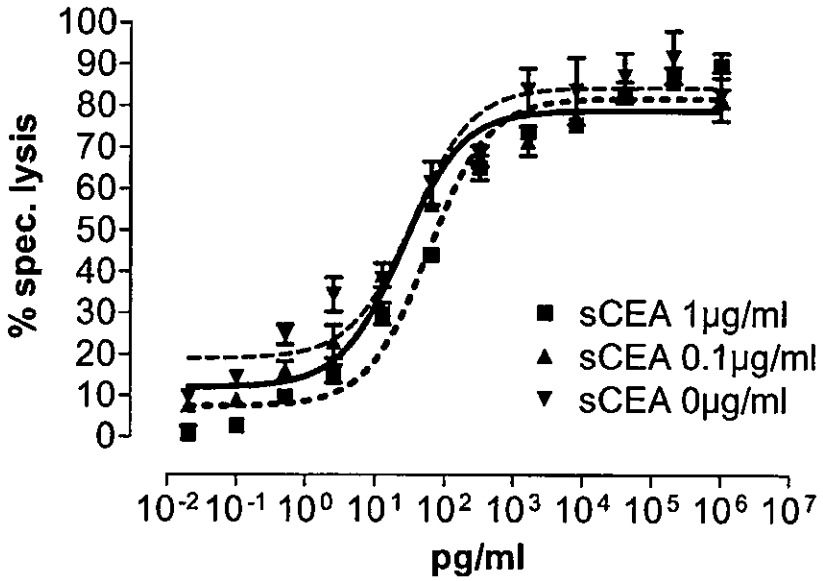




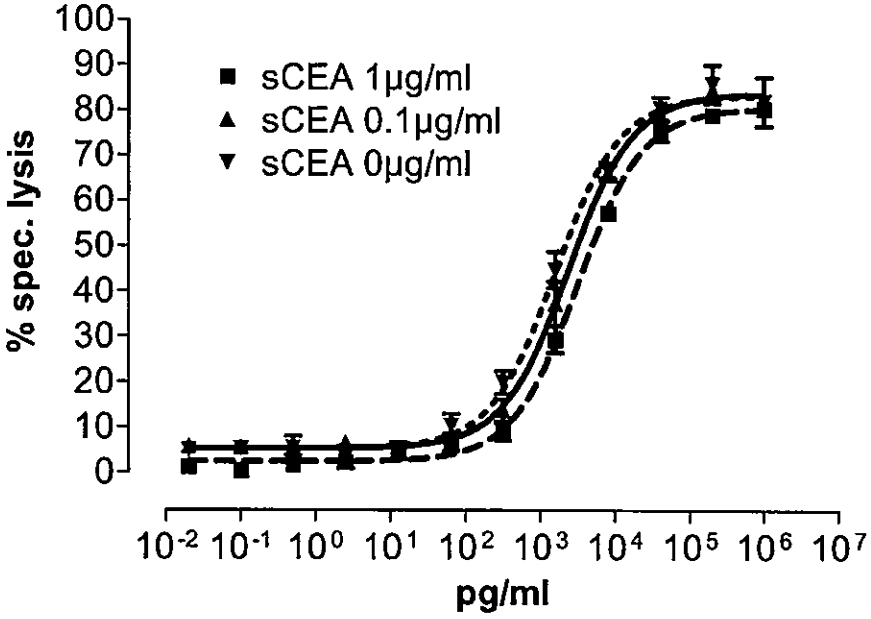
EC50 [ng/ml]	I –HL	II –HL	III –LH	III -HL
CHO-CEA+	9.3	1.2	119	139

FIGURE 5

CEA I VLVH x SEQ ID NO.77 VHVL

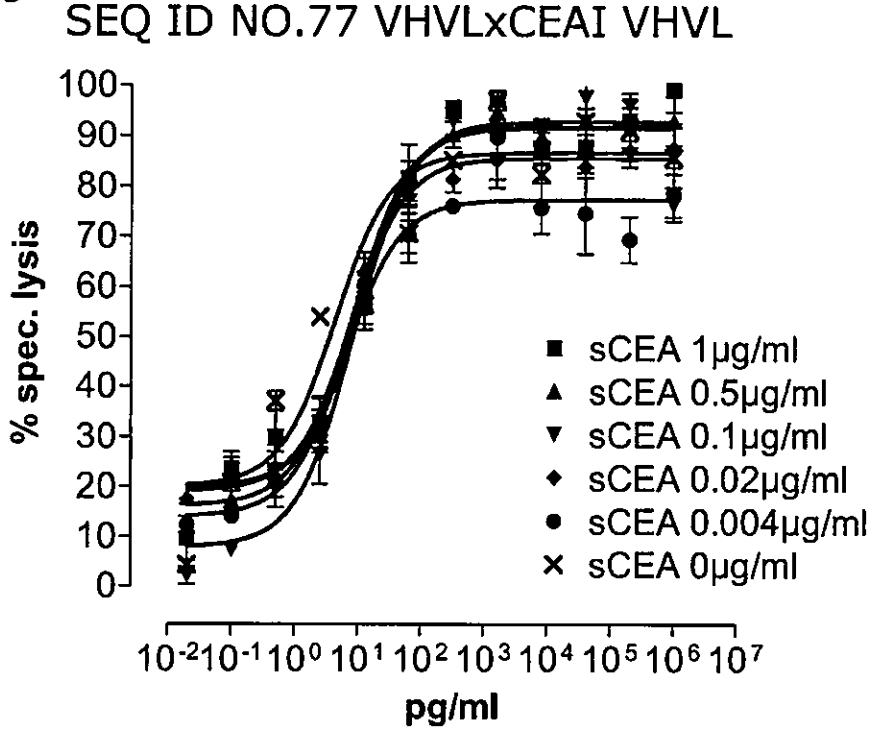


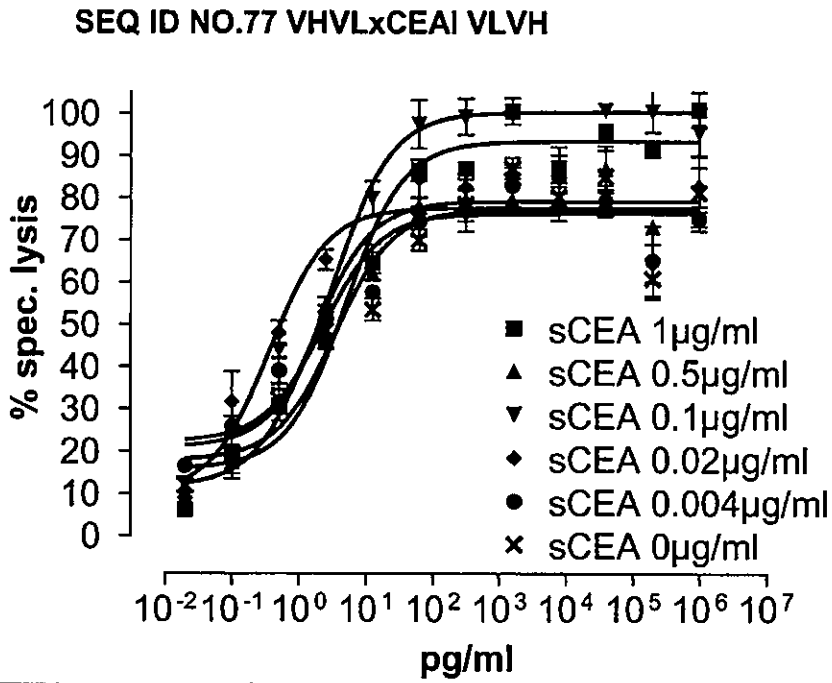
CEA I VHVL x SEQ ID NO.77 VHVL



Sol. CEA [µg/ml]	0	0.1	1
CEA I VHVL x SEQ ID NO.77 VHVL EC50 [ng/ml]	1.6	2.4	3.2
CEA I VLVH x SEQ ID NO.77 VHVL EC50 [ng/ml]	0.034	0.024	0.058

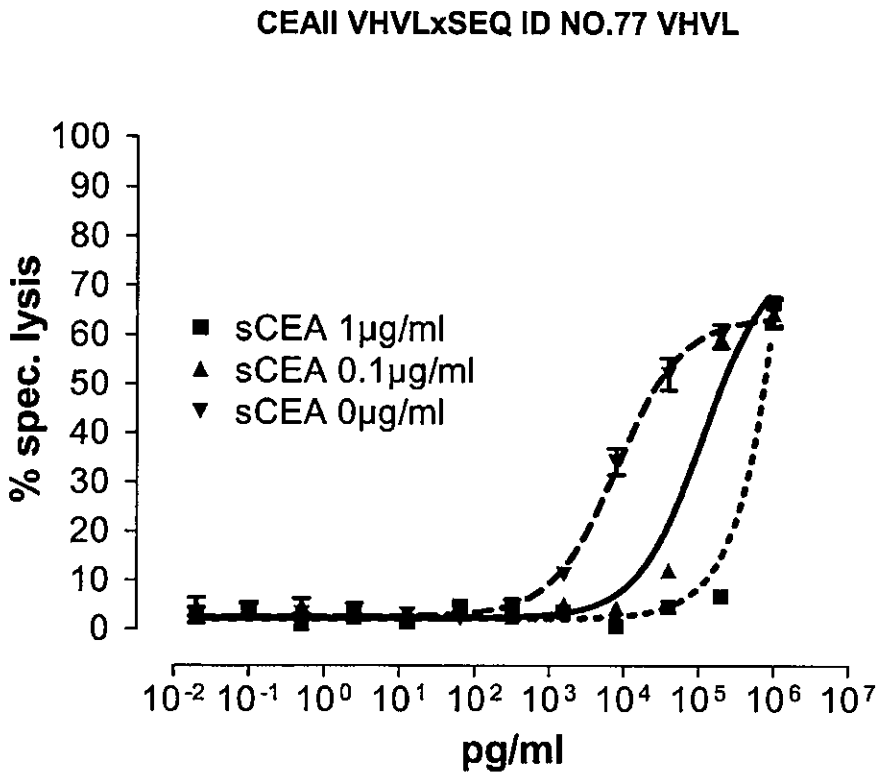
FIGURE 6





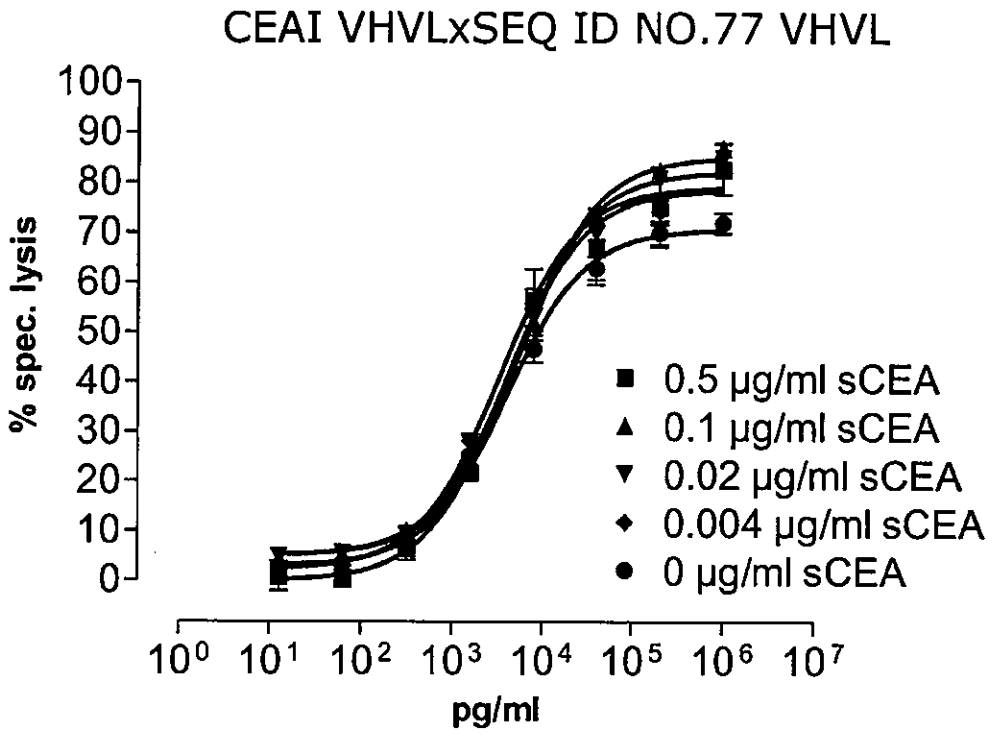
Sol. CEA [µg/ml]	**0**	**0.004**	**0.02**	**0.1**	**0.5**	**1**
SEQ ID NO.77 VHVLx CEA-I LH EC_{50} [pg/ml]	3.5	2.3	0.4	3.5	1.6	5.1
SEQ ID NO.77 VHVL x CEA-I HL EC_{50} [pg/ml]	4.5	6.2	7.4	8.4	9.1	11.6

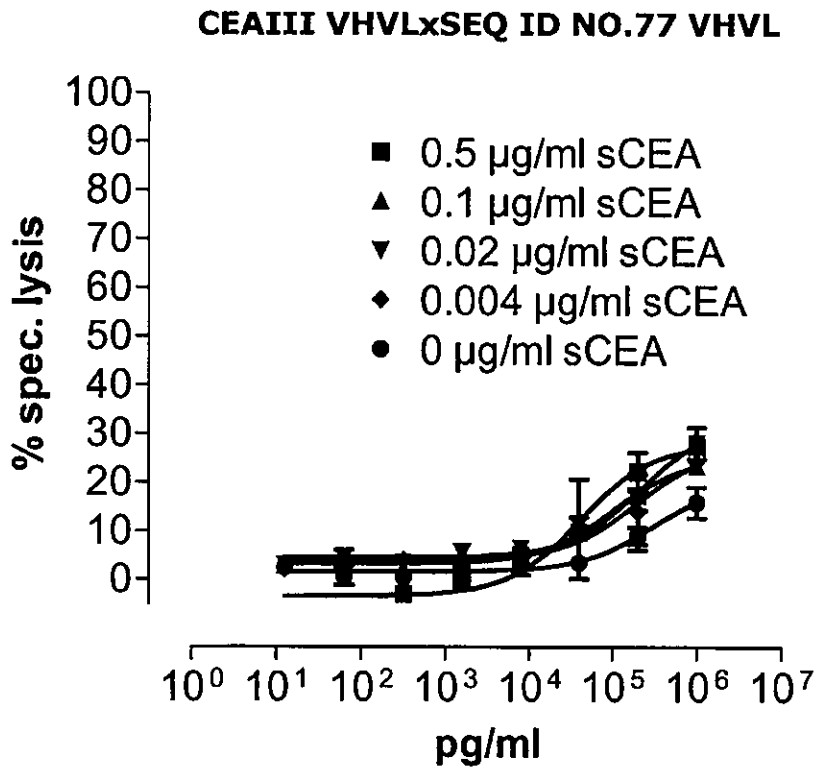
FIGURE 7



Sol. CEA [µg/ml]	0	0.1	1
CEAII VHVLxSEQ ID NO.77 VHVL EC50 [ng/ml]	8.2	114.6	3980

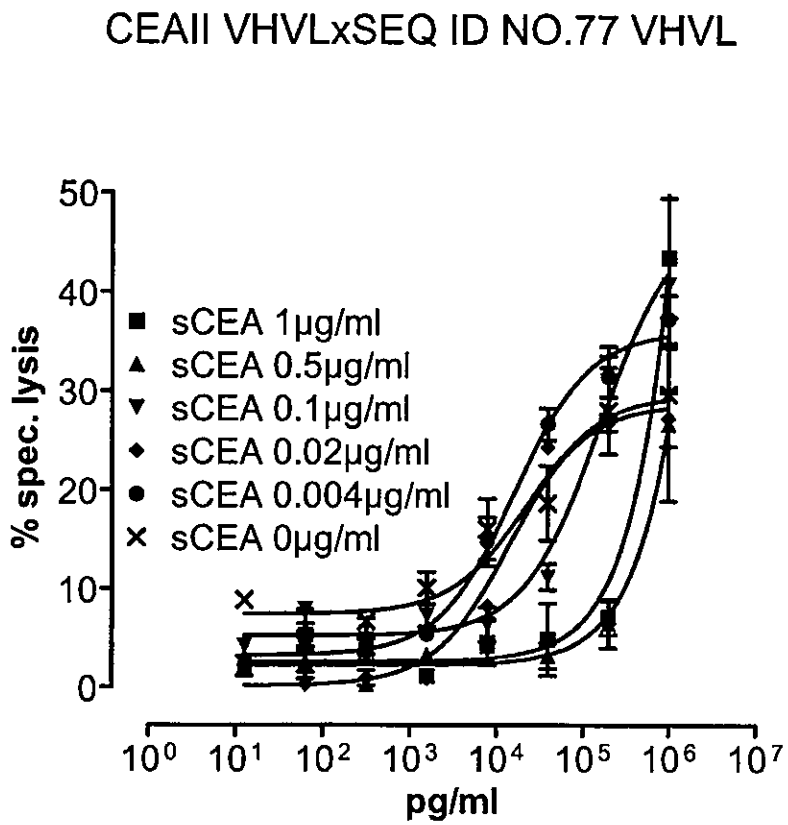
FIGURE 8





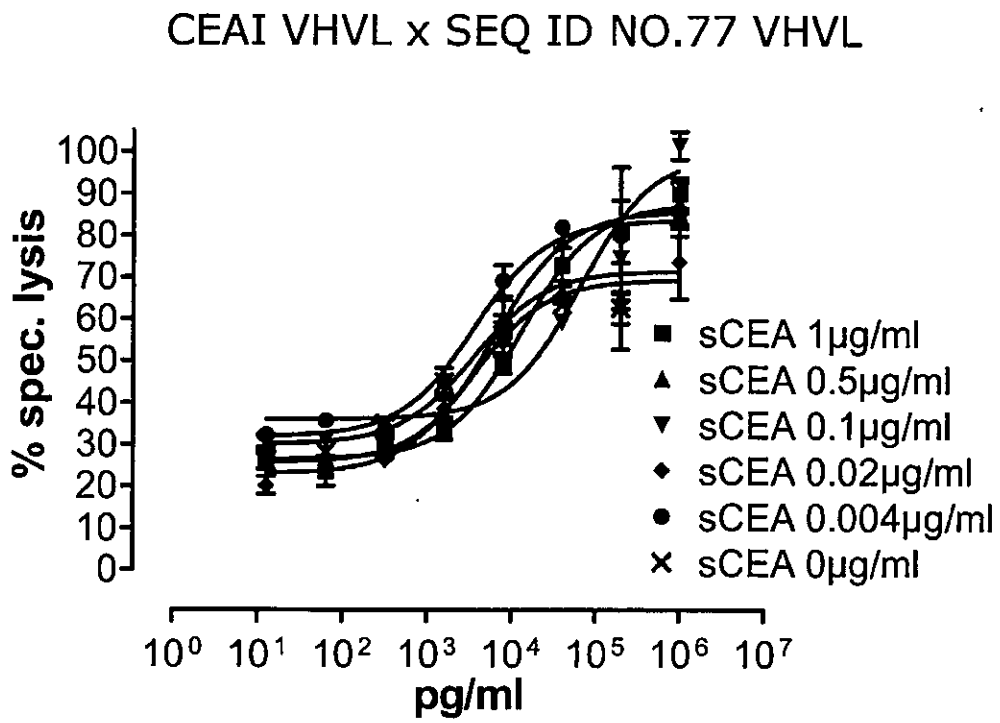
Sol. CEA [µg/ml]	0	0.004	0.02	0.1	0.5
CEAIVHVLxSEQ ID NO.77VHVL EC50 [ng/ml]	3.9	3.3	4.7	5.5	3.8
CEAIIIVHVLxSEQ ID NO.77VHVL EC50 [ng/ml]	n.d.	n.d.	n.d.	n.d	n.d.

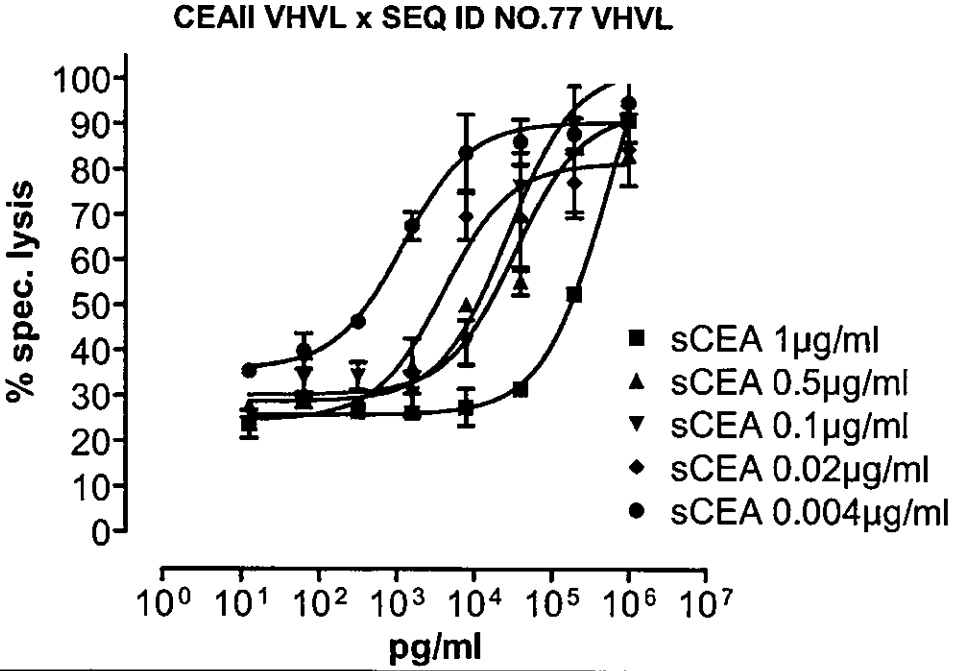
FIGURE 9



Sol. CEA [µg/ml]	0	0.02	0.1	0.5	1.0
CEAIIVHVLxSEQ ID NO.77VHVL EC50 [ng/ml]	23	14	159	1415	5057

FIGURE 10

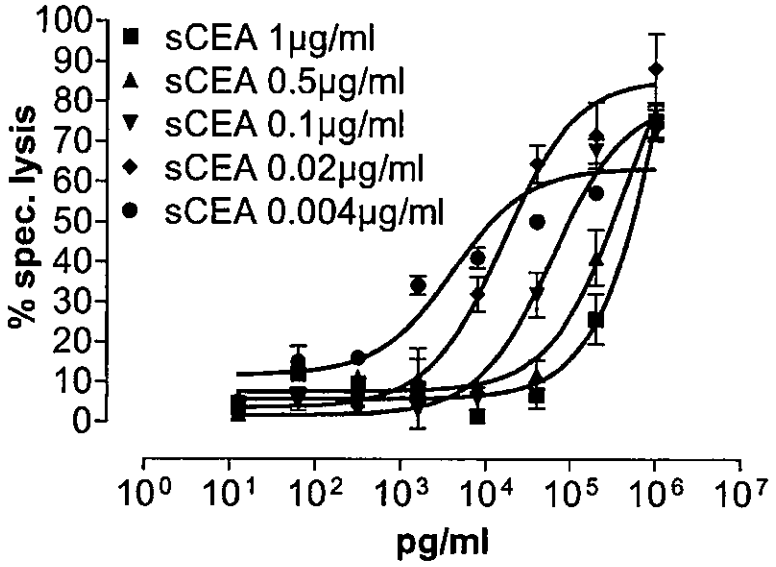




Sol. CEA [µg/ml]	0	0.004	0.1	0.5	1.0
CEAIVHVLxSEQ ID NO.77VHVL EC50 [ng/ml]	3.6	3.6	65.4	6.3	5.1
CEAIIVHVLxSEQ ID NO.77VHVL EC50 [ng/ml]	--	1.2	36.5	77.9	578

FIGURE 11

CEAII VHVL x SEQ ID NO.77 VHVL



Sol. CEA [µg/ml]	0.004	0.02	0.1	0.5	1.0
CEAIIVHVLxSEQ ID NO.77 VHVL EC50 [ng/ml]	4.0	16	60	432	1983

FIGURE 12

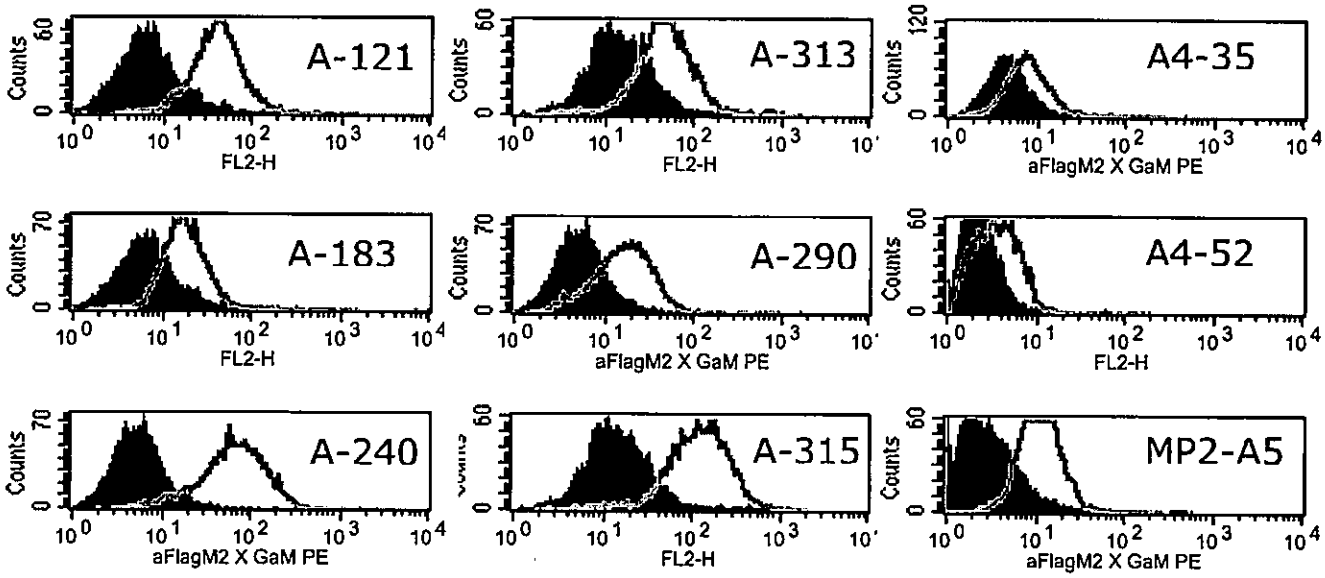

A-121
A-313
A4-35
A-183
A-290
A4-52
A-240
A-315
MP2-A5
Counts
FL2-H
aFlagM2 X GaM PE

FIGURE 13

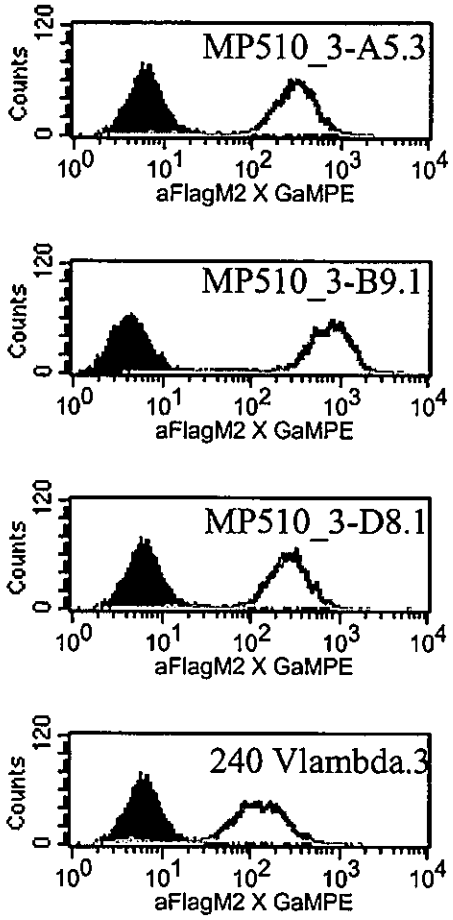

MP510_3-A5.3
MP510_3-B9.1
MP510_3-D8.1
240 Vlambda.3
Counts
120
0
10^0 10^1 10^2 10^3 10^4
aFlagM2 X GaMPE

FIGURE 14

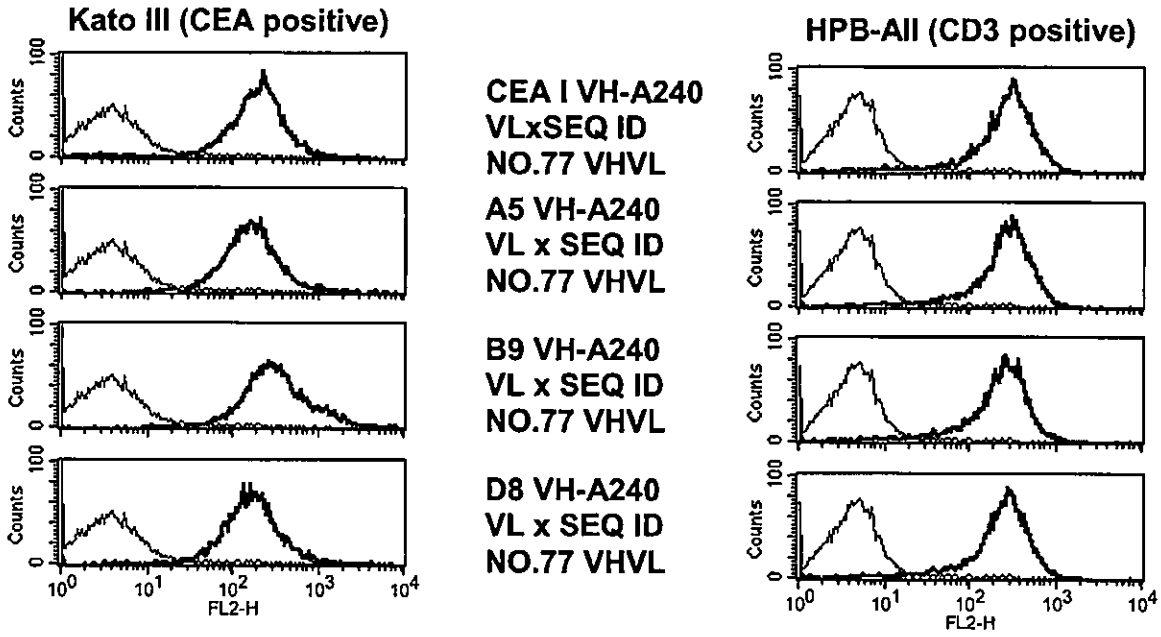
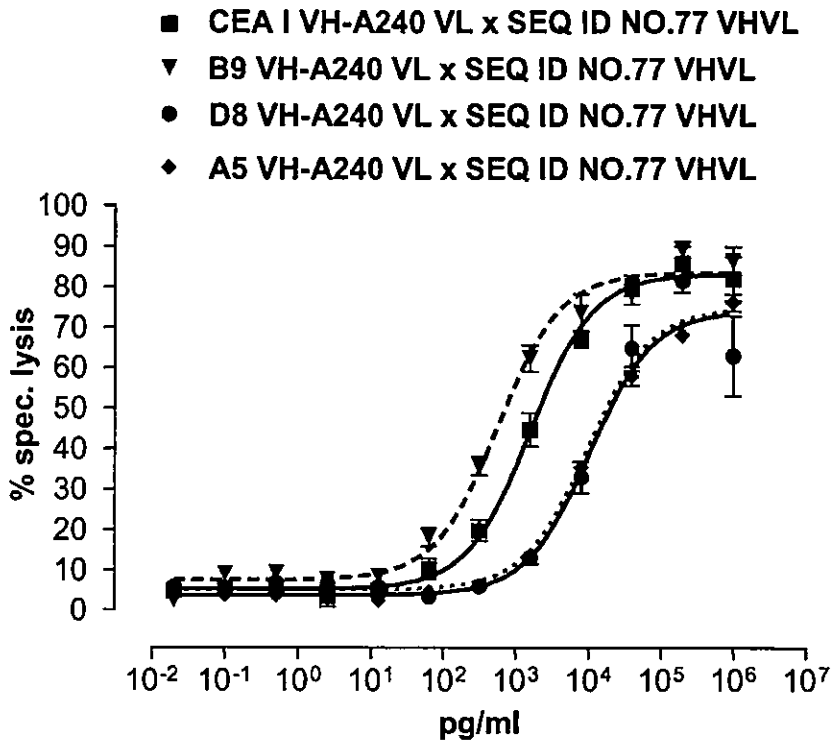
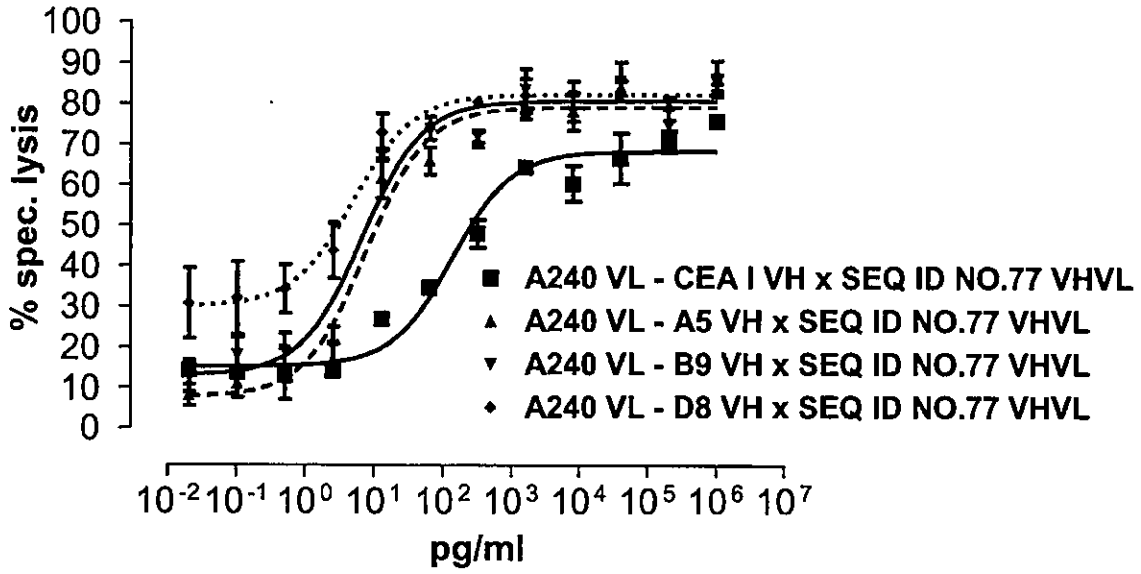

Kato III (CEA positive)
HPB-All (CD3 positive)
CEA I VH-A240 VLxSEQ ID NO.77 VHVL
A5 VH-A240 VL x SEQ ID NO.77 VHVL
B9 VH-A240 VL x SEQ ID NO.77 VHVL
D8 VH-A240 VL x SEQ ID NO.77 VHVL
Counts
FL2-H

FIGURE 15



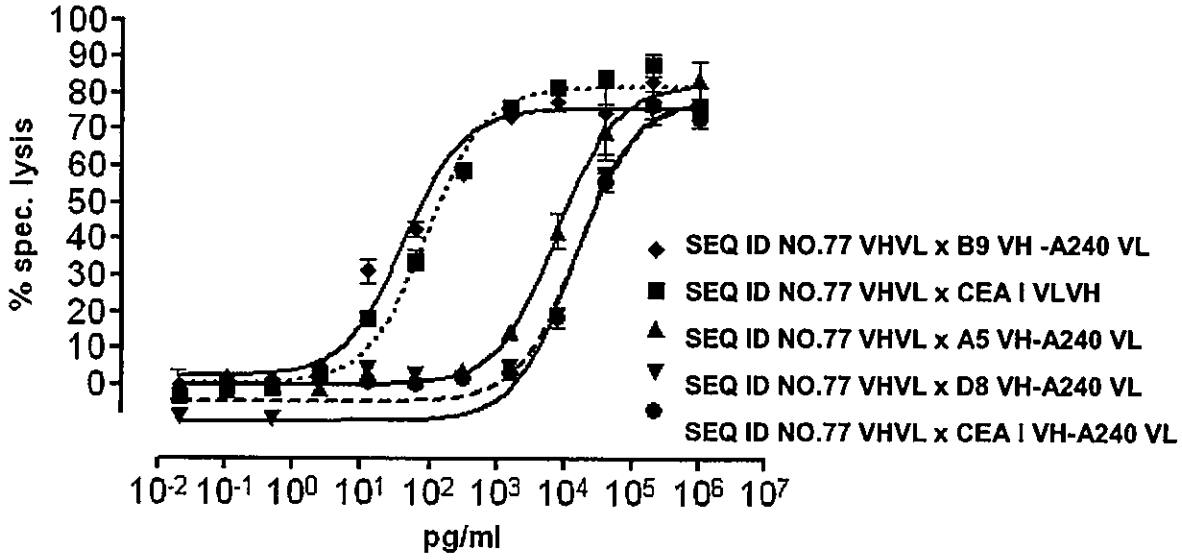
	EC 50 [ng/ml]
B9 VH - A240 VL x SEQ ID NO.77 VHVL	0.58
CEA I VH - A240 VL x SEQ ID NO.77 VHVL	1.61
D8 VH - A240 VL x SEQ ID NO.77 VHVL	10.0
A5 VH - A240 VL x SEQ ID NO.77 VHVL	10.5

FIGURE 16



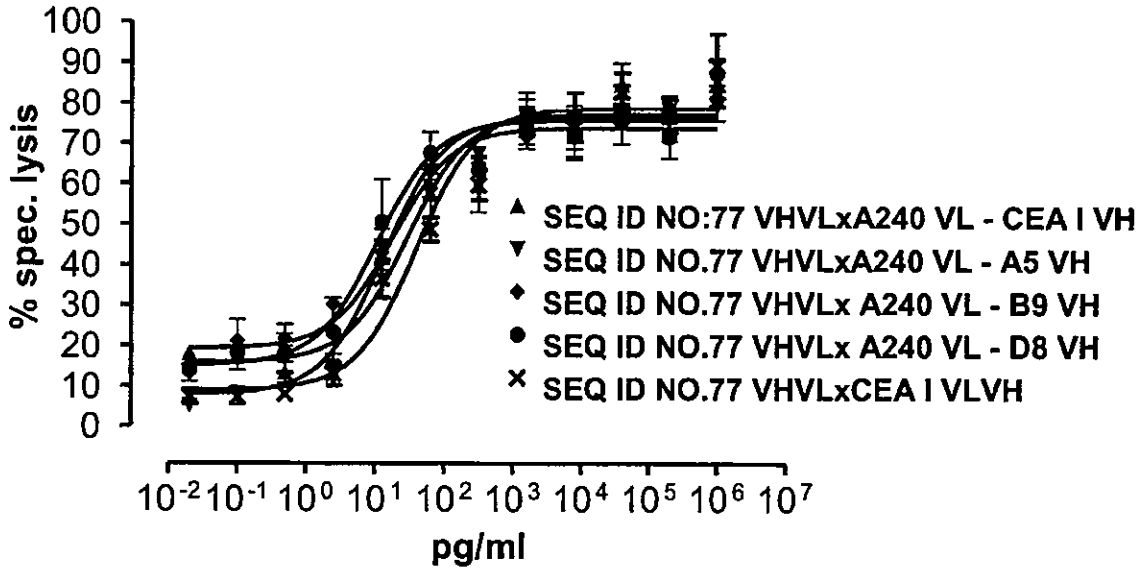
	EC 50 [pg/ml]
A240 VL-D8 VHxSEQ ID NO.77 VHVL	5.1
A240 VL-A5 VHxSEQ ID NO.77 VHVL	7.7
A240 VL-B9 VHxSEQ ID NO.77 VHVL	6.7
A240 VL-CEAI VHxSEQ ID NO.77 VHVL	135.9

FIGURE 17



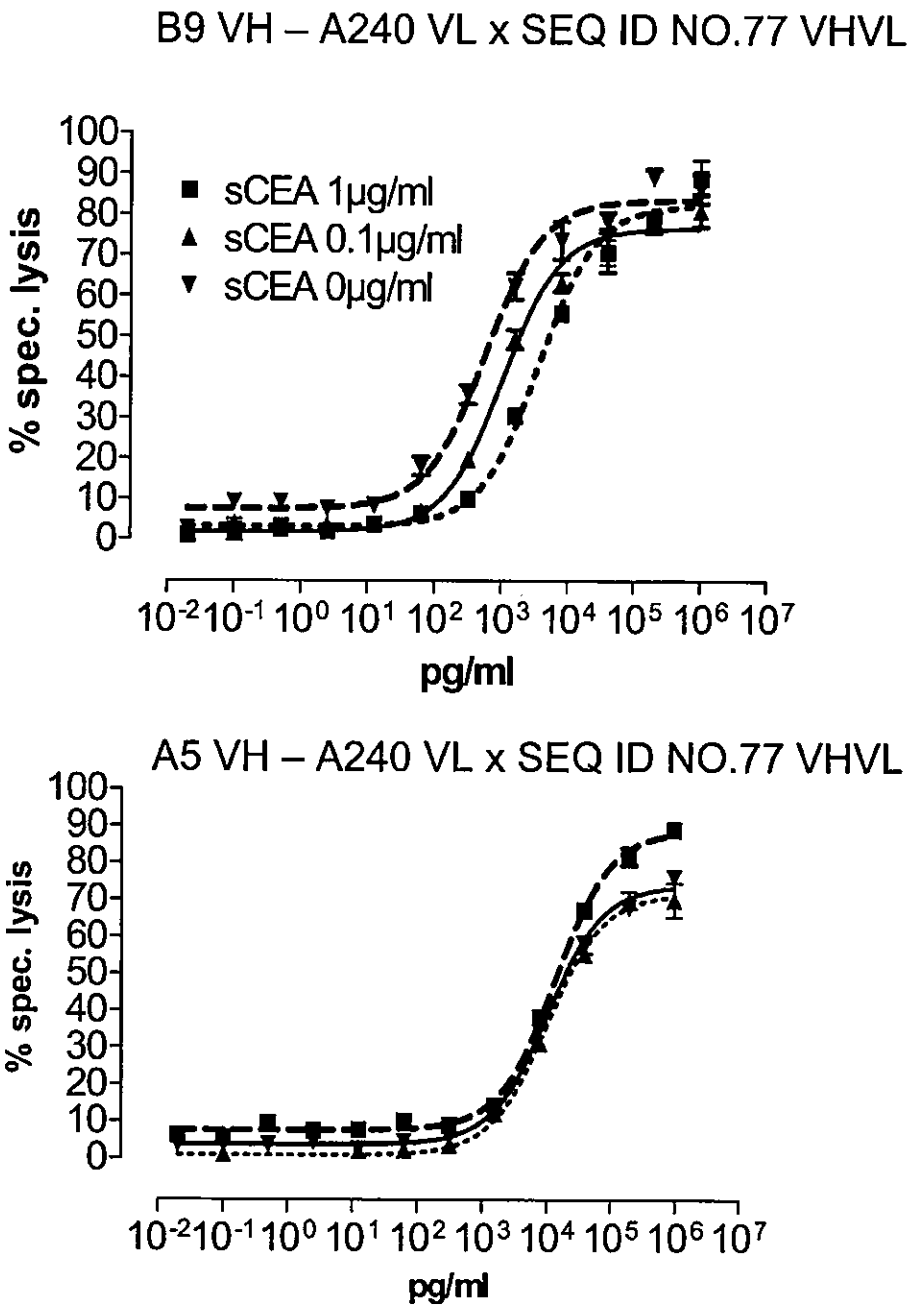
	EC 50 [ng/ml]
SEQ ID NO.77 VHVL x B9 VH -A240 VL	0.042
SEQ ID NO.77 VHVL x CEA I VLVH	0.092
SEQ ID NO.77 VHVL x A5 VH-A240 VL	7.5
SEQ ID NO.77 VHVL x D8 VH-A240 VL	13.8
SEQ ID NO.77 VHVL x CEA I VH-A240 VL	15.6

FIGURE 18



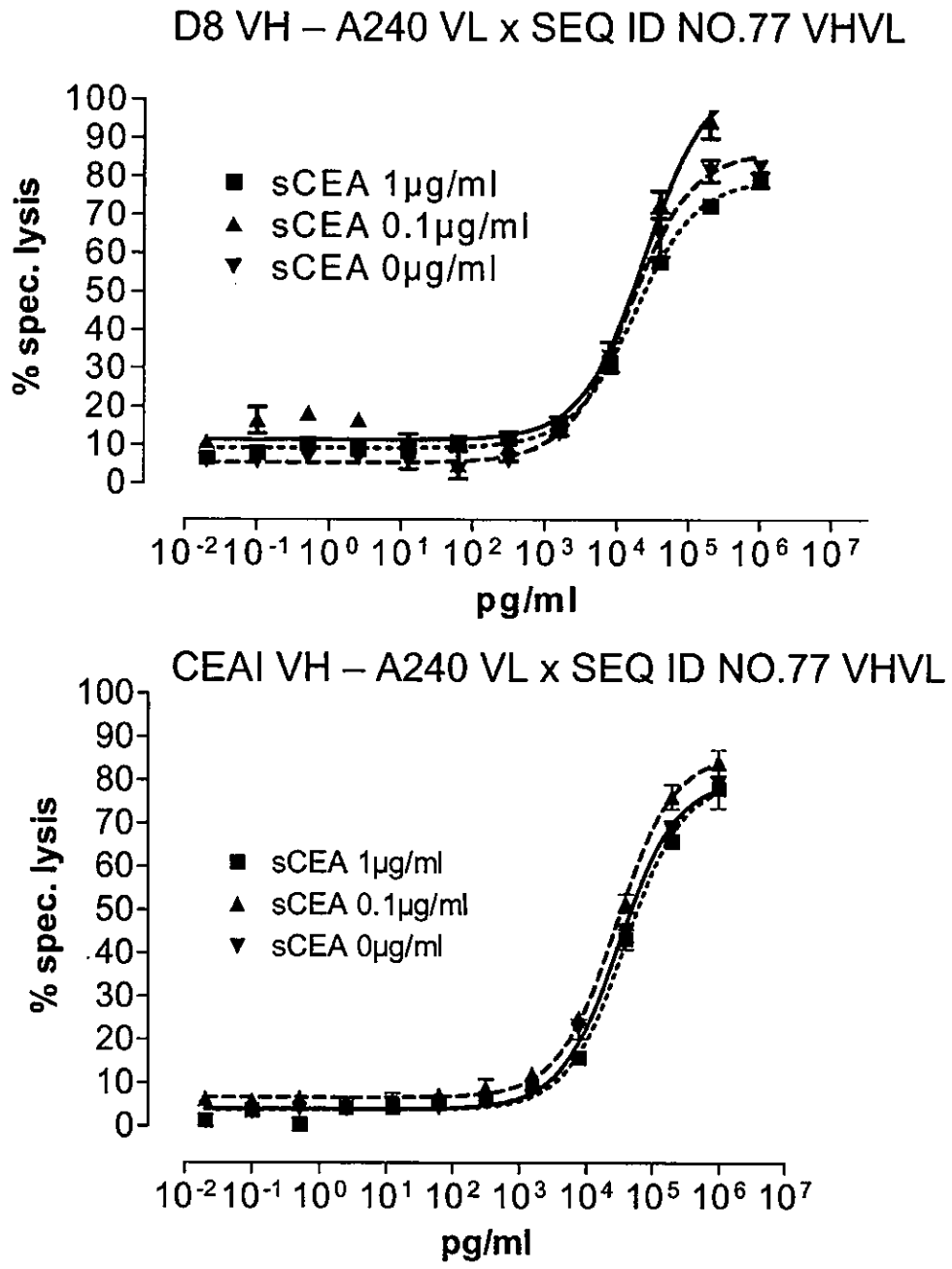
	EC 50 [pg/ml]
SEQ ID NO:77 VHVL x A240 VL - D8 VH	11.0
SEQ ID NO:77 VHVL x A240 VL - A5 VH	13.5
SEQ ID NO:77 VHVL x A240 VL - B9 VH	18.4
SEQ ID NO:77 VHVL x A240 VL - CEA I VH	29.8
SEQ ID NO:77 VHVL x CEA I VLVH	40.0

FIGURE 19



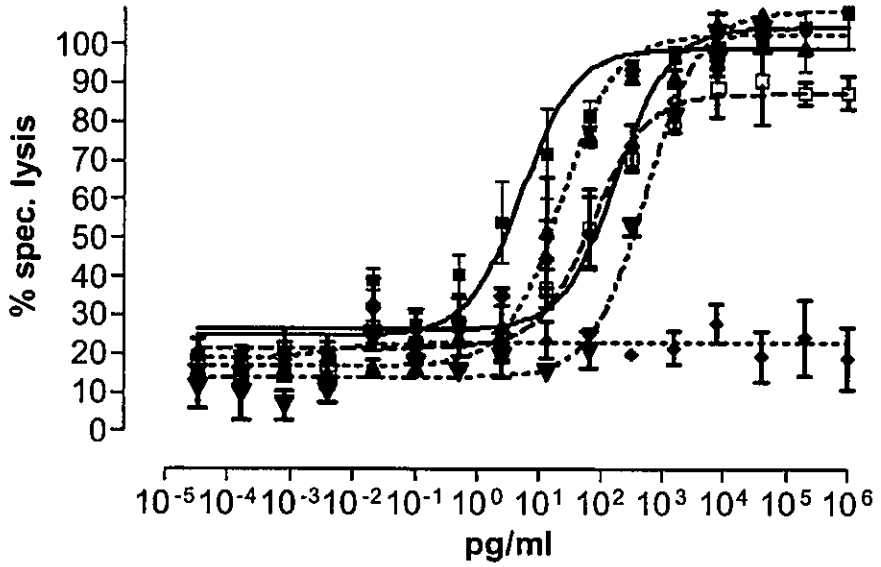
Sol. CEA [µg/ml]	0	0.1	1
B9 VH – A240 VL x SEQ ID NO.77 VHVL EC50 [ng/ml]	0.58	1.04	3.65
A5 VH – A240 VL x SEQ ID NO.77 VHVL EC50 [ng/ml]	10.5	10.4	14.0

FIGURE 20



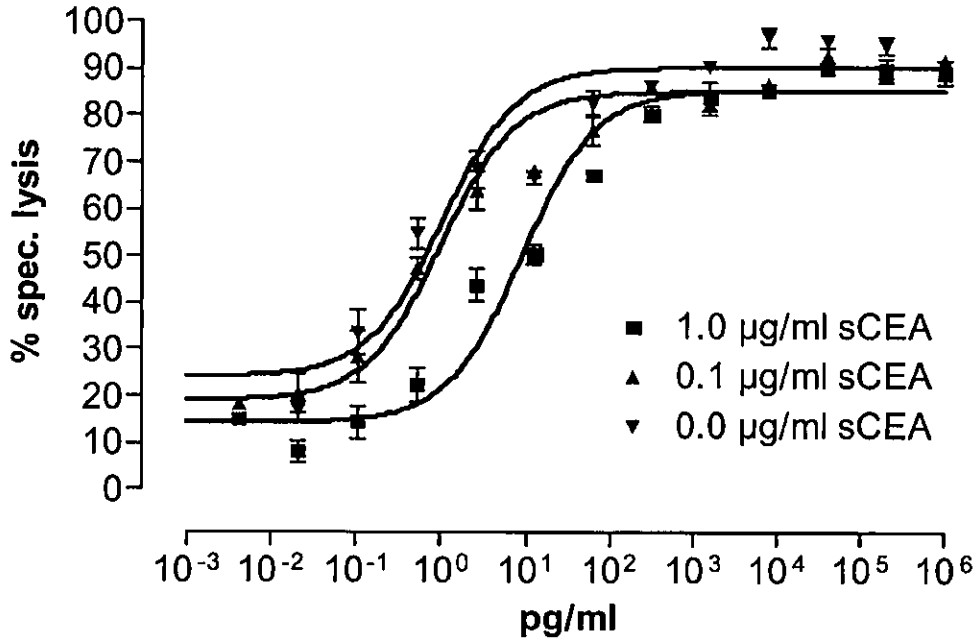
Sol. CEA [µg/ml]	**0**	**0.1**	**1**
D8 VH – A240 VL x SEQ ID NO.77 VHVL EC50 [ng/ml]	15.1	24.1	17.5
CEAI VH– A240 VL x SEQ ID NO.77 VHVL EC50 [ng/ml]	31.6	28.8	39.0

FIGURE 21



	EC 50 [pg/ml]
A240(VL)-B9(VH) x SEQ ID NO.77 VHVL	5.3
SEQ ID NO.77 VHVL x A240(VL)-B9(VH)	22.9
SEQ ID NO.77 VHVL x B9(VH) A240(VL)	74.2
B9(VH) A240(VL) x SEQ ID NO.77 VHVL	178.2
SEQ ID NO.77 VHVL x CEA I	538.6
Negative Control	n.a.

FIGURE 22



Sol. CEA [µg/ml]	0	0.1	1
A240 VL – B9 VH x SEQ ID NO.77 VHVL EC50 [pg/ml]	1.0	1.0	8.9

FIGURE 23

High Resolution Cation Exchange Chromatography

of A240 VL–B9 VH x SEQ ID NO.77 VHVL

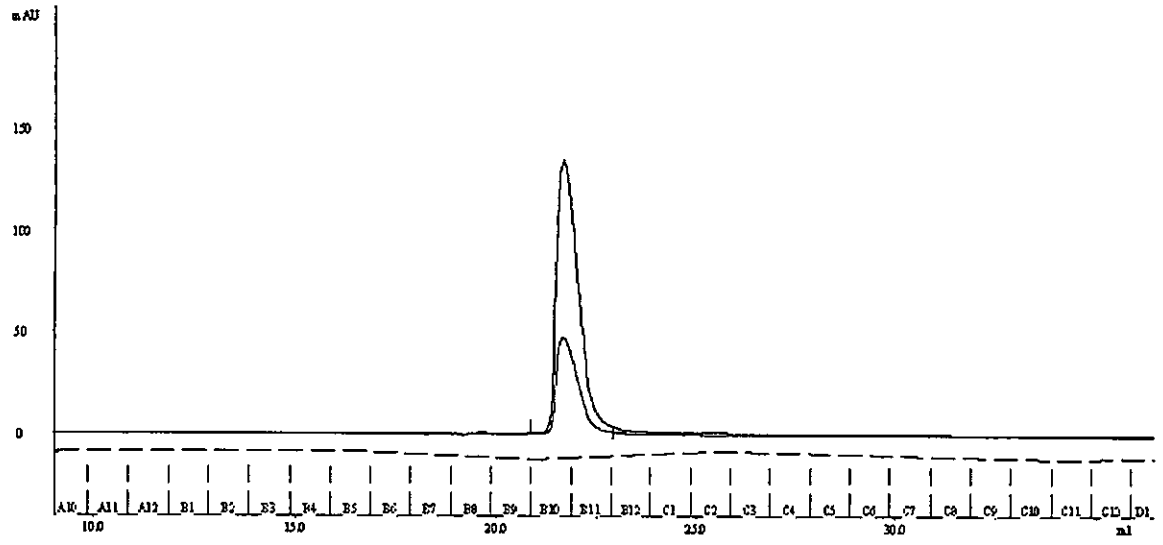
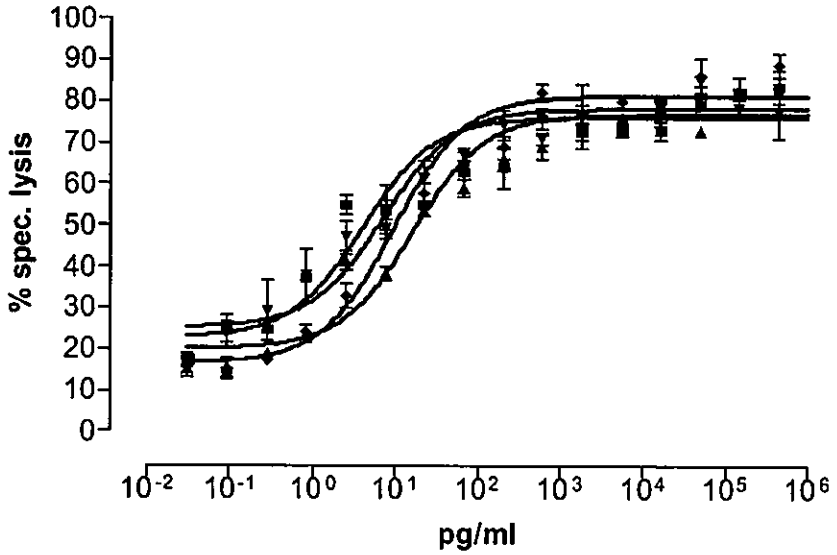


FIGURE 24

Protein stability testing of A240 VL–B9 VHxSEQ ID NO.77 VHVL in human plasma



	EC 50 [pg/ml]
■ Incubation for 24 h in plasma at 37 °C	**4.0**
▲ Incubation for 24 h in plasma at 4 °C	**16.5**
● Protein dilution immediately before the assay in RPMI	**7.1**
♦ Protein dilution immediately before the assay in plasma	**9.4**

FIGURE 25

High Resolution Cation Exchange Chromatography

of SEQ ID NO.77 VHVLxE12 VH–A240 VL

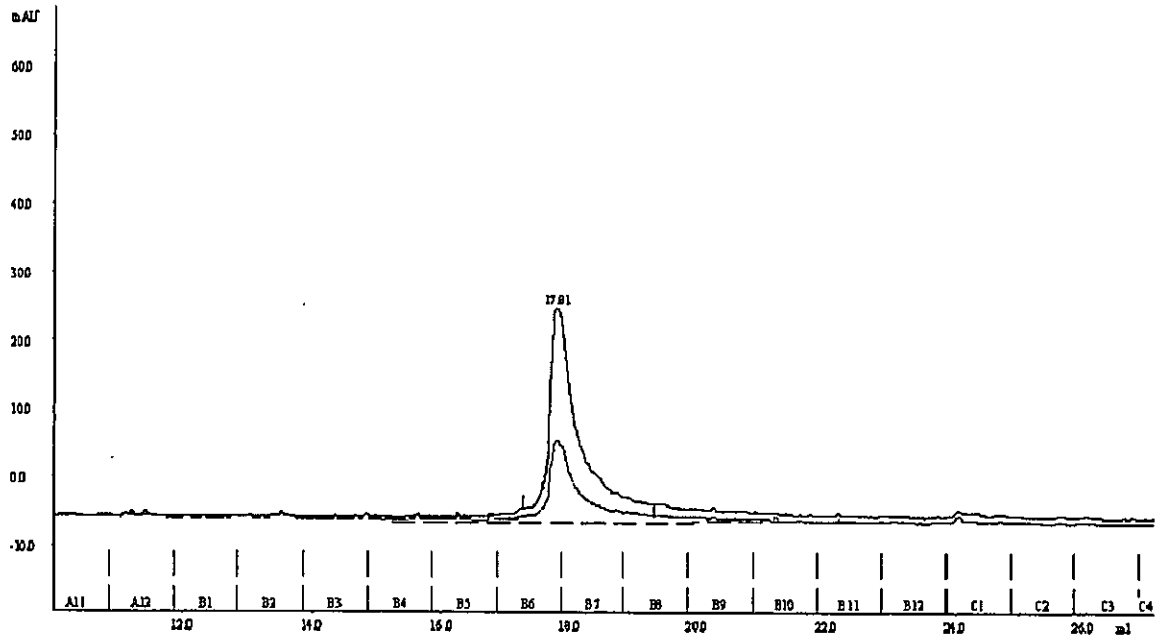
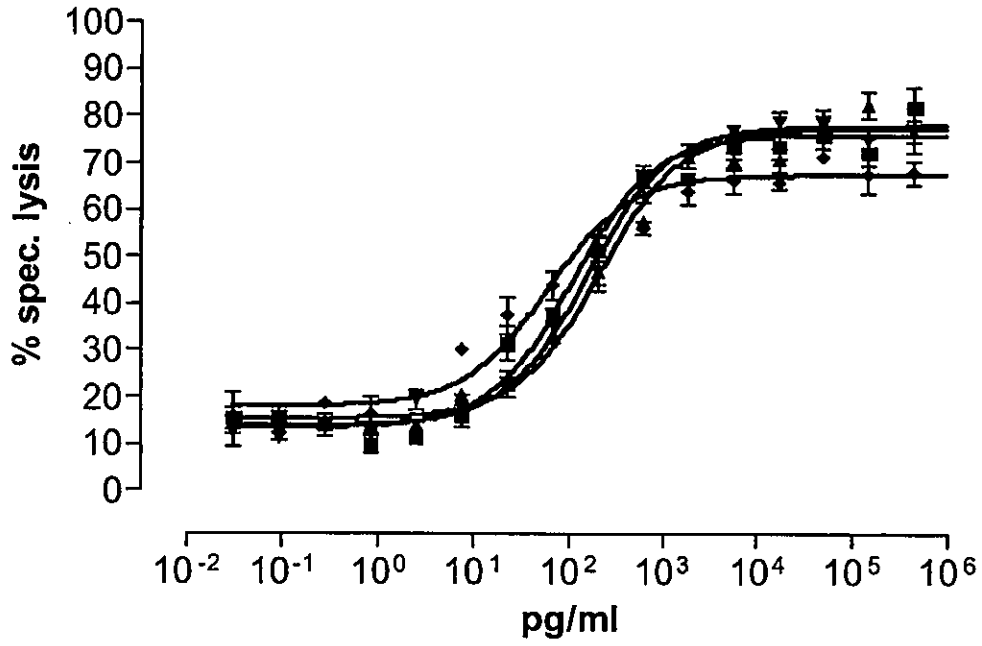


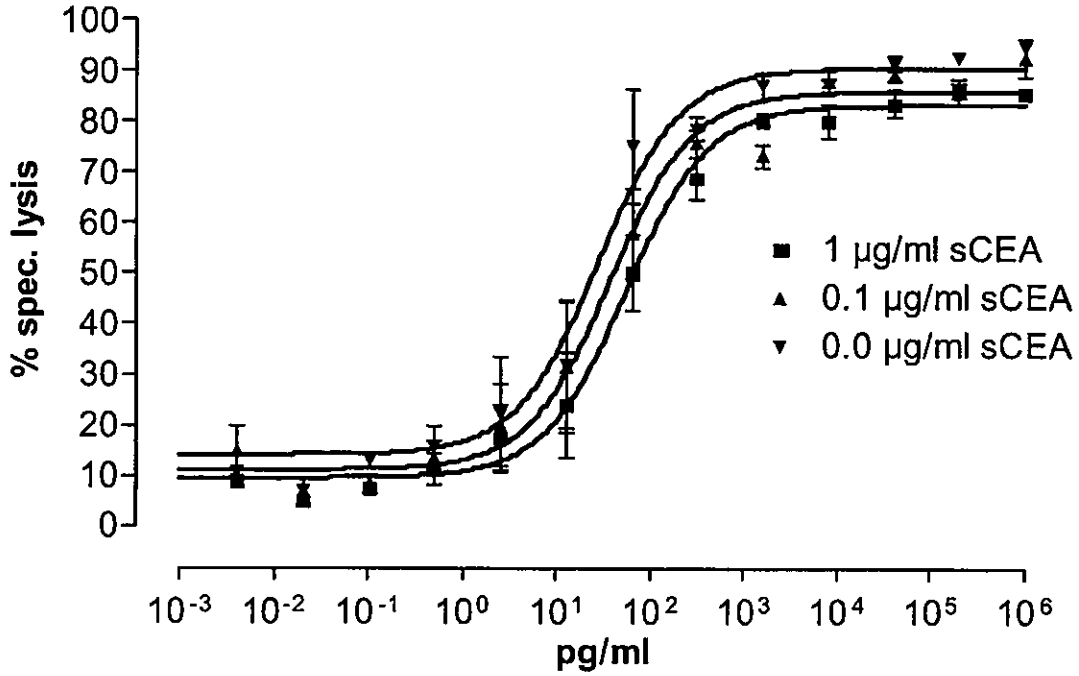
FIGURE 26

Protein stability testing of SEQ ID NO.77 VHVLxE12 VH–A240 VL in human plasma



	EC 50 [pg/ml]
■ Incubation for 24 h in plasma at 37 °C	**111.4**
▲ Incubation for 24 h in plasma at 4 °C	**214.0**
● Protein dilution immediately before the assay in RPMI	**159.5**
♦ Protein dilution immediately before the assay in plasma	**59.1**

FIGURE 27



Sol. CEA [µg/ml]	0	0.1	1
SEQ ID NO.77 VHVL x E12 VH - A240 VL EC50 [pg/ml]	28.2	37.6	55.3