

Supplementary Table 1: FDA-approved therapy.

Gene	Inhibitors	Monotherapy or combination therapy	FDA approval for use in cancer types
EGFR	Erlotinib	monotherapy	Locally advanced or metastatic NSCLC (NCT01287754)
	Erlotinib	In combination with gemcitabine	Locally advanced, inoperable, or metastatic pancreatic cancer (NCT00026338)
EGFR	Gefitinib	Monotherapy	Metastatic NSCLC with EGFR exon 19 deletion or L858R mutation (NCT01203917)
HER2	Lapatinib	Capecitabine	HER-2+ advanced or metastatic breast cancer who have received prior therapy (NCT00078572)
	Lapatinib	Letrozole	HER2+ postmenopausal women with hormone receptor positive metastatic breast cancer (NCT00073528)
EGFR	Afatinib	Monotherapy	EGFR+ metastatic non-small cell lung cancer (NCT00949650); metastatic, squamous NSCLC progressing after
			platinum-based chemotherapy (NCT01523587)
EGFR	Osimertinib	Monotherapy	NSCLC with EGFR exon 19 deletions or exon 21 L858R mutation (NCT02296125)
	Osimertinib	Monotherapy	EGFR T790M mutation-positive metastatic NSCLC (NCT012151981)
HER2	Pembrolizumab	Trastuzumab, fluorouracil+cisplatin or capecitabine+oxaliplatin	Locally advanced unresectable or metastatic HER2 positive gastric or gastroesophageal junction adenocarcinoma (NCT03615326)
HER2	Trastuzumab		HER2 overexpressing breast cancer

HER2	Pertuzumab	With trastuzumab and docetaxel	HER2+ metastatic breast cancer patients not treated prior (NCT00567190); HER2+ metastatic or locally recurrent breast cancer (NCT02402712)
HER2	Tucatinib	In combination with capecitabine and trastuzumab	Adult patients with advanced unresectable or metastatic HER2-positive breast cancer who have received prior anti-HER2-treatment in metastatic settings (NCT02614794)
HER2	Neratinib	Monotherapy	HER2+ breast cancer after treatment completion with adjacent trastuzumab (NCT00878709)
VEGFR, PDGFR, c-Kit, FGFR1/2	Pazopanib	Monotherapy	Locally advanced and/ or metastatic renal cell carcinoma (RCC) (NCT00334282)
	Pazopanib	Monotherapy	Advanced soft tissue sarcoma who have received prior chemotherapy (NCT00753688)
VEGFR, PDGFR, c-Kit, FLT3, CSF-1R, RET	Sunitinib	Monotherapy	Gastrointestinal Stromal Tumor (GIST) resistant to imatinib treatment (NCT00075218)
	Sunitinib	Monotherapy	Advanced Renal Cell Carcinoma (RCC) (NCT00083889)
Raf kinase, VEGFR2, c-Kit, FLT3, PDGFR β	Sorafenib	Monotherapy	Unresectable hepatocellular carcinoma (NCT00105443)
	Sorafenib	Monotherapy	Advanced renal cell carcinoma (NCT00073307)
	Sorafenib	Monotherapy	Locally recurrent or metastatic differentiated thyroid carcinoma patients who did not respond to radioactive iodine treatment (NCT00984282)
VEGFR	Bevacizumab	FOLFOX4 (5-fluorouracil, leucovorin, and oxaliplatin)	Metastatic colorectal cancer (NCT00109070)
	Bevacizumab	Carboplatin and paclitaxel	Unresectable, locally advanced, recurrent or metastatic NSCLC (NCT00021060)

VEGFR	Bevacizumab	Lomustine	Recurrent glioblastoma (NCT01290939)
	Bevacizumab	With interferon alfa 2a	Metastatic renal cell carcinoma (NCT00738530)
CDK family	Palbociclib	Fulvestrant	HR positive, HER2 negative advanced or metastatic breast cancer (NCT01942135) following endocrine therapy
	Ribociclib	In combination with letrozole	Hormone receptor-positive, HER2-negative advanced breast cancer in post-menopausal women (NCT01958021)
<i>c-Met</i>	Crizotinib	Monotherapy	Metastatic NSCLC that are ALK or ROS1-positive (NCT01154140, NCT00932893, NCT00585195)
	Crizotinib	Monotherapy	ALK positive relapsed or refractory, systemic anaplastic large cell lymphoma (ALCL) for pediatric patients and young adults (NCT00939770)
	Cabozantinib	Monotherapy	Advanced Renal Cell Carcinoma (RCC) who previously received anti-angiogenic therapy (NCT01865747); advanced Renal Cell Carcinoma (RCC) not received prior therapy (NCT01835158)
	Cabozantinib	Monotherapy	Hepatocellular Carcinoma (HCC) patients treated with Sorafenib (NCT01908426)
	Cabozantinib	Monotherapy	Differentiated thyroid cancer following prior VEGFR-targeted therapy in adults and pediatric patients (above 12 years) (NCT03690388)
JAK family	Ruxolitinib	Monotherapy	Myelofibrosis (NCT00952289)
	Fedratinib	Monotherapy	High risk primary and secondary myelofibrosis (NCT01437787)
MEK1/2	Trametinib	Monotherapy	Unresectable or metastatic melanoma with BRAF V600E or V600K mutations (NCT01245062)
	Trametinib	In combination with dabrafenib	Unresectable cutaneous melanoma with BRAF V600E or V600K mutations (NCT01584648)

MEK1/2	Cobimetinib	In combination with vemurafenib	Unresectable or metastatic melanoma with a BRAF V600E or V600K mutation (NCT01689519)
RET, VEGFR, EGFR, BRK, Src kinase family	Vandetanib	Monotherapy	Unresectable locally
			Advanced or metastatic medullary thyroid cancer (NCT00410761)
Src kinase family	Bosutinib	Monotherapy	Resistant chronic myelogenous leukemia (CML) with prior therapy (NCT02130557)
ALK	Crizotinib	Monotherapy	ALK positive non squamous cancer of the lung (NCT01154140)
	Crizotinib	Monotherapy	Younger patients with relapsed or refractory solid tumors or anaplastic large cell lymphoma (NCT00939770)
	Ceritinib	Monotherapy	Adult NSCLC and other tumors with genetic abnormalities in ALK. (NCT01283516)
	Ceritinib	Monotherapy	Metastatic non-small cell lung cancer (NCT01828099)
	Alectinib	Monotherapy	ALK-rearranged NSCLC (NCT01871805)
	Alectinib	Monotherapy	NSCLC with ALK mutation (NCT01801111)
	Alectinib	Monotherapy	ALK-positive advanced NSCLC (NCT02075840)
	Brigatinib	Monotherapy	ALK-positive locally advanced or metastatic NSCLC (NCT02094573)
	Brigatinib	Monotherapy	ALK-positive advanced NSCLC (NCT02737501)
BCR-Abl	Bosutinib	Monotherapy	Philadelphia chromosome positive (Ph+) leukemias (NCT00261846)
	Bosutinib	Monotherapy	Ph+ Chronic phase Chronic Myelogenous Leukemia (CML) (NCT02130557)
	Imatinib	Monotherapy	Chronic Myeloid Leukemia (CML) (NCT00333840)
	Nilotinib	Monotherapy	Ph+ CML in chronic phase (NCT00471497)

<i>BCR-Abl</i>	Nilotinib	Monotherapy	Ph+ CML or Acute Lymphoblastic Leukemia (ALL) (NCT01077544)
	Dasatinib	Monotherapy	Relapsed or refractory leukemia in children and adolescents (NCT00306202)
	Dasatinib	Monotherapy	Chronic phase CML or with resistant Ph+ leukemias (NCT00777036)
	Dasatinib	With chemotherapy	Pediatric Ph+ ALL (NCT01460160)
	Ponatinib	Monotherapy	Resistant chronic phase CML (NCT02467270)
	Ponatinib	Monotherapy	CML and Ph+ ALL (NCT01207440)
<i>B-Raf</i>	Vemurafenib	Monotherapy	Metastatic melanoma (NCT01006980)
	Dabrafenib	With trametinib vs monotherapy	BRAF mutant advanced melanoma (NCT01584648)
	Dabrafenib	With trametinib vs monotherapy	BRAF V600E mutation positive metastatic (Stage IV) NSCLC (NCT01336634)