Table S1. Clinical trials with published information about the method of DC-based vaccine generation and immune and/or clinical response.

IN VIVO TARGETING									
Type of vaccine		**Combinatorial treatment**	**Condition**	**Trial phase**	**Detected immune response**	**Median OS, months**	**Median PFS, months**	**Clinical trial ID**	**Refs**
Target DC	**Targeting method**								
GM-CSF recruited DCs	Administration of irradiated GM.CD40L bystander cells, irradiated CCL21-expressing NCI-H1944 cells, irradiated NCI-H2122 cells	GM-CSF	Lung adenocarcinoma	I/II	N/S	9.5	3.4	NCT01433172	[1]
GM-CSF recruited DCs	Administration of irradiated GM.CD40L bystander cells, irradiated NCI-H1944 and NCI-H2122 cells	CYP	Refractory lung adenocarcinoma	II	N/A	23 (7.1)	N/S	NCT00601796	[2]
	Administration of synthetic HLA-restricted peptides, corresponding to personal neoantigens	TLR3, Poly(IC:LC)	Melanoma	I	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT01970358	[3]
GM-CSF recruited DCs	Administration of multiepitope vaccine, composed of tyrosinase, gp100, MART-1 peptides	GM-CSF	Melanoma	III	$CD8^+$ T cells	68.6 (63.3) N/S	11.5 (9.8) N/S	NCT01989572	[4,5]
Secondary lymphoid organ-resident DCs targeting	Administration of autologous OKT3, IL-2 PBMC-derived lymphocytes, transduced with retroviral LM3TN vector, encoding MAGE-A3 and HSV-TKneo	N/U	Melanoma	II	T-cell response; DTH-positive test	N/R (12)	N/A	Not available	[6]
	Administration of MM200 cell line derived liposomes, comprised of: MM200 derived 3NTA-DTDA/ POPC modified plasma membrane vesicles containing gp100, tyrosinase and MART-1; IFNγ; DC-SIGN-specific domain Ab DMS5000	N/U	Melanoma	I	N/S	N/A	N/A	Not available	[7]
GM-CSF recruited DCs	Administration of irradiated GM.CD40L bystander cells and irradiated autologous tumor cells	GM-CSF	Different resectable tumors	I	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	Not available	[8]
	Administration of MVA-brachyury-TRICOM vaccine (MVA strain of vaccinia encoding expression of brachyury, B7.1, LFA-3, ICAM-1	N/U	Different advanced cancers	I	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT02179515	[9]
GM-CSF recruited DCs	Administration of CDX-1307 fusion protein, comprised of MR-specific IgG_1 and hCG-β	GM-CSF, Poly(IC:LC), resiquimod	Different advanced cancers	I	T-cell response; humoral	N/A	N/A	NCT00709462; NCT00648102	[10]
	Administration of CDX-1401 fusion protein, comprised of anti-DEC-205 monoclonal antibody fused to the full-length NY-ESO-1	Poly(IC:LC), resiquimod	Different advanced cancers	I	$CD4^+$ T cells; $CD8^+$ T cells; IFN-γ-producing cells; humoral	N/A	N/A	NCT00948961	[11]
	Administration of autologous tumor-derived HSP96-peptide complexes	CYP, TMZ	Glioblastoma	I	IFN-γ-producing cells	31.4	11	NCT02122822; ChiCTR-ONC-13003309	[12]
	Administration of autologous tumor-derived HSP96-peptide complexes	Radiotherapy, TMZ	Glioblastoma	II	N/A	23.8	18	NCT00905060	[13]
	Administration of autologous tumor-derived HSP96-peptide complexes	N/U	Glioblastoma	II	N/A	42.6	19.1	NCT00293423	[14]

	Administration of HspE7, which is *M. bovis* HSP65 fused to HPV 16 E7 protein	N/U	Cervical intraepithelial neoplasia III	II	humoral	N/A	N/A	NCT00075569	[15,16]
	Administration of autologous tumor-derived HSP96-peptide complexes	GM-CSF, IFN-α	Melanoma	II	IFN-γ-producing cells	N/A	N/A	Not available	[17]
	Administration of autologous tumor-derived HSP96-peptide complexes	N/U	Pancreatic adenocarcinoma	I	DTH-positive test; IFN-γ-producing cells; $CD8^+$ T cells;	2.2	0.9	Not available	[18]
	Administration of LV305, which is NY-ESO-1-encoding lentiviral vector, functionalized to target DC-SIGN	N/U	Different NY-ESO-1-expressing tumors	I	$CD4^+$ T cells; $CD8^+$ T cells; humoral	31.1	4.6	NCT02122861	[19]
EX VIVO LOADING									
Type of vaccine		**Combinatorial treatment**	**Condition**	**Trial phase**	**Detected immune response**	**Median OS, months**	**Median PFS, months**	**Clinical trial ID**	**Refs**
DCs source	**Loading method**								
GM-CSF, IL-4 autologous moDCs	Loading with MART-1 peptide	Tremelimumab	Melanoma	I	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT00090896	[20]
GM-CSF, IL-4 autologous moDCs	Loading with HLA-restricted melanoma-specific peptides or with autologous tumor lysate + KLH	N/U	Melanoma		DTH-positive test	N/A	N/A	Not available	[21]
GM-CSF, IL-4 autologous moDCs	PEG-mediated fusion with autologous irradiated tumor cells	IL-2	Melanoma	I/IIa	N/A	16.1 (8.5)	N/A	Not available	[22]
GM-CSF, IL-13 autologous moDCs	Loading with allogeneic M17 cell line lysate	N/U	Melanoma	I/II	$CD8^+$ T cells	N/A	N/A	Not available	[23]
GM-CSF, IFN-α2b autologous moDCs	N/U	Dacarbazine	Melanoma	I	$CD8^+$ T cells	N/A	N/A	Not available	[24]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α	Loading with Mage-3A1 peptide	N/U	Melanoma		$CD8^+$ T cells	N/A	N/A	Not available	[25]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α	Loading with autologous tumor lysate	CYP, ATTL	Melanoma	I	T-cell response	20 (10)	N/A	Not available	[26]
GM-CSF, IL-4 autologous moDCs; matured with IL-1β, IL-6, TNF-α, PGE2	Loading with HLA-restricted melanoma-specific peptides	N/U	Melanoma	I	$CD4^+$ T cells; DTH-positive test	N/A	N/A	Not available	[27]
GM-CSF, IL-4 autologous moDCs; matured with PGE2, OK432	Loading with synthetic HLA-restricted WT, gp100, tyrosinase, MAGE-A2 peptides	Carboplatin, paclitaxel	Melanoma	I/II	$CD8^+$ T cells; IFN-γ-producing cells	12	2.3	UMIN000006629	[28]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α, PGE2	Loading with gp100, tyrosinase peptides + KLH	IL-2	Melanoma	I/II	$CD8^+$ T cells; B-cells; humoral; DTH-positive test	N/A	N/A	NCT00243594	[29,30]
GM-CSF, IL-4 autologous moDCs; matured with IL-1β, IL-6, TNF-α, PGE2, α-GalCer	Loading with two NY-ESO-1 peptides, peptides from influenza virus proteins (PB-1, M1, NP)	N/U	Melanoma	I	$CD4^+$ T cells; $CD8^+$ T cells; NK cells	N/A	N/A	Not available	[31]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α, PGE2	Loading with gp-100 and tyrosinase peptides, or electroporation with full length-encoding gp-100 and tyrosinase mRNA	IL-2	Melanoma	III	T-cell response	63.6 (31)	41.9 (24.3)	Not available	[32]
GM-CSF, IL-4 autologous moDCs; matured with TNF and CD40L	Loading with allogeneic apoptotic and necrotic Colo829 cells	N/U	Melanoma	I	$CD8^+$ T cells	22.5	N/A	Not available	[33]

GM-CSF, IL-4 autologous moDCs; matured by electroporation with poly I:$C_{12}U$ and CD40L mRNA, or with CD40L, CD70 and caTLR4 mRNA	Electroporation with 1 out of listed antigen-coding mRNA: MAGE-A1, MAGEA3, MAGE-C2, MelanA/MART-1, tyrosinase, or gp100	IFN-α-2b	Melanoma	I/II	$CD8^+$ T cells; DTH-positive test	N/R	22	NCT00074230; NCT01066390	[34-36]
Electroporation of autologous $CD14^+$ cells with siRNAs targeting 3 inducible immunoproteasome subunits; GM-CSF, IL-4 autologous moDCs; matured with IL-1β, IL-6, TNF-α, PGE2	Electroporation with mRNAa encoding MART-1, MAGE-3,TYR, gp100	N/U	Melanoma	I	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT00672542	[37]
IL-3, IL-6, SCF, IL-4, GM-SCF autologous $CD34^+$ precursors; matured with TNF-α	Loading with HLA-restricted melanoma-specific peptides	N/U	Melanoma	I	$CD4^+$ T cells; $CD8^+$ T cells; DTH-positive test	N/A	N/A	Not available	[38]
GM-CSF, FLT3-L, TNF autologous $CD34^+$ precursors	Loading with HLA-restricted melanoma-specific peptides + KLH	N/U	Melanoma		$CD8^+$ T cells; DTH-positive test	N/A	N/A	Not available	[39]
Autologous peripheral blood $CD1c^+$ isolated myeloid DCs; cultured with GM-SCF, KLH	Loading with HLA-restricted melanoma-specific peptides	N/U	Melanoma	I	$CD8^+$ T cells	29 (10.9)	17.6 (2.3)	NCT01690377	[40]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α, PGE2	Coculture with apoptotic LNCaP	N/U	Prostate cancer	I/II	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT00289341	[41,42]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α, PGE2	Coculture with apoptotic PC3	N/U	Prostate cancer	I/II	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT00345293	[41,42]
GM-CSF, IL-4 autologous moDCs; matured with Poly I:C	Loading with irradiated LNCaP cell line lysate	docetaxel, prednisone, CYP, imiquimod	Prostate cancer	I/II	$CD3^+$/$HLA\text{-}DR^+$; $CD8^+$ T cells; humoral	19 (11.8/13)	N/A	EudraCT 2009-017295-24	[43]
GM-CSF, IL-4 autologous moDCs; matured with Poly I:C	Loading with irradiated LNCaP cell line lysate	CYP, imiquimod	Prostate cancer	I/II	$CD8^+$ T cells; humoral	N/A	N/A	EudraCT 2009-017259-91	[44]
GM-CSF, IL-4 autologous moDCs; matured with IL-1β, IL-6, TNF-α, PGE2	Transfection with PAP and PSA coding mRNA	Docetaxel	Prostate cancer	II	IFN-γ-producing cells; DTH-positive test	N/A	5.7 (5.5)	NCT01446731	[45]
GM-CSF, IL-4 autologous moDCs; matured with LPS, rimiducid	Transduction with Ad5f35 adenovirus vector encoding ihCD40	Rimiducid	Prostate cancer	I	$CD8^+$ T cells	N/A	N/A	Not available	[46]
Autologous Peripheral blood APCs fraction	Loading with PAP fused with GM-CSF	N/U	Prostate cancer	III	T-cell response	25.9 (21.4)	11.7 (10)	NCT00005947	[47]
Autologous peripheral blood APCs fraction	Loading with PAP fused with GM-CSF	N/U	Prostate cancer	III	T-cell response; humoral	25.8 (21.7)	14.4 (14.6)	NCT00065442	[48]
Autologous peripheral blood $CD1c^+$ isolated myeloid DCs;	Loading with synthetic HLA-restricted PSA, PSMA, PAP, FMP + KLH	N/U	Prostate cancer	I	DTH-positive test	18	N/A	Not available	[49]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α, PGE2	Coculture with autologous apoptotic brain tumor cells + KLH	N/U	Primary brain cancer	I	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT00893945	[41]
GM-CSF, IL-4 autologous moDCs	Coculture with autologous irradiated tumor cells	TMZ	Glioblastoma	I	N/S	23	N/A	ACTRN 12611000029998	[50]
GM-CSF, IL-4 autologous moDCs	Loading with autologous irradiated glioma stem cell lysate	Radiotherapy or chemotherapy	Glioblastoma	II	$CD4^+$ T cells; $CD8^+$ T cells	13.7 (10.7)	7.7 (6.9)	Not available	[51]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α	Loading with synthetic HLA-restricted tumor-specific peptides	N/U	Glioblastoma	I	$CD8^+$ T cells	38.4	16.9	Not available	[52]
GM-CSF, IL-4 autologous moDCs; mature with TNF-α , IL-1β, IL-6	Electroporation with CMV pp65-mRNA	Adoptive T-cell transfer	Glioblastoma	I	$CD8^+$ T cells	N/A	N/A	NCT00693095	[53]

GM-CSF, IL-4 autologous moDCs; matured with TNF-α, IL-1β, PGE2	Loading with autologous tumor lysate derived proteins	TMZ, radiotherapy	Glioblastoma	II	$CD4^+$ T cells; $CD8^+$ T cells; NK cells	19	N/A	EudraCT 2009-018228-14	[54]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α, IL-1β, PGE2	Loading with autologous tumor lysate	TMZ, radiotherapy	Glioblastoma	I/II	N/S	19.4	11	EudraCT 2006-002881-20	[55]
autologous moDCs; matured with TNF-α, PGE2	Loading with autologous tumor lysate	TMZ	Glioblastoma	II	$CD4^+$ T cells	28	9.5	NCT00323115	[56]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α, IFN-α, poly I:C	Loading with autologous tumor lysate	Surgery, radiotherapy, TMZ	Glioblastoma	II	$CD4^+$ T cells; IFN-γ-producing cells	23.4	12.7	NCT01006044; EudraCT 2009-009879-35	[57]
GM-CSF, TNF autologous $CD34^+$ precursors	Transfection with pp65-LAMP/A64 mRNA	TMZ, tetanus/diphtheria toxoid	Glioblastoma	I	N/A	N/R (18.5)	N/R (10.8)	NCT00639639	[58]
GM-CSF, TNF autologous $CD34^+$ precursors	Transfection with pp65-encoding mRNA	TMZ, GM-CSF	Glioblastoma	I	$CD8^+$ T cells	41.1 (8)	25.3 (19.2)	NCT00639639	[59]
GM-CSF, IL-4 autologous moDCs	Coculture with apoptosed-irradiated 1650 cell line	N/U	Non-small-cell lung carcinoma	II	IFN-γ-producing cells	N/A	N/A	NCT00103116	[60,61]
GM-CSF, IL-4 autologous moDCs	Transduction with adenovirus vector encoding CCL21	N/U	Non-small-cell lung carcinoma	I	$CD8^+$ T cells; humoral	3.9	N/A	NCT01574222	[62]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α	Loading with MUC-1 peptide	CIK, radiotherapy	Non-small-cell lung carcinoma		N/S	13.3 (15.3)	11 (7.7)	ChiCTR-TRC-12002369	[63]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α	Loading with allogeneic A549 or SK-MES- cell lines lysate	CIK	Non-small-cell lung carcinoma		$CD8^+$ T cells	N/A	N/A	Not available	[64]
GM-CSF, IL-4 autologous moDCs; matured with iAPA, flagellin	Loading with surviving and MUC1 peptides, and SOCS1-specific siRNA	N/U	Non-small-cell lung carcinoma	I	Increase in cytokine levels	N/A	N/A	Not available	[65]
Isolation of DCs and ATK from tumor draining lymph nodes	N/U	Platinum-based chemotherapy, adoptive transfer of DCs/ATK mixture	Non-small-cell lung carcinoma	III	N/A	N/R (47.5)	N/R (16.56)	Not available	[66]
GM-CSF, IL-4 autologous moDCs	Transduction with adenovirus vector encoding p53	All-trans-retinoic acid	Small cell lung cancer	II	IFN-γ-producing cells	N/S	N/S	Not available	[67]
GM-CSF, IL-4 autologous moDCs	Loading with autologous tumor stem cell lysate	N/U	Hepatocellular carcinoma	I	N/A	N/A	N/A	Not available	[68]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α	Electroporation with HSP70 mRNA	N/U	Hepatocellular carcinoma	I	$CD8^+$ T cells; NK cells	N/A	N/A	Not available	[69]
GM-CSF, IL-4 autologous moDCs; matured with IL-1β, IL-6, TNF-α, PGE2, IFN-γ, OK432, poly I:C	Loading with recombinant AFP, MAGE-1, and GPC-3 antigens	Imiquimod	Hepatocellular carcinoma	I/IIa	T-cell response	N/A	38.4 (10.8)	ICTRP KCT0000427	[70]
GM-CSF, IL-4 autologous moDCs	Loading with one of HLA-restricted synthetic peptides: Cap1-6D, hTERT, or surviving peptide	Poly(IC:LC)	Pancreatic cancer	I	T-cell response	7.7	3	NCT01410968	[71]
GM-CSF, IL-4 autologous moDCs; matured with PGE2, OK432	Loading with HLA-restricted WT1 peptides	Gemcitabine	Pancreatic cancer	I	DTH-positive test	N/A	N/A	Not available	[72]
GM-CSF, IL-4 autologous moDCs; matured with PGE2, OK432	Loading with synthetic HLA-restricted WT1 peptide	Gemcitabine	Pancreatic cancer	I	$CD8^+$ T cells; DTH-positive test	8.1	N/A	UMIN000004855	[73]
IL-4, GM-SCF autologous $CD34^+$ precursors; matured with TNF-α	N/U	CIK, S-1	Pancreatic cancer	I/II	CD4+ T cells	7 (4.7)	4.5 (3)	NCT01781520	[74]
GM-CSF, IL-4 allogeneic moDCs; matured with TNF-α	N/U	Allogeneic lymphocyte infusion	Hematologic cancers	I	T-cell stimulation in MLR	N/A	N/A	NCT00476177	[75]

Autologous moDCs	N/U	Rituximab, radiotherapy	Follicular lymphoma		$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	Not available	[76]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α	Loading with α-Gal–conjugated autologous lymphoma cell membranes	mDC coculture and administration with CIK	B-cell lymphoma	I	$CD4^+$ T cells; $CD8^+$ T cells; NK cells	N/A	N/A	ANZCTR 12611000988954	[77]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α, PGE2	Electroporation with WT1-encoding mRNA, or WT1-DC-LAMP-encoding mRNA	N/U	Acute myeloid leukemia	II	$CD8^+$ T cells	N/R (21.1)	59.6 (8.7)	NCT00965224	[78]
GM-CSF, IL-4 autologous moDCs; matured with IL-1β, IL-6, TNF-α, PGE2	Electroporation with mRNA encoding hTERT and LAMP-1	N/U	Acute myeloid leukemia	II	IFN-γ-producing T cells; DTH-positive test	N/A	N/A	NCT00510133	[79]
GM-CSF, TNF-α, IL-4 DCOne cell line; matured with IL-1β, TNF-α, PGE2; irradiated	N/U	N/U	Acute myeloid leukemia	I	IFN-γ-producing T cells; $CD4^+$ T cells; $CD8^+$ T cells; DTH-positive test	36	N/A	Not available	[80]
GM-CSF, IL-4 autologous moDCs; matured with IL-1β, IL-6, TNF-α, PGE2	Loading with mHag peptide, or KLH	Donor lymphocyte infusion	Multiple myeloma	I/II	$CD8^+$ T cells	N/A	3.5	EudraCT 2012-002435-28	[81,82]
GM-CSF, IL-4 autologous moDCs	Loading with fusion protein, consists from oxidized mannan, MUC1 fragment, and glutathione S-transferase	N/U	Epithelial ovarian cancer	II	$CD4^+$ T cells; $CD8^+$ T cells	N/R (26)	>12.91 (4.94)	NCT01068509	[83]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α	Loading with autologous tumor lysate + KLH	IL-2	Ovarian cancer	I/II	IFN-γ-producing T cells; NK cells	N/A	N/A	ICTRP KCT0000831	[84]
GM-CSF, IL-4 autologous moDCs; matured with IL-1β, IL-6, TNF-α, PGE2	Loading with recombinant HPV 16 E7 or HPV 18 E7 oncoprotein	N/U	Cervical cancer		T-cell response; humoral	N/A	N/A	Not available	[85]
GM-CSF, IL-4 autologous moDCs; matured with IFN-γ, LPS, IL-1β, IL-6, TNF-α, PGE2	HER2/neu peptides loading	N/U	Breast cancer	I	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT02063724	[86]
GM-CSF, IL-4 autologous moDCs; matured with IFN-γ, LPS	Loading with HER2 HLA-restricted peptides	N/U	Ductal carcinoma	I/II	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT02061332	[87]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α	Loading with autologous tumor lysate	IL-2, mDC coculture and administration with CIK	Renal cell carcinoma		$CD4^+$ T cells; $CD8^+$ T cells	28 (11)	N/A	Not available	[88]
GM-CSF, IL-4 allogeneic moDCs; matured with IFN-γ, poly I:C, R848	N/U	Surgery	Renal cell carcinoma	I/II	$CD4^+$ T cells; $CD8^+$ T cells	N/R	N/A	NCT01525017	[89]
GM-CSF, IL-4 autologous moDCs; matured with IL-1β, IL-6, TNF-α, PGE2	Loading with MAGE-A1, MAGE-A3, NY-ESO-1 peptides	Imiquimod	Neuroblastoma, sarcoma	I	$CD4^+$ T cells; $CD8^+$ T cells	N/A	N/A	NCT01241162	[90]
GM-CSF, IL-4 autologous moDCs; matured TNF-α, OK432	Loading with autologous tumor lysate	N/U	Bone and soft tissue sarcoma	I/II	IFN-γ-producing cells	N/A	N/A	Not available	[91]
GM-CSF, IL-4 autologous moDCs; matured with TNF-α, KLH, OK432	Loading with synthetic HLA-restricted RNF43 peptides	DC-activated autologous killer lymphocytes, IL-2, CYP	Different advanced solid tumors	I	$CD8^+$ T cells	N/A	N/A	UMIN000003945	[92]

Abbreviations used in table: Ab - antibody; ATK – activated T killers; ATTL – adoptive transfer of tumor-infiltrated lymphocytes; CIK – cytokine-induced killer cells; CYP – cyclophosphamide; DTH - delayed-type hypersensitivity reaction; DTIC – dacarbazine; MLR – mixed leukocyte reaction; moDCs - monocyte-derived dendritic cells; N/A – not assessed; N/R – not reached due to only few deaths of patients; N/S – not significant; N/U – was not used; Poly I:C, poly I:C_{12}U, Poly(IC:LC) - polyinosinic-polycytidylic acid and its different derivatives; S-1 – combination drug

comprised of fluoropyrimidine tegafur, DPD-inhibitor gimeracil, and oteracil potassium; TMZ – temozolomide; α-Gal - α-1,3-galactosyltransferase. Control, non-responders, or other comparison group numbers are indicated in brackets if available.

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