

*TUMOR ASSOCIATED  
MUTATIONS IN BRAF*

Domain	Mutation	Tumor Type
RBD	p.Q201H	Ovarian carcinoma
	p.K439T	Lung adenocarcinoma
	p.K439Q	Melanoma
	p.T440P	Lung SQCC
	p.R443T	Endometrioid carcinoma
	p.R444R	Melanoma
	p.R444W	Endometrioid carcinoma
		Melanoma
	p.R444Q	Endometrioid carcinoma
	p.P453T	Large intestine adenoma
Kinase	p.Q456Q	Thyroid papillary carcinoma
	p.V459L	Lung adenocarcinoma
Kinase	p.G460G	Upper aerodigestive tract nasal polyp
Kinase	p.R462I	Endometrioid carcinoma
		Large intestine adenocarcinoma
Kinase	p.I463S	Large intestine adenocarcinoma
Kinase	p.G464V	Breast carcinoma
		Large intestine adenocarcinoma
Kinase	p.G464R	Melanoma
Kinase	p.G464E	Biliary tract carcinoma
		Large intestine adenocarcinoma
		Ovary carcinoma
		Ovarian carcinoma cell line (Hey)

## 2 TARGETING PROTEIN KINASES FOR CANCER THERAPY

Kinase	p.G466R	Melanoma
Kinase	p.G466E	Melanoma
Kinase	p.G466A	Melanoma
Kinase	p.G466V	Melanoma Bronchioloalveolar adenocarcinoma cell line (NCI-H1666) NSCLC cell lines (CAL-12T) Lung adenocarcinoma Cervix carcinoma
Kinase	p.S467L	Melanoma
Kinase	p.F468C	Large intestine adenocarcinoma
Kinase	p.G469E	Biliary tract carcinoma Cervix carcinoma Large intestine adenocarcinoma Melanoma Cervix adenocarcinoma
Kinase	p.G469A	ALL ALBL AML DLBCL Large intestine adenocarcinoma Lung NSCLC cell lines (NCI-H1395, NCI-H1755)
Kinase	p.G469S	Melanoma
Kinase	p.G469R	DLBCL Large intestine adenocarcinoma Malignant melanoma Thyroid anaplastic carcinoma cell line (SNU-80)
Kinase	p.G469V	Biliary tract carcinoma Large intestine adenocarcinoma Esophagus squamous cell carcinoma Upper aerodigestive tract SQCC Melanoma
Kinase	p.V471F	Lung SQCC
Kinase	p.K475M	Melanoma
Kinase	p.N486 P490del	Ovarian carcinoma
Kinase	p.N581I	Melanoma
Kinase	p.N581S	Large intestine adenocarcinoma

Kinase	p.I582M	Melanoma
Kinase	p.F583F	Melanoma
Kinase	p.L584F	Melanoma
Kinase	p.H585H	Melanoma
Kinase	p.E586E	Melanoma
Kinase	p.E586K	Ovarian carcinoma
		Melanoma
Kinase	p.D587N	Melanoma
Kinase	p.D587E	Large intestine hyperplastic polyp
		Melanoma
Kinase	p.D587A	Large intestine adenocarcinoma
Kinase	p.L588R	Melanoma
Kinase	p.L588P	Melanoma
Kinase	p.T589I	Large intestine adenoma
Kinase	p.V590V	Melanoma
Kinase	p.V590fs*3	Clear cell renal carcinoma
Kinase	p.I592M	Melanoma
Kinase	p.I592V	Melanoma
Kinase	p.D594V	Large intestine adenocarcinoma
		Melanoma
Kinase	p.D594N	Melanoma
Kinase	p.D594K	Large intestine adenocarcinoma
Kinase	p.D594G	DLBCL
		Endometrioid carcinoma
		Large intestine adenocarcinoma
		Stomach carcinoma
		Melanoma
Kinase	p.D594E	Melanoma
Kinase	p.F595S	Melanoma
Kinase	p.F595L	Biliary tract carcinoma
		Large intestine adenocarcinoma
		Melanoma
Kinase	p.G596D	Cervical adenocarcinoma
Kinase	p.G596R	Large intestine adenocarcinoma
Kinase	p.G596S	Melanoma
Kinase	p.L597Q	Large intestine adenocarcinoma
		Endometrioid carcinoma
		Melanoma

#### 4 TARGETING PROTEIN KINASES FOR CANCER THERAPY

Kinase	p.L597V	Biliary tract carcinoma Lung NSCLC Cervical carcinoma Melanoma
Kinase	p.L597R	Lung adenocarcinoma Ovary serous carcinoma Melanoma
Kinase	p.L597S	Melanoma
Kinase	p.A598 T599insV	Thyroid papillary carcinoma
Kinase	p.A598V	Melanoma
Kinase	p.T599 V600insDFGLAT	Thyroid papillary carcinoma
Kinase	p.T599 V600insV	Melanoma
Kinase	p.T599T	Melanoma
Kinase	p.T599I	Large intestine adenocarcinoma Malignant melanoma
Kinase	p.T599 V600insTT	Melanoma
Kinase	p.V600E	AML AMLTR GIST Melanoma Biliary tract carcinoma Breast carcinoma Endometrioid carcinoma Glioma Neuroblastoma cell line (ACN) Hepatocellular carcinoma Astrocytoma Ocular melanoma Plasma cell myeloma Lung adenocarcinoma Lung SCC cell line (Colo668) Malignant fibrous histiocytoma–pleomorphic sarcoma cell line (GCT) Esophageal adenocarcinoma Ovary mucinous carcinoma Ovary serous carcinoma Ovary carcinoma cell line (ES-2) Endometrioid carcinoma

		Pancreatic ductal carcinoma
		Pituitary adenoma
		Prostate adenocarcinoma
		Small intestine adenocarcinoma
		Rhabdomyosarcoma cell line (A673)
		Fibrous histiocytoma–pleomorphic sarcoma
		Liposarcoma
		Synovial sarcoma
		Stomach adenocarcinoma
		Thyroid papillary carcinoma
		Thyroid anaplastic carcinoma cell line (HTh 104)
		HNSCC
Kinase	p.V600D	Biliary tract carcinoma
		Melanoma
Kinase	p.V600G	Melanoma
Kinase	p.V600M	Glioma
		Large intestine adenocarcinoma
		Prostate adenocarcinoma
		Melanoma
		Stomach adenocarcinoma
Kinase	p.V600L	Ovary carcinoma
Kinase	p.V600R	Melanoma
Kinase	p.V600A	Prostate adenocarcinoma
Kinase	p.V600K	Melanoma
Kinase	p.V600 K601> E	Large intestine adenocarcinoma
		Melanoma
		Thyroid papillary carcinoma
Kinase	p.V600 S605> D	Melanoma
Kinase	p.K601Q	Large intestine adenocarcinoma
Kinase	p.K601E	Large intestine adenoma
		Large intestine adenocarcinoma
		Melanoma
		Thyroid papillary carcinoma
		Upper aerodigestive tract nasal polyp
Kinase	p.K601N	Chronic lymphocytic leukemia–small lymphocytic lymphoma (cell line JVM-3)

		Plasma cell myeloma (cell line U-266)
		Melanoma
		Ovarian carcinoma
		Large intestine adenocarcinoma
Kinase	p.K601del	Thyroid papillary carcinoma
Kinase	p.K601I	Melanoma
Kinase	p.S602S	Melanoma
Kinase	p.W604S	Melanoma
Kinase	p.W604G	Melanoma
Kinase	p.W604del	Small intestine adenocarcinoma
Kinase	p.S605G	Melanoma
Kinase	p.S605F	Melanoma
Kinase	p.S605R	Melanoma
Kinase	p.S605N	Melanoma
Kinase	p.G606E	Melanoma
Kinase	p.S607P	Melanoma
Kinase	p.H608R	Melanoma
Kinase	p.Q609R	Melanoma
Kinase	p.Q609Q	Melanoma
Kinase	p.E611D	Melanoma
Kinase	p.Q612*	Thyroid papillary carcinoma
Kinase	p.S614P	Melanoma
Kinase	p.G615R	Melanoma
Kinase	p.S616P	Melanoma
Kinase	p.S616F	Ovarian clear cell carcinoma
		Pancreatic ductal carcinoma
Kinase	p.I617T	Melanoma
Kinase	p.L618S	Melanoma
Kinase	p.W619R	Melanoma
Kinase	p.R682Q	Endometrioid carcinoma

## SOURCES

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Forbes SA, Bhamra G, Bamford S, Dawson E, Kok C, Clements J, Menzies A, Teague JW, Futreal PA, Stratton MR. The Catalog of Somatic Mutations in Cancer (COSMIC). *Curr Protocols Hum Genet.* 2008 Apr; Chapter 10: Unit 10.11.