

Supplementary Table 1 mitochondrial mRNA modification

Transcript	Position	Modification	Modification enzyme	Related cancer
MT-CO1	1472	m ¹ A	TRMT6/61A, TRMT61B	Unknown
	391	Ψ	RPUSD3, TRUB2	
MT-CO2	297	m ¹ A	TRMT6/61A, TRMT61B	
MT-CO3	707	m ¹ A	TRMT6/61A, TRMT61B	
	698-700	Ψ	RPUSD3, TRUB2	
MT-ND5	1374	m ¹ A	TRMT10C	

Supplementary Table 2 mitochondrial rRNA modifications

Transcript	Position	Modification	Modification enzyme	Related cancer
12S rRNA	429	m ⁵ U	TRMT2B	Unknown
	839	m ⁴ C	METTL15, METTL17	Acute myeloid leukemia
	841	m ⁵ C	NSUN4 (with MTERF4), METTL17	Acute myeloid leukemia
	936	m ⁶ ₂ A	TFB1M	Unknown
	937	m ⁶ ₂ A	TFB1M	
	947	m ¹ A	TRMT61B	
	1145	Gm	MRM1	
16S rRNA	1369	Um	MRM2/ GTPBP5	Acute myeloid leukemia
	1370	Gm	MRM3	
	1397	Ψ	RPUSD4	

Supplementary Table 3 mitochondrial tRNA modifications

Transcript	Position	Modification	Modification enzyme	Related cancer
Ala, Arg, Asp, Asn, Glu, Gly, His, Leu ^{CUN} , Lys, Phe, Pro, Thr, Trp, Val,	9	m ¹ A	TRMT10C, HSD17B10	Unknown
Cys, Gln, Ile, Leu ^{UUR} , Tyr		m ¹ G	TRMT10C, HSD17B10	
Ala, Asn, Asp, Gln, Glu, Gly, His, Ile, Leu ^{UUR} , Leu ^{CUN} , Lys, Phe, Pro, Ser ^{UCN}	10	m ² G	Unknown	
Arg	16	m ¹ A	Unknown	lung cancer
Leu ^{UUR} , Leu ^{CUN} , Ser ^{UCN}	20	D	DUS2	
Ala, Glu, Leu ^{UUR}	26	m ² G	TRMT1	
Ile		m ² ₂ G	TRMT1	Unknown
Asn, Asp, Cys, His, Ile, Leu ^{UUR} , Leu ^{CUN} , Met, Pro, Val	27	ψ	PUS1	
Ala, Asn, Cys, Glu, Leu ^{CUN} , Lys, Ser ^{UCN} , Tyr	28	ψ	PUS1	
Leu ^{CUN}	31	ψ	Unknown	pancreatic cancer
Arg, Cys, Pro	32	Ψ	Unknown	
Ser ^{UCN} , Thr		m ³ C	METTL8	
Gln	33	ψ	Unknown	Unknown
Met		f ⁵ C	NSUN3, ALKBH1	
Glu, Gln, Leu ^{UUR} , Lys, Trp	34	τm ⁵ U	MTO1, GTPBP3/	
Gln, Glu, Lys		τm ⁵ s ² U	MTU1	Unknown
Asn, Asp, His, Tyr		Q	QTRT1, QTRT2	
His	35	ψ	Unknown	

Transcript	Position	Modification	Modification enzyme	Related cancer
Ala, Gln, Leu ^{CUN} , Pro	37	m ¹ G	TRMT5	Acute myeloid leukemia
Cys, Phe, Ser ^{UCN} , Trp, Tyr		i ⁶ A	TRIT1	
Phe, Ser ^{UCN} , Trp, Tyr		ms ² i ⁶ A	TRIT1, CDK5RAP1	
Asn, Ile, Lys, Ser ^{AGY} , Thr,		t ⁶ A	YRDC, OSGEPL1	
Ala, Pro	38	Ψ	Unknown	Unknown
Ala, Arg, Cys, Gln, Gly, His, Phe, Pro, Tyr, Val	39	Ψ	PRUSD4	
Asn, Gln, Glu, Gly	40	Ψ	Unknown	
His, Leu ^{UUR} , Phe, Ser ^{AGY} , Tyr	48	m ⁵ C	NSUN2	
Glu, Ser ^{AGY}	49	m ⁵ C	NSUN2	
Ser ^{AGY}	50	m ⁵ C	NSUN2	
Met		Ψ	Unknown	
Asn, Leu ^{UUR} , Gln, Pro, Ser ^{UCN}	54	m ⁵ U	TRMT2B	
Asn, Gln, Glu, Leu ^{UUR} , Met, Ser ^{UCN} , Pro	55	Ψ	TRUB2	
Cys, Glu, Ile, Leu ^{UUR} , Lys, Ser ^{UCN}	58	m ¹ A	TRMT61B	
Pro	66	Ψ	PUS1	
Pro	67	Ψ	PUS1	
Ala	68	Ψ	PUS1	