Table S1. Frequency of occurrence of various tRNAs in different tissues of *Brassica rapa*

	Leaves	ApicMer	Pollen	UnpolOv	PollOv	Embryo	Endosperm
Ala	1.10	0.85	0.16	0.98	0.64	0.96	0.69
Arg	**6.89***	0.65	0.22	0.76	0.43	0.28	0.10
Asn	0.05	0.05	0.03	0.08	0.14	0.03	
Asp	**6.73***	0.61	0.24	1.55	0.63	3.36	1.31
Cys	0.09	0.11	0.09	0.29		0.08	0.04
Gln	0.99	1.08	1.12	1.71	1.77	1.22	1.11
Glu	58.23	62.63	78.40	64.99	59.27	76.23	92.19
Gly	8.18	23.75	5.56	24.36	31.18	14.04	3.16
His	0.12	0.68	0.10	0.37		0.59	1.23
Ile	0.02	0.14			0.10	0.05	
Leu	0.16	0.33	12.30	0.18	0.56	0.09	
Lys	0.19	0.16	0.05	0.83	0.74	0.15	
Met	0.25	0.27	0.06	0.35	0.22	0.24	
Phe	0.25		1.12				
Pro	0.52			0.12		1.29	0.05
SeC	0.01		0.00	0.02		0.00	0.01
Ser	0.12			0.19		0.05	
Thr	1.11			0.29		0.16	
Trp							
Tyr	3.28	7.96		2.93	3.91	1.15	
Val	0.13	0.09	0.19			0.04	
Pseudo	**11.59***	0.65	0.35	0.32	0.41	0.27	0.11

Leaves – leaf tissue, ApicMer – apical meristem, Pollen – pollen, UnpolOv – unpollinated ovule, PollOv – pollinated ovule, Embryo – embryo tissues, Endosperm – endosperm tissues. Asterisks indicate difference from all other tissues ($p<0.05$).

Table S2. Frequency of occurrence of various tRFs in different tissues of *Brassica rapa*

	Leaves	ApicMer	Pollen	UnpolOv	PollOv	Embryo	Endosperm
Ala	8.06	6.54	0.76	0.11	0.24	4.70	17.09
Arg	2.02	0.87	0.90	***13.96**	0.96	4.17	1.50
Asn	0.02	0.31	0.11	0.88	0.08	0.13	
Asp	***75.40**	14.51	2.16	13.87	8.76	23.15	12.44
Cys	0.07	0.16	0.53			0.21	
Gln	0.07	0.67	***8.25**	0.65	1.63		
Glu	3.38	25.78	29.88	20.80	35.50	11.67	21.65
Gly	***7.77**	43.85	56.67	42.15	47.44	51.80	44.20
His		1.36	0.25			0.15	0.50
Ile	0.01	0.18			0.08	0.21	
Leu	0.14	0.59	0.17	3.55	1.37	0.33	
Lys	0.07	0.18	0.17	0.74	0.17	0.14	
Met	0.06	2.43	0.06	0.47	1.36	2.63	
Phe	0.18		0.03				
Pro						0.11	
SeC			0.03			0.00	
Ser	0.03					0.03	
Thr	0.08					0.15	
Trp							
Tyr	1.34	0.07			0.08	0.16	
Val	0.10	0.14	0.03			0.45	
Pseudo	1.27	2.36	3.15	2.81	2.35	2.71	2.62

Leaves – leaf tissue, ApicMer – apical meristem, Pollen – pollen, UnpolOv – unpollinated ovule, PollOv – pollinated ovule, Embryo – embryo tissues, Endosperm – endosperm tissues. Asterisks indicate difference from all other tissues ($p<0.05$).

Table S3. tRF to tRNA ratio for different tissues

tRnaType	Leaves	ApMer	Pollen	UnpolOvule	PolOvule	Embryo	Endosperm
Asp_GUC5'	178.359	2.247	0.848	20.547	2.146	51.914	39.834
Pseudo_UCC	25.667	5.091	2.230	12.667	3.895	48.141	25.263
Gly_UCC	24.498	7.619	2.403	13.555	6.122	37.944	26.330
Gln_UUG	7.666	0.066	2.932	1.721	0.028	2.011	2.112
Pro_CGG	5.929			2.143		5.626	0.818
Ala_AGC	4.573	0.796	0.160		0.030	0.868	1.827
Met_CAU	3.402	0.848	0.096	0.259	0.978	1.255	
Arg_CCU	2.127	0.152	0.384	6.356	0.688	4.652	1.375
Arg_UCU5'	1.951	0.128			0.094	0.116	
Gly_GCC	1.637	0.032	0.047	0.169		1.006	2.616
Ala_UGC	1.483	0.739	0.218	0.221	0.108		1.315
Cys_GCA	1.457	0.145	0.579	2.976		1.925	3.885
Ala_CGC	1.453	0.464	0.045	0.163		0.355	0.692
SeC_UCA	1.250		0.833	2.222		6.000	2.250
His_GUG	1.042	0.192	0.231	2.026		7.068	4.735
Glu_CUC	1.027	0.345	0.776	6.886	0.177	4.582	1.522
Gly_CCC	0.982	0.011	0.052	0.684	0.013	1.226	4.743
Gln_CUG5'	0.755	0.056		3.702	0.179	1.907	0.667
Leu_UAG	0.585	0.167	0.001	2.079	0.381	0.544	
Val_GAC	0.500						
Pro_UGG	0.317					0.339	
Phe_GAA	0.313		0.003				
Val_CAC	0.304	0.143	0.016			1.200	
Ile_UAU	0.294	0.124			0.114	0.455	
Leu_UAA	0.283					3.000	
Pro_AGG	0.263					0.500	
Asn_GUU	0.200	0.575	0.321	1.343	0.085	0.462	
Glu_UUC5'	0.195	0.030	0.032	0.174	0.088	0.243	0.454
Tyr_GUA5'	0.181	0.001		0.009	0.003		

Ser_UGA	0.171							
Lys_UUU	0.160	0.107	0.308	0.095	0.035	0.144		
Thr_UGU	0.066							
Arg_UCG	0.034	0.094		0.803				
Pseudo_GGC	0.032	0.011	0.019	0.152	0.044	0.036		
Arg_UCU3'	0.016	0.064		0.450			0.792	
Tyr_GUA3'	0.004					0.025		
Asp_GUC3'	0.002							
Glu_UUC3'	0.001					0.0002		
Gln_CUG3'		0.031	0.048					
Thr_CGU				3.000		3.959	5.497	
Ser_CGA				0.524		2.041	5.107	
Thr_AGU				0.361		1.127		
Ala_AGC				0.067		0.789		
Pseudo_UCU3'						0.005		

The ratio was calculated by dividing the number of tRF reads (shorter or equal to 27 nt) by the number of tRNA reads (longer than 29 nt).

Table S4. Common targets for various ncRFs

tRF	Leaves	ApicMer	Pollen	UnpolOv	PolOv	Embryo	Endosperm	
Bra003753	53	23	15	17	17	13	15	BEL1-like homeodomain 3
Bra021314	31	10	5	8	8	8	9	No annotation
Bra013336	25	10	5	8	8	8	8	Leucine-rich repeat protein kinase
Bra000529	14	42	42	19	25	33	36	proteosome family protein
Bra037748	14	42	30	18	25	33	36	cyclin-dependent kinase E1
Bra037499	10	10	7	3	5	13	1	B-box type zinc finger protein with CCT domain
Bra013528	10	10	7	3	5	13	1	PapD-like superfamily protein
Bra013584	9	28	25	10	13	25	22	WRKY DNA binding protein 31
Bra020153	9	28	25	10	13	26	24	LA RNA-binding protein
Bra012143	9	33	25	10	13	25	21	Unknown
Bra016601	8	21	19	14	16	17	10	alpha/beta-Hydrolases superfamily protein
Bra034753	7	2	2	3	1	2	4	Unknown
Bra003597	7	2	2	3	1	2	4	nudix hydrolase homolog 3, phosphohydrolase
Bra023172	7	2	2	3	1	2	4	Argonaute family protein - AGO2
Bra032111	5	14	15	9	12	8	14	LJRHL1-like 1
Bra033536	4	5	8	2	8	3	2	associated molecule with the SH3 domain of STAM 3

rRF	Leaves	ApicMer	Pollen	UnpolOv	PolOv	Embryo	Endosperm	
Bra030994	5	4		5	5	5	5	Disease resistance protein (TIR-NBS-LRR class) family
Bra034079	5	4		5	5	5	5	Disease resistance protein (TIR-NBS-LRR class) family
Bra013685	5	4		5	5	5	5	unknown

snRF	Leaves	ApicMer	Pollen	UnpolOv	PolOv	Embryo	Endosperm
Bra032383	0	2	2	2	3	2	2

Bra034244	0	1	1	1	1	1	1	
Bra018742	0	8	1	3	6	8	7	Tetratricopeptide repeat (TPR)-like superfamily protein
Bra030327	0	1	1	1	1	1	1	

snoRF	**Leaves**	**ApicMer**	**Pollen**	**UnpolOv**	**PolOv**	**Embryo**	**Endosperm**	
Bra039448	5	3	0	2	2	3	0	unknown function
Bra034045	3	3	0	2	2	3	0	Peptidase S24/S26A/S26B/S26C family protein
Bra029738	3	3	0	2	2	3	0	Peptidase S24/S26A/S26B/S26C family protein

Numbers show the number of unique ncRFs targeting specific genes.

Table S5. Frequency of predicted binding of tRFs to various regions of their potential targets in different tissues

Each mRNA target was divided into three sections (5' third, central third and 3' third). The number of tRFs binding to specific regions is expressed in percentage of total.

tRF		**Cleavage**			**Translation inhibition**		
tissue		**5' third**	**central third**	**3' third**	**5' third**	**central third**	**3' third**
1	leaves	48%	50%	2%	65%	34%	2%
2	ap_meri	68%	31%	2%	23%	75%	2%
3	pollen	66%	34%	0%	15%	85%	0%
4	unpol_ovule	75%	24%	1%	26%	73%	1%
5	pol_ovule	74%	26%	1%	25%	74%	1%
6	embryo	41%	58%	1%	24%	75%	1%
7	endosperm	64%	36%	0%	13%	87%	0%
	Average	**63%**	**37%**	**1%**	**26%**	**74%**	**1%**