Supplemental data 2. the information of candidate lncRNAs and circRNAs.

	lncRNA							Comparative analysis of serum exosome transcriptome data					verification on serum exosomes		verification on tissues	
Symbol	EnsID	Type	Chromosome	Start position	End position	Strand	Transcript number	Total length	log_2FC	log_2CPM	F value	*P* value[a]	FDR	Mann-Whitney U	*P* value[b]	t statistics	*P* value[c]
RP11-443C10.1	ENSG00000253163.1	lincRNA	chr5	178804532	178805762	-	1	1231	7.029	4.456	47.461	2.469E-10	1.056E-06	24	<0.001	1.760	0.046
AC114730.5	ENSG00000215023.2	antisense	chr2	242740331	242741322	-	1	992	6.561	4.072	41.157	2.654E-09	1.915E-06	275	0.399	0.469	0.322
RP11-556O9.4	ENSG00000272383.1	pseudogene	chr17	61165523	61166558	-	1	1036	6.092	3.710	35.560	2.377E-08	3.329E-06	64.5	<0.001	2.759	0.006
RP4-594A5.1	ENSG00000272328.1	lincRNA	chr7	8343371	8380973	+	2	37603	6.022	3.660	37.195	1.242E-08	2.748E-06	-	-	-	-
OR4F2P	ENSG00000224777.3	pseudogene	chr11	86649	87586	-	1	938	5.915	3.579	30.568	1.807E-07	6.527E-06	137	<0.001	2.900	0.004
RPL31P58	ENSG00000243053.2	pseudogene	chr17	27129462	27129840	+	1	379	5.636	3.389	33.672	5.076E-08	4.008E-06	147.5	0.002	2.024	0.027
AJ006998.2	ENSG00000229425.1	lincRNA	chr21	16742841	16774624	-	1	31784	5.458	3.267	32.401	8.508E-08	4.671E-06	-	-	-	-
FYTTD1P1	ENSG00000234502.2	pseudogene	chr9	104137626	104138885	-	1	1260	5.378	3.218	32.456	8.321E-08	4.640E-06	173	0.009	2.086	0.024
NPM1P47	ENSG00000259466.1	pseudogene	chr15	62374649	62375504	-	1	856	5.373	3.950	30.430	1.567E-07	6.083E-06	249	0.214	0.965	0.172
RP11-417E7.1	ENSG00000223485.1	lincRNA	chr6	169558187	169563019	-	2	4833	5.354	4.081	31.736	9.016E-08	4.743E-06	123	<0.001	3.306	0.002
AC005741.2	ENSG00000249418.2	pseudogene	chr5	129934041	129934472	+	1	432	5.242	3.133	31.621	1.171E-07	5.260E-06	209	0.053	1.006	0.163
AC010983.1	ENSG00000235056.1	lincRNA	chr2	195868435	195891094	-	1	22660	5.224	3.577	30.305	1.653E-07	6.246E-06	-	-	-	-
MTND3P10	ENSG00000233286.1	pseudogene	chr2	120970511	120970851	+	1	341	5.120	3.061	28.614	4.080E-07	9.908E-06	107.5	<0.001	0.879	0.194
GOLGA8UP	ENSG00000103832.1(	pseudogene	chr15	31083776	31094062	+	1	10287	5.055	3.023	30.223	2.084E-07	6.980E-06	-	-	-	-
ARL2BPP4	ENSG00000249312.1	pseudogene	chr5	129865112	129865582	+	1	471	4.977	2.977	28.127	5.006E-07	1.103E-05	187	0.019	3.054	0.003
RPS3AP23	ENSG00000218351.2	pseudogene	chr6	141956787	141957640	-	2	854	4.918	3.410	25.902	1.107E-06	1.821E-05	163	0.005	2.310	0.015
AC009262.2	ENSG00000236212.1	lincRNA	chr7	34249138	34295955	+	1	46818	4.769	3.963	27.342	5.908E-07	1.210E-05	-	-	-	-
RP11-164H5.1	ENSG00000231744.1	pseudogene	chr9	127360986	127361859	-	1	874	4.728	3.938	25.986	1.067E-06	1.779E-05	207	0.049	2.684	0.007
FAM204CP	ENSG00000230902.1	pseudogene	chr13	76262692	76263333	-	1	642	4.595	3.447	25.042	1.617E-06	2.325E-05	279	0.429	0.959	0.174
RP11-35N6.6	ENSG00000230328.2	pseudogene	chr9	104121214	104123524	+	1	2311	4.525	4.207	23.082	3.866E-06	4.323E-05	187	0.019	0.554	0.293
RNASEH1P1	ENSG00000265790.1	pseudogene	chr17	20805252	20805993	-	1	742	4.520	4.335	23.214	3.644E-06	4.159E-05	178	0.012	2.287	0.016
RP11-909N17.2	ENSG00000253931.1	antisense	chr8	144494919	144499224	+	1	4306	4.485	3.900	24.458	2.093E-06	2.774E-05	256	0.258	0.448	0.329
RP11-618I10.1	ENSG00000249763.1	pseudogene	chr4	70108346	70116533	+	1	8188	4.443	3.837	22.111	5.979E-06	5.953E-05	-	-	-	-
RP11-318K15.2	ENSG00000254325.2	sense intronic	chr8	56806154	56808298	+	1	2145	4.420	3.054	23.487	3.225E-06	3.780E-05	147.5	0.002	5.186	<0.001
MTND1P34	ENSG00000225514.1	pseudogene	chr1	47630182	47631592	-	1	1411	4.402	2.676	24.147	2.749E-06	3.355E-05	273	0.382	1.159	0.129
RP11-11N5.3	ENSG00000272218.1	lincRNA	chr4	187813706	187814137	+	1	432	4.390	2.669	25.097	1.822E-06	2.524E-05	170	0.007	0.997	0.165
CTC-261N6.1	ENSG00000248363.1	lincRNA	chr5	85649621	85664672	+	2	15052	4.336	2.645	24.763	2.105E-06	2.781E-05	-	-	-	-
KB-1517D11.2	ENSG00000253468.1	pseudogene	chr8	99425110	99426012	-	1	903	4.331	2.641	24.648	2.213E-06	2.880E-05	128.5	<0.001	3.230	0.002
RP1-90J4.1	ENSG00000257906.1	lincRNA	chr12	47808791	47813962	+	1	5172	4.325	2.639	24.676	2.186E-06	2.858E-05	-	-	-	-
AC006000.5	ENSG00000237713.1	lincRNA	chr7	13378826	13404674	-	1	25849	4.268	2.613	24.813	2.060E-06	2.746E-05	-	-	-	-
RP11-3B12.2	ENSG00000237764.2	lincRNA	chr7	124812272	125019375	+	1	207104	4.211	2.588	24.678	2.183E-06	2.857E-05	-	-	-	-
CD177P1	ENSG00000204933.2	pseudogene	chr19	43876894	43883276	-	2	6383	4.203	2.584	20.854	1.174E-05	9.889E-05	-	-	-	-
RP11-138J23.1	ENSG00000251026.1	lincRNA	chr5	103415612	103441104	+	1	25493	4.177	2.573	24.989	1.909E-06	2.615E-05	-	-	-	-
CTD-2330J20.1	ENSG00000259651.2	pseudogene	chr15	58442474	58442762	+	1	289	4.174	2.572	23.242	4.080E-06	4.483E-05	253	0.24	0.891	0.191
RP11-815M8.1	ENSG00000238042.1	lincRNA	chr1	222054323	222151865	-	2	97543	4.160	2.566	25.798	1.348E-06	2.071E-05	-	-	-	-
AC112721.2	ENSG00000222032.1	lincRNA	chr2	238337563	238343465	-	1	5903	4.085	2.534	22.026	6.971E-06	6.635E-05	-	-	-	-
RP11-589N15.2	ENSG00000269899.1	sense intronic	chr8	11703663	11703900	-	1	238	4.064	2.525	22.892	4.758E-06	5.036E-05	129	<0.001	3.374	0.001
RPL7P31	ENSG00000235379.1	pseudogene	chr7	34750369	34751092	+	1	724	4.027	3.940	18.475	3.160E-05	2.161E-04	161	0.004	0.829	0.208
RP5-928E24.2	ENSG00000235461.1	lincRNA	chrX	84465712	84474704	+	1	8993	4.026	2.509	22.123	6.678E-06	6.439E-05	-	-	-	-
RP11-925D8.3	ENSG00000259600.2	pseudogene	chr15	58443232	58444712	+	1	1481	3.969	4.126	18.512	3.106E-05	2.132E-04	200	0.036	0.966	0.172
HOXC-AS1	ENSG00000250451.1	antisense	chr12	54392806	54393794	-	2	989	3.960	3.262	19.559	1.913E-05	1.450E-04	153	0.002	0.933	0.18
RP11-49I11.3	ENSG00000267456.2	pseudogene	chr18	33858698	33859082	-	1	385	3.933	2.472	22.189	6.484E-06	6.299E-05	197	0.031	2.199	0.019
RP11-400N13.3	ENSG00000232679.1	lincRNA	chr1	222215047	222238105	-	1	23059	3.731	2.945	19.010	2.465E-05	1.765E-04	-	-	-	-
RP11-703M24.5	ENSG00000266049.1	antisense	chr18	2688562	2833063	-	2	144502	3.654	4.350	15.657	1.189E-04	6.457E-04	-	-	-	-
AC007128.1	ENSG00000229970.3	antisense	chr7	8301894	8384146	+	1	82253	3.639	3.503	16.323	8.668E-05	4.919E-04	-	-	-	-
RP11-803D5.4	ENSG00000270190.1	lincRNA	chr2	112024445	112025050	-	1	606	3.637	4.500	17.284	5.510E-05	3.387E-04	172	0.008	1.657	0.056
RP11-161I6.2	ENSG00000263745.1	lincRNA	chr18	1883525	2240847	-	4	357323	3.637	4.368	16.854	6.745E-05	3.984E-04	-	-	-	-
NF1P8	ENSG00000236956.1	pseudogene	chr2	131947407	131955066	-	1	7660	3.586	4.093	16.062	9.810E-05	5.473E-04	-	-	-	-
RP11-596D21.1	ENSG00000257831.1	antisense	chr14	31717834	31771945	+	1	54112	3.564	2.856	16.874	6.682E-05	3.954E-04	-	-	-	-
AC002116.7	ENSG00000267698.1	antisense	chr19	36505410	36536874	+	1	31465	3.547	2.689	17.596	4.761E-05	2.996E-04	-	-	-	-
AC004906.3	ENSG00000237286.1	antisense	chr7	2983669	2986725	+	1	3057	3.535	4.741	16.663	7.383E-05	4.297E-04	235	0.14	0.814	0.212
RP11-10A14.5	ENSG00000248538.2	lincRNA	chr8	9046521	9060364	+	3	13844	3.506	3.538	15.238	1.453E-04	7.622E-04	-	-	-	-
RP11-308D16.1	ENSG00000232379.1	pseudogene	chrX	136029907	136030292	-	1	386	3.457	2.303	20.305	1.501E-05	1.200E-04	184.5	0.016	3.324	0.002
RP11-30H9.1	ENSG00000258065.1	pseudogene	chr14	29326590	29327907	-	1	1318	3.456	5.090	17.810	4.307E-05	2.764E-04	210.5	0.056	0.926	0.182
RPS14P7	ENSG00000242635.2	pseudogene	chr4	161739574	161740021	+	1	448	3.439	3.345	14.920	1.692E-04	8.680E-04	136	0.001	3.119	0.002
AIMP1P2	ENSG00000227177.1	pseudogene	chr1	172855087	172855398	-	1	312	3.404	2.286	19.317	2.345E-05	1.700E-04	186	0.018	4.134	<0.001
RP5-1120P11.1	ENSG00000237686.2	antisense	chr6	43963460	44042389	-	2	78930	3.388	5.262	19.718	1.779E-05	1.365E-04	-	-	-	-

RP11-559M23.1	ENSG00000273106.1	antisense	chr2	44394764	44395998	-	1	1235	3.369	4.983	16.184	9.260E-05	5.212E-04	123	<0.001	2.089	0.024
RP11-100G15.5	ENSG00000240791.1	pseudogene	chr9	94872857	94873150	+	1	294	3.332	2.263	18.743	3.042E-05	2.095E-04	238.5	0.157	0.984	0.167
RP11-701P16.5	ENSG00000251230.1	lincRNA	chr4	185765739	185776905	-	2	11167	3.298	3.719	14.255	2.330E-04	1.139E-03	-	-	-	-
RP11-19C24.1	ENSG00000272304.1	lincRNA	chr4	66868999	66882510	+	1	13512	3.270	2.244	17.312	5.865E-05	3.568E-04	-	-	-	-
RP11-93K22.13	ENSG00000248243.1	lincRNA	chr3	129808276	129813147	-	1	4872	3.224	3.477	13.495	3.368E-04	1.568E-03	253.5	0.242	2.317	0.015
RP11-680F20.10	ENSG00000260209.1	lincRNA	chr11	125742926	125744423	-	2	1498	3.173	5.362	16.884	6.649E-05	3.938E-04	237.5	0.152	1.314	0.101
AC027119.1	ENSG00000229642.1	lincRNA	chr3	6004529	6165807	+	1	161279	3.167	2.418	16.186	9.251E-05	5.209E-04	-	-	-	-
RP11-424M22.1	ENSG00000256450.1	pseudogene	chr12	16666379	16667305	+	1	927	3.149	4.520	13.533	3.307E-04	1.544E-03	232	0.126	1.286	0.106
RP11-476K15.1	ENSG00000266602.1	lincRNA	chr18	1509184	1647098	+	1	137915	3.108	2.199	17.505	5.366E-05	3.318E-04	-	-	-	-
RP1-90G24.6	ENSG00000224050.1	lincRNA	chr22	32669407	32673173	+	1	3767	3.103	2.198	17.396	5.642E-05	3.453E-04	254	0.245	0.572	0.287
CTD-2339L15.3	ENSG00000259254.1	sense intronic	chr15	40935131	40939055	+	1	3925	3.095	2.668	13.313	3.682E-04	1.693E-03	123	<0.001	2.442	0.011
AC018641.7	ENSG00000226468.2	pseudogene	chr7	32496575	32497370	-	1	796	3.079	4.051	12.372	5.840E-04	2.519E-03	228	0.111	0.934	0.18
CTD-2114J12.1	ENSG00000253525.1	pseudogene	chr8	92169513	92170976	+	1	1464	3.077	4.898	13.892	2.778E-04	1.331E-03	59	<0.001	1.872	0.037
RP11-81H3.2	ENSG00000251138.2	lincRNA	chr12	74526946	74796315	-	5	269370	3.069	4.975	14.214	2.376E-04	1.160E-03	-	-	-	-
IGLVIVOR22-1	ENSG00000271138.1	IG V pseudogene	chr22	25833273	25833790	-	1	518	3.059	3.163	13.335	3.643E-04	1.678E-03	94	<0.001	2.493	0.01
RP11-283G6.4	ENSG00000256234.1	antisense	chr12	26364097	26488789	-	1	124693	3.008	2.703	13.433	3.472E-04	1.611E-03	-	-	-	-
RP11-129B9.2	ENSG00000257121.1	pseudogene	chr12	95494307	95494821	+	1	515	3.001	3.288	12.119	6.613E-04	2.810E-03	226	0.103	2.153	0.021
ARGFXP2	ENSG00000265293.2	pseudogene	chr17	30477452	30478523	-	1	1072	2.986	4.231	11.648	8.352E-04	3.452E-03	213	0.063	0.898	0.189
SLC25A24P1	ENSG00000241361.4	pseudogene	chr1	108815565	108918572	+	3	103008	2.981	3.245	10.645	1.379E-03	5.339E-03	-	-	-	-
RP5-881L22.5	ENSG00000226812.2	antisense	chr20	42976192	42983825	-	2	7634	2.973	3.865	11.360	9.641E-04	3.910E-03	-	-	-	-
RP11-575F12.1	ENSG00000249345.2	lincRNA	chr12	127399766	127544946	-	3	145181	2.905	4.023	11.332	9.775E-04	3.953E-03	-	-	-	-
CTC-327F10.4	ENSG00000251320.1	antisense	chr5	147266675	147267267	+	1	593	2.863	3.199	11.307	9.898E-04	3.994E-03	147	0.002	3.368	0.001
RP11-9E13.4	ENSG00000234806.1	pseudogene	chr10	70184317	70184754	+	1	438	2.860	3.611	9.631	2.305E-03	8.405E-03	236	0.144	1.100	0.141
RP11-3B12.5	ENSG00000224899.1	lincRNA	chr7	124791380	124793665	-	1	2286	2.857	2.703	11.696	8.157E-04	3.380E-03	90	<0.001	3.063	0.003
OR1AA1P	ENSG00000234288.1	pseudogene	chrX	130558273	130559188	+	1	916	2.851	3.680	10.654	1.373E-03	5.314E-03	190	0.022	1.099	0.142
RP1-68D18.4	ENSG00000255443.1	antisense	chr11	35231890	35236532	-	1	4643	2.827	2.675	10.696	1.345E-03	5.217E-03	257.5	0.268	1.351	0.095
AC004692.4	ENSG00000228680.1	antisense	chr7	43278665	43288867	-	3	10203	2.802	4.344	10.759	1.303E-03	5.075E-03	-	-	-	-
GS1-293C5.1	ENSG00000273138.1	antisense	chr7	95045420	95045774	+	1	355	2.789	3.008	9.791	2.124E-03	7.811E-03	194	0.027	0.738	0.234
ATP5G1P4	ENSG00000227440.1	pseudogene	chr3	172546526	172546966	-	1	441	2.774	4.201	10.815	1.266E-03	4.949E-03	218.5	0.077	0.958	0.174
HIGD1AP6	ENSG00000253229.1	pseudogene	chr8	76214531	76214809	+	1	279	2.714	2.103	15.523	1.350E-04	7.163E-04	114	<0.001	0.937	0.179
RP11-104E19.1	ENSG00000258657.1	antisense	chr14	25064929	25126980	+	2	62052	2.694	4.049	10.766	1.298E-03	5.060E-03	-	-	-	-
RP11-278L15.2	ENSG00000243885.1	lincRNA	chr3	149101966	149103587	-	1	1622	2.692	4.362	10.172	1.751E-03	6.583E-03	252.5	0.235	3.766	0.001
RP11-473O4.4	ENSG00000254263.1	lincRNA	chr8	130902711	130914004	+	1	11294	2.683	2.097	15.055	1.682E-04	8.642E-04	-	-	-	-
RPSAP52	ENSG00000241749.3	pseudogene	chr12	66151800	66220754	-	2	68955	2.674	4.642	10.253	1.680E-03	6.342E-03	-	-	-	-
RP11-381E24.1	ENSG00000241634.1	pseudogene	chr3	108262214	108262722	-	1	509	2.669	3.773	9.438	2.543E-03	9.109E-03	78	<0.001	0.984	0.168
RP4-809F18.2	ENSG00000257061.1	lincRNA	chr12	126842580	126843442	+	1	863	2.624	3.810	9.184	2.897E-03	1.022E-02	162	0.004	0.934	0.173
RP1-137D17.1	ENSG00000226194.1	lincRNA	chr6	169770093	169788480	-	2	18388	2.621	5.333	11.377	9.562E-04	3.882E-03	-	-	-	-
RP11-25H12.1	ENSG00000249413.2	lincRNA	chr4	66864564	67015730	+	1	151167	2.615	4.226	9.398	2.596E-03	9.266E-03	-	-	-	-
RP11-318K12.1	ENSG00000228991.2	pseudogene	chr9	66693277	66721073	-	1	27797	2.604	4.343	9.626	2.310E-03	8.420E-03	-	-	-	-
RP11-146E13.4	ENSG00000258188.1	lincRNA	chr14	19812176	19859970	+	1	47795	2.568	4.521	8.887	3.375E-03	1.167E-02	-	-	-	-
AL121578.5	ENSG00000224339.1	pseudogene	chrX	37805137	37806028	+	1	892	2.563	3.279	8.414	4.311E-03	1.436E-02	158	2	0.550	0.294
RP11-180P8.3	ENSG00000266411.1	lincRNA	chr17	61044178	61045910	-	1	1733	2.553	4.341	8.849	3.442E-03	1.183E-02	256	0.258	1.156	0.13
HOXB-AS4	ENSG00000242207.1	antisense	chr17	46706037	46712294	+	2	6258	2.531	3.548	9.321	2.700E-03	9.600E-03	-	-	-	-
AC093850.2	ENSG00000230838.1	lincRNA	chr2	216582766	216584147	+	1	1382	2.530	3.458	9.174	2.911E-03	1.027E-02	193	0.025	0.440	0.332
RP11-707P20.1	ENSG00000236513.1	lincRNA	chrX	4545241	4551613	-	1	6373	2.529	3.414	8.340	4.478E-03	1.485E-02	-	-	-	-
RP11-519M16.1	ENSG00000246876.2	lincRNA	chr4	130645326	130692636	-	2	47311	2.528	4.991	9.931	1.978E-03	7.334E-03	-	-	-	-
RP4-809F18.1	ENSG00000255595.1	lincRNA	chr12	126843848	126845611	+	1	1764	2.523	5.171	10.343	1.606E-03	6.120E-03	223	0.093	2.055	0.026
DGCR9	ENSG00000273032.1	lincRNA	chr22	19005347	19007761	+	1	2415	2.512	6.805	16.499	7.977E-05	4.588E-04	87	<0.001	2.298	0.016
RP11-212I21.2	ENSG00000260135.2	lincRNA	chr16	55461470	55496209	-	2	34740	2.485	3.237	8.071	5.153E-03	1.672E-02	-	-	-	-
RP11-392O1.4	ENSG00000267747.1	antisense	chr17	41622153	41687706	+	1	65554	2.419	3.801	7.375	7.428E-03	2.287E-02	-	-	-	-
RP3-395M20.7	ENSG00000225931.3	antisense	chr1	2497849	2501327	+	1	3479	2.408	5.604	11.313	9.868E-04	3.984E-03	94	<0.001	2.223	0.018
AP000525.10	ENSG00000232775.2	pseudogene	chr22	16157079	16172700	+	3	15622	2.400	4.314	7.622	6.520E-03	2.044E-02	-	-	-	-
RP11-1017G21.3	ENSG00000259013.2	pseudogene	chr14	102435701	102435938	-	1	238	2.380	2.031	13.599	3.365E-04	1.567E-03	164.5	0.005	0.510	0.307
ST8SIA6-AS1	ENSG00000204832.5	antisense	chr10	17428935	17455502	+	5	26568	2.377	5.490	10.519	1.470E-03	5.654E-03	-	-	-	-
RP11-344P13.1	ENSG00000224857.1	lincRNA	chr1	121315744	121322322	-	1	6579	2.350	2.030	12.838	4.855E-04	2.146E-03	-	-	-	-
RP11-203H2.2	ENSG00000234763.1	lincRNA	chr6	8342170	8343254	-	1	1085	2.322	3.656	7.603	6.586E-03	2.062E-02	151	0.002	0.753	0.23
RP11-279O17.1	ENSG00000261319.1	lincRNA	chr16	8348494	8349774	+	1	1281	2.306	5.145	8.570	3.975E-03	1.340E-02	62	<0.001	1.202	0.121
RP11-600K15.1	ENSG00000253658.1	lincRNA	chr8	69824038	70016425	-	4	192388	2.280	4.645	7.560	6.735E-03	2.103E-02	-	-	-	-
RP11-297K7.1	ENSG00000236182.1	pseudogene	chr3	188707171	188707924	-	1	754	2.258	4.949	8.382	4.383E-03	1.457E-02	275.5	0.401	2.366	0.013
LINC00567	ENSG00000259831.1	lincRNA	chr13	111462023	111465431	-	1	3409	2.241	7.114	16.929	6.511E-05	3.878E-04	97	<0.001	2.318	0.015

GK-IT1	ENSG00000229331.1	sense intronic	chrX	30689752	30690283	+	1	532	2.232	2.010	12.253	8.060E-04	3.345E-03	78	<0.001	2.145	0.021
CSAG2	ENSG00000184324.1	antisense	chrX	151922445	151928738	+	2	6294	2.227	4.391	7.624	6.511E-03	2.042E-02	-	-	-	-
LL22NC03-N14H	ENSG00000272872.1	sense intronic	chr22	16154073	16154766	-	1	694	2.220	6.028	10.203	1.723E-03	6.494E-03	88.5	<0.001	0.475	0.32
CSAG3	ENSG00000197463.8	antisense	chrX	151876743	151883038	-	2	6296	2.215	4.382	7.375	7.425E-03	2.287E-02	-	-	-	-
RP5-1120P11.3	ENSG00000231881.1	lincRNA	chr6	44041650	44045689	+	1	4040	2.162	5.651	8.982	3.213E-03	1.118E-02	48.5	<0.001	0.002	0.499
GUCY1B2	ENSG00000123201.1	pseudogene	chr13	51568647	51654998	-	7	86352	2.158	5.460	8.501	4.119E-03	1.381E-02	-	-	-	-
CYP4A22-AS1	ENSG00000225506.2	lincRNA	chr1	47562325	47644943	-	1	82619	2.140	4.473	6.571	1.140E-02	3.293E-02	-	-	-	-
RP11-64C1.1	ENSG00000240708.1	lincRNA	chr3	55330228	55334766	+	1	4539	2.122	4.774	6.670	1.081E-02	3.150E-02	20	<0.001	0.858	0.2
RP3-436N22.3	ENSG00000238272.1	antisense	chr1	173524390	173581911	+	1	57522	2.107	3.457	6.264	1.344E-02	3.767E-02	-	-	-	-
AL162759.1	ENSG00000235269.1	lincRNA	chr14	54235660	54317600	-	1	81941	2.106	2.684	7.107	8.558E-03	2.584E-02	-	-	-	-
CTD-2015H3.2	ENSG00000266450.1	lincRNA	chr18	1655178	1779956	+	1	124779	2.090	2.747	6.447	1.218E-02	3.474E-02	-	-	-	-
LINC00922	ENSG00000261742.1	lincRNA	chr16	65318402	65610203	-	3	291802	2.078	5.214	7.638	6.464E-03	2.029E-02	-	-	-	-
RP11-223C24.1	ENSG00000249806.1	lincRNA	chr4	143487172	143582103	+	1	94932	2.077	1.983	11.934	7.539E-04	3.164E-03	-	-	-	-
RP11-497G19.1	ENSG00000257883.1	lincRNA	chr12	117099387	117135870	+	1	36484	2.058	4.981	7.141	8.404E-03	2.543E-02	-	-	-	-
RP4-694A7.2	ENSG00000233589.1	antisense	chr1	68944812	68949222	+	1	4411	2.054	2.938	6.302	1.317E-02	3.705E-02	37	<0.001	1.640	0.057
CTD-2354A18.1	ENSG00000261780.2	processed transcript	chr18	70992176	71017113	+	3	24938	2.044	4.961	6.984	9.139E-03	2.736E-02	-	-	-	-
RP11-946L16.1	ENSG00000257258.1	lincRNA	chr12	29296129	29301608	-	1	5480	2.041	2.655	6.573	1.138E-02	3.289E-02	-	-	-	-
RP11-324H7.1	ENSG00000248452.2	pseudogene	chr4	26113487	26115461	+	1	1975	2.039	4.732	6.306	1.314E-02	3.699E-02	104	<0.001	1.283	0.106
RP11-283G6.5	ENSG00000255750.1	antisense	chr12	26383752	26472653	-	3	88902	2.033	3.738	5.679	1.848E-02	4.910E-02	-	-	-	-
HSPA8P3	ENSG00000234788.1	pseudogene	chr10	27003551	27004761	+	1	1211	2.024	3.060	6.044	1.514E-02	4.160E-02	146	0.002	0.203	0.421
CTD-2591A6.2	ENSG00000257869.1	lincRNA	chr14	28787347	28887818	+	1	100472	2.010	3.681	5.751	1.777E-02	4.754E-02	-	-	-	-
KLF7P1	ENSG00000240704.1	pseudogene	chr3	170670639	170671686	-	1	1048	2.007	5.715	8.455	4.220E-03	1.409E-02	168.5	0.007	4.353	<0.001
AC106875.1	ENSG00000228496.1	sense intronic	chr2	11821586	11823454	+	2	1869	1.997	5.482	7.988	5.381E-03	1.736E-02	187	0.019	0.581	0.284
RP11-867G2.6	ENSG00000255666.1	lincRNA	chr11	94375073	94384797	+	4	9725	1.980	2.889	5.931	1.611E-02	4.380E-02	-	-	-	-
LINC00397	ENSG00000223404.3	lincRNA	chr13	88453291	88456063	-	2	2773	1.962	2.666	6.058	1.503E-02	4.136E-02	268	0.343	2.190	0.02
RP11-925D8.6	ENSG00000259671.1	pseudogene	chr15	58447159	58448260	+	1	1102	1.959	4.491	5.684	1.842E-02	4.900E-02	122	<0.001	1.476	0.077
MTND5P28	ENSG00000223549.1	pseudogene	chr2	120972757	120974855	+	1	2099	1.940	4.605	6.004	1.548E-02	4.237E-02	226	0.102	2.194	0.02
RP11-513O17.2	ENSG00000253301.1	lincRNA	chr8	58055248	58152857	+	9	97610	1.938	5.575	7.110	8.546E-03	2.581E-02	-	-	-	-
NEURL3	ENSG00000163121.5	pseudogene	chr2	97163383	97173846	-	4	10464	1.924	6.003	8.981	3.215E-03	1.118E-02	-	-	-	-
RP11-326C3.2	ENSG00000255026.1	antisense	chr11	287305	288987	+	3	1683	1.917	5.401	6.530	1.165E-02	3.350E-02	182.5	0.015	1.596	0.062
POLD2P1	ENSG00000213730.3	pseudogene	chr5	92603135	92604131	+	1	997	1.872	5.955	7.660	6.390E-03	2.011E-02	274	0.389	2.516	0.01
RP11-276E17.2	ENSG00000234142.1	lincRNA	chr1	166445009	166459276	-	1	14268	1.870	2.481	5.749	1.779E-02	4.759E-02	-	-	-	-
KLF8P1	ENSG00000260726.2	pseudogene	chr16	48751994	48753054	+	1	1061	1.833	5.362	6.475	1.200E-02	3.434E-02	249	0.214	1.994	0.029
RP1-27K12.2	ENSG00000231683.2	lincRNA	chr6	53426087	53481969	-	7	55883	1.831	5.915	7.569	6.705E-03	2.096E-02	-	-	-	-
HOTAIR	ENSG00000228630.1	antisense	chr12	54356092	54368740	-	5	12649	1.812	5.736	6.973	9.193E-03	2.749E-02	-	-	-	-
APCDD1L-AS1	ENSG00000231290.1	processed transcript	chr20	57090435	57194944	+	8	104510	1.804	7.368	11.335	9.760E-04	3.948E-03	-	-	-	-
RAET1K	ENSG00000218358.2	pseudogene	chr6	150319155	150326293	-	2	7139	1.752	5.607	6.099	1.470E-02	4.062E-02	-	-	-	-
LINC00355	ENSG00000227674.1	lincRNA	chr13	64560504	64650144	-	1	89641	1.736	5.509	6.384	1.260E-02	3.571E-02	-	-	-	-
RP11-863P13.3	ENSG00000261327.3	lincRNA	chr16	88210904	88219696	-	3	8793	1.685	5.661	5.654	1.874E-02	4.971E-02	-	-	-	-
RP3-407E4.3	ENSG00000218274.2	pseudogene	chr6	64104912	64107011	-	1	2100	1.655	5.517	6.066	1.496E-02	4.119E-02	97	<0.001	1.269	0.109
AC090505.5	ENSG00000234805.1	pseudogene	chr3	194476318	194478151	+	1	1834	1.628	6.571	7.699	6.262E-03	1.977E-02	265	0.321	1.778	0.044
RP3-393E18.2	ENSG00000237927.1	lincRNA	chr6	160007987	160010201	-	1	2215	1.615	6.077	6.368	1.271E-02	3.597E-02	155	0.003	0.998	0.164
SLC22A20	ENSG00000197847.8	pseudogene	chr11	64981311	65010228	+	6	28918	1.577	7.236	10.313	1.631E-03	6.203E-03	-	-	-	-
TCAM1P	ENSG00000240280.2	pseudogene	chr17	61926652	61941739	+	7	15088	1.507	6.665	7.476	7.040E-03	2.182E-02	-	-	-	-
RP11-120K18.2	ENSG00000260757.1	sense overlapping	chr16	31413886	31416020	+	1	2135	1.492	6.412	5.851	1.682E-02	4.537E-02	210.5	0.056	2.047	0.026
RP11-445F12.1	ENSG00000255509.2	antisense	chr17	35218935	35293960	-	4	75026	1.421	6.405	5.827	1.704E-02	4.587E-02	-	-	-	-
RP11-150O12.3	ENSG00000254290.1	lincRNA	chr8	37454998	37457376	-	2	2379	1.418	6.985	7.107	8.558E-03	2.584E-02	192	0.024	0.999	0.164
PVT1	ENSG00000249859.3	processed transcript	chr8	128806779	129113499	+	21	306721	1.401	6.588	6.647	1.094E-02	3.181E-02	-	-	-	-
RP5-1086K13.1	ENSG00000224950.1	lincRNA	chr1	117035645	117041834	-	1	6190	1.399	6.774	6.256	1.350E-02	3.781E-02	-	-	-	-
RP11-66B24.7	ENSG00000272808.1	lincRNA	chr15	101390036	101404501	+	1	14466	1.356	7.212	5.899	1.639E-02	4.443E-02	-	-	-	-
RP11-428P16.2	ENSG00000213514.2	pseudogene	chr10	79490524	79494527	+	1	4004	1.315	7.180	6.198	1.393E-02	3.883E-02	28	<0.001	1.924	0.033
RP11-626H12.3	ENSG00000248844.2	lincRNA	chr11	69902336	69911477	-	2	9142	1.312	6.654	6.009	1.543E-02	4.227E-02	-	-	-	-
LINC00494	ENSG00000235621.4	lincRNA	chr20	46988693	46999372	+	4	10680	1.297	7.035	6.467	1.205E-02	3.447E-02	-	-	-	-
AL589743.1	ENSG00000225210.5	lincRNA	chr14	19650018	19718563	+	15	68546	1.195	9.727	16.440	8.202E-05	4.695E-04	-	-	-	-
LINC00665	ENSG00000232677.2	lincRNA	chr19	36803969	36822620	-	8	18652	1.088	7.871	5.709	1.817E-02	4.842E-02	-	-	-	-
RP11-353N14.5	ENSG00000262585.1	lincRNA	chr17	77889051	77900524	-	1	11474	1.024	7.935	5.797	1.732E-02	4.654E-02	-	-	-	-

			circRNA						Comparative analysis of serum exosome transcriptome data					verification on serum exosomes		verification on tissues	
circbaseID	Nearby gene ID	Nearby gene name	Chromosome	Start position	End position	Strand	circRNA type	circBankID	log_2FC	log_2CPM	F value	*P* value[a]	FDR	Mann-Whitney U	*P* value[b]	t statistics	*P* value[c]
hsa_circ_0000111	ENSG00000134242	PTPN22	chr1	114391161	114397671	-	exon	hsa_circPTPN22_002	2.535	10.722	4.497	3.396E-02	1.625E-01	249.5	0.212	0.018	0.493
hsa_circ_0000268	ENSG00000019995	ZRANB1	chr10	126631025	126631876	+	exon	hsa_circZRANB1_005	5.077	10.321	25.212	5.155E-07	5.546E-06	105	<0.001	1.740	0.048
hsa_circ_0033144	ENSG00000127152	BCL11B	chr14	99723807	99724176	-	exon	hsa_circBCL11B_002	3.433	10.177	8.843	2.944E-03	2.048E-02	27	<0.001	2.796	0.005
hsa_circ_0047880	ENSG00000141655	TNFRSF11A	chr18	60015400	60017170	+	exon	hsa_circTNFRSF11A_002	5.202	10.407	25.437	4.589E-07	5.546E-06	96	<0.001	6.884	<0.001
hsa_circ_0050334	ENSG00000105176	URI1	chr19	30462099	30477324	+	exon	hsa_circURI1_002	4.499	10.522	13.597	2.268E-04	1.949E-03	221	0.085	1.804	0.042
hsa_circ_0059958	ENSG00000078747	ITCH	chr20	33065576	33067594	+	exon	hsa_circITCH_058	4.482	9.997	25.302	4.921E-07	5.546E-06	110	<0.001	4.326	<0.001
hsa_circ_0004887	ENSG00000087586	AURKA	chr20	54956488	54959380	-	exon	hsa_circAURKA_006	5.057	10.318	25.203	5.180E-07	5.546E-06	281	0.445	0.472	0.321
hsa_circ_0001459	ENSG00000109674	NEIL3	chr4	178274461	178274882	+	exon	hsa_circNEIL3_010	5.392	10.524	26.146	3.178E-07	5.546E-06	221	0.085	1.786	0.044
hsa_circ_0069399	ENSG00000047365	ARAP2	chr4	36230203	36231267	-	exon	hsa_circARAP2_001	5.207	10.407	25.440	4.581E-07	5.546E-06	259	0.278	0.229	0.41

The comparative analysis of serum exosome transcriptome data was performed on the expression of ncRNAs in serum exosomes from GC patients and those from healthy donors.
The verification on serum exosomes was conducted to compare the expression of candidate biomarkers in serum exosomes of GC patients with those of healthy donors
The verification on tissues was conducted to compare the expression of candidate biomarkers in tumor tissues with adjacent normal tissues from the same GC patients.
The verification on serum exosomes and tissues were conducted on the candidate biomarkers, except for those with length over than 5000 bp. This is because the long lengths made them difficult to quantify and it is hard to conduct fundamental functional experiments on them.
Abbreviations: lncRNA, long non-coding RNA; circRNA, circular RNA; FC, fold change; CPM, counts per million; FDR, False Discovery Rate; ncRNA, non-coding RNA; GC, gastric cancer.
P values were calculated by EdgeR (a), Mann-Whitney test (b) and Paired T test (c).