Circulating Biomarkers Associated with the Diagnosis and Prognosis of B-Cell Progenitor Acute Lymphoblastic Leukemia. Álvarez-Zúñiga, C.D.; Garza-Veloz, I.; Martínez-Rendón, J.; Ureño-Segura, M.; Delgado-Enciso, I.; Martinez-Fierro, M.L. *Cancers* **2023.**

Table S1: Circulating Biomarkers for BCP-ALL.

Marker	Association	Blood component	Expression	P	Method	Finding	Ref.
p53	AL	Serum	Up	<0.05	ELISA	Diagnosis and differentiation between adult ALL and AML.	[66]
EGFR	AL	Serum	Up	<0.001	ELISA		
TNF-α	BCP-ALL	Plasma	Up	0.024	ELISA	Diagnosis and useful to asses childhood BCP-ALL.	[63]
	ALL	Serum	Up	0	ELISA	Diagnostic and prognostic biomarker in adults with ALL.	[3]
	BCP-ALL	Serum	Up	>0.05	ELISA	Difference from others hematological disease.	[62]
Leptin	BCP-ALL	Plasma	Up	<0.001	Flow cytometry	Diagnosis, correlating the disease stage and the responsiveness to chemotherapy or a new target for childhood ALL therapy.	[134]
	ALL	Serum	High	-	ELISA	Prognostic marker, leukemia stratification in adults with ALL and AML.	[135]
Adiponectin	ALL	Serum	Low	-	ELISA	Prognostic marker, leukemia stratification in adults with ALL and AML.	[135]
	BCP-ALL	Plasma	Down	<0.0001	Flow cytometry	Diagnosis, correlating the disease stage and the responsiveness to chemotherapy or a new target for childhood ALL therapy.	[134]
Resistin	BCP-ALL	Plasma	Up	<0.001	Flow cytometry	Diagnosis, correlating the disease stage and the responsiveness to chemotherapy or a new target for childhood ALL therapy.	[134]
Fragment of C3-8137	ALL	Serum	Up	$5.35x10^{-5}$	Specific antibody	Potential biomarker for diagnosis of pediatric ALL, and distinguish between AML.	[4]
Fragment of C3-8937	ALL	Serum	Up	$5.13x10^{-5}$	Specific antibody		
C3	BCP-ALL	Serum	Up	<0.05	Lectin affinity chromatography	Candidate biomarker for early diagnosis and response to treatment of childhood BCP-ALL.	[124]
Tyrosine Kinase	ALL	Plasma	Down	<0.05	Fluorescence spectral	Diagnostic and diffused malignancy indicator of childhood ALL.	[8]
Thymidine kinase	BCP-ALL, TCP-ALL, AML	Serum	Up	0.001	Two-step indirect immunoassay modified by chemiluminescence	Diagnostic biomarker for B-ALL.	[139,137]
				<0.001	Immunoassay with specific monoclinal antibody.	Diagnostic, following up and response to treatment biomarker to ALL.	
CD44	BCP-ALL	Plasma	Up	≤0.01	FT-FCM	Potential diagnosis of adult BCP-ALL and new targets for therapy.	[49]
	ALL	Serum	Up	<0.01	ELISA	Reliable tumor marker for adult AL and pediatric ALL	[140,141]
BAFF	ALL	Plasma	Up	<0.05	ELISA	Diagnostic and progression marker for childhood ALL	[150,151]
	ALL	Serum	Up	<0.0001	ELISA	Diagnostic and prognostic markers for adult ALL.	[94]
APRIL	ALL	Plasma	Up	<0.05	ELISA	Diagnostic and progression marker for childhood ALL	[150,151]
	ALL	Serum	Up	<0.0001	ELISA	Diagnostic and prognostic markers for adult ALL.	[94]

PF4	ALL	Serum	Down	$1.54x10^{-7}$	Specific antibody	Potential biomarker for diagnosis of pediatric ALL, and distinguish between AML.	[7]
TM	ALL	Plasma	Up	<0.001	ELISA	Prognostic marker in childhood ALL.	[99]
	ALL	Plasma	Up	0.0001	ELISA		[98]
vWF	ALL	Plasma	Up	<0.001	ELISA	Prognostic marker in childhood ALL.	[99]
	ALL	Plasma	Up	0.025	ELISA		[98]
	AL	Plasma	Up	$6x10^{-85}$	PEA	Clinical prognostic markers and treatment effect of adult AL.	[78]
Survivin	ALL	Serum	Up	0	ELISA	Diagnosis and prognostic of adult ALL.	[3]
	BCP-ALL	PBMC	Up	<0.0001	Western Blot	Potential marker to specify prognosis in childhood BCP-ALL.	[70]
Tryptophan	ALL	Plasma	Down	<0.05	Fluorescence spectral	Diagnostic and diffused malignancy indicator of childhood ALL.	[8]
Coenzyme NADH	ALL	Plasma	Down	<0.05			
Coenzyme FAD	ALL	Plasma	Up	<0.05			
CTAP-III	ALL	Serum	Down	$7.19x10^{-8}$	Specific antibody	Potential biomarker for diagnosis of pediatric ALL, and distinguish between AML.	[7]
GSTP	ALL	Whole blood	Up	<0.01	PMF	Potential diagnostic biomarker and drug target of childhood ALL.	[4]
PHB	ALL	Whole blood	Up	<0.01	PMF		
60S acidic ribosomal protein P0	ALL	Whole blood	Down	<0.01	PMF		
PNPO	ALL	Whole blood	Down	<0.01	PMF		
TPI-1	ALL	Whole blood	Down	<0.05	PMF		
PRDX4	ALL	Whole blood	Down	<0.01	PMF		
Cytoplasmic actin	ALL	Whole blood	Down	<0.01	PMF		
Hypothetical protein FLJ26567	ALL	Whole blood	Down	<0.01	PMF		
ADAM17	BCP-ALL	Plasma	Up	$8x10^{-5}$	Western blot	Diagnostic biomarker and develop therapeutic target for adult BCP-ALL.	[68]
ATG3	BCP-ALL	Plasma	Up	$2x10^{-6}$	Western blot		
CD19	BCP-ALL	Plasma	Up	≤0.05	FT-FCM	Potential diagnosis of adult BCP-ALL and new targets for therapy	[49]
CD24	BCP-ALL	Plasma	Up	≤0.05	FT-FCM		
CD29	BCP-ALL	Plasma	Up	≤0.01	FT-FCM		
CD105	BCP-ALL	Plasma	Up	≤0.01	FT-FCM		
CD146	BCP-ALL	Plasma	Up	<0.05	FT-FCM		
CD9	BCP-ALL	Plasma	Up	≤0.05	FT-FCM		
CD63	BCP-ALL	Plasma	Up	≤0.01	FT-FCM		
CD81	BCP-ALL	Plasma	Up	≤0.05	FT-FCM		
HLA-DR	BCP-ALL	Plasma	Up	≤0.06	FT-FCM		
Smad7	ALL	Serum	Up	<0.01	qRT-PCR	Potential diagnostic marker for childhood ALL	[16]
α-enolase	BCP-ALL	Serum	Up	<0.05	ELISA	Potential diagnostic, prognostic biomarkers and therapeutical targets.	[14]
Anti-9-0AcSGs	ALL	Serum	Up	<0.0001	ELISA	Potential diagnostic biomarker for childhood ALL.	[65]
TGF-β1	ALL	Serum	Down	<0.01	qRT-PCR	Potential diagnostic marker for childhood ALL	[16]

Semaphorin 4D	AML, ALL	Plasma	Up	<0.01	ELISA	Target for leukemia diagnosis and treatment	[105]
	BCP-ALL	PBMC	Up	<0.01	Western blot	Potential biomarker for pediatric BCP-ALL diagnosis and prognosis	[106]
VEGF	ALL	Serum	Down	<0.001	ELISA	Predictor of progression of childhood ALL.	[152]
sL-selectin	ALL	Serum	Up	<0.05	ELISA	Diagnostic and detection of relapse of childhood ALL.	[153]
BCMA	ALL	Plasma	Up	<0.05	ELISA	Diagnostic and prognostic markers for adult ALL.	[94]
TACI	ALL	Plasma	Up	<0.05	ELISA		
TRAIL	ALL	Serum	Down	<0.0001	ELISA		
CLUS	BCP-ALL	Plasma	Down	<0.01	Western blot.	Potential diagnostic and prognostic biomarker for pediatric -ALL.	[110]
CERU	BCP-ALL	Plasma	Down	<0.01	Western blot.		
APOE	BCP-ALL	Plasma	Down	<0.01	Western blot.		
APOA4	BCP-ALL	Plasma	Up	<0.01	Western blot.		
APOA1	BCP-ALL	Plasma	Up	<0.01	Western blot.		
AMBP	BCP-ALL	Plasma	Up	<0.01	Western blot.		
ACTB	BCP-ALL	Plasma	Down	<0.01	Western blot.		
AFAM	BCP-ALL	Plasma	Down	<0.01	Western blot.		
LRG1	BCP-ALL	Serum	Up	<0.05	Lectin affinity chromatography	Candidate biomarker for early diagnosis and response to treatment of childhood BCP-ALL.	[124]
CLU	BCP-ALL	Serum	Up	<0.05			
F2	BCP-ALL	Serum	Up	<0.05			
SERPIND1	BCP-ALL	Serum	Up	<0.05			
A2M	BCP-ALL	Serum	Up	<0.05			
SERPINF2	BCP-ALL	Serum	Up	<0.05			
SERPINA1	BCP-ALL	Serum	Up	<0.05			
CFB	BCP-ALL	Serum	Up	<0.05			
ADA	ALL	Serum	Up	<0.001	Electrophoresis	Diagnose childhood ALL and monitor therapies.	[154]
ADA1	ALL	Serum	Up	<0.001	Electrophoresis		
IGF-I	ALL	Serum	Down	0.08	ELISA	Support diagnosis and follow-up of children with ALL	[64]
IGF-II	ALL	Serum	Down	0.79	ELISA		
IGFBP-2	ALL	Serum	Up	0.22	ELISA		
IGFBP-3	ALL	Serum	Down	0.9	ELISA		
cKI-67	ALL	Plasma	Up	<0.001	ECL	Diagnostic, prognostic biomarker in adult ALL.	[126]
cCD 33	ALL, AML	Plasma	High	0.03*	IFC	Poor prognosis in adult patients with ALL.	[155]
CD56	BCP-ALL	Whole blood	In vivo	0.006	Flow cytometry	Poor prognosis in adult BCP-ALL	[156]
CD200	BCP-ALL	Whole blood	In vivo	0.003	Flow cytometry		
Ca 125	ALL, ANLL	Serum	High	0.001***	ELISA	Therapeutic response in children with AL.	[127]
sI-CAM-1	ALL	Serum	Up	<0.001	ELISA	Response to treatment and early detection of relapse of childhood ALL.	[142]
sVCAM	ALL	Serum	Up	<0.001	ELISA		

sE-selectin	ALL	Serum	Up	<0.001	ELISA		
TNFRS2	ALL	Plasma	Up	<0.34	ELISA	Poor prognostic biomarker for ALL.	[96]
	ALL	PMNC	Up	<0.081	ELISA		
TNFRS9	ALL	Plasma	Up	<0.15	ELISA		
	ALL	PMNC	Up	<0.42	ELISA		
SYND1	AL	Plasma	Up	$7.2x10^{-71}$	PEA	Clinical prognostic markers and treatment effect of adult AL.	[78]
TNFRSF6B	AL	Plasma	Up	$2.2x10^{-71}$	PEA		
MPO	AL	Plasma	Up	$5.9x10^{-50}$	PEA		
VIM	AL	Plasma	Up	$3.6x10^{-45}$	PEA		
TNF-R1	AL	Plasma	Up	$1.2x10^{-42}$	PEA		
IL-6	AL	Plasma	Up	$3.6x10^{-41}$	PEA		
CTSD	AL	Plasma	Up	$1.6x10^{-40}$	PEA		
ADAM-TS 15	AL	Plasma	Low	$3.4x10^{-40}$	PEA		
FURIN	AL	Plasma	Up	$6x10^{-40}$	PEA		
HSP70	ALL, AML	Plasma	Up	<0.05	Electrochemiluminescence	Potential adverse prognostic biomarker of adult ALL and AML.	[107]
PGRN	ALL	Serum	Up	CIR:0.008	ELISA	Marker of predictor ALL and target therapy.	[101]
				DFS:0.029			
sFASL	ALL	Serum	Up	Survival:0.0018	ELISA	Marker associated with favorable response to therapy in childhood ALL.	[125]
				CRD: 0.0013			
XCL1	ALL	Serum	Up	0.01	ELISA	Marker related with higher survival in adult ALL patients.	[21]
Statin	ALL	Whole blood	Up	0.05	Mab	Additional useful marker for prognosis in childhood ALL.	[46]
HSP90	ALL	Serum	Down	0.192	ELISA	Marker related to poor response to steroids in children with ALL.	[130]
Proteasome ChT-L	ALL	Plasma	Up	0.006	Fluorogenic peptide assay	Additional marker in monitoring the therapy response in childhood ALL.	[132]
AC133	AL	Whole blood	Up	<0.05	Flow cytometry	Prognostic marker to high resistance to chemotherapy and short survival in childhood AL.	[69]
mR-223-3p	AL	Serum	Up	0.0044	qRT-PCR	Diagnostic biomarker of childhood ALL.	[15]
mRNA Survivin	BCP-ALL	Whole blood	Up	<0.05	qRT-PCR	Potential diagnostic marker for childhood BCP-ALL.	[70]
mRNA LEF-1	BCP-ALL	Whole blood	Up	OS: 0.005	qRT-PCR	Adverse prognostic significance for adult BCP-ALL.	[20]
mRNA-BAFF	ALL	PBMC	UP	<0.05	RT-PCR	Diagnostic and progression marker for childhood ALL.	[150]
mRNA-APRIL	ALL	PBMC	UP	<0.05	RT-PCR		
mRNA-BCMA	ALL	PBMC	UP	<0.05	RT-PCR	Diagnostic and progression marker for childhood ALL.	[150,151]
mRNA-TACI	ALL	PBMC	UP	<0.05	RT-PCR	Diagnostic and progression marker for childhood ALL.	
mRNA Livin	ALL	PBMC	Up	OS:0.05	qRT-PCR	Potential prognostic marker for childhood ALL.	[111]
mRNA LRP	ALL	PBMC	Up	<0.05	RT-PCR	Marker associated with early response and complete remission state post induction in pediatric ALL.	[157]

mRNA HLA-G	ALL	PBMC	High	<0.01	RT-PCR	Prognostic tumor marker and to monitor disease state and improvement in adult ALL.	[71]
mRNA Bcl-2	ALL	PBMC	Down after induction	<0.001	qRT-PCR	Potential prognostic marker and monitor response to treatment for childhood ALL.	[76]
mRNA MS12	BCP-ALL	Whole blood	Up	OS: 0.018	RT-PCR	Unfavorable prognostic biomarker for adult BCP-ALL.	[27]
mRNA CRLF2	BCP-ALL	Whole blood	Up	OS: 0.0038	Q-PCR	Unfavorable prognostic biomarker of long-term outcome for adult BCP-ALL.	[112]
miR-181a	ALL	Serum	Down	<0.01	qRT-PCR	Potential diagnostic marker for childhood ALL	[16]
miR-181b	ALL	Whole blood	Up	<0.001	qRT-PCR	Diagnosis of childhood ALL.	[158]
miR-181c	ALL	Whole blood	Up	<0.001	qRT-PCR		
miR-181b-5p	ALL	Plasma	Up	<0.001	qRT-PCR and TLDA	Detection of minimal residual leukemia.	[146]
miR-196	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR	Potential diagnostic biomarker and therapeutic targets for childhood ALL.	[116]
miR-196a	ALL	PBMC	Down	0.028	qRT-PCR	Diagnostic biomarker of childhood ALL.	[15]
miR-10b	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR	Potential diagnostic biomarker and therapeutic targets for childhood ALL.	[116]
miR-15b	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-20b	ALL	PBMC	Down	5.00×10^{-5}	qRT-PCR		
miR-22	ALL	PBMC	Down	1.50×10^{-5}	qRT-PCR		
miR-23a	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-25	ALL	PBMC	Down	4.00×10^{-5}	qRT-PCR		
miR-29a	ALL	PBMC	Down	1.00×10^{-5}	qRT-PCR		
miR-30c	ALL	PBMC	Down	1.00×10^{-5}	qRT-PCR		
miR-30e-3p	ALL	PBMC	Down	5.00×10^{-5}	qRT-PCR		
miR-100	ALL	PBMC	Down	4.00×10^{-5}	qRT-PCR		
miR-100	ALL	Whole blood, plasma.	Up	<0.001	qRT-PCR	Potential biomarker for childhood acute leukemia	[117]
	ALL	PBMC	Up	0.007	qRT-PCR	Diagnostic biomarker of childhood ALL.	[15]
	ALL	PBMC	Up	0.002	qRT-PCR	Biomarker associated with resistance to vincristine in childhood ALL.	[118]
miR-101	ALL	PBMC	Down	5.00×10^{-6}	qRT-PCR	Potential diagnostic biomarker and therapeutic targets for childhood ALL.	[116]
miR-126	ALL	PBMC	Down	6.50×10^{-5}	qRT-PCR		
miR-126	ALL	PBMC	Up	0.046	qRT-PCR	Biomarker associated with resistance to vincristine in childhood ALL.	[118]
miR-129	ALL	PBMC	Up	5.00×10^{-5}	qRT-PCR	Potential diagnostic biomarker and therapeutic targets for childhood ALL.	[116]
miR-133b	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-146b	ALL	PBMC	Down	5.00×10^{-6}	qRT-PCR		
miR-146a-3p	AL	Serum	Down	0.0012	qRT-PCR	Early detection of pediatric acute leukemia	[159]
miR-146a	ALL	PBMC	Up	<0.0001	qRT-PCR	Diagnostic biomarker of childhood ALL.	[15]
	ALL	Plasma	Up	<0.001	qRT-PCR	Predictive marker for diagnosis and prognosis of adult and pediatric ALL	[9]

miR-155	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR	Potential diagnostic biomarker and therapeutic targets for childhood ALL.	[116]
miR-193b	ALL	PBMC	Down	5.00×10^{-6}	qRT-PCR		
miR-216	ALL	PBMC	Down	$2x10^{-5}$	qRT-PCR		
miR-217	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-299-3p	ALL	PBMC	Down	$2.50x10^{-5}$	qRT-PCR		
miR-302b	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-302d	ALL	PBMC	Down	5.00×10^{-6}	qRT-PCR		
miR-325	ALL	PBMC	Down	5.00×10^{-6}	qRT-PCR		
miR-330	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-362	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-368	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-696-5p	ALL	PBMC	Up	$4.50x10^{-5}$	qRT-PCR		
miR-374	ALL	PBMC	Down	5.00×10^{-6}	qRT-PCR		
miR-425-5p	ALL	PBMC	Up	$5.00x10^{-6}$	qRT-PCR		
miR-494	ALL	PBMC	Down	1.00×10^{-5}	qRT-PCR		
miR-501	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-513	ALL	PBMC	Up	$2.50x10^{-6}$	qRT-PCR		
miR-514	ALL	PBMC	Down	5.00×10^{-6}	qRT-PCR		
miR-515-5p	ALL	PBMC	Down	1.00×10^{-5}	qRT-PCR		
miR-517b	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-520	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-532	ALL	PBMC	Down	$7.5x10^{-5}$	qRT-PCR		
miR-576	ALL	PBMC	Up	$2.5x10^{-7}$	qRT-PCR		
miR-585	ALL	PBMC	Up	5.00×10^{-6}	qRT-PCR		
miR-617	ALL	PBMC	Up	$2.5x10^{-5}$	qRT-PCR		
miR-645	ALL	PBMC	Up	$1.5x10^{-5}$	qRT-PCR		
miR-26a	BCP-ALL	Plasma	Down	<0.001	qRT-PCR	Diagnostic biomarker for BCP-ALL.	[73]
miR-34a	BCP-ALL	Plasma	Up	0.015	qRT-PCR		
miR-221	BCP-ALL	Plasma	Down	<0.001	qRT-PCR		
miR-222	BCP-ALL	Plasma	Up	0.004	qRT-PCR		
miR-99a	ALL	Whole blood	Down	<0.001	qRT-PCR	Diagnosis of childhood ALL	[117]
	ALL	PBMC	Up	0.002	qRT-PCR	Biomarker for predicting prognosis and response to treatment for childhood ALL.	[77]
	ALL	PBMC	Up	0.033	qRT-PCR	Biomarker associated with resistance to vincristine in childhood ALL.	[118]
miR-125b-1	ALL	Serum	Up	<0.0001	qRT-PCR	Potential diagnosis marker for childhood ALL	[72]
miR-125b-5p	BCP-ALL	Plasma	Up	<0.01	qRT-PCR and TLDA	Diagnostic of BCP-ALL and detection of residual leukemia	[116]

miR-125b	ALL	PBMC	Up after induction	<0.001	qRT-PCR	Prognostic tumor marker and to monitor disease state and improvement in adult ALL.	[71]
	ALL	PBMC	Down	0.001	qRT-PCR	Biomarker for predicting prognosis and response to treatment for childhood ALL.	[77]
	ALL	PBMC	Up	0.033	qRT-PCR	Biomarker associated with resistance to vincristine in childhood ALL.	[118]
miR-203	ALL	Serum	Down	<0.0001	qRT-PCR	Early detection of pediatric acute leukemia	[159]
	ALL	PBMC	Up	0.041	qRT-PCR	Biomarker associated with resistance to vincristine in childhood ALL.	[118]
miR-142-3p	AL	Serum	Down	0.001	qRT-PCR	Early detection of pediatric acute leukemia	[159]
miR-223	BCP-ALL	Plasma	Down	<0.001	qRT-PCR and TLDA	Diagnostic of BCP-ALL and detection of residual leukemia	[146,73]
miR-511	BCP-ALL	Plasma	Up	0.002	qRT-PCR	Diagnosis, identification of progression markers and assessment of biological and/or therapeutic targets for patients with BCP-ALL.	[73]
miR-638	ALL	Plasma	Up	<0.0001	qRT-PCR	Detection, prognosis and relapse at diagnosis time	[6]
circRNA-AFF2	BCP-ALL	PBMC	Up	0.029	qRT-PCR	Classification, risk stratification and diagnosis of BCP-ALL.	[90]
circRNA-IL4R	BCP-ALL	PBMC	Up	<0.01	qRT-PCR		
circRNA-ZCCHC7	BCP-ALL	PBMC	Up	<0.01	qRT-PCR		
circRNA-AFF3	BCP-ALL	PBMC	Up	<0.01	qRT-PCR		
circRNA-PAX5	BCP-ALL	PBMC	Up	<0.0001	qRT-PCR		
circRNA-PVT1	BCP-ALL	PBMC	Up	0.0002	qRT-PCR		
circRNA-HIPX3	BCP-ALL	PBMC	Up	<0.0001	qRT-PCR		
circRNA-BCL2	BCP-ALL	PBMC	Up	0.0317	qRT-PCR		
circRNA-SETBP1	MLL, BCP-ALL	PBMC	Down	0.0028	qRT-PCR		
circRNA-X	MLL-BCP-ALL	PBMC	Down	0.0472	qRT-PCR		
circRNA-IKZF1	BCP-ALL	PBMC	Down	0.0154	qRT-PCR		
miR-21	ALL	PBMC	Up	<0.05	qRT-PCR	Response to treatment in childhood ALL.	[74,115]
	BCP-ALL	Serum	Up	<0.001	qRT-PCR	Biomarker for risk assessment and unfavorable prognostic in childhood BCP-ALL	[160]
miR-92a	ALL	PBMC	Up	0.0186	qRT-PCR	Prognostic and monitoring adult ALL.	[75]
miR-24	ALL	PBMC	Up	<0.05	qRT-PCR	Response to treatment, therapeutic target and prognostic marker in childhood ALL.	[74]
miR-148a	ALL	PBMC	Up	<0.01	qRT-PCR	Response to treatment in childhood ALL.	
miR-128-3p	ALL	Plasma	Up	<0.001	qRT-PRC and TLDA	Detection of minimal residual leukemia.	[146]
miR-128b	ALL	PBMC	Up	<002	qRT-PCR	Biomarker associated with resistance to vincristine in childhood ALL.	[118]
miR-150	ALL	PBMC	Down	0.049	qRT-PCR	Potential predictor of clinical outcome of ALL.	[161]
miR-629	ALL	PBMC	Up	0.031	qRT-PCR	Biomarker associated with resistance to vincristine in childhood ALL.	[118]
miR-9	ALL	PBMC	Up	0.032	qRT-PCR		
miR-625	ALL	PBMC	Down	0.006	qRT-PCR		
miR-141	ALL	PBMC	Down	0.021	qRT-PCR		

miR-200c	ALL	PBMC	Down	0.001	qRT-PCR		
miR-383	ALL	PBMC	Up	0.037	qRT-PCR		
miR-335	ALL	PBMC	Up	0.033	qRT-PCR		
miR-454	ALL	PBMC	Up	0.017	qRT-PCR		
Mitochondrial DNA	ALL	PBMC	Down	EFS: 0.04	qRT-PCR	A marker of poor prognosis of childhood ALL.	[119]
cf-DNA	ALL	Plasma	Up	<0.001	qRT-PCR	DNA concentrations and mean integrity may be used as biomarker for diagnostic, prognostic and monitoring MDR for ALL.	[50]
Pseudouridine	ALL	Serum	Up	<0.001	HPLC	Diagnostic and prognostic marker of adult ALL.	[67]
Phosphorylcholine	ALL	Serum	Up	<0.05	Ultra-performance liquid chromatography and mass spectrometry	Potential diagnostic and prognostic biomarker for childhood ALL.	[17]
LysoPC (16:0)	ALL	Serum	Up	<0.05			
LysoPC (18:0)	ALL	Serum	Up	<0.05			
PC(P-18:1(9Z)/0:0)	ALL	Serum	Up	<0.05			
3-Decaprenyl-4-hydroxybenzoic acid	ALL	Serum	Up	<0.05			
DG (24:1(15Z)/22:5(4Z,7Z,10Z,13Z,16Z)/0:0)	ALL	Serum	Up	<0.05			
LysoPC (18:2(9Z,12Z))	ALL	Serum	Up	<0.05			
PE(P-19:1(12Z)/0:0)	ALL	Serum	Up	<0.05			
LysoPC (18:1(11Z))	ALL	Serum	Up	<0.05			
PC (16:0/0:0) [rac]	ALL	Serum	Up	<0.05			
PC (18:1(9Z)/18:4(6Z,9Z,12Z,15Z))	ALL	Serum	Up	<0.05			
PI (20:5(5Z,8Z,11Z,14Z,17Z)/15:1(9Z))	ALL	Serum	Up	<0.05			
11(Z),14(Z)-eicosadienoic Acid	ALL	Serum	Up	<0.05			
PA (22:0/0:0)	ALL	Serum	Up	<0.05			
PE (14:0/15:0)	ALL	Serum	Up	<0.05			
PG (20:1(11Z)/0:0)	ALL	Serum	Up	<0.05			
PG(P-20:0/0:0)	ALL	Serum	Up	<0.05			
11(Z),14(Z)-eicosadienoic Acid	ALL	Serum	Up	<0.05			
PA (22:0/0:0)	ALL	Serum	Up	<0.05			
PE (14:0/15:0)	ALL	Serum	Up	<0.05			
PG (20:1(11Z)/0:0)	ALL	Serum	Up	<0.05			
PG(P-20:0/0:0)	ALL	Serum	Up	<0.05			
LysoPE (0:0/16:0)	ALL	Serum	Down	<0.05			
LysoPE (18:1(11Z)/0:0)	ALL	Serum	Down	<0.05			
LysoPc (15:0)	ALL	Serum	Down	<0.05			
LysoPC (20:5(5Z,8Z,11Z,14Z,17Z))	ALL	Serum	Down	<0.05			
LysoPC (22:6(4Z,7Z,10Z,13Z,16Z,19Z))	ALL	Serum	Down	<0.05			

LysoPC (17:0)	ALL	Serum	Down	<0.05			
LysoPC (22:5(7Z,10Z,13Z,16Z,19Z))	ALL	Serum	Down	<0.05			
8,11-eicosadienoic acid	ALL	Serum	Down	<0.05			
Uric acid	ALL	Serum	Down	<0.05			
Chenodeoxycholic acid glycine conjugate	ALL	Serum	Down	<0.05			
LysoPE (22:4(7Z,10Z,13Z,16Z)/0:0)	ALL	Serum	Down	<0.05			
LysoPE (20:4(8Z,11Z,14Z,17Z)/0:0)	ALL	Serum	Down	<0.05			
PC (15:0/0:0)	ALL	Serum	Down	<0.05			
Hyaluronic Acid	BCP-ALL	Serum	Up	0.03	Latex agglutination.	Potential prognostic biomarker for adult BCP-ALL, on the day before the beginning of the chemotherapy.	[162]
SPGT	ALL	Serum	Up	<0.001	Spectrometry	Prognostic significance associated with progression fulminant form of childhood ALL.	[163]
2,3-Dinor-6-keto-PGF1a	ALL	Whole blood	High	<0.01	Mass spectrometer	Predict clinical outcome, monitor disease progress of adult ALL.	[93]
GPEtn(16:0/0:0)	ALL	Whole blood	Down	<0.01			
GPCho(O-6:0/O-6:0)	ALL	Whole blood	High	<0.01			
GPEtn(18:1(9Z)/0:0)	ALL	Whole blood	Down	<0.01			
Methyl 8-[2-(2-formyl-vinyl)-3-hydroxy-5-oxocyclopentyl]-octanoate	ALL	Whole blood	High	<0.01			
1-Tetrahexanoyl-2-(8-[3]-ladderane-octanyl)-sn-GPEtn	ALL	Whole blood	Down	<0.01		Predict clinical outcome, monitor disease progress of adult ALL.	

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