Supplementary Table 1. A list of cancer immunotherapeutic agents that reprogram macrophage function or phenotype.

Target	Therapeutic*	Molecule type	Phase**	Trial ID
AHR	IK-175	Small molecule	1	NCT04200963, NCT05472506
CD163	OR2805	mAb	1/2	NCT05094804
CD24	IMM47	mAb	1	NCT05985083
CD24	ATG-031	mAb	1	NCT06028373
CD40	Dacetuzumab; SGN-40	mAb	2	NCT00079716, NCT00103779, NCT00283101, NCT00435916, NCT00525447, NCT00529503, NCT00556699, NCT00655837, NCT00664898
CD40	Selicrelumab; CP-870,893; RO7009789	mAb	1/2	NCT02157831, NCT01008527, NCT01456585, NCT02304393, NCT02588443, NCT02665416, NCT02760797, NCT03193190, NCT03424005, NCT03555149, NCT03892525
CD40	ChiLob 7/4	mAb	1	NCT01561911
CD40	SEA-CD40	mAb	2	NCT02376699, NCT04993677
CD40	Mitazalimab; ADC-1013; JNJ-64457107	mAb	1/2	NCT02379741, NCT02829099, NCT05650918, NCT04888312, NCT06205849
CD40	Sotigalimab; APX005M; PYX-107	mAb	2	NCT02482168, NCT02600949, NCT02706353, NCT03123783, NCT03214250, NCT03165994, NCT03389802, NCT03502330, NCT03597282, NCT03719430, NCT04337931, NCT04130854, NCT04495257, NCT05419479
CD40	ABBV-428	Bispecific Ab (Mesothelin)	1	NCT02955251
CD40	ABBV-927	mAb	1/2	NCT02988960, NCT03893955, NCT03818542, NCT04807972
CD40	MEDI5083	Fusion protein	1	NCT03089645
CD40	CDX-1140	mAb	2	NCT03329950, NCT04491084, NCT04536077, NCT04520711, NCT05029999, NCT05484011, NCT04616248, NCT05349890, NCT05849480, NCT05231122
CD40	NG-350A	Viral vector for mAb	1	NCT03852511, NCT04787991, NCT05165433
CD40	GEN1042; BNT312	Bispecific Ab (4-1BB)	1/2	NCT04083599, NCT05491317, NCT06057038
CD40	2141 V-11	mAb	1/2	NCT04059588, NCT04547777, NCT05126472, NCT05734560
CD40	YH003	mAb	2	NCT04481009, NCT05017623, NCT05031494, NCT05176509, NCT05420324
CD40	LVGN7409	mAb	1	NCT04635995, NCT05152212, NCT05075993
CD40	RO7300490; RG6189	Bispecific Ab (FAP)	1	NCT04857138

CD40	MP0317	Bispecific protein (FAP)	1	NCT05098405
CD40	MIL-97	mAb	1	NCT04965077
CD40	SHR-7367	Bispecific (FAP)	1	NCT05740202
CD40; CD47	SL-172154	Bispecific protein	1	NCT04406623, NCT04502888, NCT05275439, NCT05483933
CD47	Magrolimab; Hu5F9-G4	mAb	3	NCT02216409, NCT02678338, NCT02953782, NCT02953509, NCT03248479, NCT03558139, NCT03527147, NCT03869190, NCT03922477, NCT04435691, NCT04313881, NCT04541017, NCT04778410, NCT04778397, NCT04751383, NCT04854499, NCT04827576, NCT04892446, NCT04958785, NCT04599634, NCT05169944, NCT04788043, NCT05079230, NCT05330429, NCT05738161, NCT05835011, NCT06046482, NCT05829434, NCT05807126, NCT05367401
CD47	CC-90002	mAb	1	NCT02367196, NCT02641002
CD47	Ontorpacept; TTI-621; PF-0791800	Fusion protein	2	NCT02663518, NCT02890368, NCT04996004, NCT05507541
CD47	Evorpacept; ALX148	Fusion protein	2/3	NCT03013218, NCT04417517, NCT04643002, NCT04675294, NCT04755244, NCT05027139, NCT05025800, NCT05002127, NCT05167409, NCT05524545, NCT05467670, NCT05868226, NCT05787639, NCT04675333
CD47	SRF231	mAb	1	NCT03512340
CD47	Maplirpacept; PF-07901801; TTI-622	Fusion protein	2	NCT03530683, NCT05139225, NCT05261490, NCT05567887, NCT05675449, NCT05507541, NCT05896774, NCT05626322, NCT05896163
CD47	SHR1603	mAb	1	NCT03722186
CD47	IBI188	mAb	1	NCT03717103, NCT03763149, NCT04485052, NCT04485065, NCT04861948
CD47	AO-176	mAb	1/2	NCT03834948, NCT04445701
CD47	TG-1801	Bispecific Ab (CD19)	1	NCT03804996, NCT04806035
CD47	lemzoparlimab; TJ011133	mAb	3	NCT03934814, NCT04202003, NCT04912063, NCT05148533, NCT04895410, NCT05709093
CD47	HX009	Bispecific Ab (PD-1)	2	NCT04097769, NCT05731752, NCT04886271, NCT05189093
CD47	SGN-CD47M	Antibody–drug conjugate	1	NCT03957096
CD47	IMM01	Fusion protein	1/2	NCT05860075, NCT05140811, NCT05833984
CD47	IMM0306	Bispecific protein (CD20)	1/2	NCT05805943, NCT04746131, NCT05771883
CD47	ZL-1201	mAb	1	NCT04257617

CD47	IMC-002	mAb	1	NCT04306224, NCT05276310, NCT05946226
CD47	IBI322	Bispecific Ab (PD-L1)	2	NCT04328831, NCT04338659, NCT04795128, NCT04912466, NCT05296603, NCT05148442
CD47	DSP107	Bispecific protein (4-1BB)	1/2	NCT04440735, NCT04937166
CD47	MIL-95	mAb	1	NCT04651348
CD47	AK117; Ligufalimab	mAb	2	NCT04349969, NCT04728334, NCT04900350, NCT04980885, NCT05214482, NCT05227664, NCT05229497, NCT05235542, NCT05382442, NCT05960955, NCT06196203
CD47	Gentulizumab	mAb	1	NCT05263271, NCT05221385
CD47	TQB2928	mAb	1	NCT04854681, NCT05192512, NCT06008405
CD47	PF-07257876	Bispecific Ab (PD-L1)	1	NCT04881045
CD47	IBC0966	Bispecific Ab (PD-L1)	1/2	NCT04980690
CD47	6MW3211	Bispecific Ab (PD-L1)	2	NCT05048160, NCT05448599, NCT05431569, NCT05440045, NCT05446688
CD47	STI-6643	mAb	1	NCT04900519
CD47	CPO107	Bispecific protein (CD20)	1/2	NCT04853329
CD47	BAT7104	Bispecific Ab (PD-L1)	1	NCT05767060, NCT05200013
CD47	IMM2902	Bispecific protein (HER2)	1/2	NCT05805956, NCT05076591
CD47	NI-1801	Bispecific Ab (Mesothelin)	1	NCT05403554
CD47	HMPL-A83	mAb	1	NCT05429008
CD47	SG2501	Bispecific Ab (CD38)	1	NCT05293912
CD47	AUR103	Small molecule	1	NCT05607199
CD47	PT886	Bispecific Ab (Claudin 18.2)	1/2	NCT05482893
CD47	IMM2520	Bispecific protein (PD-L1)	1	NCT05780307
CD47	SG1906	Bispecific Ab (Claudin 18.2)	1	NCT05857332
CD47	PT217	Bispecific Ab (DLL3)	1	NCT05652686
CD47	D3L-001	Bispecific Ab (HER2)	1	NCT05957536
CD47	HCB101	Fusion protein	1	NCT05892718

C/EBPα	MTL-CEBPA	Small activating RNA	2	NCT02716012, NCT04105335, NCT05097911, NCT04710641
Cell therapy	CT-0508	Macrophage-based cell therapy	1	NCT04660929
Cell therapy	CT-0525	Monocyte-based cell therapy	1	NCT06254807
Cell therapy	MT-101	Monocyte-based cell therapy	1/2	NCT05138458
Cell therapy	SIRPant-M; SI-101	Macrophage-based cell therapy	1	NCT05967416
Cell therapy	Autologous monocytes, peginterferon alfa-2b and interferon gamma-1b	Monocyte-based cell therapy	1	NCT02948426
Clever-1	Bexmarilimab; FP-1305	mAb	1/2	NCT03733990, NCT05428969
Dectin-2	BDC-3042	mAb	1/2	NCT06052852
HDAC	Tefinostat; CHR-2845	Small molecule	1/2	NCT00820508, NCT02759601
HMGB1	SB17170	Small molecule	1	NCT05522868
IDO1	Indoximod; NLG-8189; 1-methyl-D-tryptophan	Small molecule	2	NCT00567931, NCT00739609, NCT01042535, NCT01191216, NCT01560923, NCT01792050, NCT02052648, NCT02073123, NCT02077881, NCT02502708, NCT02460367, NCT02835729, NCT03301636, NCT04049669, NCT05106296
IDO1	Epacadostat; INCB024360	Small molecule	3	NCT01195311, NCT01604889, NCT01685255, NCT01822691, NCT01961115, NCT02178722, NCT02118285, NCT02042430, NCT02166905, NCT02298153, NCT02327078, NCT02318277, NCT02575807, NCT02364076, NCT02559492, NCT02785250, NCT02752074, NCT02862457, NCT02959437, NCT03085914, NCT03196232, NCT03277352, NCT03358472, NCT03361865, NCT03260894, NCT03322540, NCT03374488, NCT03348904, NCT03322566, NCT03322384, NCT03414229, NCT03006302, NCT03217669, NCT03291054, NCT03361228, NCT03347123, NCT03463161, NCT03493945, NCT03589651, NCT03602586, NCT03707457, NCT03823131, NCT03471286, NCT03516708, NCT03532295, NCT04463771, NCT04586244
IDO1	GDC-0919; navoximod	Small molecule	1	NCT02048709, NCT02471846
IDO1	BMS-986205; linrodostat	Small molecule	3	NCT02658890, NCT02750514, NCT02935634, NCT02996110, NCT03192943, NCT03247283, NCT03346837, NCT03329846, NCT03335540, NCT03459222, NCT03519256, NCT03695250,

				NCT03792750, NCT03854032, NCT04047706, NCT04106414
IDO1	KHK2455	Small molecule	1	NCT02867007, NCT03915405
IDO1	PF-06840003	Small molecule	1	NCT02764151
IDO1	NLG802	Small molecule	1	NCT03164603
IDO1	LY3381916	Small molecule	1	NCT03343613
IDO1	MK-7162	Small molecule	1	NCT03364049
IDO1; TDO	HTI 1090; SHR9146	Small molecule	1	NCT03208959, NCT03491631
IDO1; TDO	M4112	Small molecule	1	NCT03306420
IDO1; TDO	DN1406131	Small molecule	1	NCT03641794
IDO1; TDO	LPM-3480226	Small molecule	1	NCT03844438
LAIR1	NGM438	mAb	1	NCT05311618
LAIR1	NC410	Fusion protein	1/2	NCT04408599, NCT05572684
LILRB1	SAR444881; BND-22	mAb	1/2	NCT04717375
LILRB1	AGEN1571	mAb	1	NCT05377528
LILRB2	MK-4830	mAb	2	NCT03564691, NCT04165070, NCT04165096, NCT04303169, NCT04626518, NCT04165083, NCT04895722, NCT04924101, NCT04541108, NCT04938817, NCT05446870, NCT05342636, NCT05319730
LILRB2	JTX-8064	mAb	1/2	NCT04669899
LILRB2	IO-108	mAb	1	NCT05054348, NCT05508100
LILRB2	BMS-986406	mAb	1	NCT05298592
LILRB2	CDX-585	Bispecific Ab (PD-1)	1	NCT05788484
LILRB2	ES009	mAb	1	NCT06007482
LILRB2	OR502	mAb	1/2	NCT06090266
LILRB2; LILRB1	NGM707	mAb	1/2	NCT04913337
LILRB2; LILRB1	IOS-1002	Fusion protein	1	NCT05763004
LILRB4	MK-0482	mAb	2	NCT03918278, NCT04165070, NCT04165096, NCT04165083, NCT04541108, NCT05038800
LILRB4	NGM831	mAb	1	NCT05215574
LILRB4	IO-202	mAb	1	NCT05309187

PI3Kγ	Eganelisib; IPI-549	Small molecule	2	NCT02637531, NCT03719326, NCT03980041, NCT03961698, NCT03795610
PI3Kγ	ZX-4081	Small molecule	1/2	NCT05118841
PI3Kγ	HS248	Small molecule	1	NCT05759234
PI3Kγ; PI3Kδ	Duvelisib; IPI-145	Small molecule	Appr.	NCT01476657, NCT01871675, NCT01882803, NCT02004522, NCT02049515, NCT02158091, NCT02204982, NCT02391545, NCT02292225, NCT02598570, NCT02711852, NCT02783625, NCT03372057, NCT03534323, NCT04038359, NCT03892044, NCT04707079, NCT03961672, NCT04193293, NCT04331119, NCT04209621, NCT04688658, NCT04803201, NCT05010005, NCT05057247, NCT04652960, NCT05065866, NCT04890236, NCT05044039, NCT05508659, NCT05675813, NCT05976997
PI3Kγ; PI3Kδ; SIK3	Tenalisib; RP6530	Small molecule	2	NCT02017613, NCT02567656, NCT03471351, NCT03711578, NCT03711604, NCT03770000, NCT04204057, NCT05021900
PI3Kγ; PI3Kδ	ZX-101A	Small molecule	1	NCT04504708, NCT05269940, NCT05258266
Siglec-15	NC318	mAb	2	NCT03665285, NCT04699123
Siglec-15	PYX-106	mAb	1	NCT05718557
SIRPα	CC-95251	mAb	1	NCT03783403, NCT05168202
SIRPα	BI 765063	mAb	1	NCT03990233, NCT04653142, NCT05068102, NCT05249426, NCT05446129
SIRPα	GS-0189	mAb	1	NCT04502706
SIRPα	BR105; lumistobart	mAb	1	NCT05351697
SIRPα	LM-101	mAb	1/2	NCT05615974
SIRPα	ADU-1805	mAb	1	NCT05856981
SIRPα	BYON4228	mAb	1	NCT05737628
STAT3	OPB-31121	Small molecule	1/2	NCT00511082, NCT00657176, NCT01029509, NCT00955812, NCT01406574
STAT3	Napabucasin; BBI608	Small molecule	3	NCT01775423, NCT01325441, NCT01776307, NCT01830621, NCT02024607, NCT02231723, NCT02178956, NCT02279719, NCT02347917, NCT02358395, NCT02315534, NCT02432326, NCT02352558, NCT02467361, NCT02641873, NCT02753127, NCT02851004, NCT02826161, NCT02993731, NCT03522649, NCT03647839, NCT03721744
STAT3	OPB-51602	Small molecule	1	NCT01184807, NCT01423903, NCT01344876, NCT02058017
STAT3	AZD9150; danvatirsen;	Anti-sense oligonucleotide	2	NCT01563302, NCT01839604, NCT02417753, NCT02499328, NCT02549651, NCT02546661, NCT02983578, NCT03334617, NCT03394144,

	IONIS-STAT3Rx			NCT03421353, NCT03527147, NCT03819465, NCT03794544, NCT05814666
STAT3	OPB-111077	Small molecule	2	NCT01711034, NCT01942083, NCT02250170, NCT03063944, NCT03158324, NCT03197714, NCT04049825
STAT3	TTI-101	Small molecule	1/2	NCT03195699, NCT05384119, NCT05440708, NCT06141031
STAT3	DSP-0337	Small molecule	1	NCT03416816
STAT3	WP1066	Small molecule	2	NCT01904123, NCT04334863, NCT05879250
STAT3	DCR-STAT3	Small interfering RNA	1	NCT06098651
STAT6	ExoASO-STAT6; CDK-004	Exosome-based delivery of anti-sense oligonucleotide	1	NCT05375604
STING	MIW815; ADU-S100	Small molecule	2	NCT02675439, NCT03172936, NCT03937141
STING	MK-1454; ulevostinag	Small molecule	2	NCT03010176, NCT04220866
STING	MK-2118	Small molecule	1	NCT03249792
STING	GSK3745417	Small molecule	1	NCT03843359, NCT05424380
STING	BMS-986301	Small molecule	1	NCT03956680
STING	IMSA101	Small molecule	2	NCT04020185, NCT05846646, NCT05846659, NCT06026254
STING	SB 11285	Small molecule	1	NCT04096638
STING	SYNB1891	Bacterial vector	1	NCT04167137
STING	E7766	Small molecule	1	NCT04144140
STING	TAK-676; dazostinag	Small molecule	1/2	NCT04420884, NCT06062602, NCT04879849
STING	exoSTING; CDK-002	Exosome-based delivery of STING agonist	1/2	NCT04592484
STING	SNX281	Small molecule	1	NCT04609579
STING	HG381	Small molecule	1	NCT04998422
STING	TAK-500	Antibody–drug conjugate (CCR2)	1/2	NCT05070247
STING	KL340399	Small molecule	1	NCT05387928, NCT05549804
STING	BI 1387446	Small molecule	1	NCT04147234
STING	BI 1703880	Small molecule	1	NCT05471856
STING	XMT-2056	Antibody–drug conjugate (HER2)	1	NCT05514717

STING	CRD3874	Small molecule	1	NCT06021626
STING	ONM501	STING-agonist in polymeric micelles	1	NCT06022029
TLR2; TLR4	OM-174; CRX-527	Synthetic lipid A analogue	1	NCT01800812
TLR3	Hiltonol; poly-ICLC	Nucleic-acid based	2	NCT00052715, NCT00058123, NCT00553683, NCT00880867, NCT01188096, NCT01984892, NCT02061449, NCT02643303, NCT03162562, NCT02834052, NCT03721679, NCT04116320, NCT05281926, NCT04544007, NCT06064279
TLR3	Rintatolimod; ampligen	Nucleic-acid based	2	NCT01545141, NCT03403634, NCT03599453, NCT03734692, NCT03899987, NCT04081389, NCT04379518, NCT05927142, NCT05494697, NCT05756166
TLR3	BO-112	Nucleic-acid based	2	NCT02828098, NCT04508140, NCT04420975, NCT04570332, NCT04777708, NCT05265650
TLR4	G100; GLA-SE	Synthetic lipid A derivative	2	NCT02035657, NCT02180698, NCT02406781, NCT02501473
TLR4	GSK1795091	Synthetic lipid A analogue	1	NCT03447314
TLR5	entolimod; CBLB502	Recombinant protein	2	NCT01527136, NCT02715882
TLR5	mobilan; M-VM3	Viral vector for TLR5 and entolimod	1/2	NCT02654938, NCT02844699
TLR7	Imiquimod; aldara; TMX-101; UGN-201	Small molecule	Appr.	NCT00031759, NCT00189241, NCT00189306, NCT00204555, NCT00066872, NCT00189280, NCT00129519, NCT00079300, NCT00314756, NCT00707174, NCT00273910, NCT00453050, NCT00384124, NCT00504023, NCT00581425, NCT00785122, NCT00941811, NCT00803907, NCT00821964, NCT01212549, NCT00865644, NCT00899574, NCT00941252, NCT01161888, NCT01088737, NCT01264731, NCT01421017, NCT01720407, NCT01731652, NCT01283763, NCT01861535, NCT02135419, NCT02329171, NCT02130323, NCT02394132, NCT02059499, NCT02242929, NCT02669459, NCT02917746, NCT00463359, NCT03206138, NCT03180684, NCT03276832, NCT03233412, NCT03116659, NCT04279535, NCT03370406, NCT04859361, NCT03872947, NCT03534947, NCT03196180, NCT03982004, NCT05055050, NCT04883645, NCT05375903
TLR7	PF-4878691; 852-A	Small molecule	2	NCT00095160, NCT00091689, NCT00189332, NCT00276159, NCT00319748
TLR7	LHC-165	Small molecule	1	NCT03301896
TLR7	DSP-0509; guretolimod	Small molecule	1/2	NCT03416335

TLR7	NJH395	Antibody–drug conjugate (HER2)	1	NCT03696771
TLR7	BNT411	Small molecule	1/2	NCT04101357
TLR7	TQ-A3334	Small molecule	1/2	NCT04273815
TLR7	RO7119929	Small molecule prodrug	1	NCT04338685
TLR7	SHR2150	Small molecule	1/2	NCT04588324
TLR7	MBS8(1V270)	Micellar TLR-agonist	1	NCT04855435
TLR7	CAN1012	Small molecule	1	NCT04987112, NCT05580991
TLR7; TLR8	Resiquimod; R848; STM-416	Small molecule	1/2	NCT01676831, NCT01808950, NCT05710848
TLR7; TLR8	telratolimod; MEDI9197	Small molecule	1	NCT02556463
TLR7; TLR8	BDB001; EIK1001	Small molecule	2	NCT03486301, NCT04196530, NCT03915678, NCT04840394, NCT04819373, NCT06246110
TLR7; TLR8	NKTR-262	Small molecule	1/2	NCT03435640
TLR7; TLR8	BDC-1001	Antibody–drug conjugate (HER2)	2	NCT04278144, NCT05954143
TLR7; TLR8	TransCon	Hydrogel with resiquimod	2	NCT04799054, NCT05081609, NCT05980598
TLR7; TLR8	BDB018	Small molecule	1	NCT04840394
TLR8	motolimod; VTX-2337	Small molecule	2	NCT00688415, NCT01294293, NCT01334177, NCT01289210, NCT01666444, NCT01836029, NCT02124850, NCT02431559, NCT02650635, NCT03906526, NCT04272333
TLR8	DN-1508052	Small molecule	1	NCT03934359
TLR8	SBT6050	Antibody–drug conjugate (HER2)	1/2	NCT04460456, NCT05091528
TLR9	PF-03512676; CpG 7909	Nucleic-acid based	2	NCT00031278, NCT00043407, NCT00040950, NCT00043394, NCT00043368, NCT00043420, NCT00070629, NCT00369291, NCT00070642, NCT00233506, NCT00185965, NCT00438880, NCT00880581, NCT00824733
TLR9	EMD 1201081; IMO-2055	Nucleic-acid based	2	NCT00729053, NCT00633529, NCT00719199, NCT01040832, NCT01360827
TLR9	GNKG168	Nucleic-acid based	1	NCT01035216, NCT01743807
TLR9	SD-101	Nucleic-acid based	2	NCT01042379, NCT01745354, NCT02254772, NCT02266147, NCT02521870, NCT02731742, NCT02927964, NCT03007732, NCT03322384,

				NCT03410901, NCT03831295, NCT04050085, NCT04935229, NCT05220722, NCT05607953
TLR9	MGN1703; lefitolimod	Nucleic-acid based	3	NCT01208194, NCT02200081, NCT02077868, NCT02668770
TLR9	CMP-001; vidutolimod	Virus-like vector for a TLR9 agonist	2/3	NCT02554812, NCT02680184, NCT03084640, NCT03438318, NCT03618641, NCT03507699, NCT03983668, NCT04401995, NCT04633278, NCT04695977, NCT04698187, NCT04807192, NCT04387071, NCT04708418, NCT04916002, NCT05445609
TLR9	tilsotolimod; IMO-2125	Nucleic-acid based	3	NCT02644967, NCT03052205, NCT03445533, NCT03865082, NCT04126876, NCT04196283, NCT04270864
TLR9	DV281	Nucleic-acid based	1	NCT03326752
TLR9	cavrotolimod	Nucleic-acid based	1/2	NCT03684785
TREM1	PY159	mAb	1	NCT04682431
VISTA	CI-8993; Onvatilimab; JNJ-61610588	mAb	1	NCT02671955, NCT04475523
VISTA; PD-L1	CA-170	Small molecule	1	NCT02812875
VISTA	W0180	mAb	1	NCT04564417
VISTA	HMBD-002	mAb	1	NCT05082610
VISTA	KVA-12123	mAb	1/2	NCT05708950
VISTA	SNS-101	mAb	1/2	NCT05864144
VISTA	PMC-309	mAb	1	NCT05957081

*Therapeutics for the same target and their trial IDs were ordered based on trial start date. Former drug names were omitted, if they did not yield clinicaltrials.gov search results. For TLR agonists, trials investigating the TLR agonist as an adjuvant to cancer vaccine or dendritic cell therapy were excluded.
**Highest trial phase. For phase 1/2 and phase 2/3 trial designs, underlined numbers indicate the phase reported in company pipeline in January 2024.
Ab, antibody; Appr., approved; FAP, fibroblast activation protein alpha; mAb, monoclonal antibody; NA, not available.