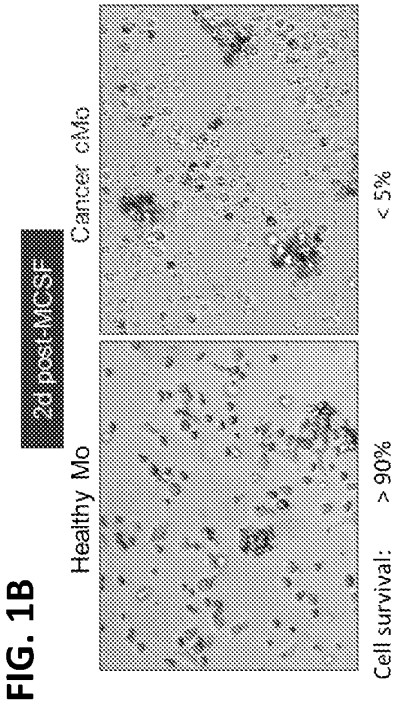
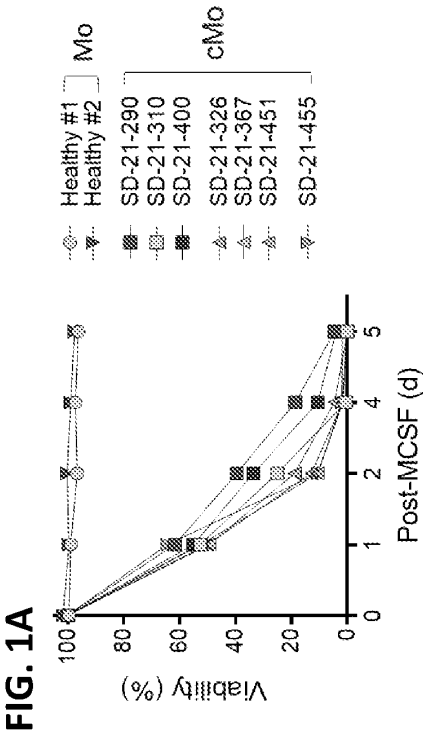




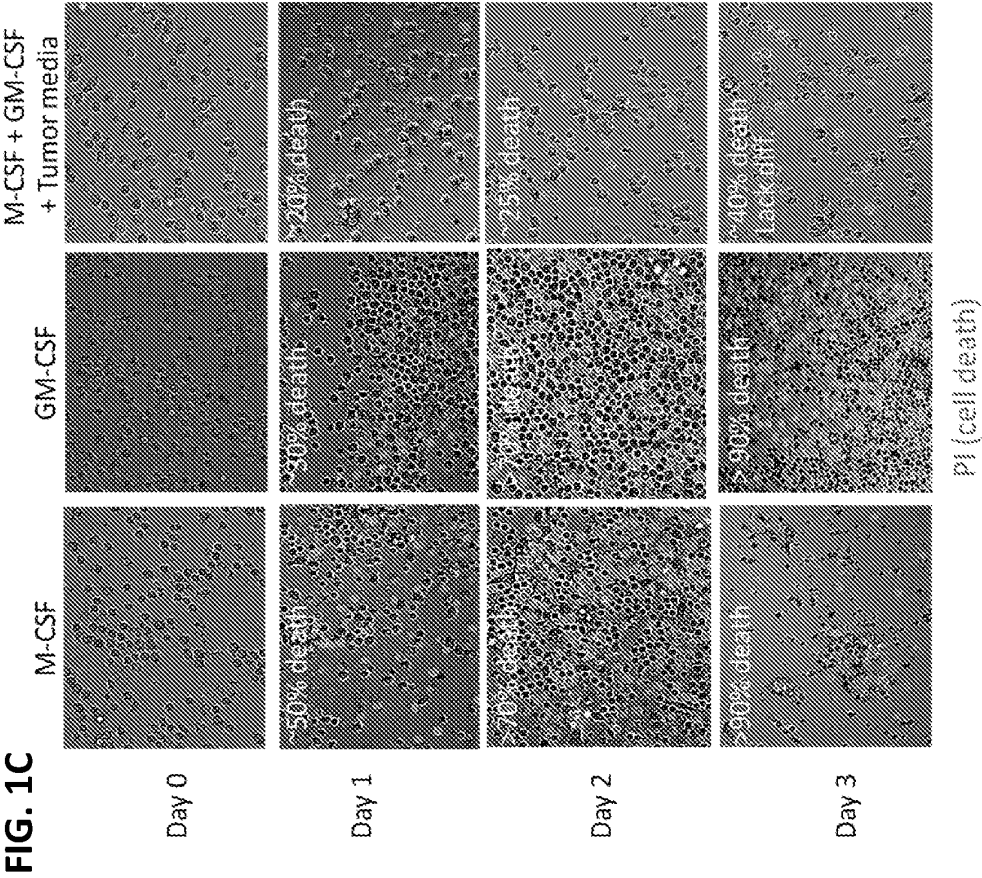


FIG. 1D

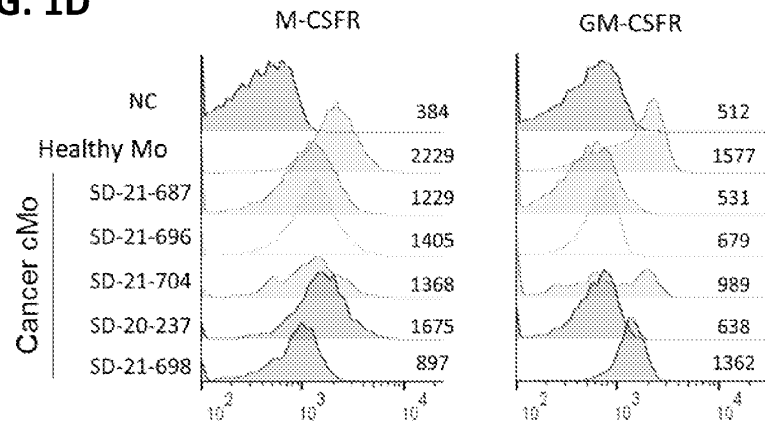


FIG. 1E

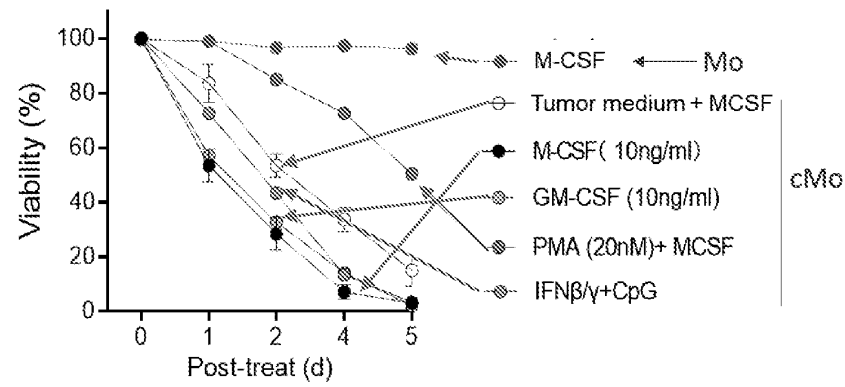


FIG. 2A

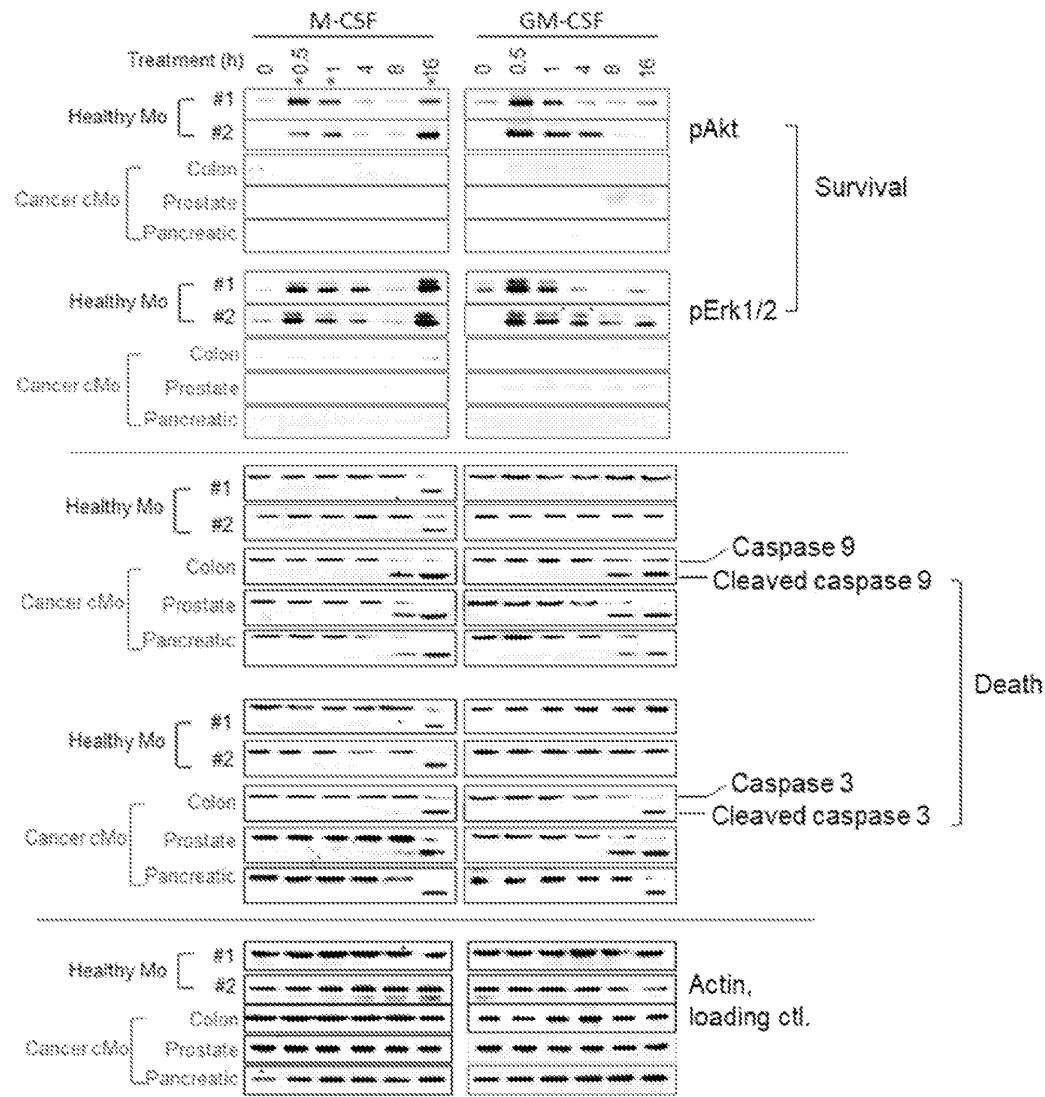


FIG. 2B

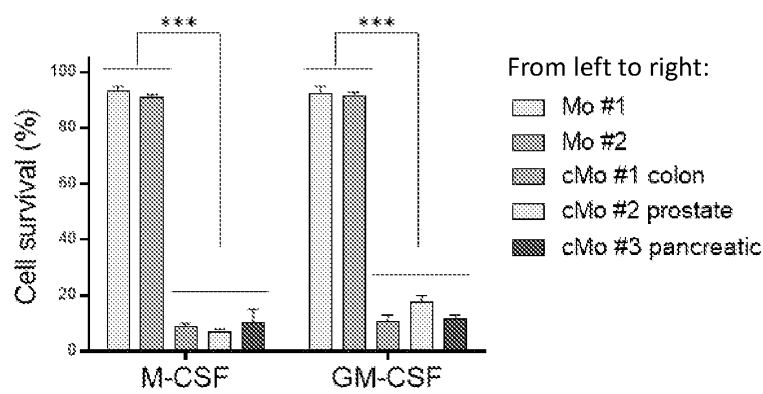


FIG. 2C

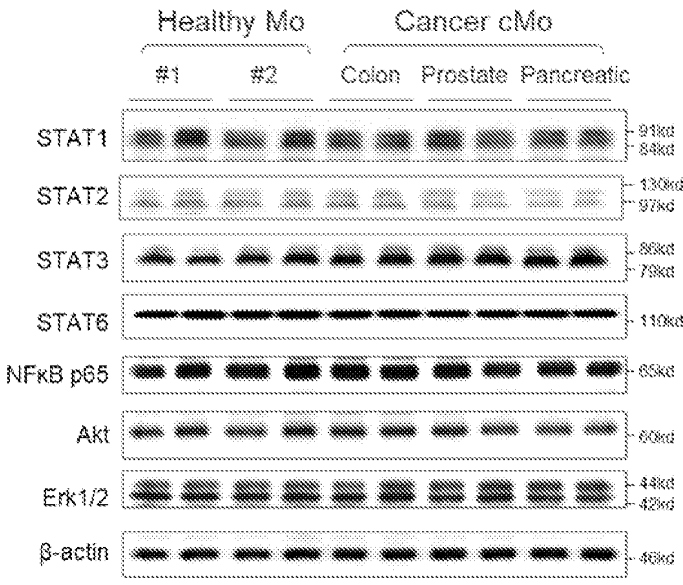


FIG. 3A

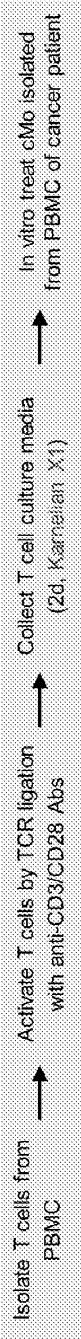
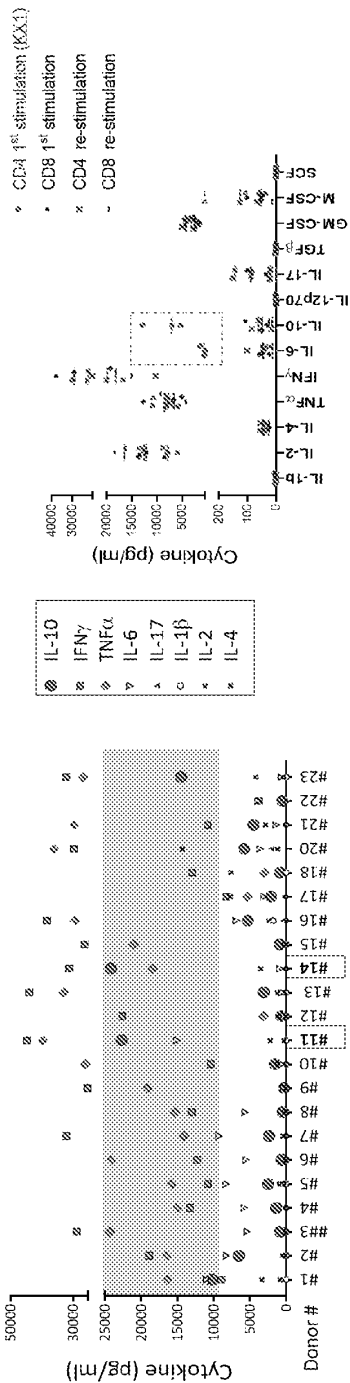
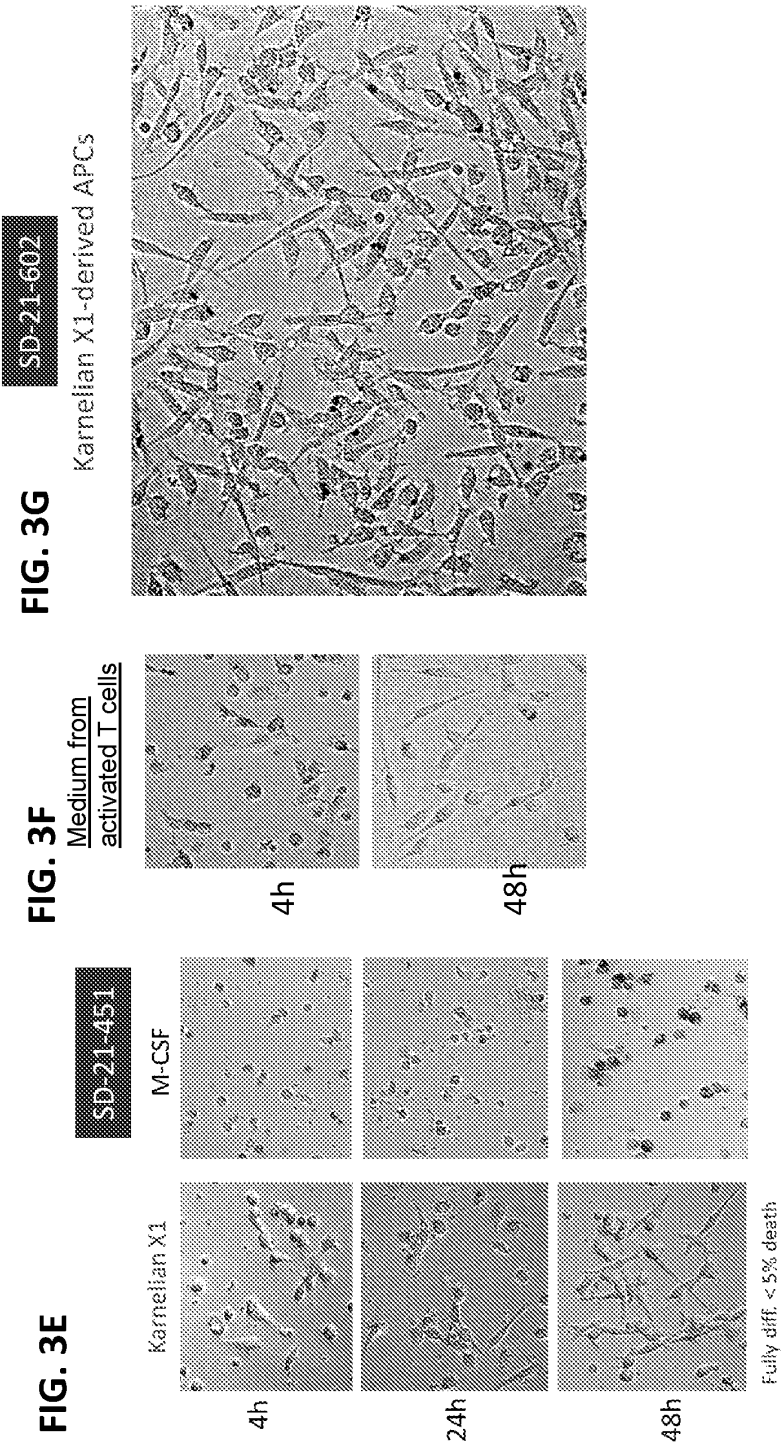


FIG. 3B

T cells from "autoimmune flare"	Cytokine (pg/ml)	IFN γ	IL-2	IL-10	TNF α	GM-CSF	IL-6	IL-17A	M-CSF	IL-4	TGF β	SCF	IL-12
day1	23148 ⁺¹¹²⁶	10138 ⁺²⁴⁷²	9147 ⁺¹⁴⁸⁰	4638 ⁺⁶⁹⁹	49128	815283	3228	411	8010	ND	ND	311	
day2	56832 ⁺⁷²⁴⁰	3132 ⁺³⁷²	23370 ⁺¹⁵⁷⁰	3007 ⁺⁵⁴⁷⁶	32614	1006777	29110	1918	156119	ND	ND	ND	
day3	25025 ⁺³³⁵⁴	303188	14372 ⁺¹³²⁷¹	230691 ⁺³⁸⁶	267141	431266	49111	59110	9311	ND	ND	ND	
													
T cells from healthy donors	Cytokine (pg/ml)	IFN γ	IL-2	IL-10	TNF α	GM-CSF	IL-6	IL-17A	M-CSF	IL-4	TGF β	SCF	IL-12
day1	21548 ⁺²⁵⁸¹	9861 ⁺¹⁸²⁹	3271164	41621319	53117	82180	36112	812	35111	ND	ND	ND	
day2	49769 ⁺¹⁸³⁶	28741668	9701465	36031291	290141	32129	2519	2915	125116	ND	ND	ND	
day3	2037211941	219167	6191383	19281211	221114	36114	34118	3618	84110	ND	ND	ND	

FIG. 3C





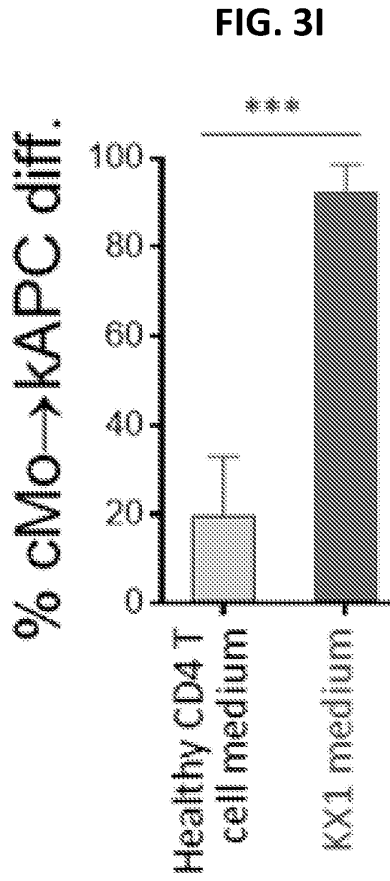
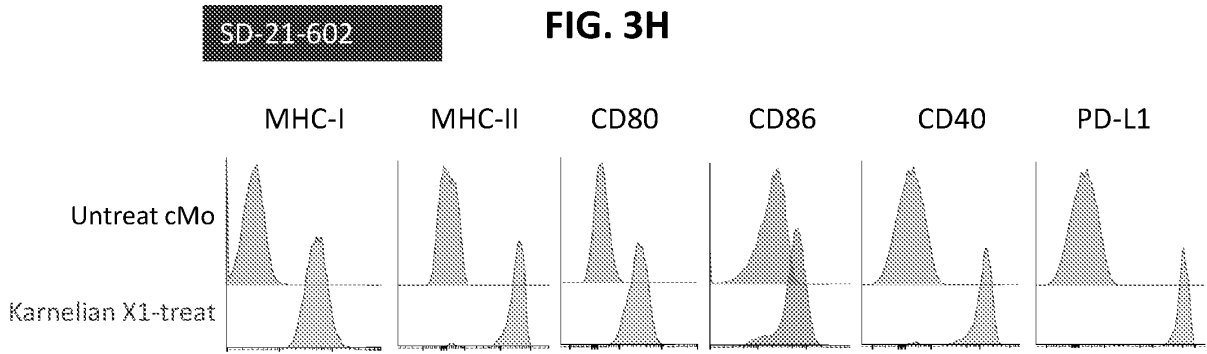


FIG. 4

Ex vivo differentiating monocytes from healthy donors or cancer patients by M-CSF, GM-CSF or Karmelian X1

Human Whole Blood (cc) or PBMC		Cell Number (x10 ⁶ /10cc blood)					Monocyte Differentiation	
		PBMC total	CD66+ G-MDSC	CD4	CD8	CD14+ Monocyte	5d M-CSF or GM-CSF (Survive & Diff.)	2d Kamelian X1 (Survive & Diff.)
	Healthy donor #1	8.3	0.2	2.0	2.1	2.4	>95%; Diff. ++++	>90%; Diff. ++++
	Healthy donor #2	9.0	0.6	2.3	1.8	1.6	>90%; Diff. ++++	>90%; Diff. ++++
	Healthy donor #3	10.5	<0.1	2.9	2.7	2.4	>90%; Diff. ++++	>90%; Diff. ++++
CHTN/Duke SD-21-290	Liver Cancer #1 (10cc), 58 y/o, M, stage II, no prior treatment	60.0	-	-	-	3.0	Fail: M-CSF <1%; GM-CSF <4%	N.A.
SD-21-310	Liver Cancer #12 (15cc), 43 y/o, M, Caucasian- left hepatic mets colorectal primary adenocarcinoma	0.7	-	-	-	-	Fail: M-CSF <1%; GM-CSF <3%	N.A.
SD-21-400	Liver #3 Metastatic urothelial carcinoma Liver Segment (20cc), 51y M, Caucasian.	37.0	25.3	1.3	1.5	5.2	Fail: M-CSF <1%; GM-CSF <7%	N.A.
SD-21-326	Kidney Cancer #1 (15cc), 70 y/o, Female, Caucasian Clear cell renal cell carcinoma II/IV	80.0	39.8	-	-	1.6	Fail: M-CSF 0%; GM-CSF <8%	N.A.
SD-21-696	Liver #4 32 y/o Female, Caucasian, 12cc, met CRC to liver	10.8	5.72	-	-	1.96	Fail: M-CSF < 2%; GM-CSF <10%	>90%; diff. ++++
SD-21-699	Liver #5 75 y/o Male Caucasian, 9cc R hepatic lesion Cholangiocarcinoma	6.7	1.53	-	-	1.0	Trace: M-CSF<5%;GM- CSF<15%	>90%; diff. ++++
SD-21-704	Liver #6 73 y/o Male Caucasian Cholangiocarcinoma 15cc CHTN/Duke	10	1.5	2.45	0.7	0.98	Fail: M-CSF<1%; GM-CSF <4%	>90%; diff. ++++
SD-20-237	Liver #7 72 y/o Female Caucasian met colon cancer to liver 20cc	48.5	24.25	2.26	2.36	10.23	Trace: M-CSF<4%; GM- CSF<6%	>90%; diff. ++++
SD-21-367	Kidney Cancer #2 (10cc)	26.0	16.9	0.7	0.5	4.4	Fail: M-CSF <1%; GM-CSF <1%	>90%; diff. ++++
SD-21-451	Kidney Cancer #3 (10cc)	10.0	5.6	1.3	1.2	1.2	Fail: M-CSF 2%; GM-CSF <5%	>90%; diff. ++++
SD-21-599	Kidney Cancer #4 (16cc), 71y Male, Caucasian	3.1	0.2	0.5	0.3	1.2	Fail: M-CSF <1%; GM-CSF <1%	>90%; diff. ++++
SD-21-672	Kidney Cancer #5 (20cc) 49y M Caucasian	5	1.2	0.5	0.2	1.2	N.A.	>90%; diff. ++++
SD-21-687	Kidney Cancer #6 (11cc) 78y M Caucasian	10.9	4.6			1.4	Trace: M-CSF~5%; GM- CSF~2%	>90%; diff. ++++
SD-21-455	Endometrial Cancer #1 (7cc), 64 y/o F, African American	8.6	6.4	0.4	0.6	0.5	Fail: M-CSF <1%; GM-CSF ~6%	>90%; diff. ++++
SD-21-522	Endometrial Cancer #2 (15cc) 75y/o Female, African American	2.7	<0.1	0.6	0.9	0.3	Trace: M-CSF <3%; GM-CSF ~10%	>90%; diff. ++++
SD-21-516	Thymic epithelial neoplasma (thymoma) (8cc), 69y F, Caucasian, no known presurgical therapy	6.0	0.8	2.7	0.7	0.7	Trace: M-CSF ~2%; GM- CSF~15%	>90%; diff. ++++
SD-21-602	Stage IV adenocarcinoma lung cancer (13cc), 58y F	12.3	1.5	1.2	0.8	1.8	Trace: M-CSF~2%; GM- CSF~10%	>90%; diff. ++++
SD-21-623	Abdominal mass; High-grade pleomorphic spindle cell sarcoma	14	6.8	0.3	0.2	2.4	Trace: M-CSF~7%; GM-CSF~ 5%	>90%; diff. ++++
SD-21-669	Chondrosarcoma 78y F Caucasian CHTN/Duke	14.5	10.6	0.3	0.1	0.8	Trace: M-CSF <1%; GM-CSF <6%	>90%; diff. ++++
Hospital apoptosis	55y F, Asian; Uterine smooth muscle cancer, liver& lung mets			~45% CD3+		25%	Fail: M-CSF <2%; GM-CSF N.A.	>90%; diff. ++++ In vitro cell neo-T: ++++
StemCell	Pancreatic cancer (PDAC), isolated PBMC	-	-	54.3% CD3+		25.5%	Trace: M-CSF <1% GM-CSF <12%	>90%; diff. ++++

FIG. 5A

Cytokine production by TCR-stimulated T cells

Cytokine (pg/ml)	IFN γ	IL-2	IL-10	TNF α	GM-CSF	IL-6	IL-17A	M-CSF	IL-4	TGF β	SCF	IL-12
Day 1	23148 ⁺⁴¹²⁶	10138 ⁺²⁴⁷¹	9147 ⁺¹⁴⁸⁰	4638 ⁺⁶³⁹	49 ⁺¹⁸	25 ⁺⁹	32 ⁺²⁸	4 ⁺¹	80 ⁺¹⁰	ND	ND	3 ⁺¹
Day 2	56832 ⁺⁷²⁴⁰	3132 ⁺⁵⁷²	23370 ⁺³⁵⁷⁹	3007.5 ⁺⁴⁷⁶	326 ⁺⁵⁴	29 ⁺⁷	29 ⁺¹⁰	19 ⁺³	166 ⁺¹⁹	ND	ND	ND
Day 3	25025 ⁺¹²⁶⁴	303 ⁺⁸⁸	14372 ⁺²³⁷¹	2306.9 ⁺³⁸⁸	267 ⁺⁴¹	31 ⁺⁴	49 ⁺¹¹	59 ⁺¹⁰	93 ⁺¹¹	ND	ND	ND

Karnelian X1

FIG. 5B

Karnelian X1 essential components

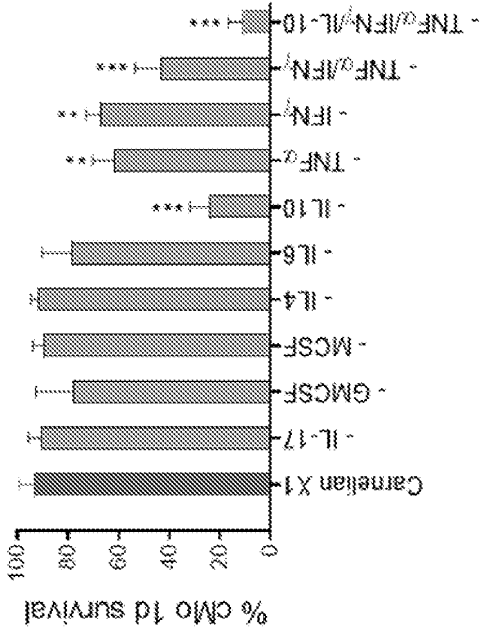


FIG. 5C

IL-10 dose-dependently enhances survival

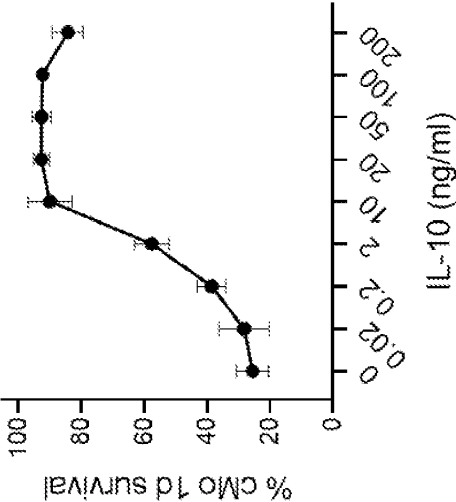


FIG. 5D

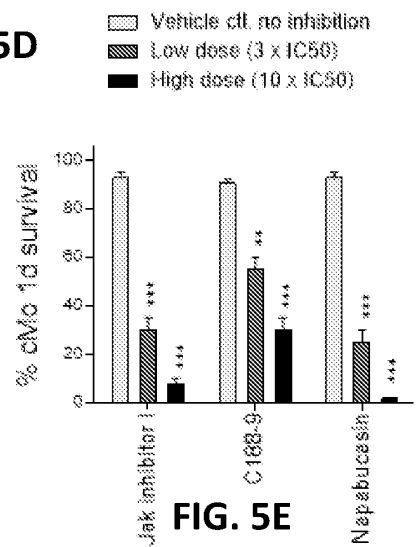


FIG. 5E

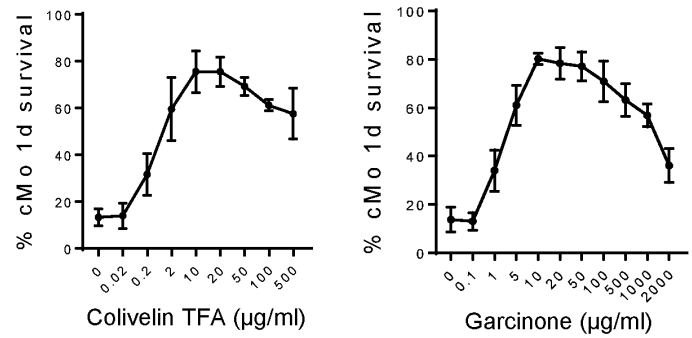


FIG. 5F

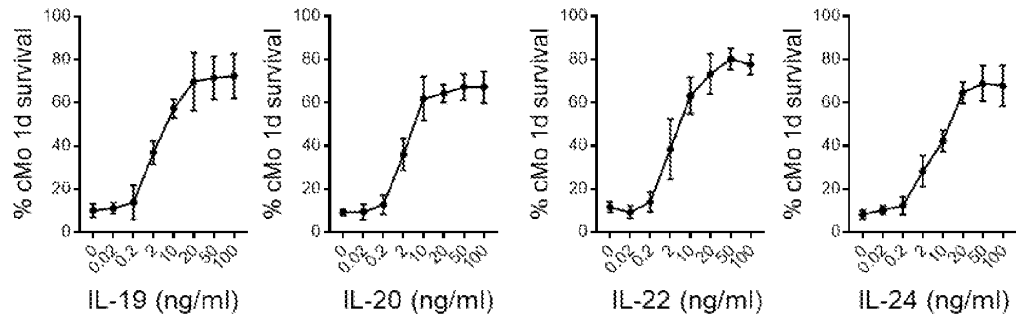


FIG. 5G

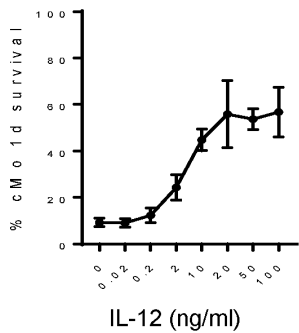


FIG. 5H

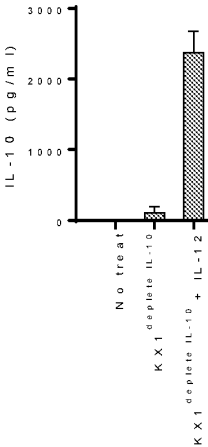
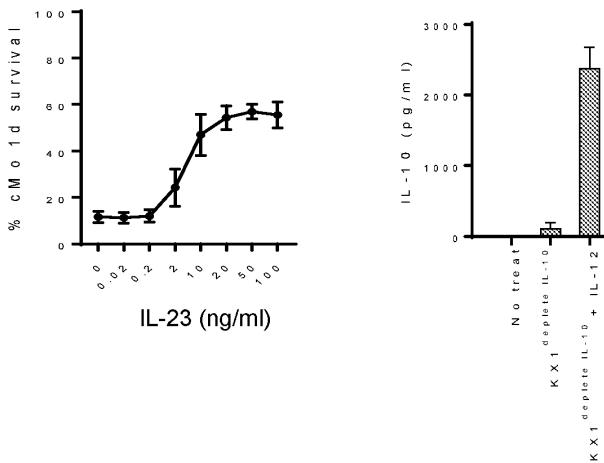


FIG. 5I

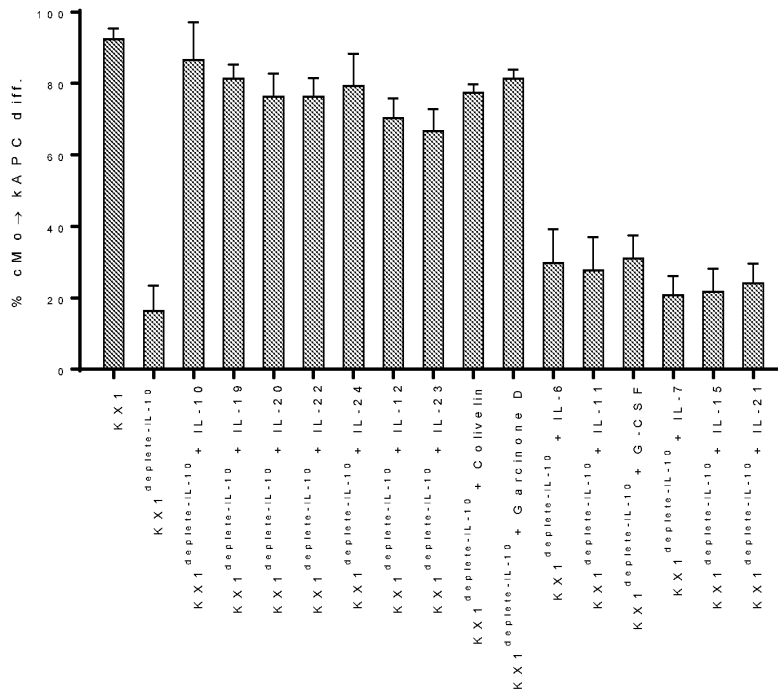


FIG. 5J

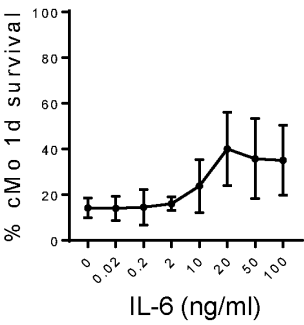
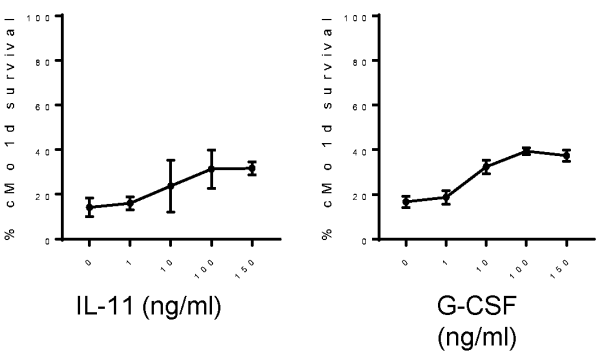


FIG. 5K



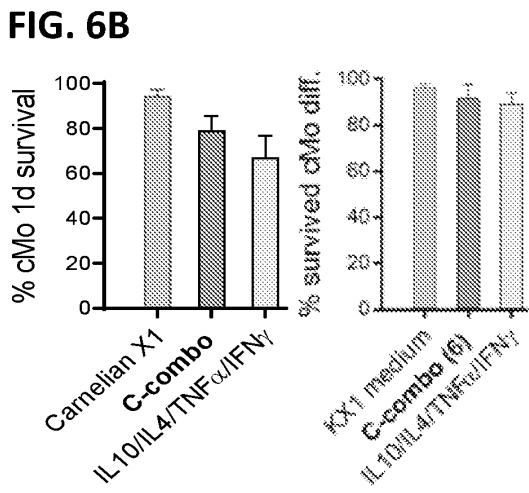
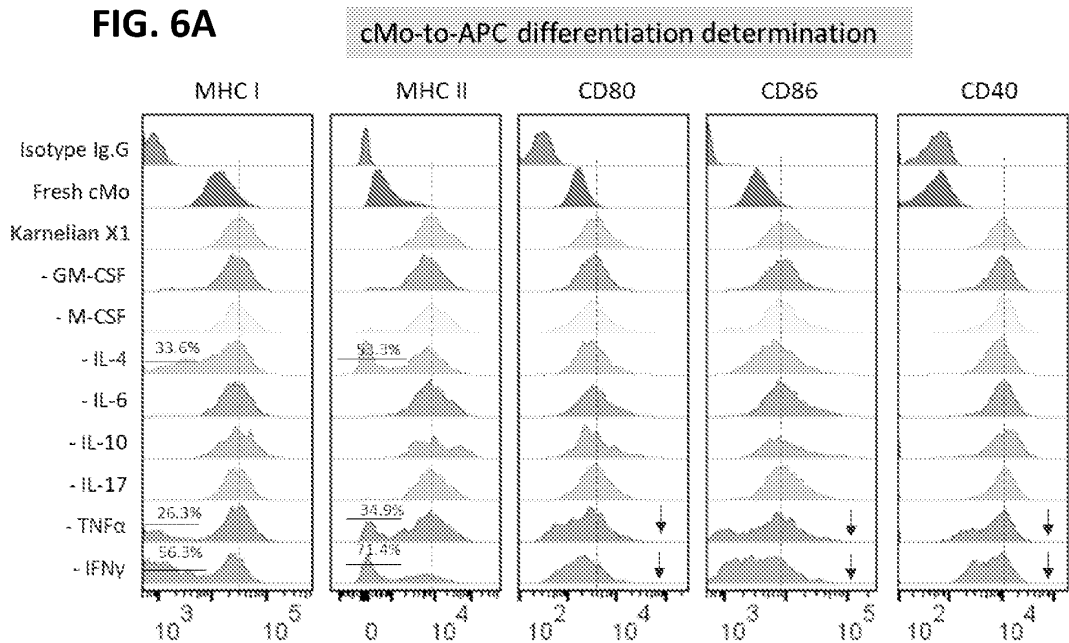


FIG. 6C

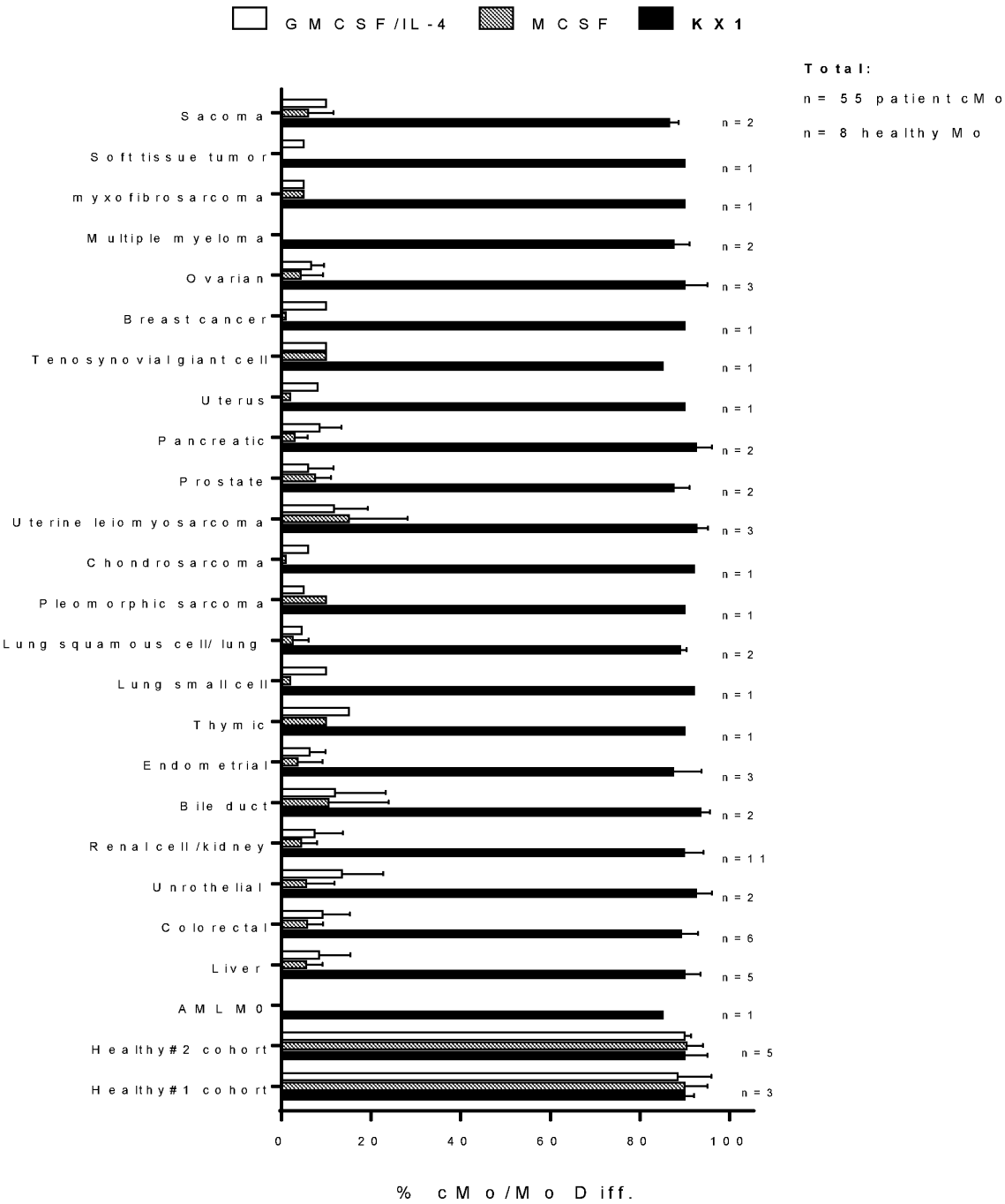
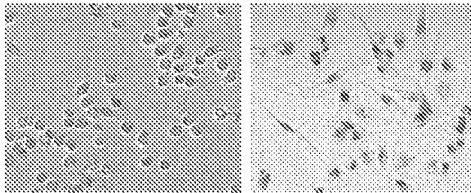


FIG. 6D



Treat cMo with C-combo

FIG. 6E

Role	cMo	
	Adhesion/Survival	APC diff.
Carnelian X1	☆☆☆☆☆	☆☆☆☆☆
IL-10	☆☆☆☆	☆
TNFα	☆☆☆	☆☆☆
IFNγ	☆☆☆	☆☆☆☆
IL-4	–	☆☆☆
GM-CSF	☆☆ / –	☆ / –
IL-6	☆ / –	–
IL-17	–	–
M-CSF	–	–
IL-2	–	–

FIG. 6F

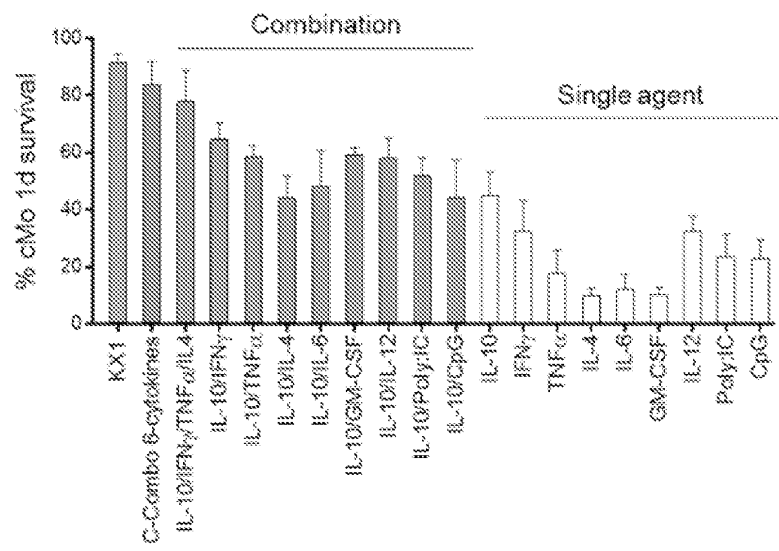


FIG. 6G

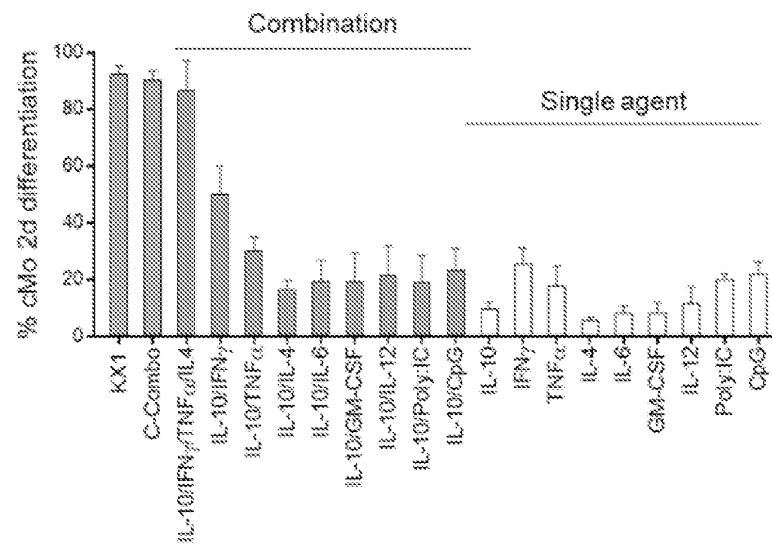
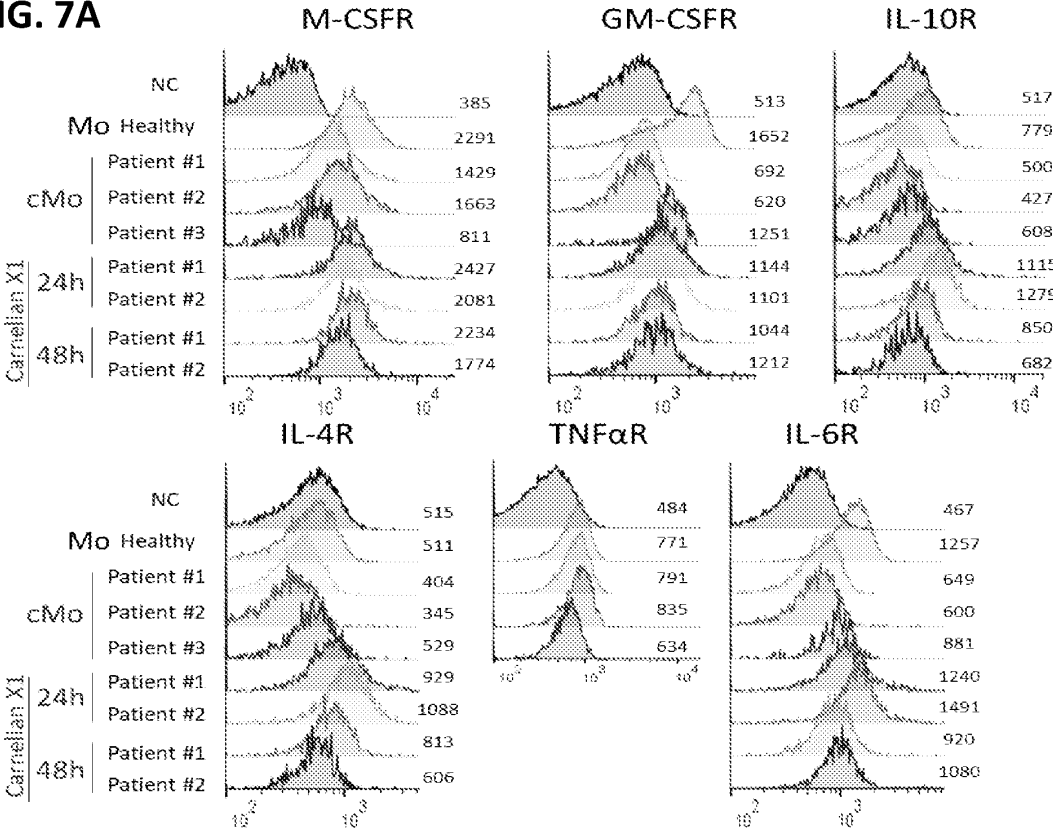


FIG. 7A



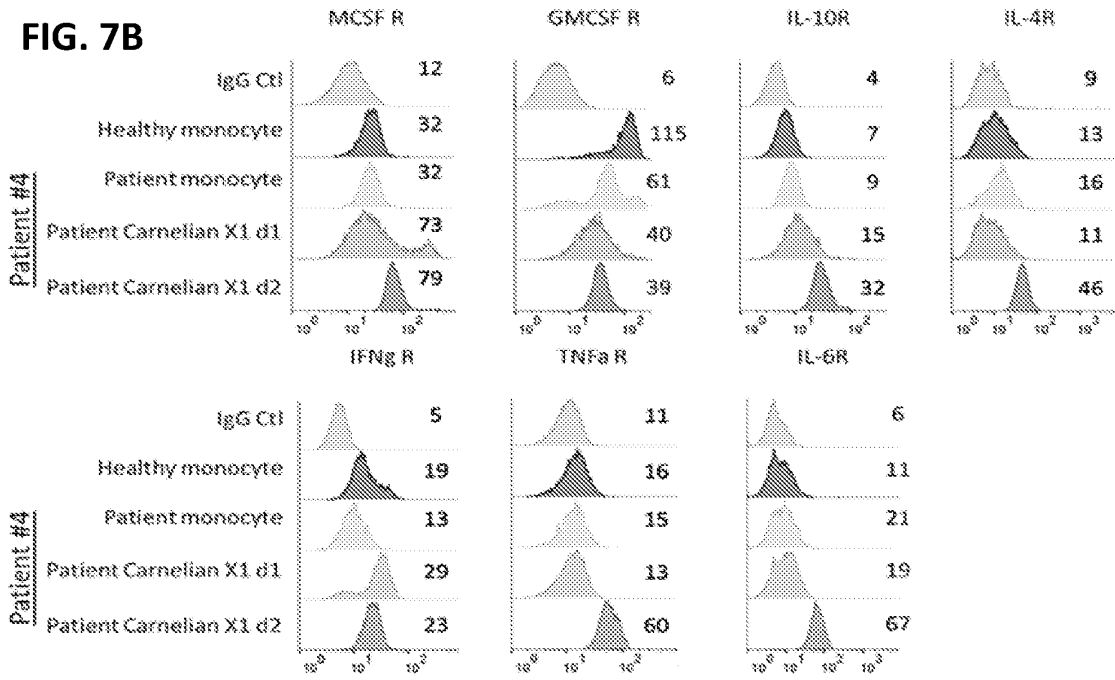


FIG. 8A

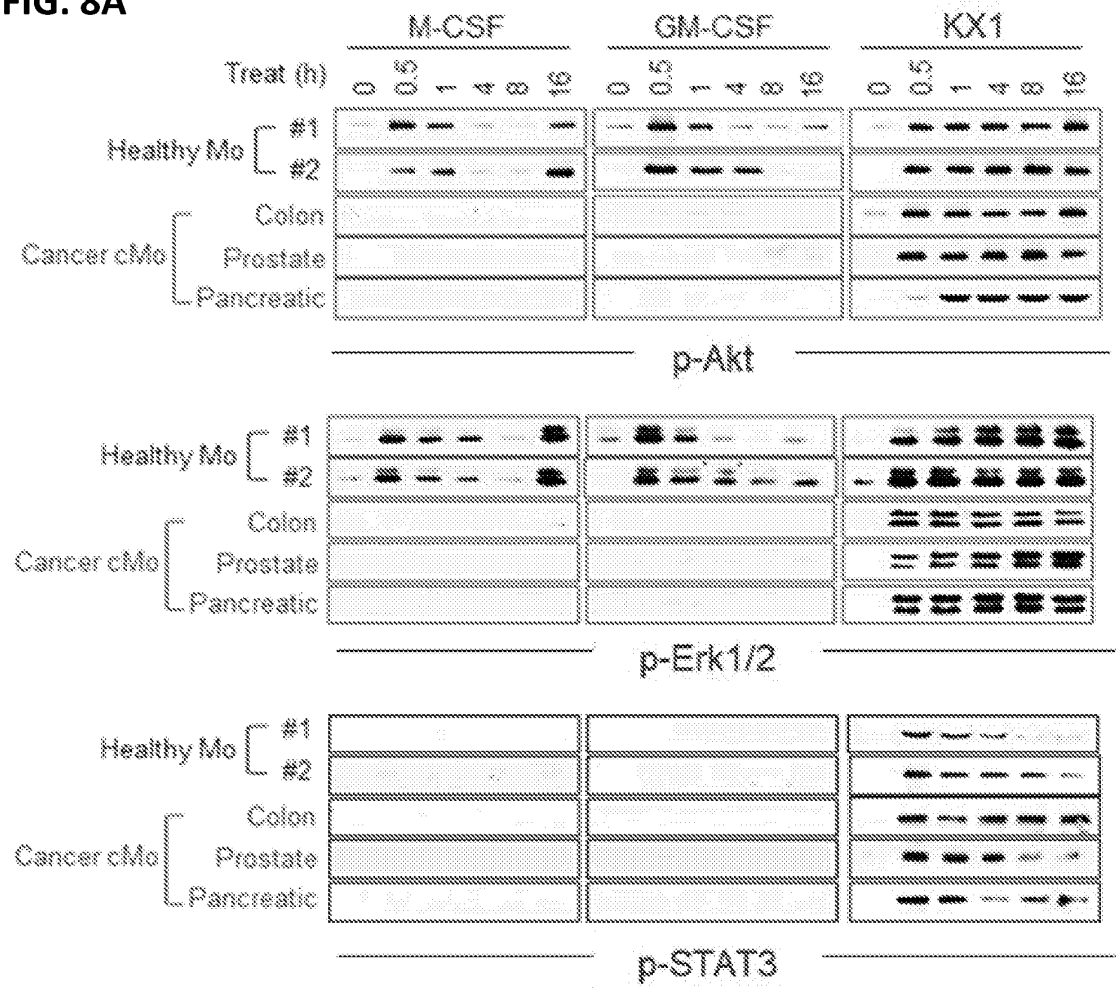


FIG. 8B

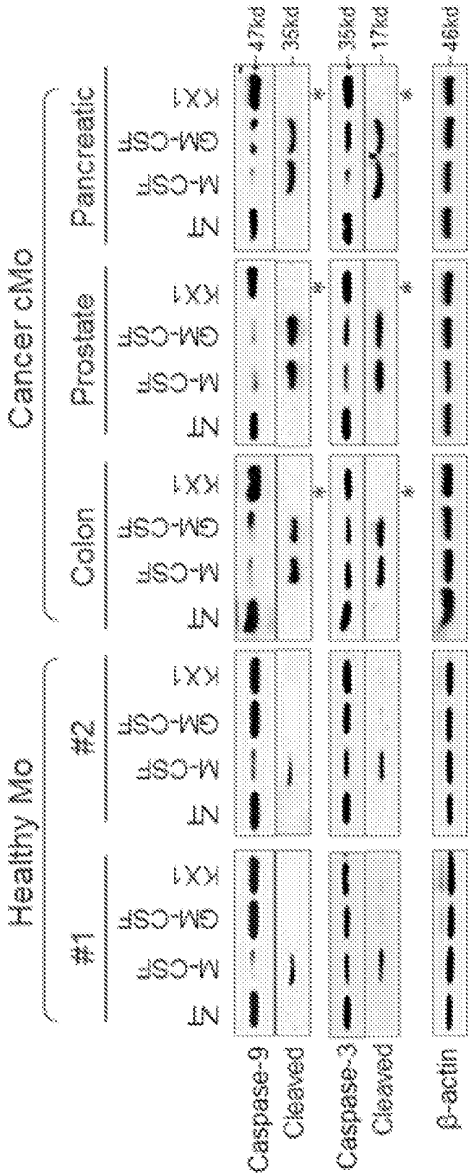


FIG. 8C

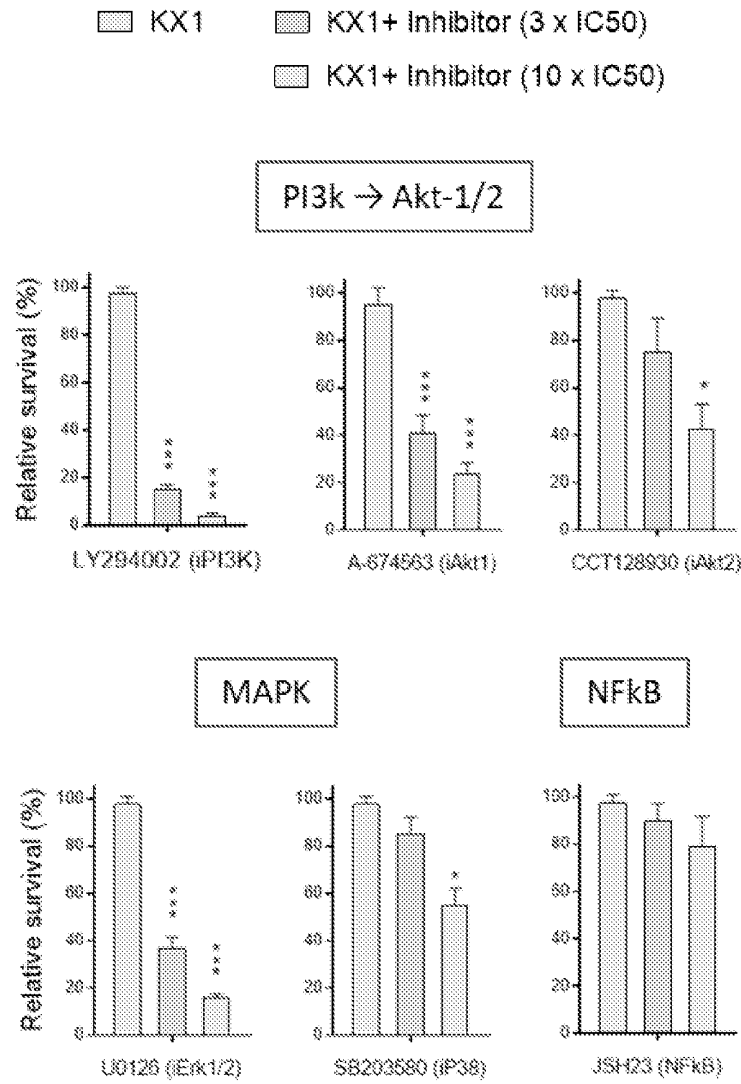


FIG. 9A

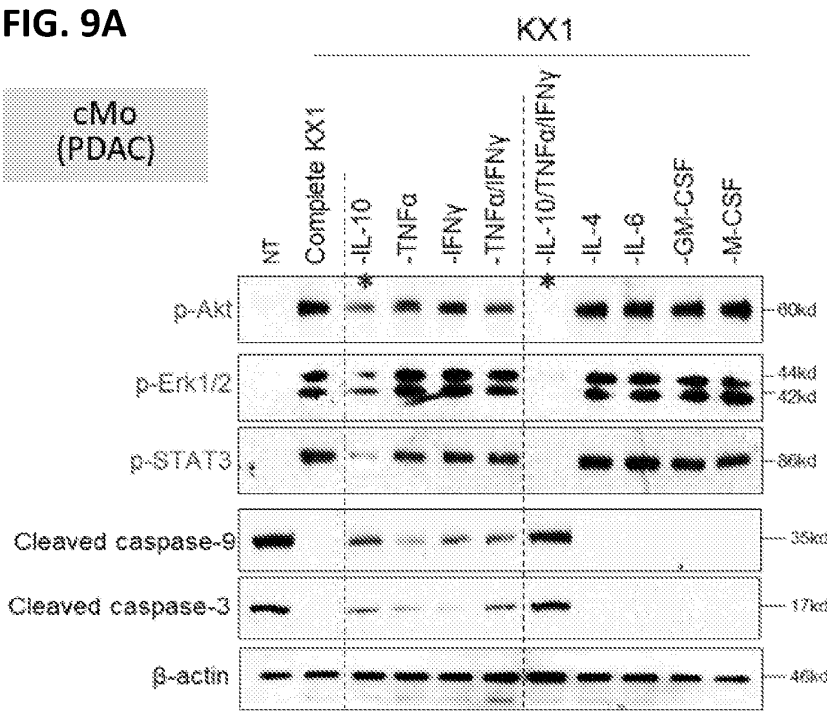


FIG. 9B

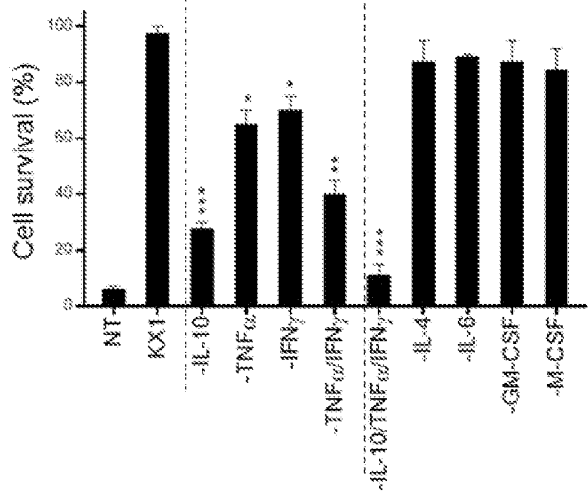


FIG. 9C

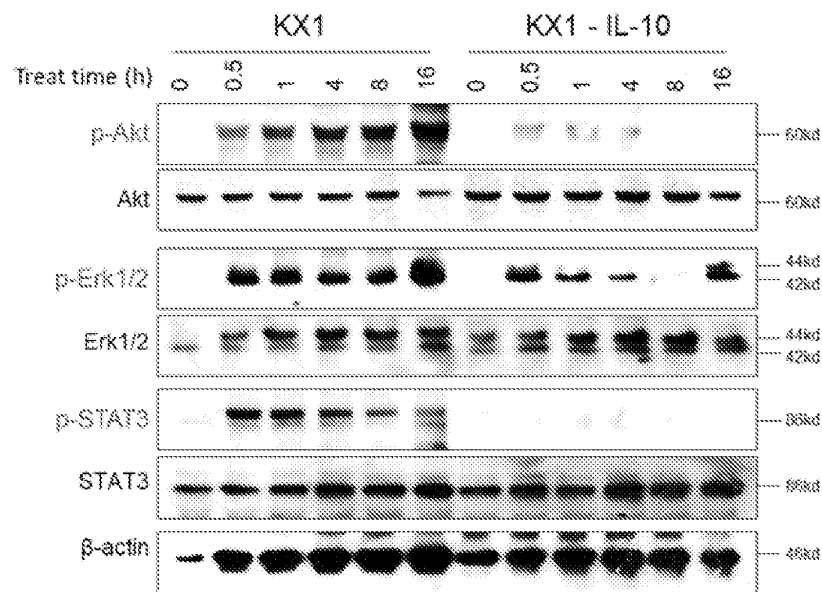


FIG. 9D

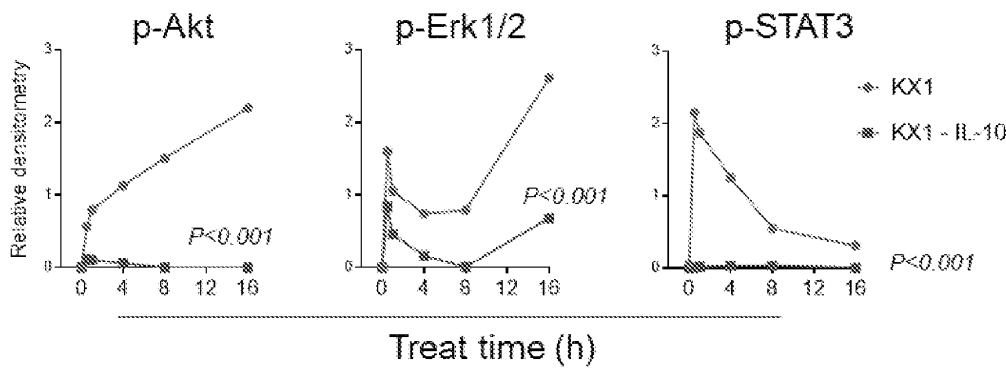
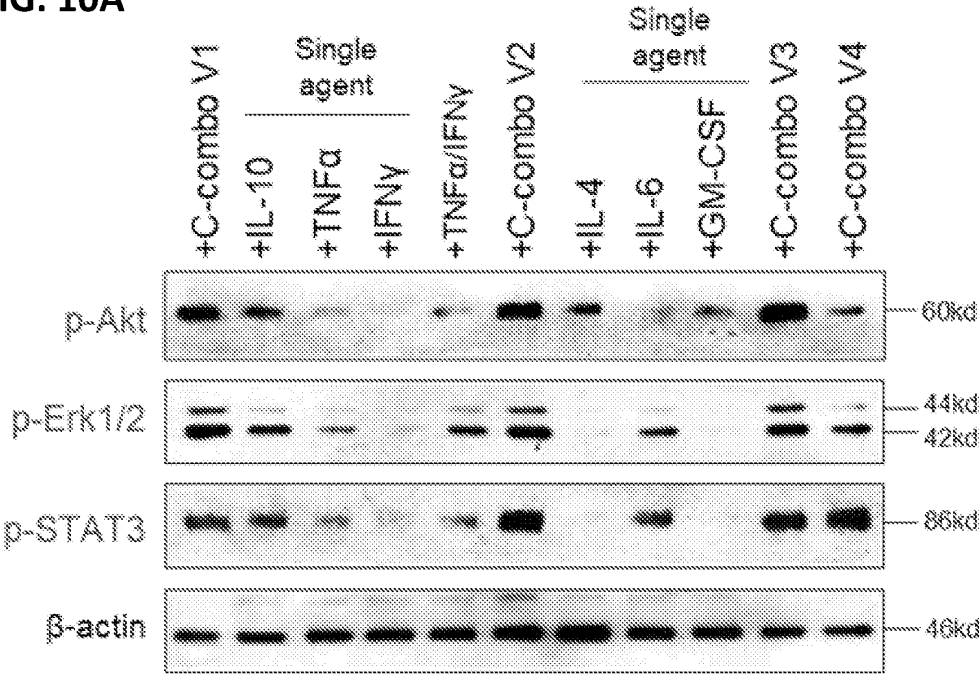
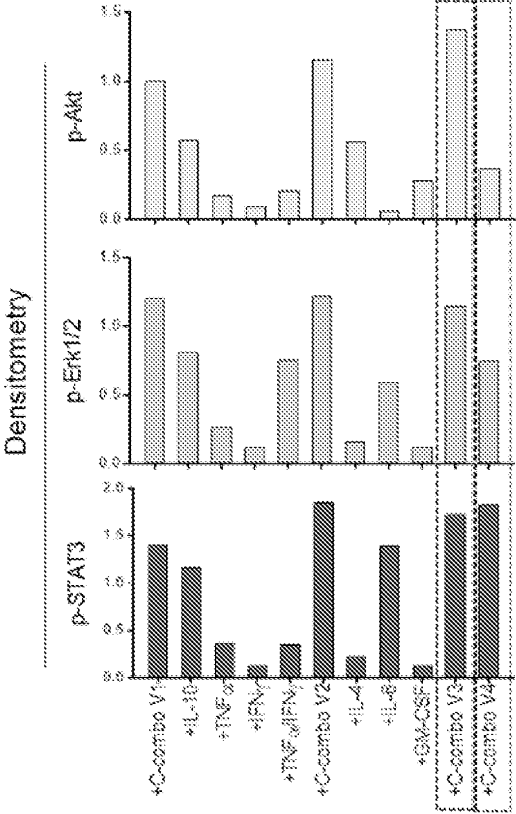


FIG. 10A



C-combo V1: IL-10+TNFα+IFNγ (50ng/ml, each cytokine)
C-combo V2: IL-10+TNFα+IFNγ+IL-6 +GMCSF (50ng/ml, each cytokine)
C-combo V3: IL-22+TNFα+IFNγ+IL-6+GMCSF (IL-22 replaces IL-10, 50ng/ml each cytokine)
C-combo V4: TNFα+IFNγ+IL-6^{high}+GMCSF (IL-10-depleted, IL-6 100ng/ml, 50ng/ml of each others)

FIG. 10B



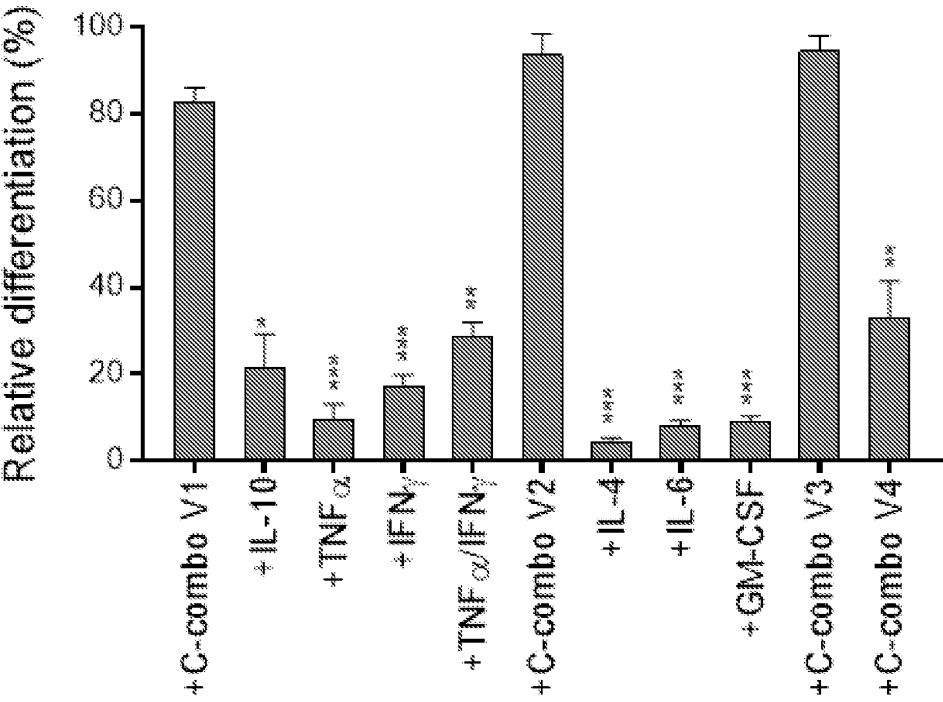
C-combo V1: IL-10+TNF α +IFN γ (50ng/ml, each cytokine)

C-combo V2: IL-10+TNF α +IFN γ +IL-6 +GMCSF (50ng/ml, each cytokine)

C-combo V3: IL-22+TNF α +IFN γ +IL-6+GMCSF (IL-22 replaces IL-10, 50ng/ml each cytokine)

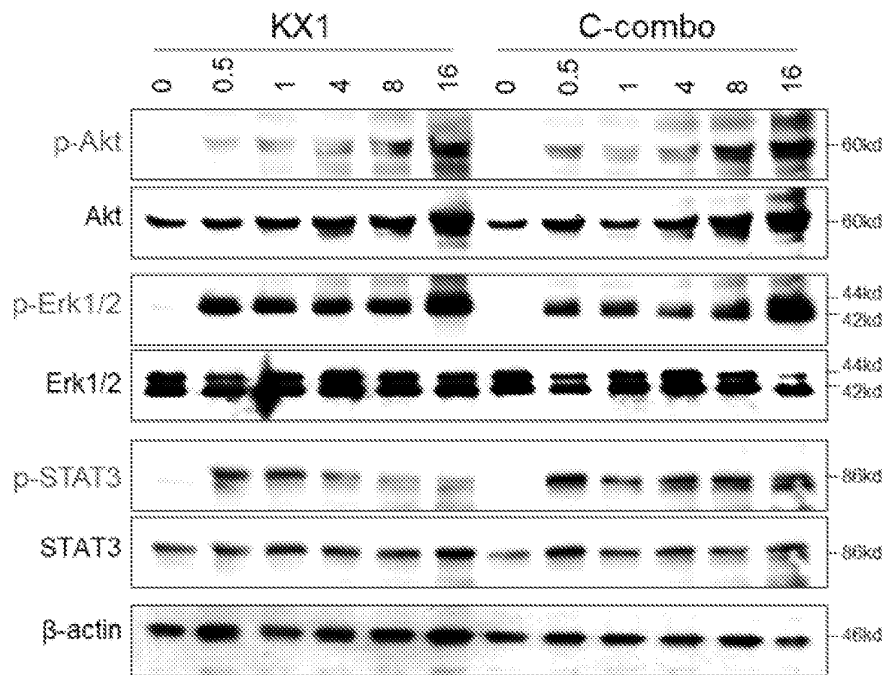
C-combo V4: TNF α +IFN γ +IL-6^{high}+GMCSF (IL-10-depleted, IL-6 100ng/ml, 50ng/ml of each others)

FIG. 10C



C-combo V1: IL-10+TNF α +IFN γ (50ng/ml, each cytokine)
C-combo V2: IL-10+TNF α +IFN γ +IL-6 +GMCSF (50ng/ml, each cytokine)
C-combo V3: IL-22+TNF α +IFN γ +IL-6+GMCSF (IL-22 replaces IL-10, 50ng/ml each cytokine)
C-combo V4: TNF α +IFN γ +IL-6^{high}+GMCSF (IL-10-depleted, IL-6 100ng/ml, 50ng/ml of each others)

FIG. 10D



C-combo (6-factor):
IL-10+TNFα+IFNγ+IL-4+IL-6+GMCSF

C-combo V1: IL-10+TNFα+IFNγ (50ng/ml, each cytokine)
C-combo V2: IL-10+TNFα+IFNγ+IL-6 +GMCSF (50ng/ml, each cytokine)
C-combo V3: IL-22+TNFα+IFNγ+IL-6+GMCSF (IL-22 replaces IL-10, 50ng/ml each cytokine)
C-combo V4: TNFα+IFNγ+IL-6^{high}+GMCSF (IL-10-depleted, IL-6 100ng/ml, 50ng/ml of each others)

FIG. 11

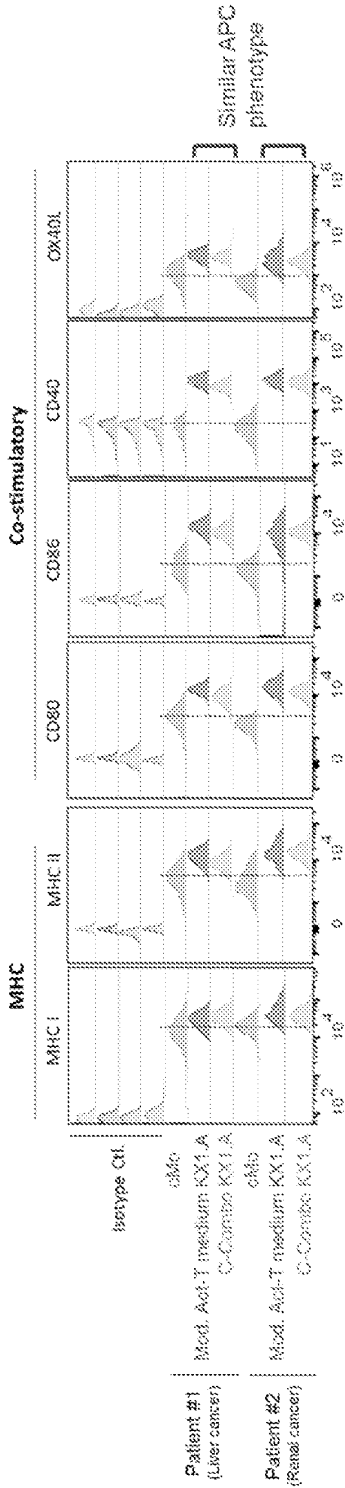


FIG. 12A

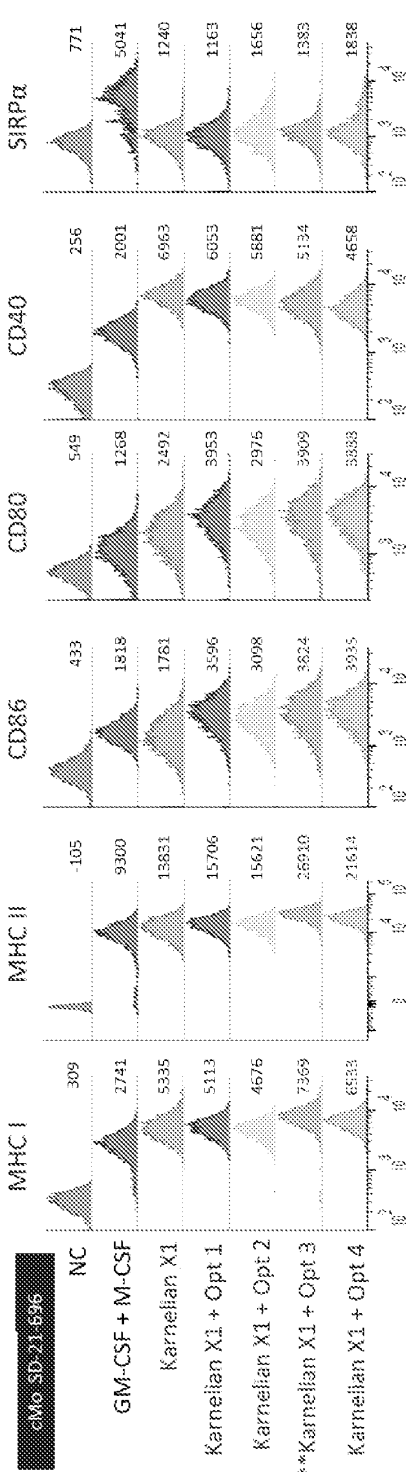


FIG. 12B

- Opt 1: IFNα/IFNγ/TNFα
- Opt 2: IFNα/IFNγ/TNFα/Poly IC/CpG,
- Opt 3: IFNα/IFNγ/TNFα/Poly IC/CpG/CD40L/αPD-L1
- Opt 4: IFNα/IFNγ/TNFα/Poly IC/CpG/CD40L/αPD-L1/TPI-1

FIG. 12C

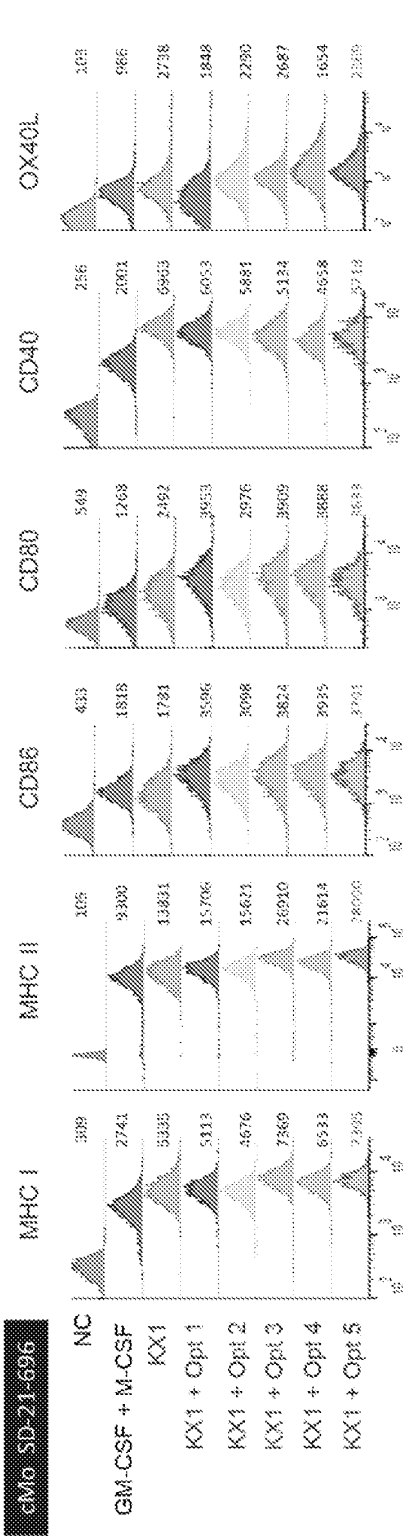


FIG. 12D

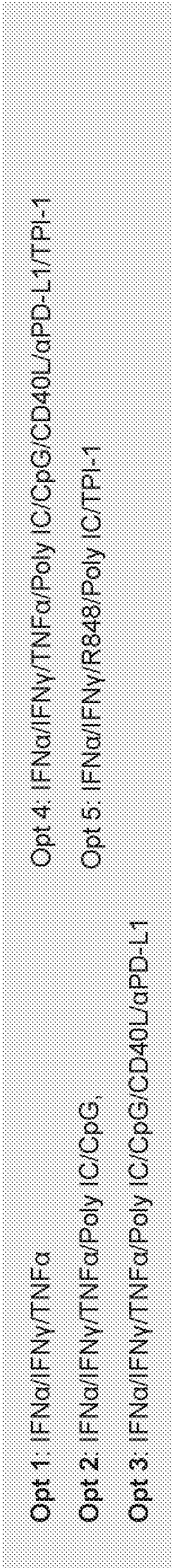


FIG. 12E

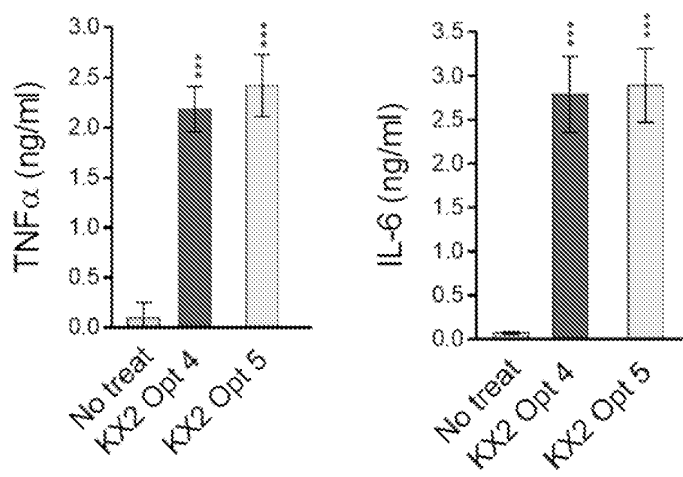


FIG. 12F

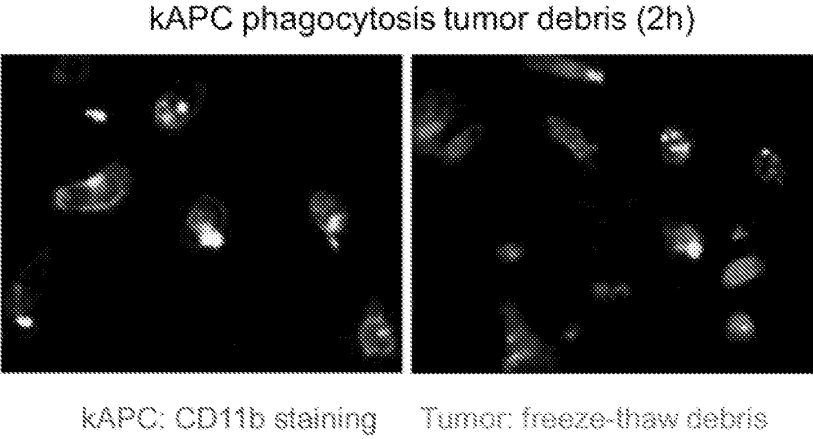


FIG. 12G

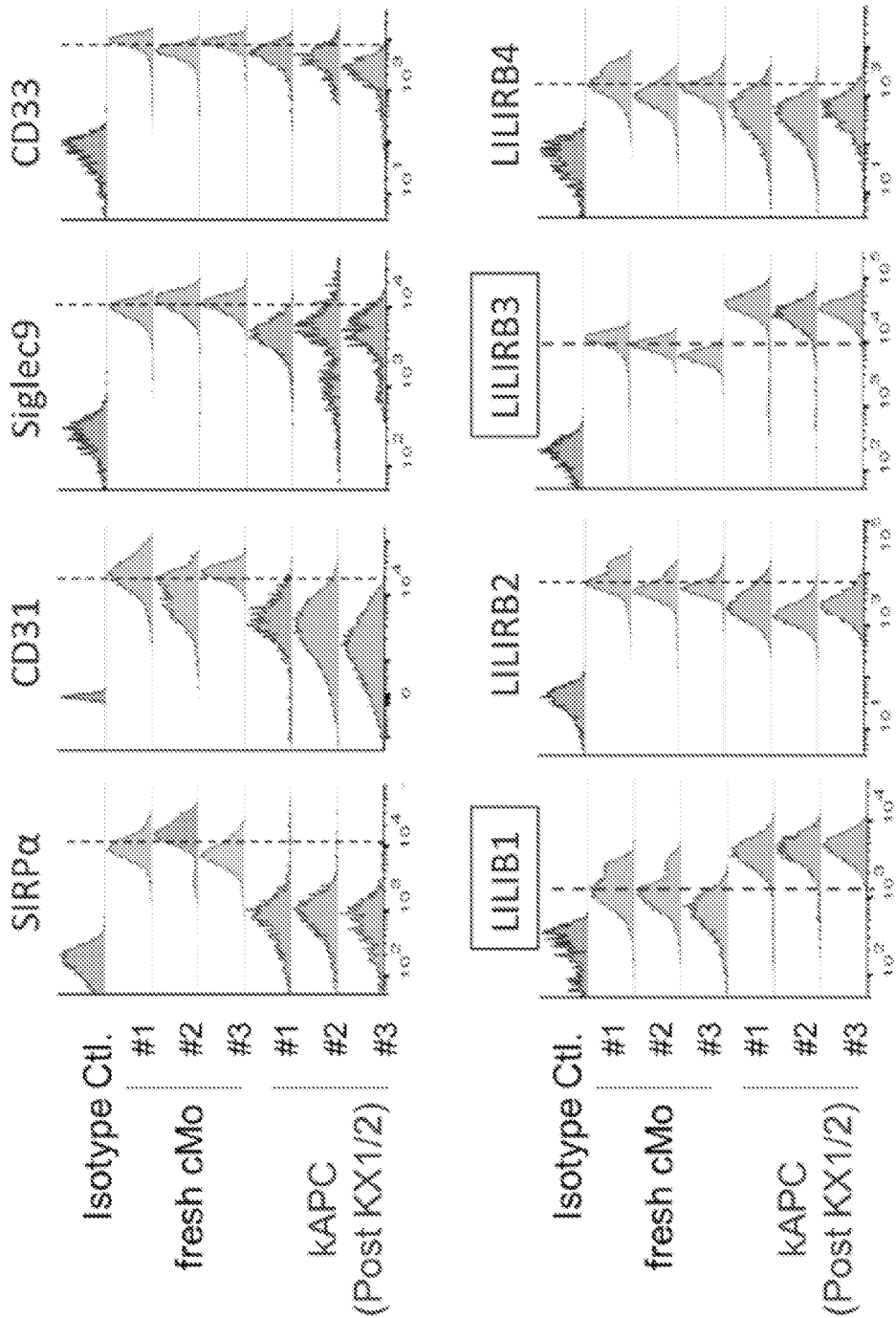


FIG. 12H

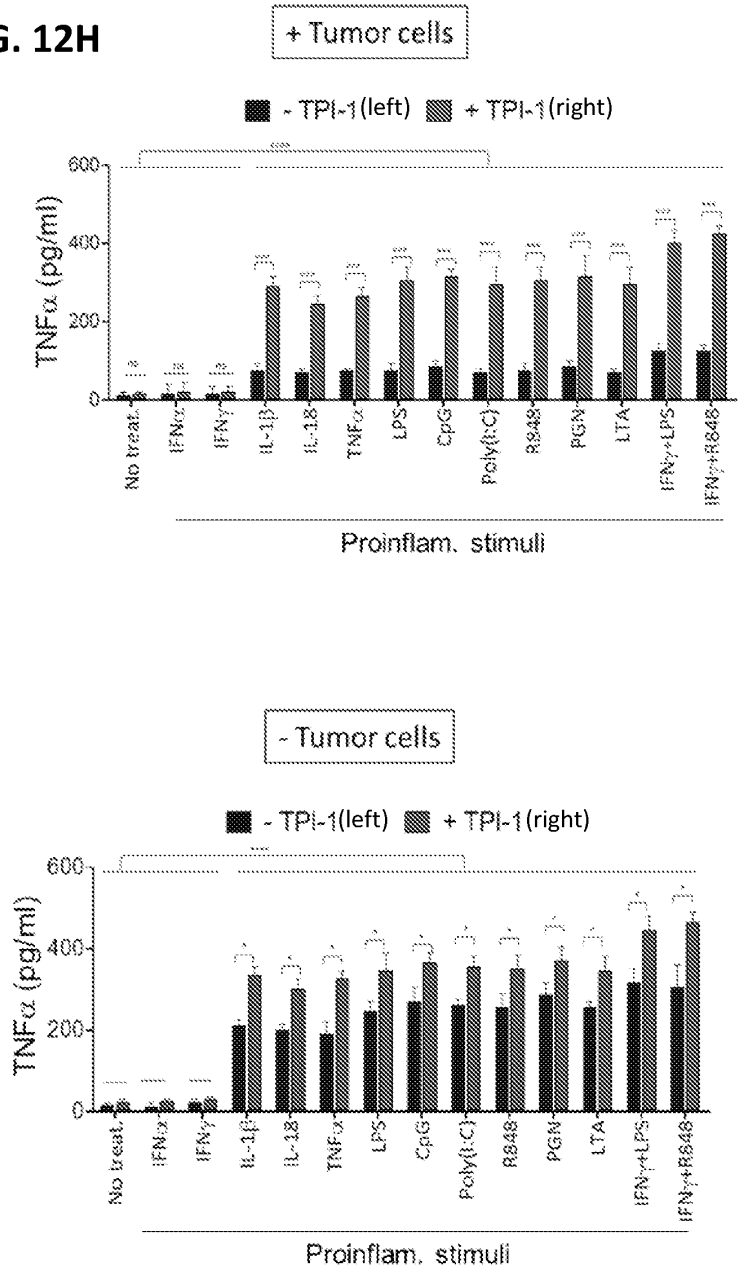


FIG. 13A

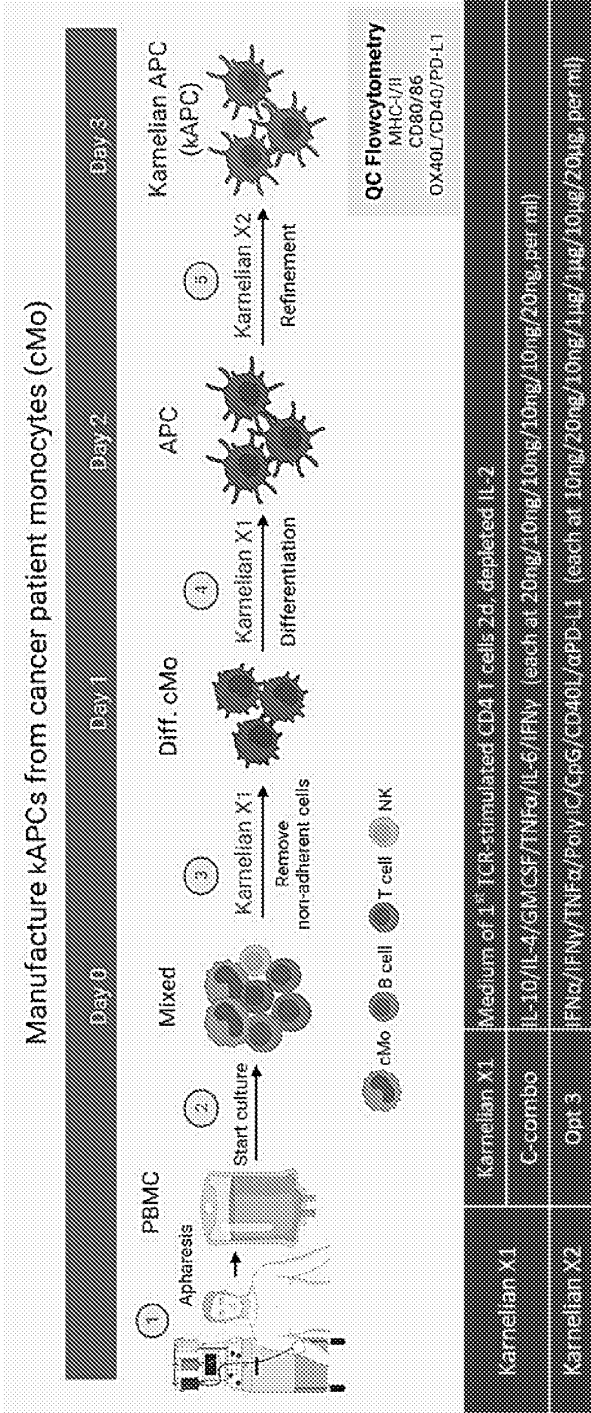


FIG. 13B

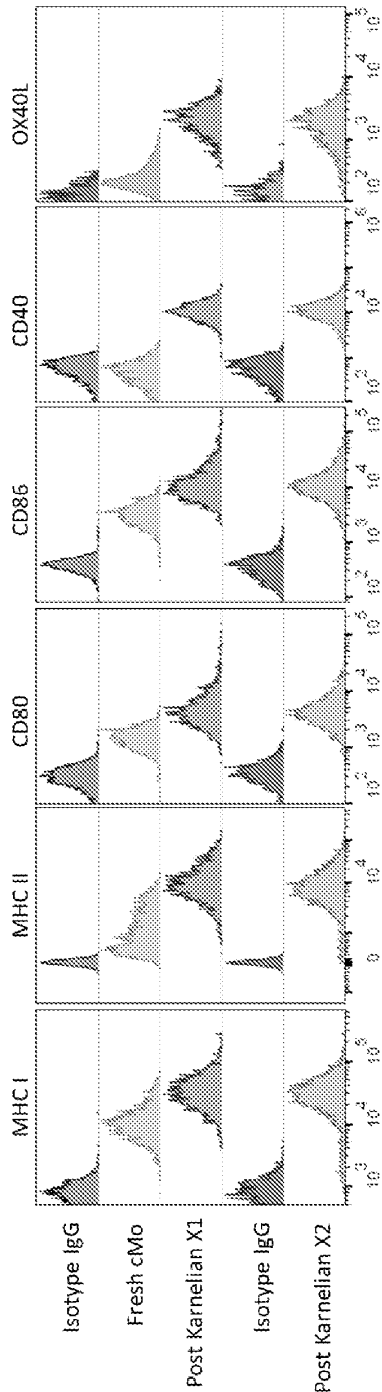


FIG. 14A

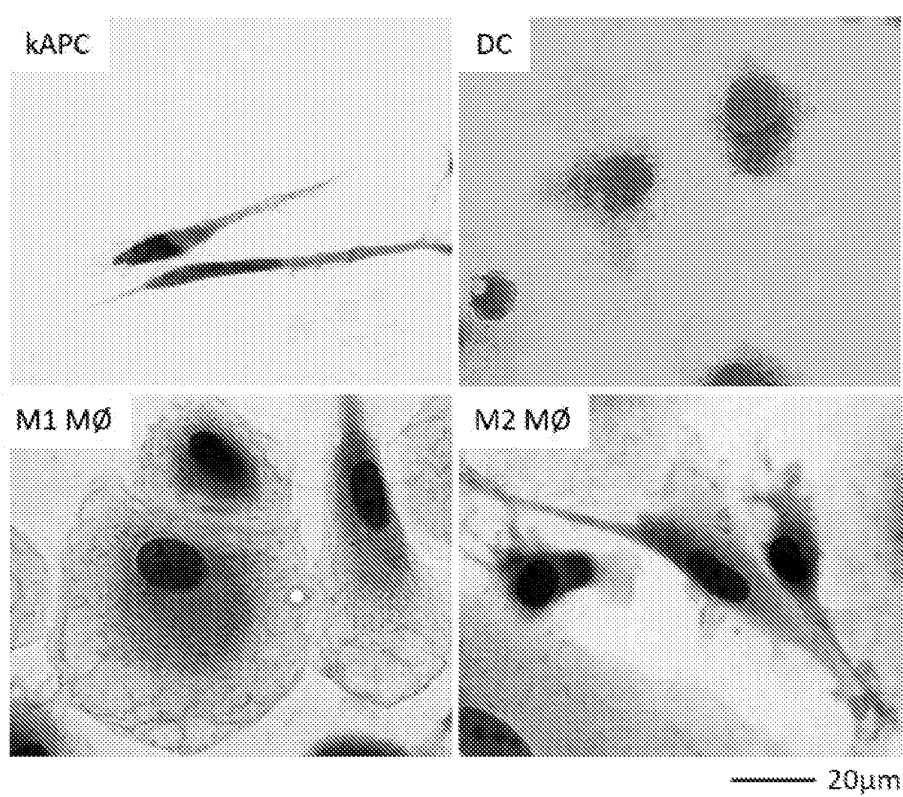


FIG. 14A, cont.

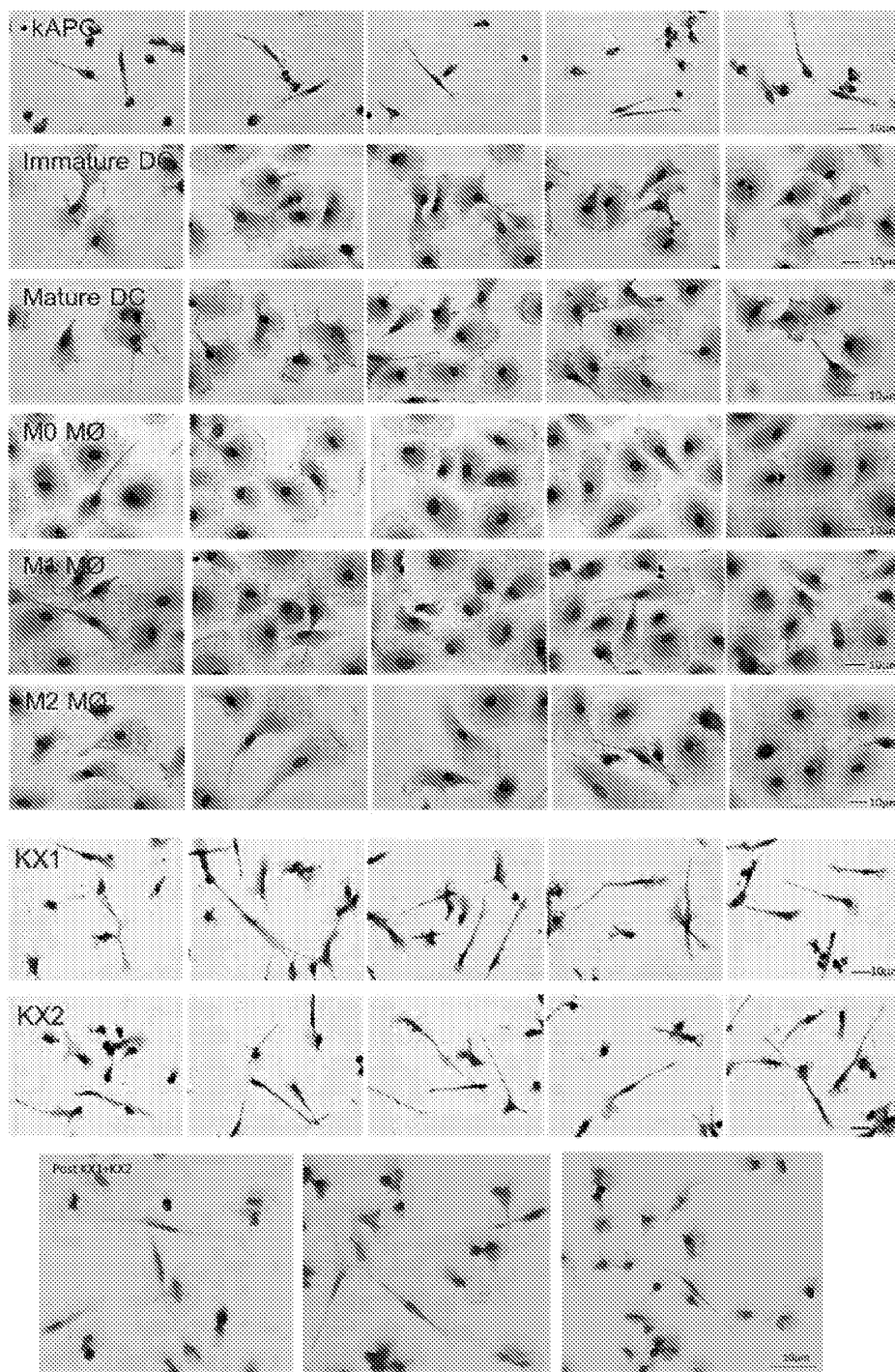


FIG. 14B

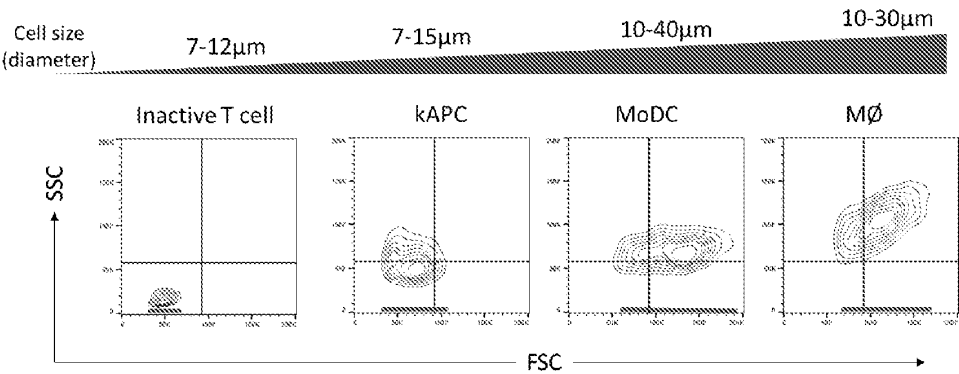


FIG. 15A

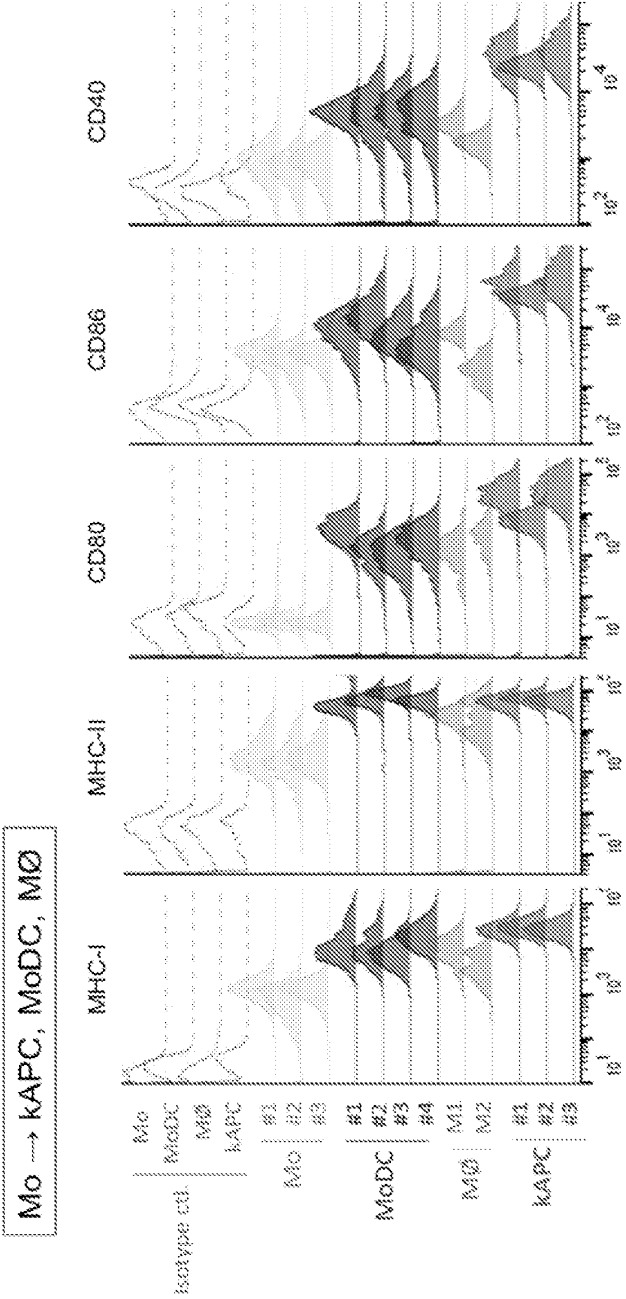
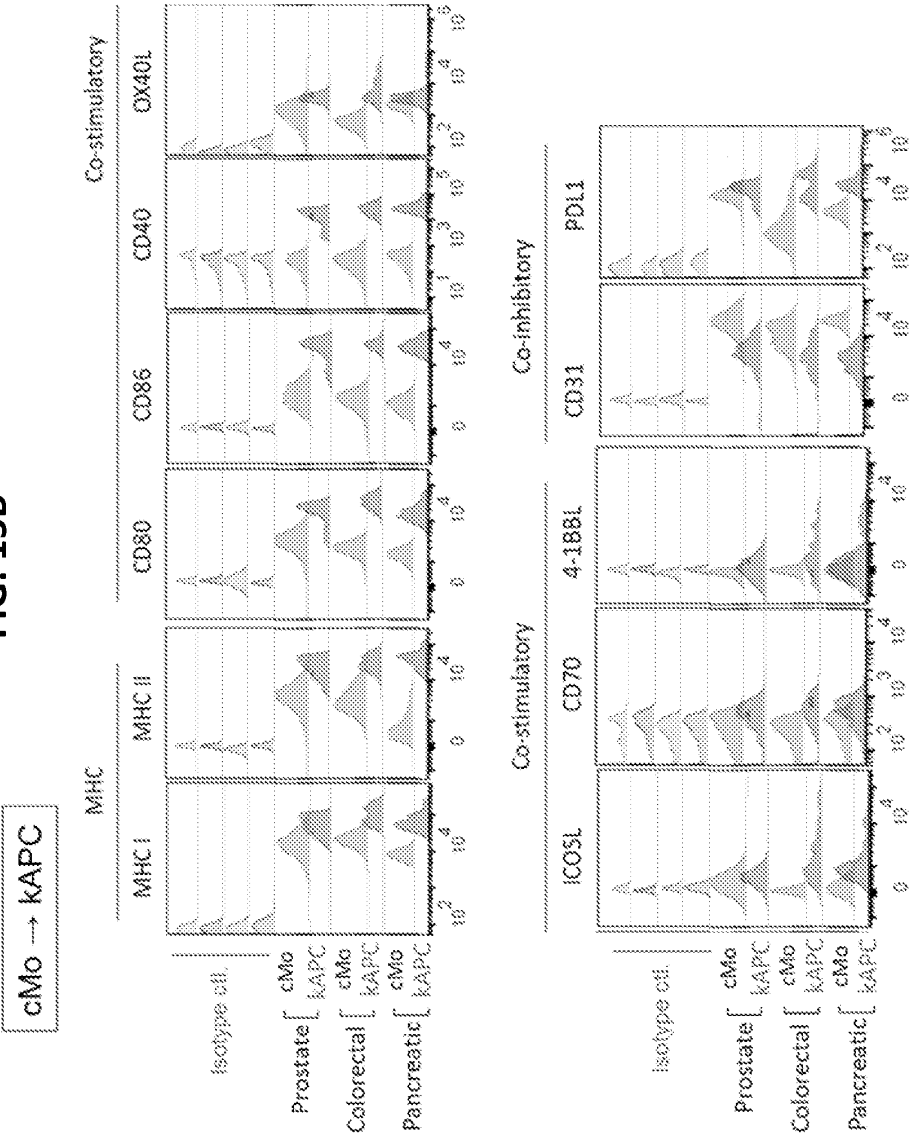
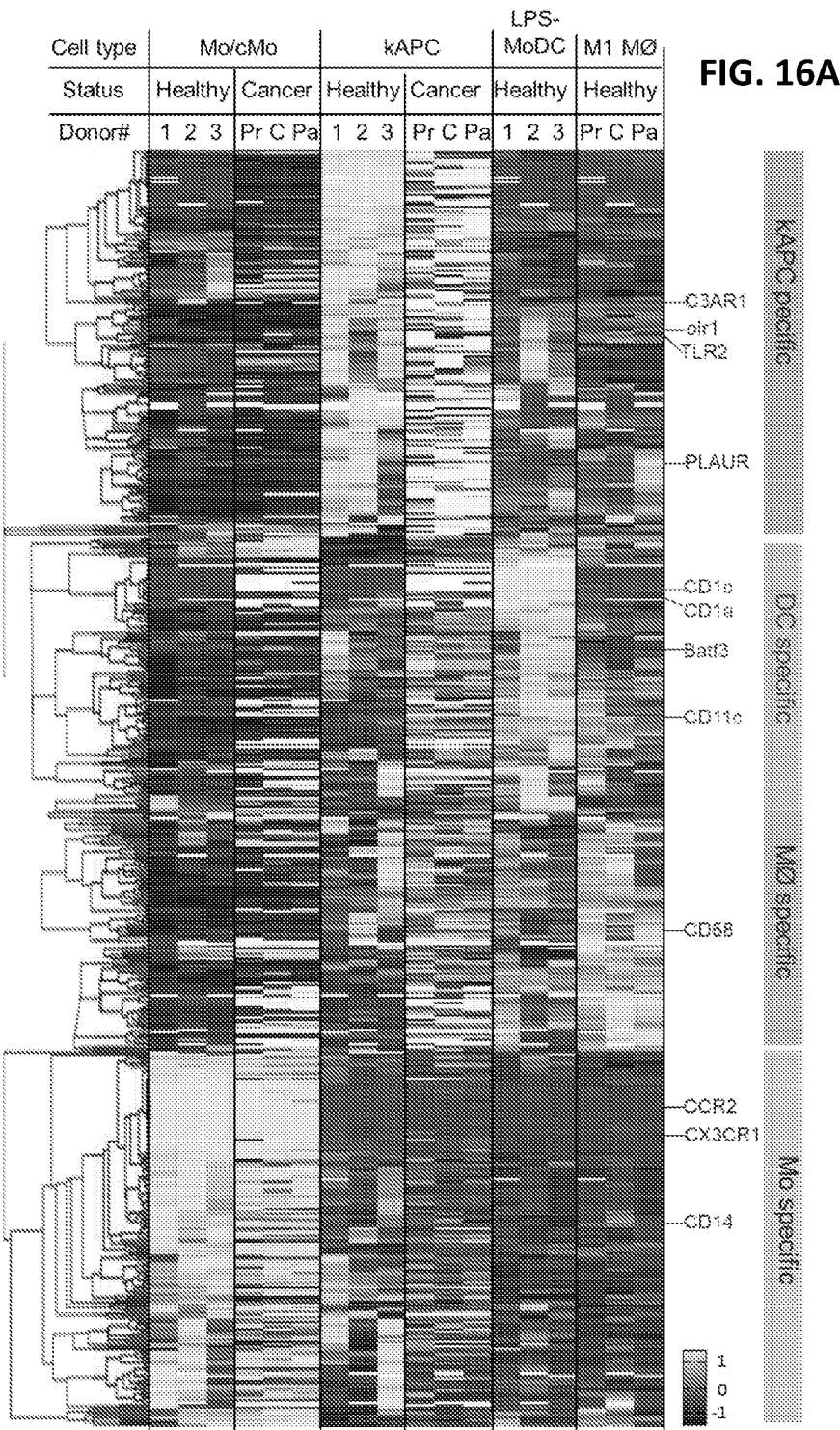
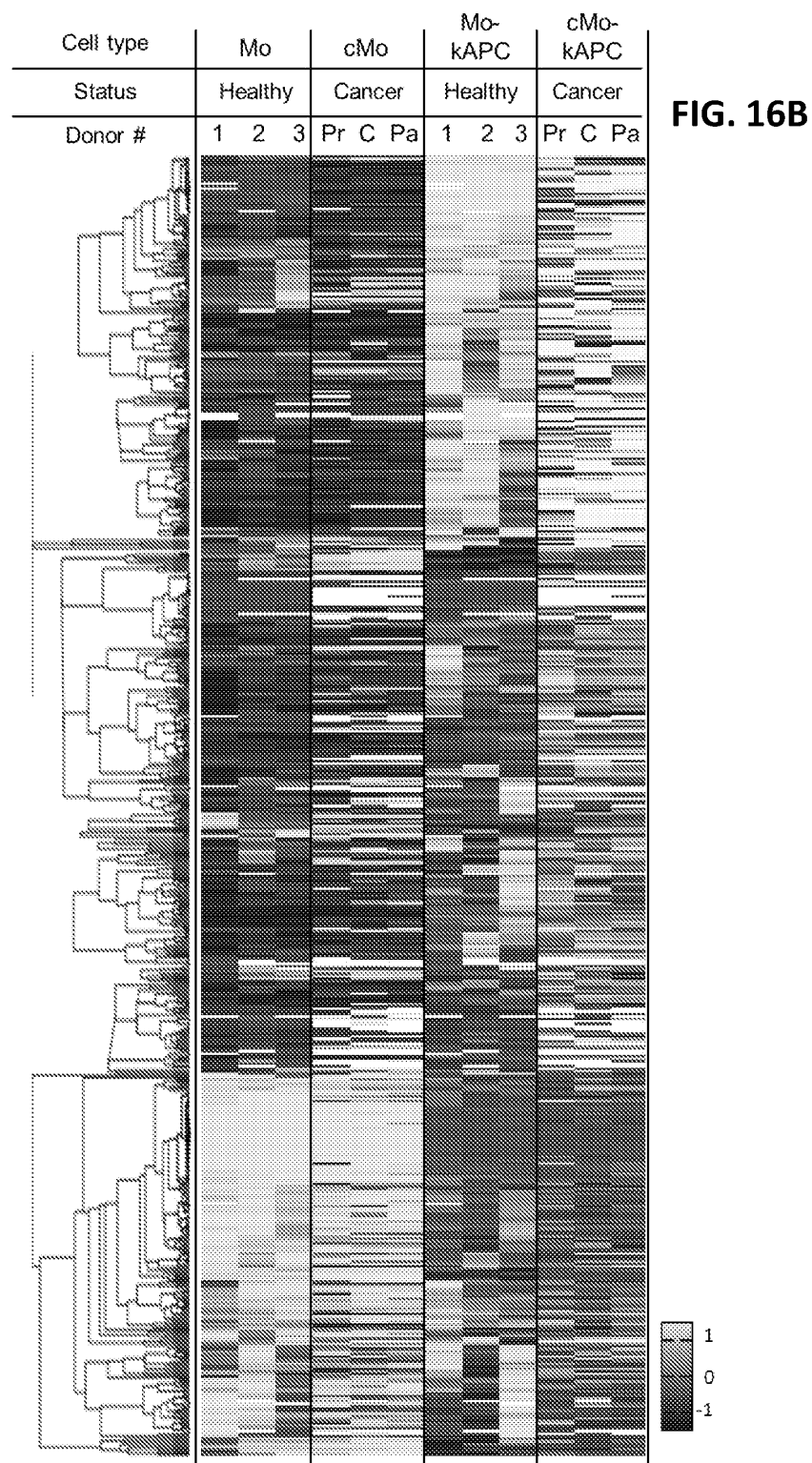


FIG. 15B







KAPC

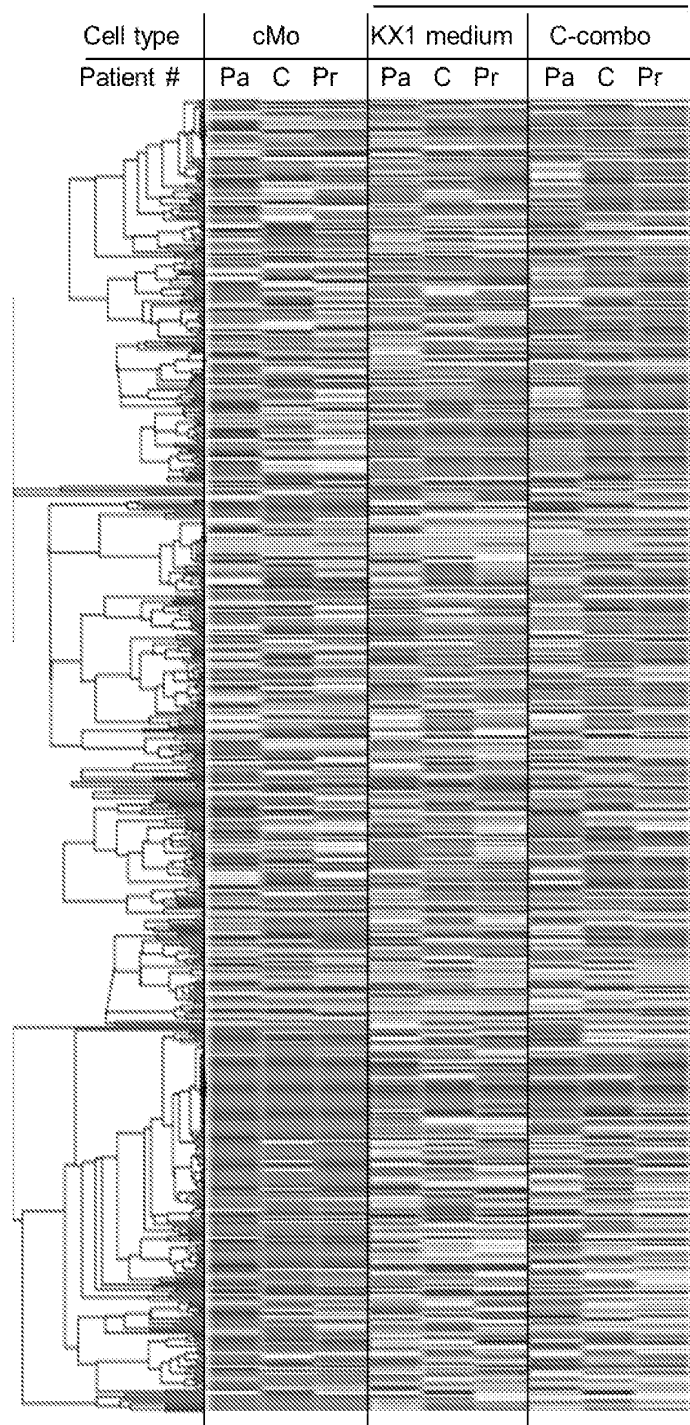


FIG. 17

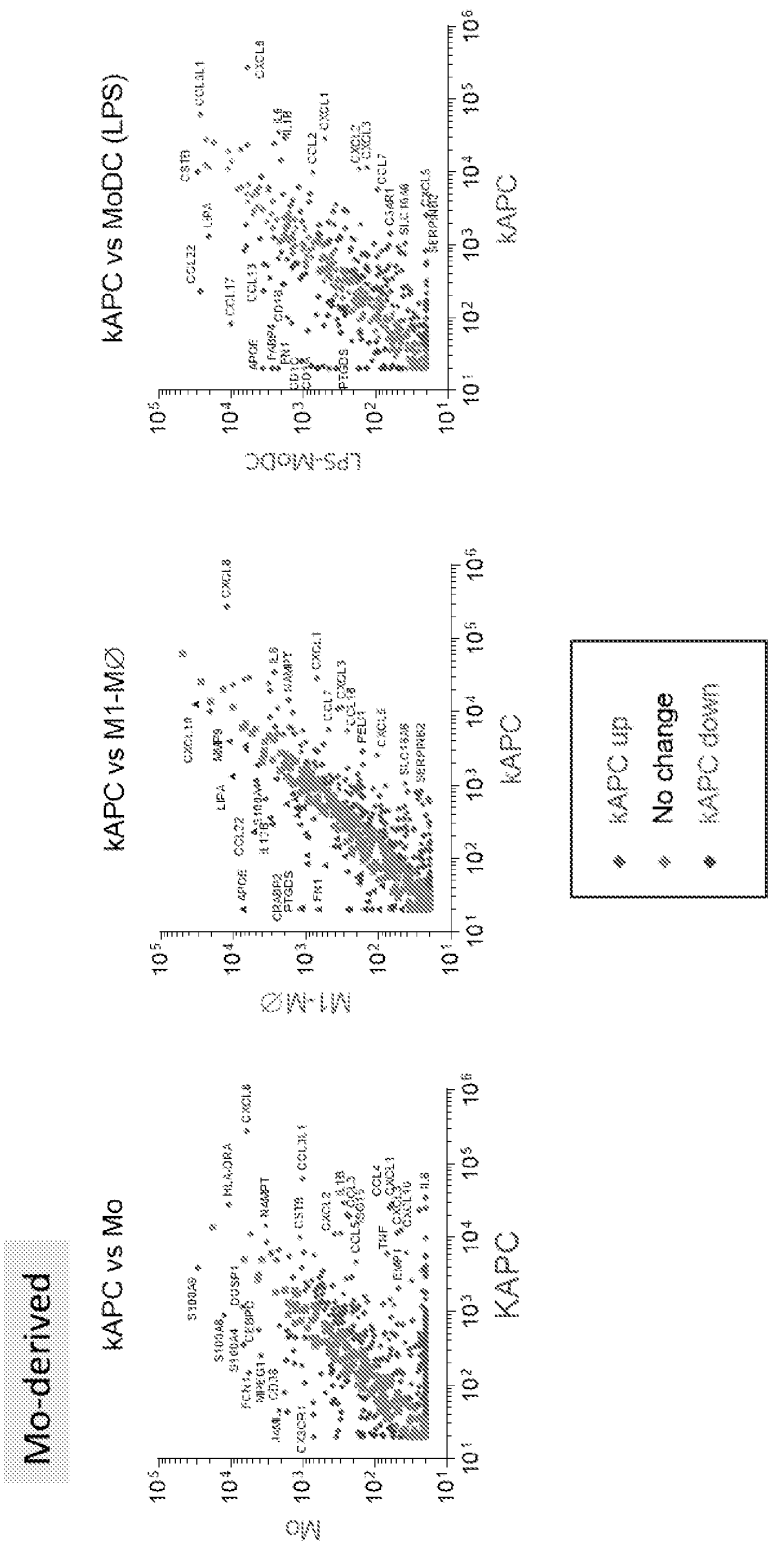


FIG. 17, cont.

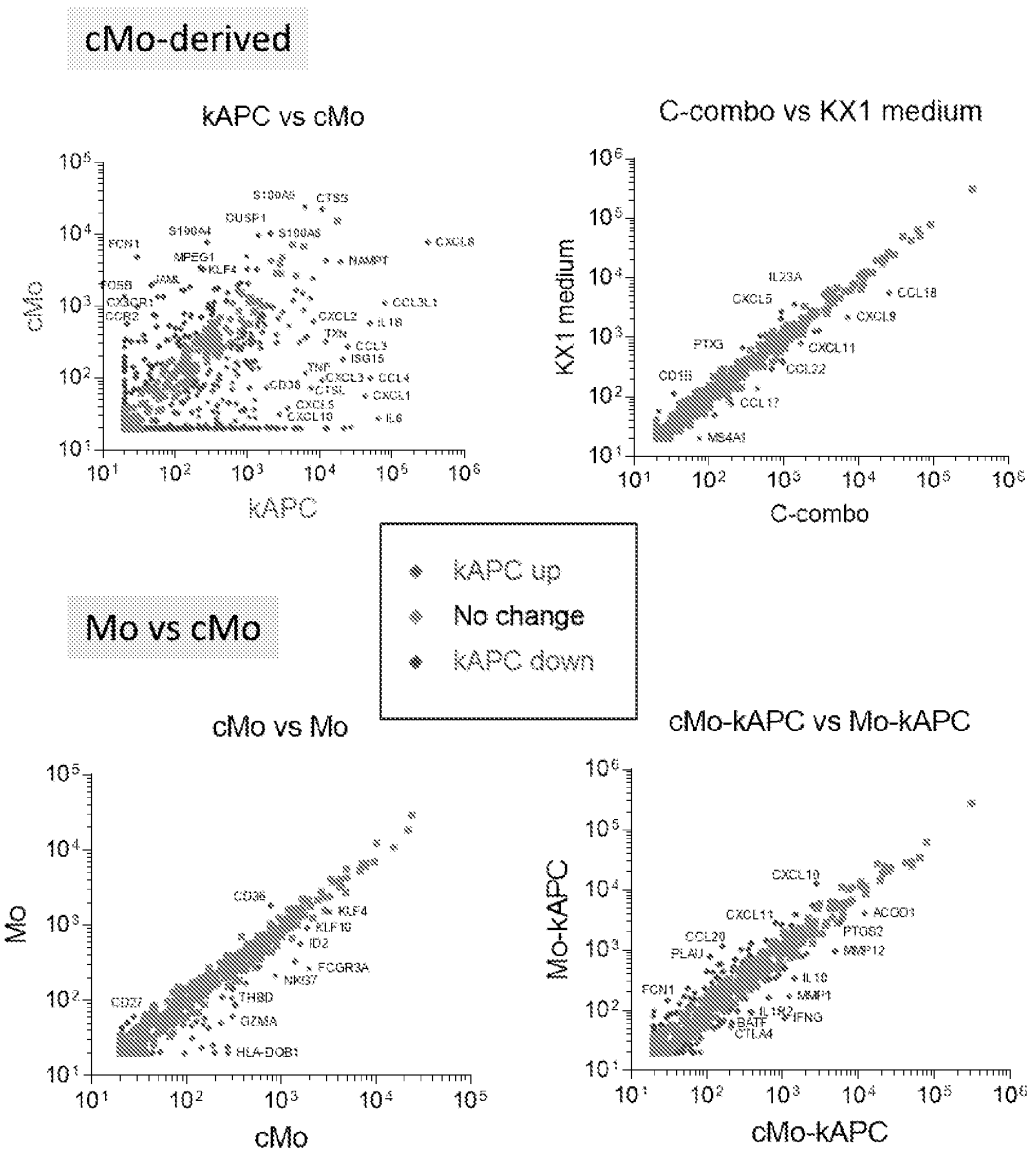


FIG. 18A

Main cell surface markers on human DC subtypes, monocytes-derived DC (MoDc), M1 macrophages and kAPC	
DC subtype	High expressed cell surface markers
cDC1	CD141 CLEC9A XCR1 CD103
cDC2	CD1c CD172a(SIRPα)
pDC	CD303
MoDC	DEC205 CD172a(SIRPα) CD1c CD11c CD303 CD209
M0 (M1)	CD26 CD172a(SIRPα) CD11c CCR2 CCR7 CD14 CD303 PD-L1 CLEC5 CCR1
kAPC	LOX1* uPAR* CD40* TLR2* IL-3R* TREM2* C3AR* IL-3R* PD-L1

FIG. 18B

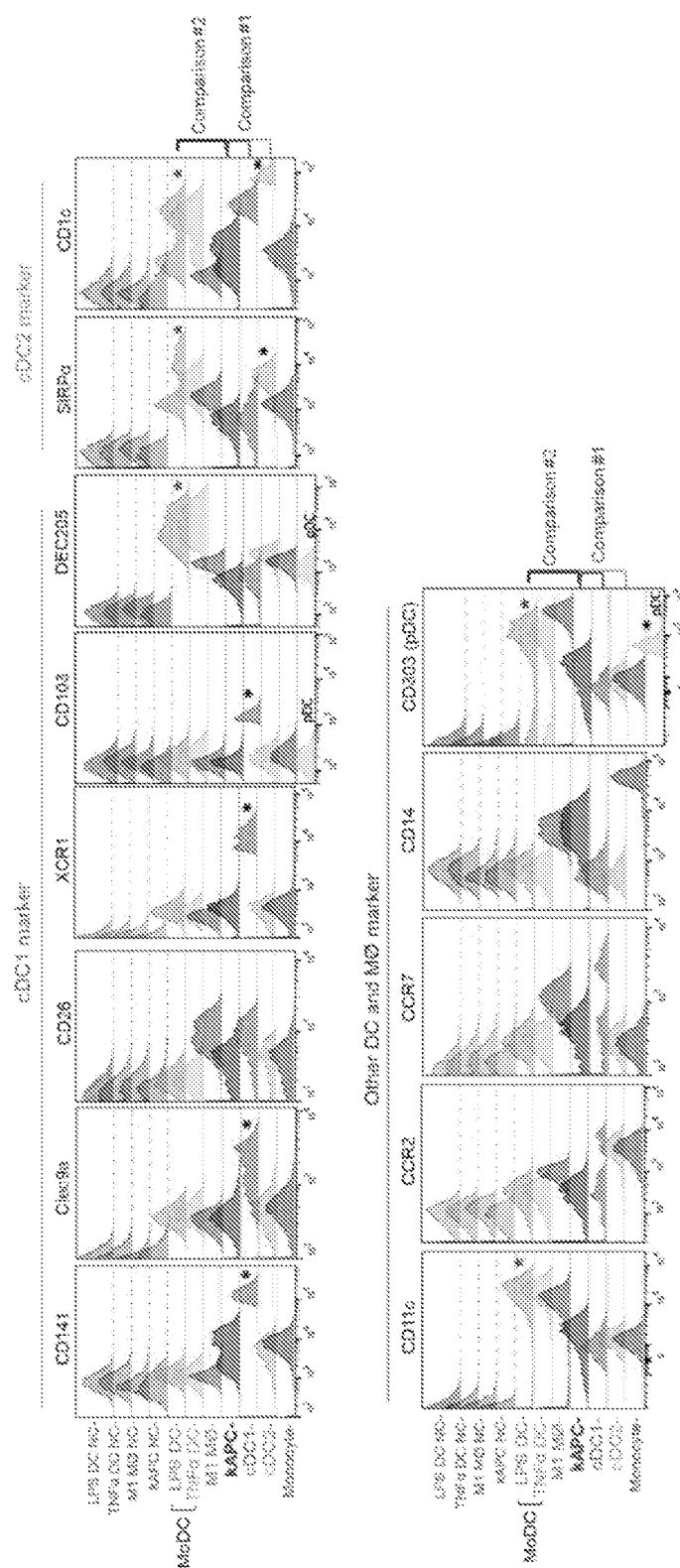


FIG. 19A

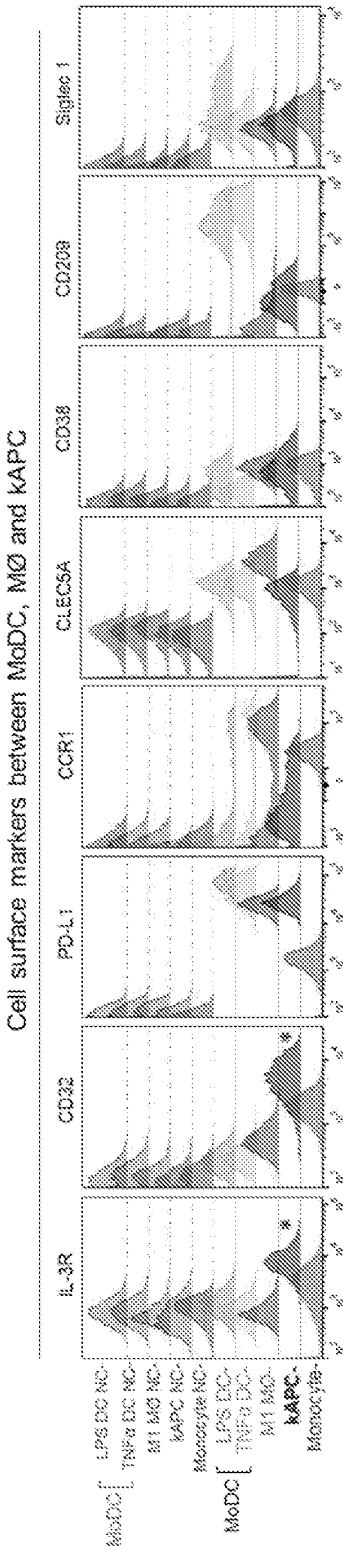


FIG. 19B

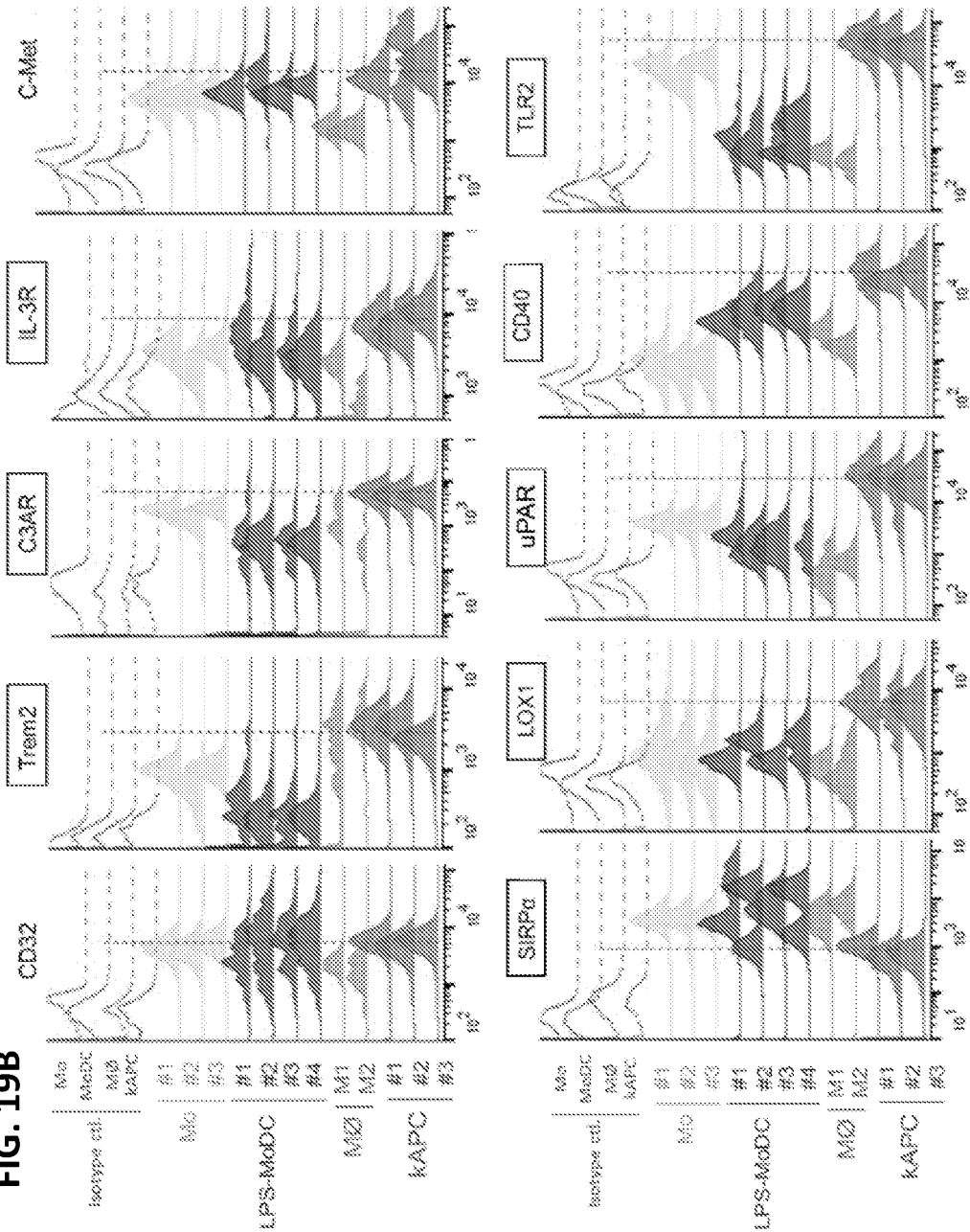


FIG. 19C

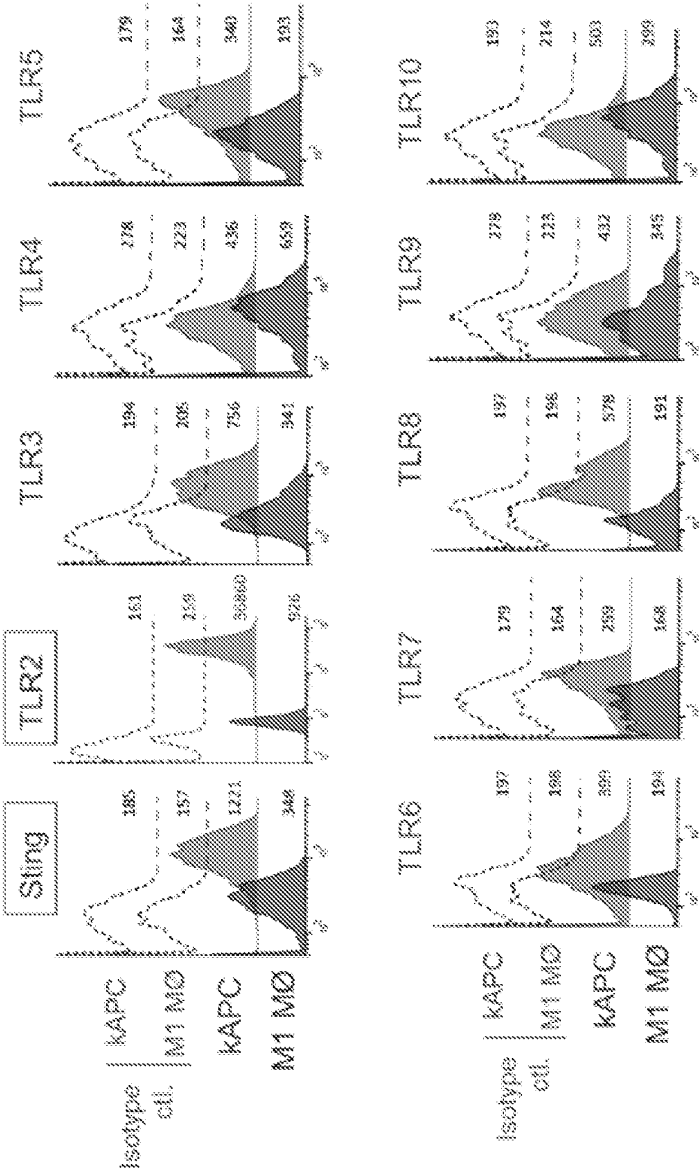


FIG. 20

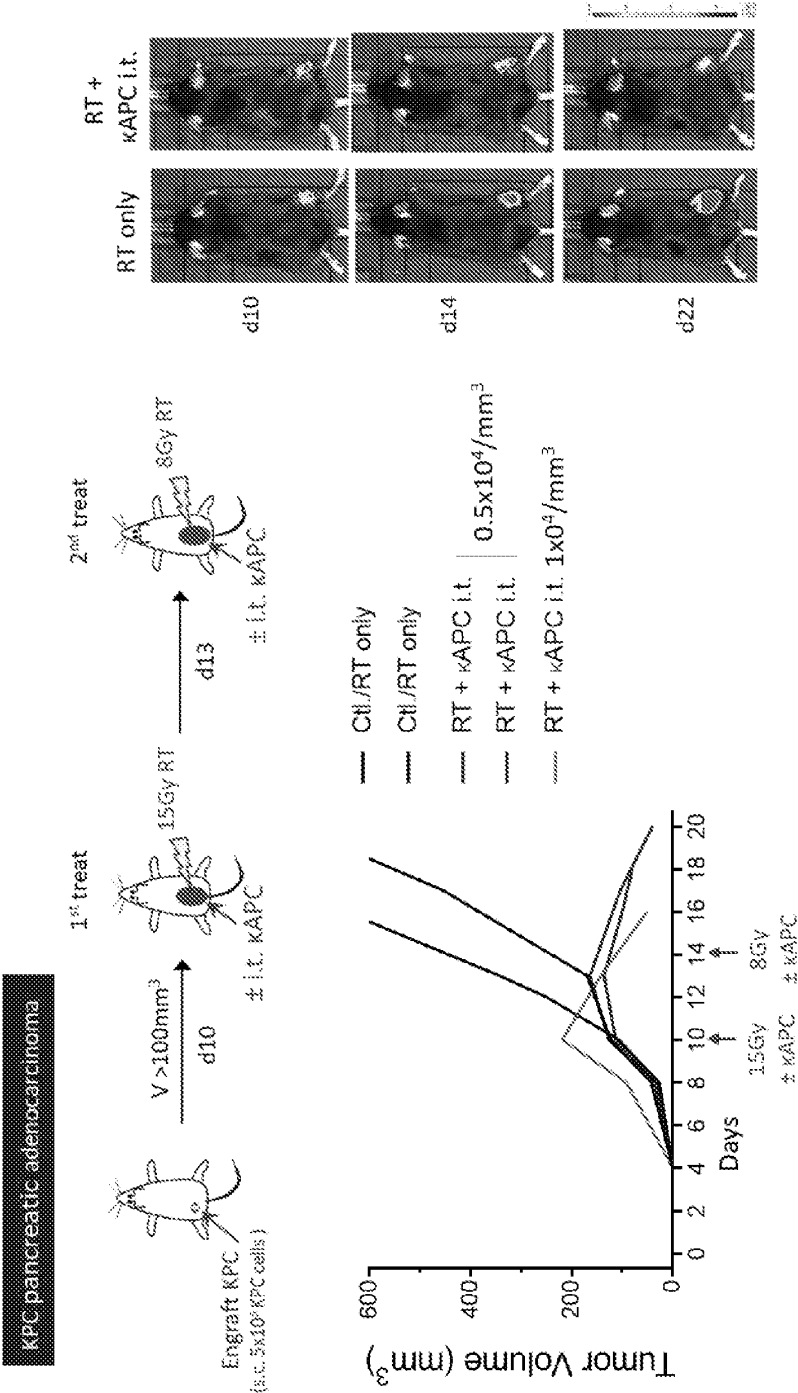
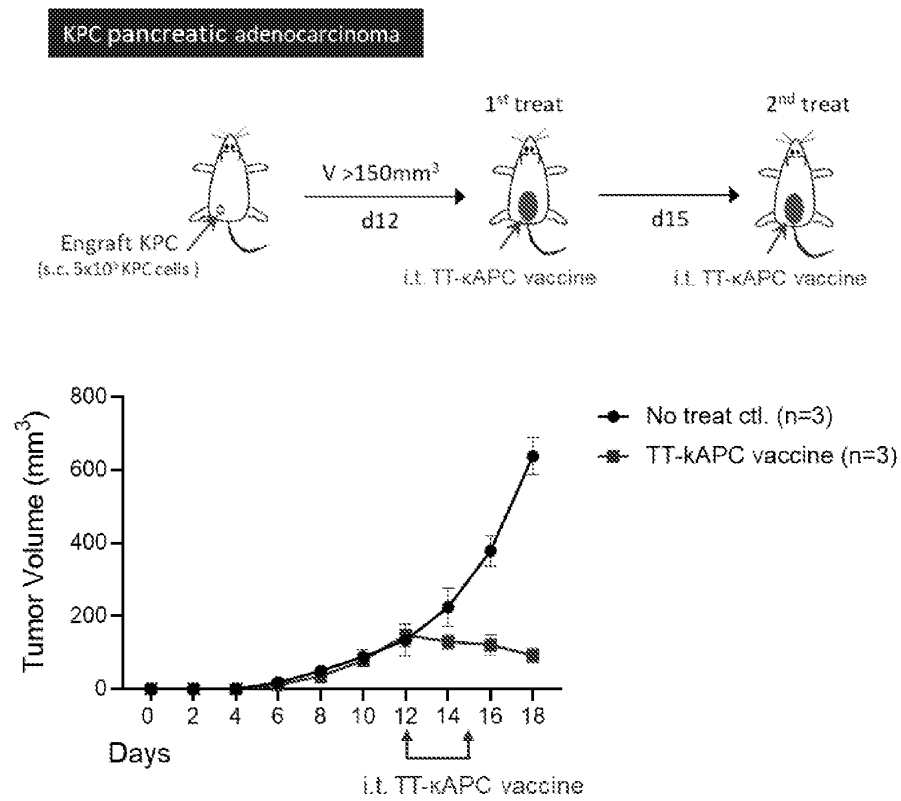
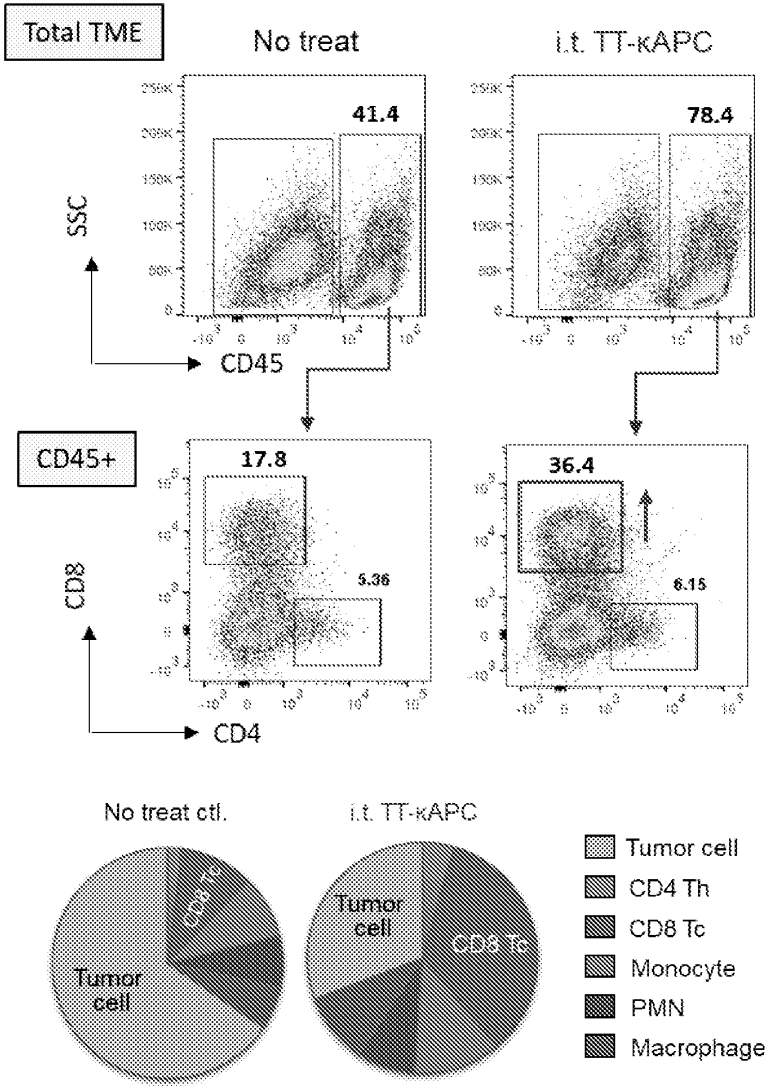


FIG. 21A





Tumor infiltrate	Total CD45 ⁺	CD4 ⁺ T	CD8 ⁺ T	Monocyte	PMN	Macrophage
<i>No treat</i>	43.9±6.7%	1.7±1.1%	8.8±2.0%	7.6±1.7%	6.2±0.5%	5.2±0.7%
<i>i.t. TT-kAPC</i>	75.4±12.4% ^{***}	3.5±3.3% [*]	27.6±5.8% ^{***}	9.8±2.5%	6.6±4.6%	7.9±2.7%

FIG. 21B

FIG. 23A

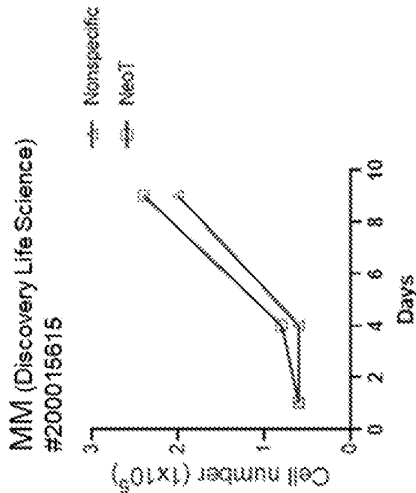


FIG. 23B

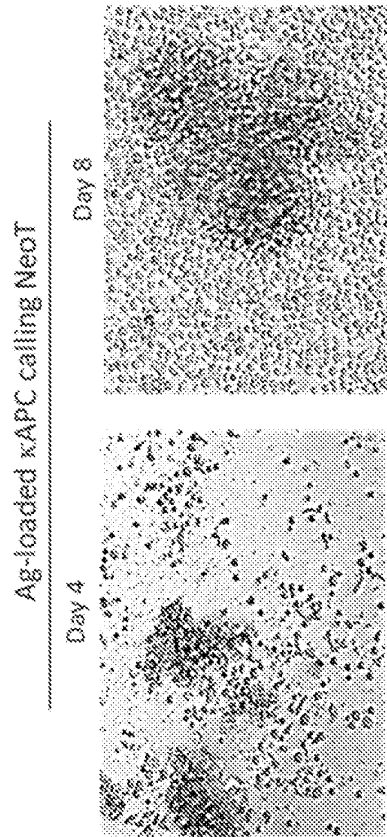


FIG. 23C

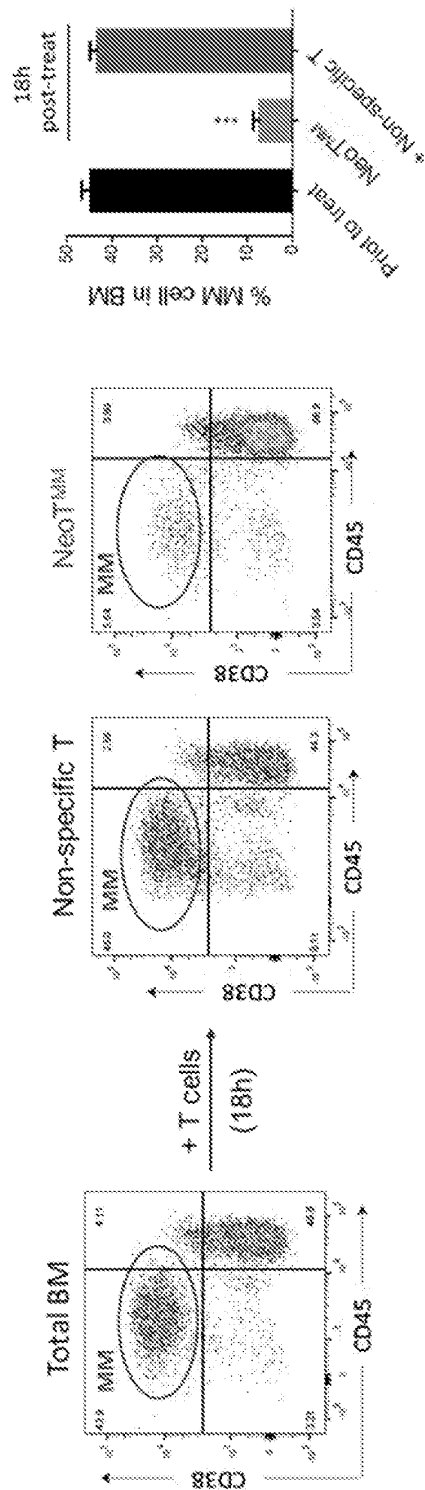


FIG. 23D

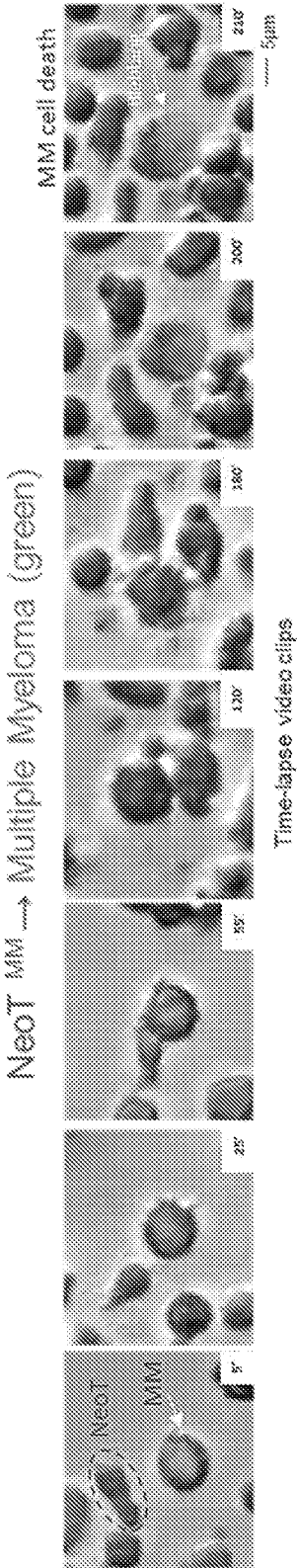


FIG. 24A

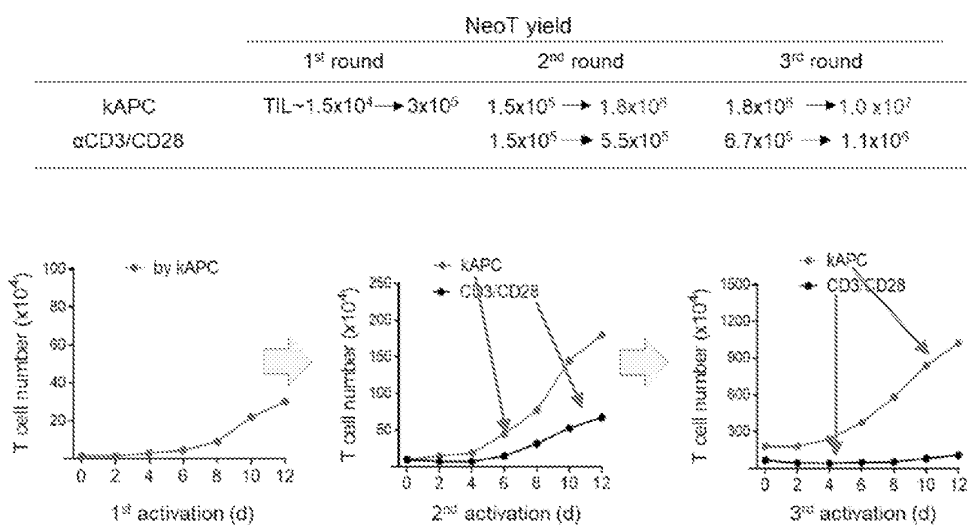


FIG. 24B

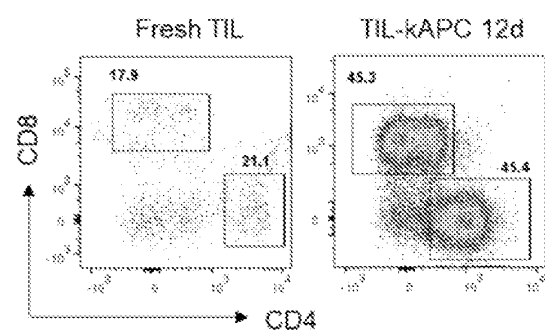


FIG. 24C

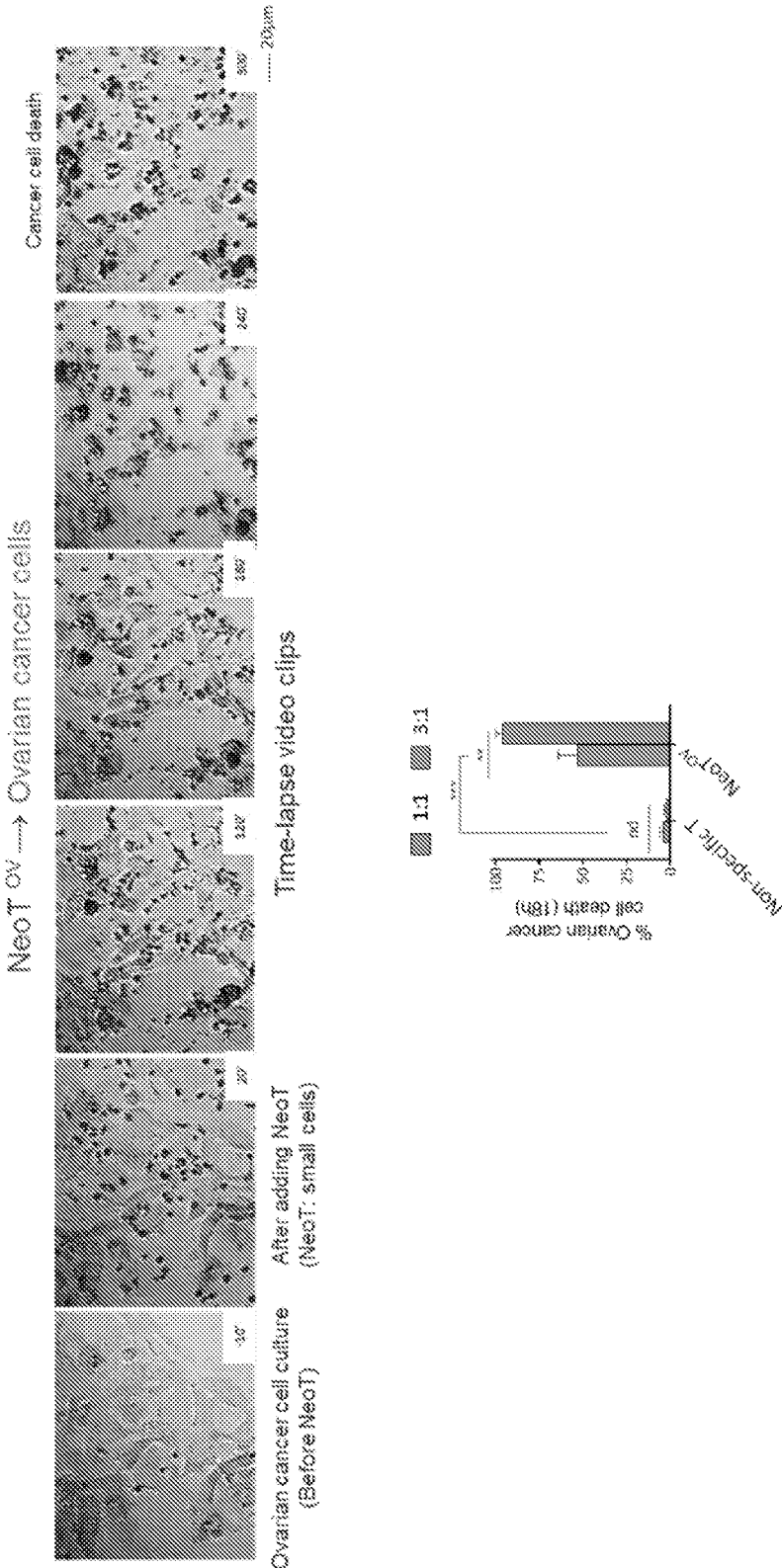


FIG. 25

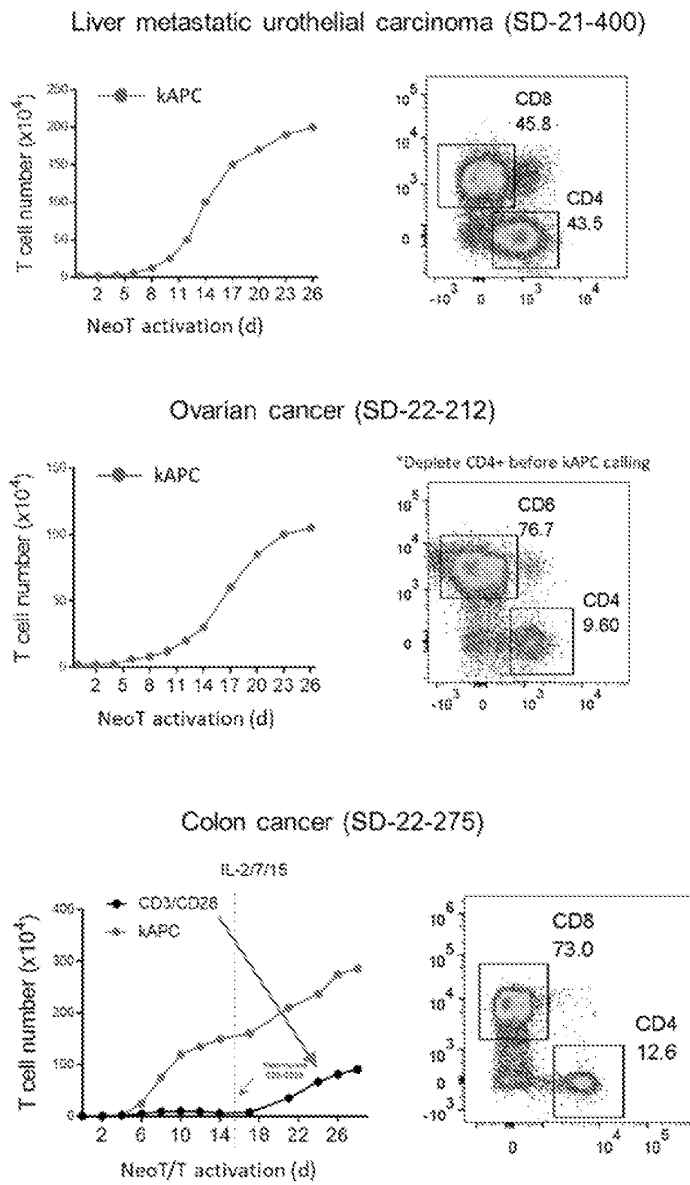


FIG. 25, cont.

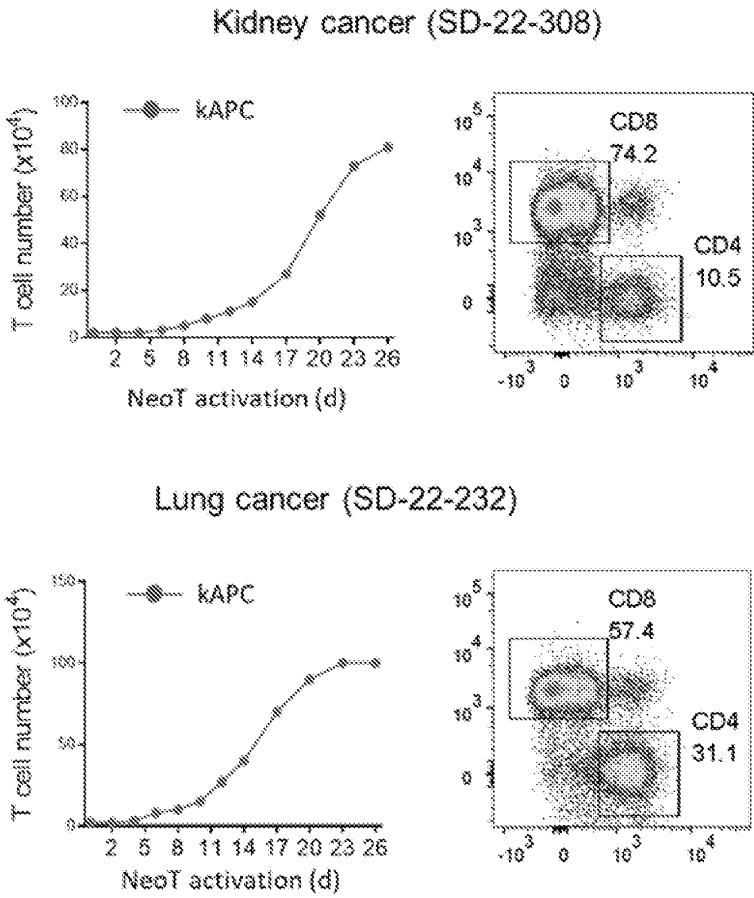
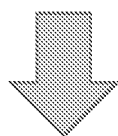
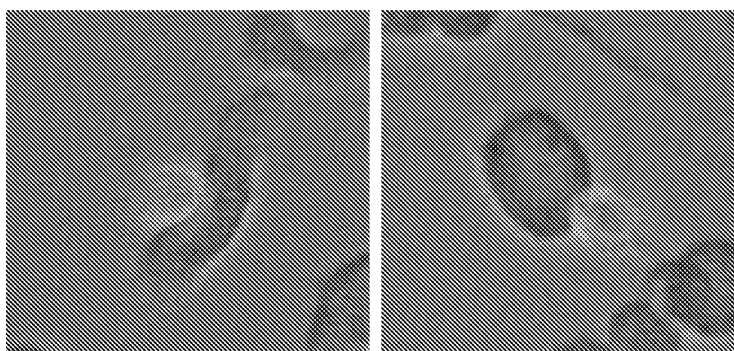


FIG. 26

NeoT (red) – kAPC (grey) engaging



NeoT (red)
clonal expansion 3d later

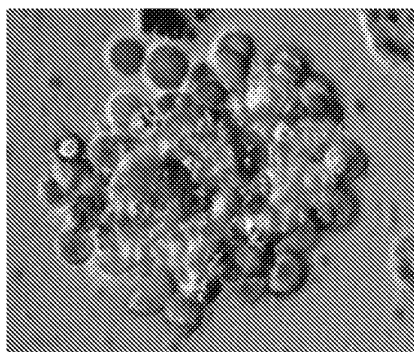


FIG. 27A

Producing kAPC from a patient with malignant Uterine Leiomyosarcoma

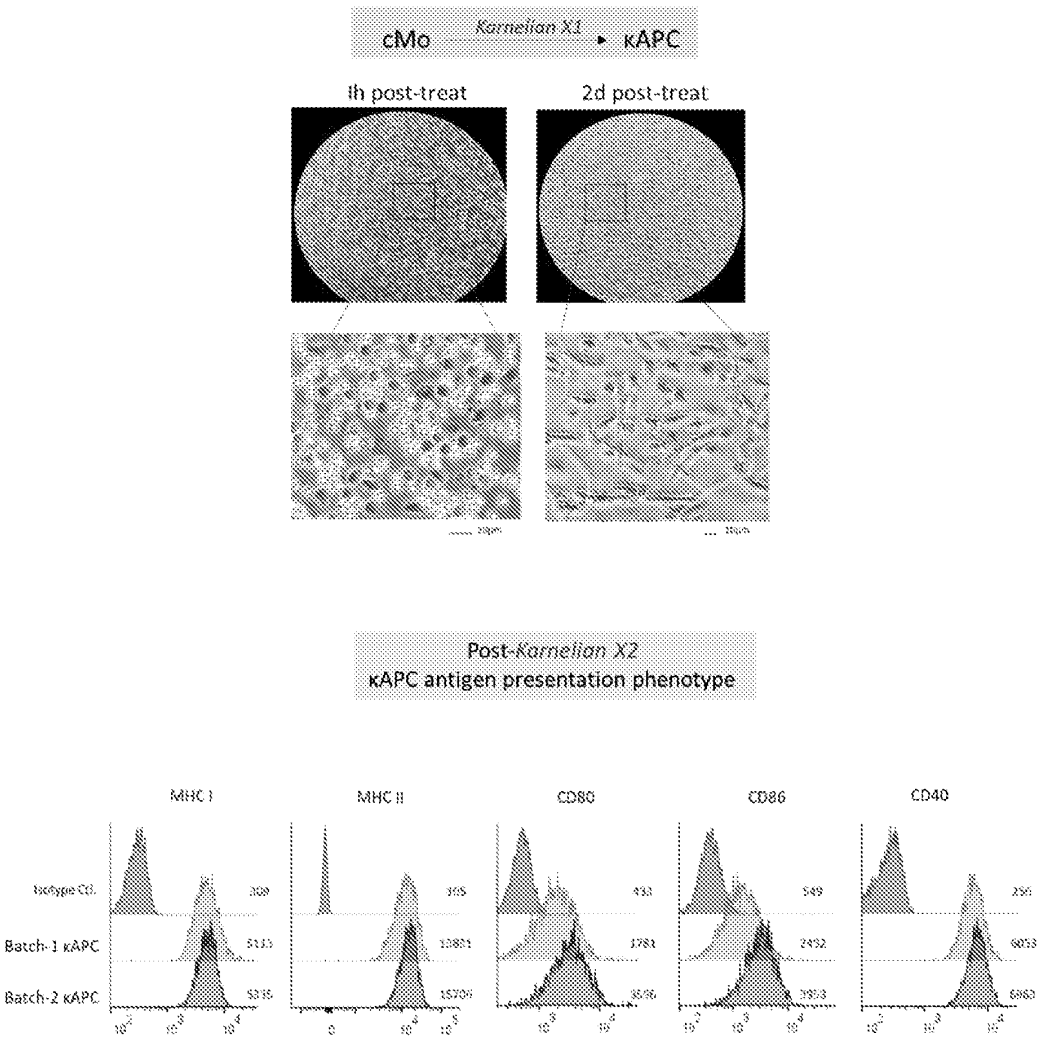


FIG. 27B In vitro production of Neo-T to treat metastatic Uterine Leiomyosarcoma

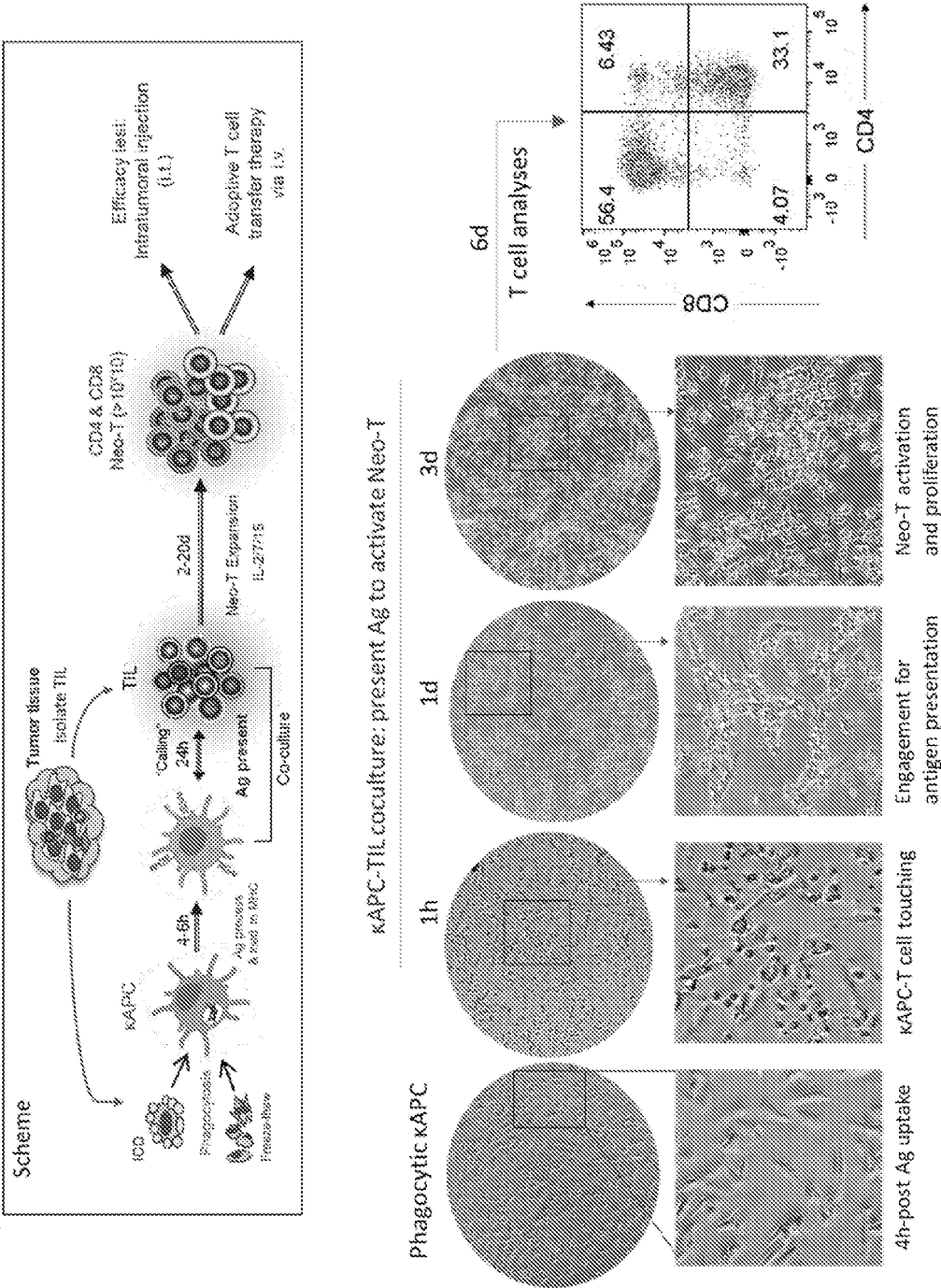


FIG. 27C

C Neo-T Efficacy by i.t.

1d prior to i.t.



4 weeks later

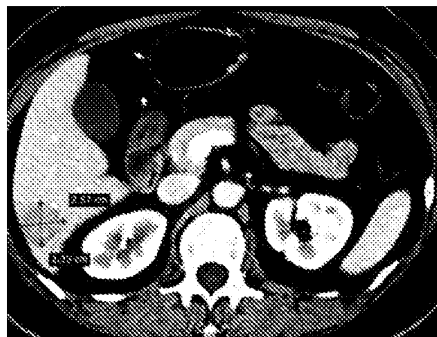


FIG. 28A

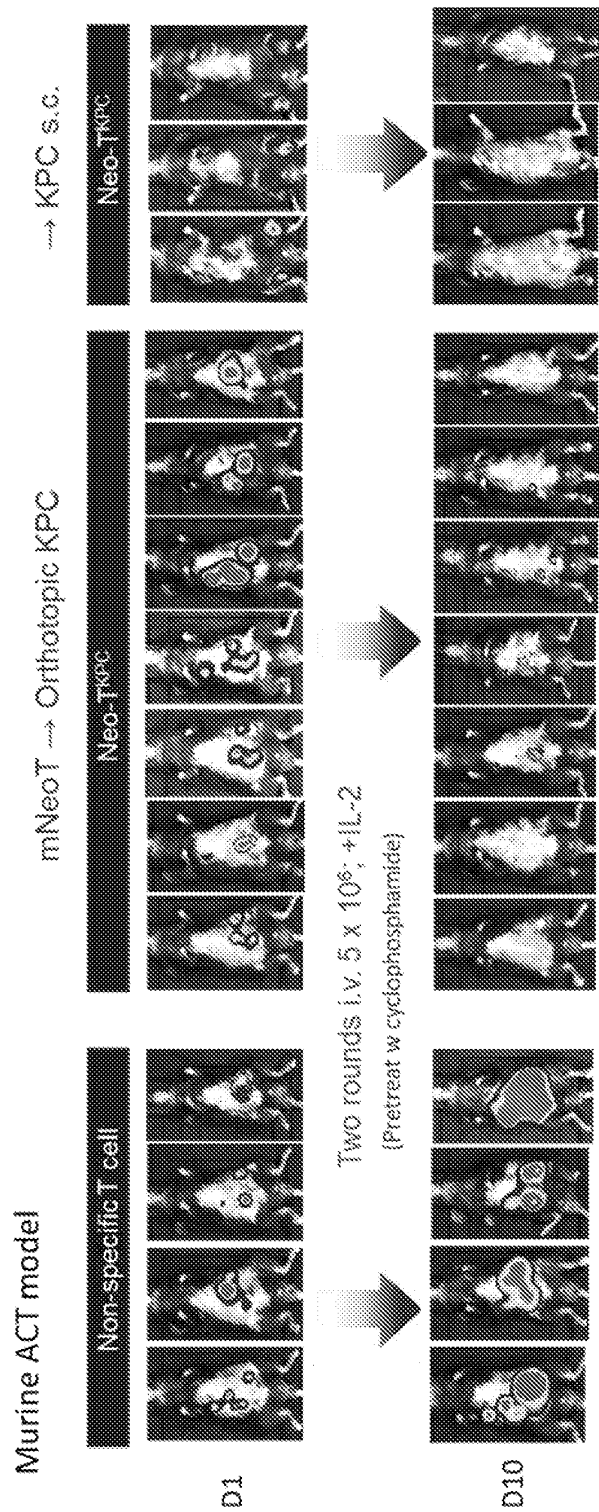
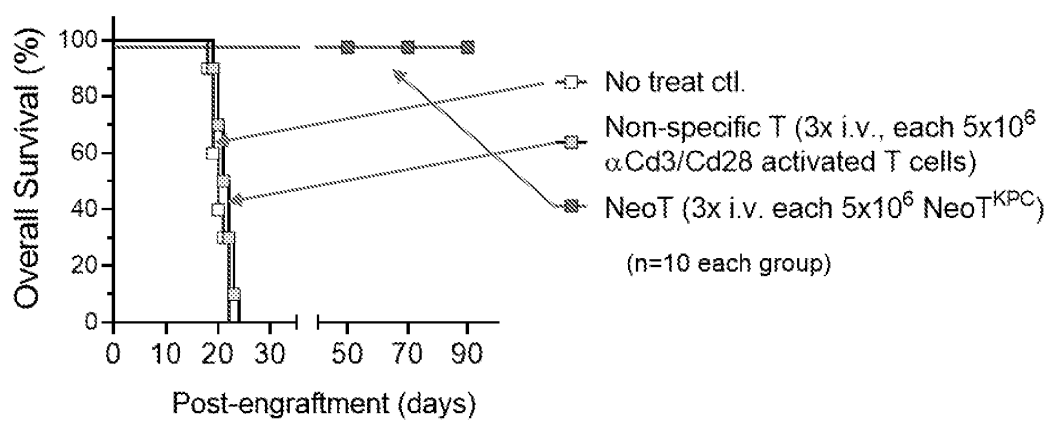


FIG. 28B

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims;; it is covered by claims Nos.:
4, 5 (completely); 1-3, 10-39 (partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.