

Table S1. Drugs approved by the Food and Drug Administration (FDA) for treating melanoma.

Type	Drug	Mechanism of Action	Approved for Use
Chemotherapy	Aldesleukin	Interleukin (IL)-2, immunostimulant	Approved for melanoma treatment
	Binimetinib	BRAF inhibitor	Approved for melanoma treatment
	Braftovi (Encorafenib)	BRAF inhibitor	Approved for melanoma treatment
	Cobimetinib Fumarate	MEK inhibitor	Approved for melanoma treatment
	Cotellic (Cobimetinib Fumarate)	MEK inhibitor	Approved for melanoma treatment
	Dabrafenib Mesylate	BRAF inhibitor	Approved for melanoma treatment
	Dacarbazine	Alkylating agent, disrupts DNA replication	Approved for melanoma treatment
	Encorafenib	BRAF inhibitor	Approved for melanoma treatment
	Hepzate (Melfalan Hydrochloride)	Alkylating agent, disrupts DNA replication	Approved for melanoma treatment

IL-2 (Aldesleukin)	Interleukin (IL)-2, immunostimulant	Approved for melanoma treatment
Imlygic (Talimogene Laherparepvec)	Oncolytic virus, selectively kills cancer cells	Approved for melanoma treatment
Intron A (Recombinant Interferon α -2b)	Interferon, immunomodulator	Approved for melanoma treatment
Ipilimumab	CTLA-4 inhibitor, enhances T cell activation	Approved for melanoma treatment
Keytruda (Pembrolizumab)	PD-1 inhibitor, enhances T cell activation	Approved for melanoma treatment
Kimmtrak (Tebentafusp-tebn)	CD3 T-cell receptor binding immunotherapy	Approved for melanoma treatment
Mekinist (Trametinib Dimethylsulfoxide)	MEK inhibitor	Approved for melanoma treatment
Mektovi (Binimetinib)	MEK inhibitor	Approved for melanoma treatment
Melphalan Hydrochloride	Alkylating agent, disrupts DNA replication	Approved for melanoma treatment
Nivolumab	PD-1 inhibitor, enhances T cell activation	Approved for melanoma treatment

Nivolumab and Relatlimab-rmbw	Combination of PD-1 and LAG-3 inhibitors	Approved for melanoma treatment
Opdivo (Nivolumab)	PD-1 inhibitor, enhances T cell activation	Approved for melanoma treatment
Opdualag (Nivolumab and Relatlimab-rmbw)	Combination of PD-1 and LAG-3 inhibitors	Approved for melanoma treatment
Pembrolizumab	PD-1 inhibitor, enhances T cell activation	Approved for melanoma treatment
Proleukin (Aldesleukin)	Interleukin (IL)-2, immunostimulant	Approved for melanoma treatment
Recombinant Interferon α -2b	Interferon, immunomodulator	Approved for melanoma treatment
Tafinlar (Dabrafenib Mesylate)	BRAF inhibitor	Approved for melanoma treatment
Talimogene Laherparepvec (T-VEC)	Oncolytic virus, selectively kills cancer cells	Approved for melanoma treatment
Tebentafusp-tebn	CD3 T-cell receptor binding immunotherapy	Approved for melanoma treatment
Trametinib Dimethyl Sulfoxide	MEK inhibitor	Approved for melanoma treatment
Vemurafenib	BRAF inhibitor	Approved for melanoma treatment
Yervoy (Ipilimumab)	CTLA-4 inhibitor, enhances T cell activation	Approved for melanoma treatment

	Zelboraf (Vemurafenib)	BRAF inhibitor	Approved for melanoma treatment
Topical Treatments	5-Fluorouracil (5-FU)	Inhibits thymidine synthesis, leads to defects in genetic material replication, cell death	Topical chemotherapeutic agent
	Imiquimod	Immunomodulator, toll-like receptor agonist, releases interleukins, enhances immune response	Adjuvant in melanoma treatment, when surgery is not an option
	Ingenol Mebutate	Protein kinase C (PKC) activator, promotes cell death by necrosis, vascular damage	Topical therapy, extracted from Euphorbia peplus
	Vitamin A Analogs (Retinoids)	Differentiation of keratinocytes, immunomodulatory effects	Topical therapy
Targeted Anticancer Therapies	BRAF Inhibitors	Target BRAF mutations, inhibit MAPK pathway	Approved for melanoma treatment, e.g., Vemurafenib, Dabrafenib
	MEK Inhibitors	Target MEK mutations, downstream of BRAF, inhibit MAPK pathway	Approved for melanoma treatment, e.g., Binimetinib, Cobimetinib, Trametinib
	C-KIT Inhibitors	Target C-KIT mutations	Approved for specific melanoma types, e.g., Imatinib
	Multikinase Inhibitors	Target multiple kinases	Approved for specific melanoma types, e.g., Nilotinib, Sunitinib

	CDK4/6 Inhibitors	Target CDK4/6 pathway	Approved for melanoma treatment, e.g., Palbociclib, Abemaciclib, Ribociclib
Immunotherapy	Interferon- α 2b	Immunostimulant, interferon	Approved for melanoma treatment
	Interleukin IL-2	Immunostimulant, interleukin	Approved for melanoma treatment
	Anti-CTLA-4 (Ipilimumab)	CTLA-4 inhibitor, enhances T cell activation	Approved for melanoma treatment
	Anti-PD-1 (Nivolumab, Pembrolizumab)	PD-1 inhibitor, enhances T cell activation, enhances immune-mediated antitumor effects	Approved for melanoma treatment
	Anti-LAG-3 (Relatlimab)	LAG-3 inhibitor, enhances T cell activation	Approved for melanoma treatment
	Combined Therapy (Ipilimumab and Nivolumab)	Combination of CTLA-4 and PD-1 inhibitors	Approved for melanoma treatment
	Combined Therapy (Relatlimab and Nivolumab)	Combination of LAG-3 and PD-1 inhibitors	Approved for melanoma treatment
	Oncolytic Virus (T-VEC)	Selectively kills cancer cells	Approved for melanoma treatment