

# Targeting Immune Checkpoints

Among the most promising approaches to activate therapeutic antitumor immunity is the blockade of immune checkpoints. Immune checkpoints refer to a plethora of inhibitory pathways hardwired into the immune system that are crucial for maintaining self-tolerance and modulating the duration and amplitude of physiological immune responses in peripheral tissues in order to minimize collateral tissue damage. Tumors co-opt certain immune-checkpoint pathways as a major mechanism of immune resistance, particularly against T cells that are specific for tumor antigens. Many of the immune checkpoints are initiated by ligand-receptor interactions, and can be blocked by antibodies or modulated by recombinant forms of ligands or receptors.

**LITERATURE REFERENCE:** The blockade of immune checkpoints in cancer immunotherapy: D.M. Pardoll; Nat. Rev. Canc. 12, 253 (2012)

**See also Wallchart!**

## Immune Checkpoints Proteins

### Receptors

PID	PRODUCT NAME	SIZE	SOURCE	PURITY (SDS-PAGE)	ENDOTOXIN (LAL TEST)
CHI-HF-210A4	CD152 [CTLA-4] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-MF-110A4	CD152 [CTLA-4] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-MF-120A4	CD152 [CTLA-4] (mouse):Fc (mouse) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-HF-210PD1	CD279 [PD-1] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-HF-220PD1	CD279 [PD-1] (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-HF-210ICOS	CD278 [ICOS] (human):Fc (human) (rec.)	25 µg	CHO cells	≥98%	<0.06EU/µg
CHI-HF-220ICOS	CD278 [ICOS] (human):Fc (human) (rec.) (non-lytic)	25 µg	CHO cells	≥98%	<0.06EU/µg
AG-40B-0031	LAG-3 (human):Fc (human) (rec.)	50 µg	CHO cells	≥99%	<0.1EU/µg
AG-40B-0039	LAG-3 (mouse):Fc (mouse) (rec.)	50 µg	CHO cells	≥95%	<1EU/µg
AG-40B-0039AA	LAG-3 (mouse):Fc (mouse) (rec.) (BULK)	500 µg	CHO cells	≥95%	<1EU/µg
CHI-HF-210T3	Tim-3 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-MF-111T3	Tim-3 (mouse):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg
AG-40A-0046	Tim-3 (mouse):Fc (human) (rec.)	50 µg	HEK 293 cells	≥90%	<0.1EU/µg
AG-40B-0083	CD40 (human):Fc (human) (rec.)	50 µg	HEK 293 cells	≥95%	<0.1EU/µg
AG-40B-0014	CD134 [OX40] (human):Fc (human) (rec.)	50 µg	HEK 293 cells	≥95%	<0.1EU/µg
AG-40B-0060	CD137 [4-1BB] (human):Fc (human) (rec.)	50 µg	HEK 293 cells	≥95%	<0.1EU/µg
AG-40A-0025	CD137 [4-1BB] (mouse):Fc (human) (rec.)	50 µg	HEK 293 cells	≥95%	<0.1EU/µg

### Ligands

CHI-HF-220PDL2	CD273 [PD-L2] (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-HF-210PDL1	CD274 [B7-H1/PD-L1] (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-HF-220PDL1	CD274 [B7-H1/PD-L1] (human):Fc (human) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-MF-120PDL1	CD274 [B7-H1/PD-L1] (mouse):Fc (mouse) (rec.) (non-lytic)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-MF-110PDL1	CD274 [B7-H1/PD-L1] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-MF-110B7H2	CD275 [B7-H2/ICOSL] (mouse):Fc (mouse) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-HF-210B7H4	B7-H4 (human):Fc (human) (rec.)	100 µg	CHO cells	≥98%	<0.06EU/µg
CHI-HF-210CD40L	CD40L [CD154] (human):Fc (human) (rec.)	50 µg	CHO cells	≥98%	<0.06EU/µg
AG-40B-0010	MegaCD40L, Soluble (human) (rec.)	10 µg	CHO cells	≥95%	<0.01EU/µg
AG-40B-0020	MegaCD40L, Soluble (mouse) (rec.)	10 µg	CHO cells	≥95%	<0.01EU/µg
AG-40B-0107	MegaCD40L, Soluble (rat) (rec.)	10 µg	CHO cells	≥95%	<0.02EU/µg
AG-40B-0029	MegaOX40L, Soluble (mouse) (rec.)	10 µg	HEK 293 cells	≥90%	<0.1EU/µg
AG-40A-0198	CD137L [4-1BBL], Soluble (human) (rec.)	50 µg	HEK 293 cells	≥95%	<0.1EU/µg
AG-40A-0020	CD137L [4-1BBL], Soluble (mouse) (rec.)	50 µg	HEK 293 cells	≥90%	<0.1EU/µg
AG-40A-0067	CD137L [4-1BBL], Soluble (mouse) (rec.) (His)	10 µg	E. coli	≥90%	<1EU/µg

# Immune Checkpoints Antibodies

## Receptors

PID	PRODUCT NAME	SIZE	SOURCE/ ISOTYPE	APPLICATION	SPECIES
ANC-176-020	CD27 (human), mAb (M-T271)	100 µg	Ms IgG1	ELISA, FACS	Hu
ANC-359-020	CD152 [CTLA-4] (human), mAb (ANC152.2/8H5)	100 µg	Ms IgG1κ	ELISA, FACS	Hu
AG-20B-0049	CD272 [BTLA] (human), mAb (6F4)	100 µg	Rt IgG1	ELISA, FACS, FUNC (Blocking)	Hu
ANC-372-020	CD272 [BTLA] (human), mAb (ANC5A5)	100 µg	Ms IgG1κ	ELISA, FACS	Hu
ANC-272-020	CD272 [BTLA] (human), mAb (ANC6E9)	100 µg	Ms IgG1κ	ELISA, FACS, FUNC (Blocking)	Hu
ANC-265-020	CD278 [ICOS] (human), mAb (ANC6C6)	100 µg	Ms IgG1κ	ELISA, FACS, FUNC (Blocking)	Hu
ANC-279-020	CD279 [PD-1] (human), mAb (ANC4H6)	100 µg	Ms IgG1κ	ELISA, FACS	Hu
AG-20B-0012	LAG-3 (human), mAb (blocking) (17B4)	100 µg	Ms IgG1	FUNC (Blocking), ICC, IHC, IP, WB	Hu
AG-20B-0012PF	LAG-3 (human), mAb (blocking) (17B4) (PF)	100 µg	Ms IgG1	FUNC (Blocking), ICC, IHC, IP, WB	Hu
AG-20B-0012B	LAG-3 (human), mAb (17B4) (Biotin)	100 µg	Ms IgG1	ELISA	Hu
AG-20B-0012F	LAG-3 (human), mAb (17B4) (FITC)	100 µg	Ms IgG1	FACS	Hu
AG-20B-0012TD	LAG-3 (human), mAb (17B4) (ATTO 488)	100 tests	Ms IgG1	FACS, ICC	Hu
AG-20B-0012TM	LAG-3 (human), mAb (17B4) (ATTO 590)	100 tests	Ms IgG1	FACS, ICC	Hu
AG-20B-0012TS	LAG-3 (human), mAb (17B4) (ATTO 647N)	100 tests	Ms IgG1	FACS, ICC	Hu
AG-20B-0011	LAG-3, mAb (blocking) (11E3)	100 µg	Ms IgG1	ELISA, FUNC (Blocking), ICC, IHC, IP, WB	Hu, Mk
AG-20B-0011PF	LAG-3, mAb (blocking) (11E3) (PF)	100 µg	Ms IgG1	ELISA, FUNC (Blocking), ICC, IHC, IP, WB	Hu, Mk
AG-20A-0029	Tim-3 (mouse), mAb (TI 339H)	50 µg	Rt IgG2ακ	ELISA, WB	Ms
AG-20A-0030	Tim-3 (mouse), mAb (TI 142F)	50 µg	Rt IgG2ακ	ELISA, FACS	Ms
ANC-177-020	CD28 (human), mAb (ANC28.1/5D10)	100 µg	Ms IgG1κ	ELISA, FACS, FUNC	Hu
AG-20B-0036	CD40 (mouse), mAb (FGK45)	100 µg	Rt IgG2α	FACS, FUNC (Activation)	Ms
AG-20B-0036PF	CD40 (mouse), mAb (FGK45) (PF)	100 µg	Rt IgG2α	FACS, FUNC (Activation)	Ms
ANC-189-020	CD40 (human), mAb (BE-1)	100 µg	Ms IgG1	ELISA, FACS, FUNC, IP	Hu
ANC-300-020	CD40 (human), mAb (EA-5)	100 µg	Ms IgG1	ELISA, FACS, FUNC	Hu, Rt
ANC-355-020	CD134 [OX40] (human), mAb (BerAct35)	100 µg	Ms IgG1	ELISA, FACS, IHC	Hu
ANC-360-020	CD137 [4-1BB] (human), mAb (4B4-1)	100 µg	Ms IgG1κ	ELISA, FACS, FUNC (Blocking)	Hu, Mk
AG-25A-0018	CD137 [4-1BB] (human), pAb	100 µg	Rabbit	FACS, WB	Hu
AG-20A-0072	CD137 [4-1BB] (mouse), mAb (M4173)	50 µg	Rt IgG1κ	FACS, WB	Ms
AG-20A-0062	CD137 [4-1BB] (mouse), mAb (M4202)	50 µg	Rt IgG1κ	FACS	Ms
AG-25A-0085	CD137 [4-1BB] (mouse), pAb	100 µg	Rat	FACS, WB	Ms
ANC-101-020	TCR Cβ1 (human), mAb (Jovi-1)	100 µg	Ms IgG2α	FACS	Hu
ANC-102-020	TCR Vβ3 (human), mAb (Jovi-3)	100 µg	Ms IgG2αλ	FACS	Hu

## Ligands

ANC-274-020	CD274 [B7-H1/PD-L1] (human), mAb (ANC6H1)	100 µg	Ms IgG1κ	ELISA, FACS	Hu
ANC-100-020	CD80 [B7-1] (human), mAb (BB1)	100 µg	Ms IgMκ	ELISA, FACS, FUNC (Blocking), WB	Hu, Prm
ANC-110-020	CD80 [B7-1] (human), mAb (P1.H1.A1.A1)	100 µg	Ms IgG1	ELISA, FACS, FUNC (Blocking)	Hu
ANC-307-020	CD86 (human), mAb (BU63)	100 µg	Ms IgG1	FACS, FUNC (Blocking)	Hu, Prm
ANC-263-020	CD275 [B7-H2/ICOSL] (human), mAb (ANC4E3)	100 µg	Ms IgG1κ	ELISA	Hu
ANC-353-020	CD40L [CD154] (human), mAb (24-31)	100 µg	Ms IgG1	ELISA, FACS, FUNC (Blocking), IHC, WB	Hu, Prm
ANC-222-020	CD70 (human), mAb (BU69)	100 µg	Ms IgG1	ELISA, FACS, FUNC (Blocking), ICC, IHC	Hu, Prm
AG-20A-0031	CD137L [4-1BBL] (human), mAb (41B436)	50 µg	Ms IgG1κ	ELISA, FACS, WB	Hu
AG-20A-0063	CD137L [4-1BBL] (human), mAb (41B446)	50 µg	Ms IgG1κ	FACS, WB	Hu
ANC-365-020	CD137L [4-1BBL] (human), mAb (ANC5D6)	100 µg	Ms IgG2ακ	ELISA, FACS, WB	Hu
ANC-400-020	CD252 [OX40L] (human), mAb (ANC10G1)	100 µg	Ms IgG1κ	ELISA, FACS, FUNC (Blocking)	Hu
ANC-270-020	CD270 [HVEM] (human), mAb (ANC3B7)	100 µg	Ms IgG2ακ	ELISA, FACS	Hu
ANC-121-020	MHC Class I (human), mAb (3F10)	100 µg	Ms IgG2α	ELISA, FACS, IHC	Hu
ANC-131-020	MHC Class II (human), mAb (TDR31.1)	100 µg	Ms IgG1	FACS, IHC, WB	Hu

**SPECIES Abbreviations:** Hu = Human; Ms = Mouse; Rt = Rat; Mk = Monkey; Prm = Primate