

Candidate Pediatric Molecular Target List

Pursuant to section 505B(m)(1) of the Federal Food, Drug, and Cosmetic Act (FD&C Act), the table labeled “automatic waivers” lists the “molecular targets of new cancer drugs and biological products in development for which pediatric cancer study requirements under [section 505B of the FD&C Act] will be automatically waived” (section 505B(m)(1)(B)). All other tables list “molecular targets considered, on the basis of data the Secretary determines to be adequate, to be substantially relevant to the growth or progression of a pediatric cancer, and that may trigger the requirements under [section 505B of the FD&C Act]” (section 505B(m)(1)(A)).

A) Gene Abnormality

Target Symbol	Gene Abnormality
ABL1/2	ABL1/2 gene fusions (BCR-ABL1, etc.)
ACVR1	ACVR1
ALK	ALK and ALK gene fusions
ASCL1	ASCL1 gene
BRAF	BRAF
BRD3-NUTM1	BRD3-NUTM1
BRD4-NUTM1	BRD4-NUTM1
CCND1,2	CCND1,2

CDK12	EWSR1-FLI1
c-KIT or KIT	c-KIT or KIT
CSF1R	CSF1R gene fusions
CTNNB1 (β -catenin)	CTNNB1
DDX3X	DDX3X
DOT1L	MLL gene fusions
EGFR	EGFR
ERK	BRAF, MAP2K1
ETS gene fusions	ETS fusions (ERG, FLI1, ETV1)
EWSR1-FLI1	EWSR1-FLI1
EZH2	SMARCB1, SMARCA4
FGFR	FGFR and FGFR gene fusions
FLT3	FLK2, STK1, CD135
Gamma secretase	NOTCH1 and FBXW7
GFI1	GFI1
GFI1B	GFI1B
Histone 3 G34R/V	Histone 3 G34R/V

Histone 3 K27M	Histone 3 K27M
IDH1 and IDH2	IDH1 and IDH2
JAK1, 2, and 3	JAK1, 2, and 3
LIN28B	LIN28B
MDM2	MDM2, TP53
MEK	BRAF and BRAF gene fusions, MAP2K1, NF1
Menin	MLL gene fusions
MET	MET
MLL	MLL gene fusions (MLL- AF4/AF9/AF10/ENL/ELL/AF1p/AF X/FKHRL1/SEPT6/GAS7/EEN/CBP /PTD)
mTOR	TSC1, TSC2
MYC	MYC translocations and amplification
MYCN	MYCN amplification
Neoantigens	MSH2, MLH1, MSH6, PMS2 POLE, and POLD1
NFkappaB	RELA fusion
NOTCH1	NOTCH1, FBXW7

NSD3-NUTM1	NSD3-NUTM1
NT5C2	NT5C2
NTRK	NTRK gene fusions
ODC1	MYC target gene
PARP	BRCA1/2, PALB2, ATM, BRIP1, CHEK2, RAD51, etc.
PAX-FOXO1	PAX-FOXO1
PDGFRA/B	PDGFRA/B gene fusions
PI3K α	PIK3CA
PPM1D (WIP1)	PPM1D (WIP1)
RAS	RAS
RET	RET
SH2B3	SH2B3
SHP2	SHP2
Smoothed	PATCH1, SMO
STAT2,3	STAT2,3
SYT-SSX	SYT-SSX

TERT	TERT
TORC1/2 as distinct from mTOR	TORC1/2
TrkB	TrkB
TP53	TP53
TYK2	TYK2
ZNF532-NUTM1	ZNF532-NUTM1

B) Cell Lineage

Target Symbol			
AKR1C3	CD70	GPNMB	PTEN
BCOR	CD79b	ERBB2 (HER2/Neu)	SYK
BTK	CD123/IL3RA	IL6	WT1
CD7	CD276 (B7-H3)	IL13RA2	YAP1
CD19	Cereblon CBL (E3 Ubiquitine protein ligase)	LRRC15	
CD20	DLL3	MAGE-A3	
CD22	DLK1	MSLN (mesothelin)	
CD30	EGFRvIII	NR5A1 (Steroidogenic factor-1)	
CD33	EPHA2	NY-ESO-1	
CD37	GD2	Olig2	
CD38	GPC2	PIK3CD (PI3 kinase delta)	
CD56	GPC3	PRAME	

C) Tumor Microenvironment and immunotherapy

Target Symbol	
B7H3	OX40
CD40	PD-1/PD-L1
CD47	RELA
CD52	RIG-I
CXCR4	STEAP1
CXCL10	STING
CTLA4	TIM3/TIM4
GM-CSF	VEGF
IDO1	VEGFR
IFN-gamma	
IL-2	
LAG3	

D) Others

Target Symbol			
AKT	CDK9	MCT1 (monocarboxylate transporter 1)	PRMT2
ATM	CK1	MEK	PRMT5
ATR	CK2 (casein kinase 2)	MIZ1	Proteasome
ATRX	CREBBP/EP300	MGMT	PTPN (protein tyrosine phosphatase)
AURKA (Aurora kinase A)	DNA (alkylators)	MLL5	RPA3
AURKB (Aurora kinase B)	DNA-PK	MYST3 (MYST histone acetyltransferase (monocytic leukemia))	SHP2

AXL	DNMT (DNA methyl transferase)	NAMPT	SMYD3
A1/BFL	FAK	NEDD8 activating enzyme (NAE)	Somatostatin Receptor
BAK	FOLR1 (folate receptor 1)	PARP	Survivin (BIRC5)
BAX	GSK-3	PDK-1 (3-phosphoinositide-dependent protein kinase 1)	SUZ12
BCL2 family members (Bcl-2, Bcl-XL, Mcl-1, A1/BFL, BAK, BAX)	HDAC	PI3Kdelta	SWI/SNF
BET bromodomain family	HIF1A	PIM1	TET2
BMPR	Hippo pathway (YAP, TAZ, TEADs)	PKA	TGF-beta
Brd1	Hsp90	PKC	Thymidylate synthase
Brd4	IAPs (inhibitor-of-apoptosis)	PLK1	Topoisomerase I/II
CDK4/6	IGFR-1	POL1	TRAIL
CHK1	KDM4A	PRDM1	Tubulin
CDK2	LSD1	PRDM8	XPO1 (Exportin)
CDK7	MCL1	PRDM10	WDR5
			WEE1