

**Supplementary Table 1:** Target regions for sequencing of 12 candidate genes identified from TCGA exome sequence data.

Exon	Target region start	Target region stop	Target size	Coverage	Number of Amplicons
<b>APEX1 (NM_001244249.1), chromosome 14</b>					11
Exon 1	20923797	20923862	65	100%	1
Exon 2	20924072	20924260	188	100%	2
Exon 3	20924826	20925019	193	100%	2
Exon 4	20925149	20925668	519	100%	6
<b>APLF (NM_173545.2), chromosome 2</b>					21
Exon 1	68694856	68694959	103	100%	1
Exon 2	68717321	68717393	72	100%	1
Exon 3	68729862	68730035	173	89%	2
Exon 4	68740211	68740359	148	100%	3
Exon 5	68740679	68740812	133	100%	2
Exon 6	68753192	68753374	182	100%	3
Exon 7	68765003	68765359	356	100%	4
exon 8	68772318	68772444	126	100%	2
exon 9	68794472	68794519	47	100%	1
exon 10	68804951	68805155	204	100%	2
<b>APTX (NM_175073.2), chromosome 9</b>					16
exon 9	32973494	32973650	156	100%	2
exon 8	32973680	32973686	6	100%	1
exon 7	32974455	32974559	104	100%	2
exon 6	32984628	32984855	227	100%	2
exon 5	32985968	32986028	60	74%	2
exon 4	32987541	32987840	299	100%	3
exon 3	32988076	32988127	51	100%	1
exon 2	32989756	32989890	134	100%	2
exon 1	33001564	33001609	45	100%	1
<b>EME1 (NM_001166131.1), chromosome 17</b>					21
exon 1	48452562	48453344	782	100%	9
exon 2	48453426	48453554	128	100%	2
exon 3	48455955	48456042	87	100%	1
exon 4	48456134	48456256	122	100%	2
exon 5	48456428	48456585	157	100%	2
exon 6	48456812	48456928	116	100%	2
exon 7	48457672	48457862	190	100%	2
exon 8	48458123	48458301	178	100%	2
<b>FANCL (NM_001114636.1), chromosome 2</b>					22
exon 14	58386898	58386935	37	100%	1
exon 13	58387242	58387314	72	100%	1
exon 12	58388656	58388773	117	100%	2
exon 11	58390000	58390082	82	100%	1
exon 10	58390163	58390209	46	100%	2

exon 9	58390568	58390652	84	100%	3
exon 8	58392858	58393009	151	100%	2
exon 7	58425713	58425797	84	100%	1
exon 6	58431264	58431361	97	100%	2
exon 5	58449076	58449177	101	100%	2
exon 4	58453862	58453919	57	100%	1
exon 3	58456948	58457009	61	100%	2
exon 2	58459188	58459247	59	100%	1
exon 1	58468352	58468455	103	100%	1
<b>FANCM (NM_020937.2), chromosome 14</b>					<b>85</b>
exon 1	45605227	45605742	515	100%	6
exon 2	45606271	45606444	173	100%	2
exon 3	45609834	45609912	78	97%	2
exon 4	45618039	45618198	159	88%	2
exon 5	45620599	45620731	132	100%	2
exon 6	45623122	45623255	133	100%	2
exon 7	45623899	45624025	126	100%	2
exon 8	45624575	45624662	87	77%	2
exon 9	45628298	45628483	185	100%	3
exon 10	45633561	45633768	207	100%	2
exon 11	45636152	45636366	214	100%	3
exon 12	45639791	45639949	158	100%	3
exon 13	45642257	45642413	156	100%	2
exon 14	45644273	45646179	1906	100%	22
exon 15	45650632	45650727	95	100%	2
exon 16	45650839	45650908	69	100%	2
exon 17	45652976	45653105	129	95%	2
exon 18	45654419	45654576	157	100%	3
exon 19	45656983	45657090	107	92%	2
exon 20	45658004	45658565	561	100%	6
exon 21	45665374	45665750	376	100%	6
exon 22	45667846	45668138	292	100%	5
exon 23	45669072	45669212	140	100%	2
<b>MAD2L2 (NM_006341.3), chromosome 1</b>					<b>12</b>
exon 8	11734830	11734873	43	100%	1
exon 7	11735138	11735231	93	100%	2
exon 6	11735714	11735788	74	100%	1
exon 5	11736102	11736197	95	100%	1
exon 4	11736904	11737005	101	100%	3
exon 3	11737599	11737671	72	100%	1
exon 2	11740409	11740528	119	100%	2
exon 1	11740618	11740665	47	100%	1
<b>PARP2 (NM_005484.3), chromosome 14</b>					<b>26</b>
exon 1	20811793	20811846	53	100%	1
exon 2	20813090	20813285	195	100%	2
exon 3	20813552	20813623	71	100%	2

exon 4	20815021	20815072	51	100%	1
exon 5	20818684	20818781	97	100%	2
exon 6	20819205	20819281	76	100%	1
exon 7	20820403	20820506	103	100%	2
exon 8	20822243	20822406	163	100%	2
exon 9	20822967	20823106	139	100%	1
exon 10	20823910	20823974	64	100%	1
exon 11	20824055	20824190	135	100%	2
exon 12	20824465	20824593	128	100%	2
exon 13	20824748	20824848	100	100%	2
exon 14	20825209	20825308	99	100%	1
exon 15	20825554	20825679	125	100%	2
exon 16	20825796	20825957	161	100%	2
<b>PARP3 (NM_001003931.2), chromosome 3</b>					<b>21</b>
exon 1	51977363	51977554	191	100%	2
exon 2	51978104	51978233	129	100%	2
exon 3	51978405	51978594	189	100%	2
exon 4	51978793	51978926	133	100%	2
exon 5	51979013	51979240	227	100%	3
exon 6	51979510	51979660	150	100%	2
exon 7	51979868	51979955	87	100%	2
exon 8	51980181	51980359	178	100%	2
exon 9	51981755	51981911	156	100%	2
exon 10	51982326	51982497	171	100%	2
<b>POLN (NM_181808.2), chromosome 4</b>					<b>38</b>
exon 24	2073839	2074026	187	100%	2
exon 23	2074694	2074756	62	100%	1
exon 22	2077178	2077246	68	100%	1
exon 21	2082684	2082763	79	100%	1
exon 20	2083359	2083470	111	100%	1
exon 19	2087339	2087471	132	100%	2
exon 18	2097577	2097660	83	100%	1
exon 17	2129839	2129954	115	100%	2
exon 16	2130905	2130983	78	100%	1
exon 15	2132959	2133017	58	100%	1
exon 14	2158514	2158580	66	100%	1
exon 13	2159584	2159638	54	100%	1
exon 12	2160881	2160938	57	100%	1
exon 11	2172405	2172501	96	100%	1
exon 10	2172824	2172908	84	100%	2
exon 9	2175681	2175746	65	100%	1
exon 8	2176417	2176478	61	100%	1
exon 7	2177992	2178061	69	100%	2
exon 6	2181034	2181192	158	100%	2
exon 5	2194930	2195043	113	41%	2
exon 4	2200250	2200444	194	100%	2

exon 3	2209713	2210214	501	100%	6
exon 2	2214773	2214853	80	100%	1
exon 1	2230825	2230964	139	100%	2
<b>RAD54L (NM_003579.3), chromosome 1</b>					<b>31</b>
exon 1	46714070	46714080	10	100%	1
exon 2	46714183	46714270	87	100%	1
exon 3	46715671	46715791	120	100%	2
exon 4	46724357	46724418	61	100%	1
exon 5	46725635	46725771	136	100%	2
exon 6	46726213	46726283	70	100%	1
exon 7	46726398	46726687	289	100%	3
exon 8	46726932	46727057	125	100%	2
exon 9	46733130	46733281	151	100%	2
exon 10	46736330	46736457	127	100%	2
exon 11	46738137	46738212	75	100%	1
exon 12	46738343	46738474	131	100%	2
exon 13	46739026	46739137	111	100%	1
exon 14	46739295	46739419	124	100%	2
exon 15	46739809	46739888	79	100%	2
exon 16	46740209	46740389	180	100%	2
exon 17	46743488	46743652	164	100%	2
exon 18	46743743	46743955	212	100%	2
<b>SMUG1 (NM_014311.2), chromosome 12</b>					<b>9</b>
exon 1	54575878	54576407	529	100%	6
exon 2	54577439	54577731	292	100%	3
Total 313 Amplicons. Average amplicon size 187 bp.					