

**Table S1: List of identified differentially methylated genes (DMGs) in Prostate cancer**

S.No.	Name of the Gene
1	A-Kinase Anchoring Protein 2 ( <i>AKAP2</i> )
2	Alpha-1,6-Mannosyltransferase ( <i>ALG12</i> )
3	Aristaless-Like Homeobox 3 ( <i>ALX3</i> )
4	Annexin A2 ( <i>ANXA2</i> )
5	Aldehyde Oxidase 1 ( <i>AOX1</i> )
6	Adenomatosis Polyposis Coli ( <i>APC</i> )
7	Androgen receptor ( <i>AR</i> )
8	BarH Like Homeobox 1 ( <i>BARHL1</i> )
9	BarH Like Homeobox 2 ( <i>BARHL2</i> )
10	Brain-derived neurotrophic factor ( <i>BDNF</i> )
11	Bone Morphogenetic Protein 4 ( <i>BMP4</i> )
12	Calcium Voltage-Gated Channel Subunit Alpha1 D ( <i>CACNA1D</i> )
13	Calcium Voltage-Gated Channel Subunit Alpha1 G ( <i>CACNA1G</i> )
14	Caveolin 1 ( <i>CAVI</i> )
15	Coiled-Coil Domain Containing 181 ( <i>CCDC181</i> )
16	Coiled-Coil Domain Containing 8 ( <i>CCDC8</i> )
17	Cyclin D2 ( <i>CCND2</i> )
18	Cluster of differentiation 40 ( <i>CD40</i> )
19	Cluster of differentiation 44 ( <i>CD44</i> )
20	Cluster of Differentiation 8a ( <i>CD8a</i> )
21	Cadherin-1 ( <i>CDH1</i> )
22	Cadherin-13 ( <i>CDH13</i> )
23	Cyclin Dependent Kinase Inhibitor 1B ( <i>CDKN1B</i> )
24	Cyclin Dependent Kinase Inhibitor 1C ( <i>CDKN1C</i> )
25	Cyclin Dependent Kinase Inhibitor 2A ( <i>CDKN2A</i> )
26	Caudal Type Homeobox 2 ( <i>CDX2</i> )

27	Caudal Type Homeobox 4 ( <i>CDX4</i> )
28	CAP-Gly Domain Containing Linker Protein Family Member 4 ( <i>CLIP4</i> )
29	Cannabinoid Receptor 1 ( <i>CNR1</i> )
30	Cochlin ( <i>COCH</i> )
31	Collagen Type IV Alpha 2 Chain ( <i>COL4A2</i> )
32	Collagen Type IX Alpha 2 Chain ( <i>COL9A2</i> )
33	Corticotropin Releasing Hormone Binding Protein ( <i>CRHBP</i> )
34	C-Terminal Binding Protein 2 ( <i>CTBP2</i> )
35	Cytochrome P450 Family 27 Subfamily A Member 1 ( <i>CYP27A1</i> )
36	Disabled-1 ( <i>DABI</i> )
37	Death-associated protein kinase 1 ( <i>DAPK1</i> )
38	Duffy antigen/chemokine receptor ( <i>DARC</i> )
39	Dickkopf WNT Signaling Pathway Inhibitor 3 ( <i>DKK3</i> )
40	Distal-Less Homeobox 1 ( <i>DLX1</i> )
41	Distal-Less Homeobox 4 ( <i>DLX4</i> )
42	Dedicator Of Cytokinesis 1 ( <i>DOCK1</i> )
43	Endothelin Receptor Type A ( <i>EDNRA</i> )
44	Endothelin Receptor Type B ( <i>EDNRB</i> )
45	EGF Containing Fibulin Like Extracellular Matrix Protein 1 ( <i>EFEMP1</i> )
46	Embryonal Fyn-Associated Substrate ( <i>EFS</i> )
47	E74 Like ETS Transcription Factor 4 ( <i>ELF4</i> )
48	Engrailed Homeobox 2 ( <i>EN2</i> )
49	Epithelial Stromal Interaction 1 ( <i>EPSTI1</i> )
50	Estrogen Receptor 1 ( <i>ESR1</i> )
51	Estrogen Receptor 2 ( <i>ESR2</i> )
52	Even-Skipped Homeobox 1 ( <i>EVX1</i> )
53	Fibulin-1 ( <i>FBLN1</i> )
54	Fructose-Bisphosphatase 1 ( <i>FBP1</i> )
55	FEV, ETS Transcription Factor ( <i>FEV</i> )

56	FEZ Family Zinc Finger 2 ( <i>FEZF2</i> )
57	Fibroblast growth factor 8 ( <i>FGF8</i> )
58	Fragile Histidine Triad ( <i>FHIT</i> )
59	Filamin C ( <i>FLNC</i> )
60	Forkhead Box B2 ( <i>FOXB2</i> )
61	Forkhead Box D2 ( <i>FOXD2</i> )
62	Forkhead Box E3 ( <i>FOXE3</i> )
63	Gastrulation Brain Homeobox 2 ( <i>GBX2</i> )
64	Glycoprotein V Platelet ( <i>GP5</i> )
65	G Protein-Coupled Receptor 50 ( <i>GPR50</i> )
66	Glutathione Peroxidase 3 ( <i>GPX3</i> )
67	General Receptor For Phosphoinositides 1 Associated Scaffold Protein ( <i>GRASP</i> )
68	Gremlin 1 ( <i>GREM1</i> )
69	Glutathione S-Transferase Pi 1 ( <i>GSTP1</i> )
70	GS Homeobox 2 ( <i>GSX2</i> )
71	Hes Family BHLH Transcription Factor 5 ( <i>HES5</i> )
72	Hexosaminidase Subunit Alpha ( <i>HEXA</i> )
73	Hemochromatosis ( <i>HFE</i> )
74	Hematopoietically Expressed Homeobox ( <i>HHEX</i> )
75	Hypermethylated In Cancer 1 ( <i>HIC1</i> )
76	Hypoxia Inducible Factor 3 Alpha Subunit ( <i>HIF3A</i> )
77	Histone Cluster 1 H4 Family Member F ( <i>HIST1H4F</i> )
78	HNF1 Homeobox B ( <i>HNF1B</i> )
79	Homeobox A11 ( <i>HOXA11</i> )
80	Homeobox A3 ( <i>HOXA3</i> )
81	Homeobox A9 ( <i>HOXA9</i> )
82	Homeobox B6 ( <i>HOXB6</i> )
83	Homeobox B8 ( <i>HOXB8</i> )
84	Homeobox C11 ( <i>HOXC11</i> )

85	Homeobox C13 ( <i>HOXC13</i> )
86	Homeobox C4 ( <i>HOXC4</i> )
87	Homeobox D3 ( <i>HOXD3</i> )
88	Homeobox D4 ( <i>HOXD4</i> )
89	Homeobox D8 ( <i>HOXD8</i> )
90	Homeobox D9 ( <i>HOXD9</i> )
91	Heparan Sulfate-Glucosamine 3-Sulfotransferase 1 ( <i>HS3ST1</i> )
92	5-Hydroxytryptamine Receptor 1B ( <i>HTR1B</i> )
93	Insulin Like Growth Factor Binding Protein 4 ( <i>IGFBP4</i> )
94	Iroquois Homeobox 1 ( <i>IRX1</i> )
95	Iroquois Homeobox 5 ( <i>IRX5</i> )
96	Iroquois Homeobox 6 ( <i>IRX6</i> )
97	ISL LIM Homeobox 2 ( <i>ISL2</i> )
98	KIT Proto-Oncogene Receptor Tyrosine Kinase ( <i>KIT</i> )
99	Kallikrein Related Peptidase 10 ( <i>KLK10</i> )
100	Lysosomal Associated Membrane Protein Family Member 5 ( <i>LAMP5</i> )
101	Ladybird Homeobox 1 ( <i>LBX1</i> )
102	LIM Homeobox 1 ( <i>LHX1</i> )
103	LIM Homeobox 2 ( <i>LHX2</i> )
104	LIM Homeobox 3 ( <i>LHX3</i> )
105	LIM Homeobox 5 ( <i>LHX5</i> )
106	LIM Homeobox 6 ( <i>LHX 6</i> )
107	LIM Homeobox 9 ( <i>LHX 9</i> )
108	LIM Homeobox Transcription Factor 1 Beta ( <i>LMX1B</i> )
109	Lysophosphatidic Acid Receptor 1 ( <i>LPAR1</i> )
110	Meis Homeobox 2 ( <i>MEIS2</i> )
111	Mesenchyme Homeobox 2 ( <i>MEOX2</i> )
112	Microfibrillar Associated Protein 2 ( <i>MFAP2</i> )
113	O-6-Methylguanine-DNA Methyltransferase ( <i>MGMT</i> )

114	Motor Neuron And Pancreas Homeobox 1 ( <i>MNX1</i> )
115	Mps One Binder Kinase Activator-Like 3B ( <i>MOB3B</i> )
116	Msh Homeobox 1 ( <i>MSX1</i> )
117	NK2 Homeobox 1 ( <i>NKX2-1</i> )
118	NK2 Homeobox 2 ( <i>NKX2-2</i> )
119	NK2 Homeobox 3 ( <i>NKX2-3</i> )
120	NK2 Homeobox 5 ( <i>NKX2-5</i> )
121	One Cut Homeobox 2 ( <i>ONCUT2</i> )
122	Orthopedia Homeobox ( <i>OTP</i> )
123	Orthodenticle Homeobox 2 ( <i>OTX2</i> )
124	P Antigen Family, Member 4 ( <i>PAGE4</i> )
125	Paired Box Gene 3 ( <i>PAX3</i> )
126	Paired Box Gene 5 ( <i>PAX5</i> )
127	Platelet Derived Growth Factor Receptor Alpha ( <i>PDGFRA</i> )
128	Platelet Derived Growth Factor Receptor Beta ( <i>PDGFRB</i> )
129	Pancreatic And Duodenal Homeobox 1 ( <i>PDX1</i> )
130	Paired Like Homeobox 2a ( <i>PHOX2A</i> )
131	Paired-like homeodomain transcription factor 2 ( <i>PITX2</i> )
132	POU Class 3 Homeobox 2 ( <i>POU3F2</i> )
133	POU Class 3 Homeobox 3 ( <i>POU3F3</i> )
134	POU Class 4 Homeobox 1 ( <i>POU4F1</i> )
135	POU Class 4 Homeobox 3 ( <i>POUF3</i> )
136	Prominin 1 ( <i>PROM1</i> )
137	Prostaglandin-Endoperoxide Synthase 2 ( <i>PTGS2</i> )
138	Retinoic Acid Receptor Beta ( <i>RARβ</i> )
139	Ras Association Domain Family Member 1 ( <i>RASSF1</i> )
140	Retina And Anterior Neural Fold Homeobox ( <i>RAX</i> )
141	RB Transcriptional Corepressor 1 ( <i>RBI</i> )
142	Regulator Of G-Protein Signaling 12 ( <i>RGS12</i> )

143	Rh Family C Glycoprotein ( <i>RHCG</i> )
144	Rho Family GTPase 2 ( <i>RND2</i> )
145	Runt Related Transcription Factor 3 ( <i>RUNX3</i> )
146	S100 Calcium Binding Protein A6 ( <i>S100A6</i> )
147	Stratifin ( <i>SFN</i> )
148	SIX Homeobox 2 ( <i>SIX2</i> )
149	SIX Homeobox 6 ( <i>SIX6</i> )
150	Solute Carrier Family 16 Member 5 ( <i>SLC16A5</i> )
151	Solute Carrier Family 22 Member 16 ( <i>SLC22A16</i> )
152	SRY-Box 17 ( <i>SOX17</i> )
153	SRY-Box 9 ( <i>SOX9</i> )
154	Spermatogenesis Associated 6 ( <i>SPATA6</i> )
155	Somatostatin Receptor 1 ( <i>SSTR1</i> )
156	T-Box 15 ( <i>TBX15</i> )
157	T-Box 3 ( <i>TBX3</i> )
158	Transcription Factor AP-2 Alpha( <i>TFAP2A</i> )
159	Transforming Growth Factor Beta 1 ( <i>TGFB1</i> )
160	TIMP Metallopeptidase Inhibitor 3 ( <i>TIMP3</i> )
161	T-Cell Leukemia Homeobox 1 ( <i>TLX1</i> )
162	Transmembrane Protein 106A ( <i>TMEM106A</i> )
163	Transmembrane Protein 176B ( <i>TMEM176B</i> )
164	TNF Receptor Superfamily Member 10c ( <i>TNFRSF10C</i> )
165	Tumor Protein P73 ( <i>TP73</i> )
166	Tropomyosin 4 ( <i>TPM4</i> )
167	Transcriptional Repressor GATA Binding 1 ( <i>TRPS1</i> )
168	Urocortin ( <i>UCN</i> )
169	UL16 Binding Protein 1 ( <i>ULBP1</i> )
170	Ventral Anterior Homeobox 1 ( <i>VAX1</i> )
171	Visual System Homeobox 1 ( <i>VSX1</i> )

172	WW And C2 Domain Containing 2 ( <i>WVC2</i> )
173	WD Repeat Domain 86 ( <i>WDR86</i> )
174	Wnt Family Member 16 ( <i>WNT16</i> )
175	Wnt Family Member 2 ( <i>WNT2</i> )
176	Wilms Tumor 1 ( <i>WT1</i> )
177	WT1 Antisense RNA ( <i>WT1-AS</i> )
178	Zic Family Member 3 ( <i>ZIC3</i> )
179	Zinc Finger Protein 154 ( <i>ZNF154</i> )
180	Zinc Finger Protein 334 ( <i>ZNF334</i> )

**Table S2: Functional Gene Set enrichment analysis of identified DMGs associated with Prostate cancer**

<b>GO.ID</b>	<b>Description</b>	<b>P value</b>	<b>Genes</b>
KEGG:05200	Pathways in cancer	1.82E-08	<i>CDH1,RASSF1,PTGS2,RARB,GSTP1,CDKN1B,APC,EDNRB,CDKN2A,AR,DAPK1</i>
GO:0045936	negative regulation of phosphate metabolic process	3.24E-08	<i>GSTP1,TIMP3,CAV1,CDKN1B,CDKN1C,APC,EDNRB,CDKN2A,SFN</i>
GO:0010563	negative regulation of phosphorus metabolic process	3.31E-08	<i>GSTP1,TIMP3,CAV1,CDKN1B,CDKN1C,APC,EDNRB,CDKN2A,SFN</i>
GO:0097190	apoptotic signaling pathway	3.90E-08	<i>CD44,GSTP1,TIMP3,CAV1,AR,SFN,HIC1,FHIT,DAPK1</i>
GO:0033673	negative regulation of kinase activity	4.17E-08	<i>GSTP1,CAV1,CDKN1B,CDKN1C,APC,CDKN2A,SFN</i>
GO:0042326	negative regulation of phosphorylation	7.17E-08	<i>GSTP1,TIMP3,CAV1,CDKN1B,CDKN1C,APC,CDKN2A,SFN</i>
GO:0052547	regulation of peptidase activity	1.72E-07	<i>CD44,TIMP3,CAV1,CDKN1B,CDKN2A,SFN,DAPK1</i>
GO:0008285	negative regulation of cell proliferation	6.56E-07	<i>GSTP1,CAV1,CDKN1B,CDKN1C,APC,CDH13,CDKN2A,AR</i>
GO:0051348	negative regulation of transferase activity	7.07E-07	<i>GSTP1,CAV1,CDKN1B,CDKN1C,APC,CDKN2A,SFN</i>
GO:0004879	RNA polymerase II transcription factor activity, ligand-activated sequence-specific	1.96E-06	<i>RARB,ESR1,ESR2,AR</i>

	DNA binding		
GO:0098531	transcription factor activity, direct ligand regulated sequence-specific DNA binding	2.16E-06	<i>RARB,ESR1,ESR2,AR</i>
GO:0052548	regulation of endopeptidase activity	3.20E-06	<i>CD44,TIMP3,CDKN1B,CDKN2A,SFN,DAPK1</i>
KEGG:05206	MicroRNAs in cancer	4.41E-06	<i>CD44,RASSF1,PTGS2,TIMP3,CDKN1B,CCND2,APC,CDKN2A</i>
GO:0043065	positive regulation of apoptotic process	7.75E-06	<i>TIMP3,CAVI,CDKN1B,APC,CDKN2A,SFN,DAPK1</i>
GO:0043068	positive regulation of programmed cell death	8.42E-06	<i>TIMP3,CAVI,CDKN1B,APC,CDKN2A,SFN,DAPK1</i>
GO:2001233	regulation of apoptotic signaling pathway	1.04E-05	<i>CD44,GSTP1,TIMP3,CAVI,AR,SFN</i>
GO:0010942	positive regulation of cell death	1.13E-05	<i>TIMP3,CAVI,CDKN1B,APC,CDKN2A,SFN,DAPK1</i>
GO:0008013	beta-catenin binding	1.30E-05	<i>CDH1,ESR1,APC,AR</i>
GO:0043281	regulation of cysteine-type endopeptidase activity involved in apoptotic process	1.38E-05	<i>CD44,CDKN1B,CDKN2A,SFN,DAPK1</i>
GO:0000079	regulation of cyclin-dependent protein serine/threonine kinase activity	1.38E-05	<i>CDKN1B,CCND2,APC,CDKN2A</i>
GO:1904029	regulation of cyclin-dependent protein kinase activity	1.47E-05	<i>CDKN1B,CCND2,APC,CDKN2A</i>
GO:0001933	negative regulation of protein phosphorylation	1.68E-05	<i>GSTP1,TIMP3,CAVI,APC,CDKN2A,SFN</i>
GO:0019207	kinase regulator activity	1.77E-05	<i>GSTP1,CDKN1B,APC,CDKN2A,SFN</i>
GO:0006469	negative regulation of protein kinase activity	2.38E-05	<i>GSTP1,CAVI,APC,CDKN2A,SFN</i>
GO:2000116	regulation of cysteine-type endopeptidase activity	2.73E-05	<i>CD44,CDKN1B,CDKN2A,SFN,DAPK1</i>
GO:0003707	steroid hormone receptor activity	2.88E-05	<i>ESR1,ESR2,AR</i>
KEGG:05219	Bladder cancer	2.92E-05	<i>CDH1,RASSF1,CDKN2A,DAPK1</i>
REAC:383280	Nuclear Receptor transcription pathway	3.27E-05	<i>RARB,ESR1,ESR2,AR</i>
GO:0030291	protein serine/threonine kinase inhibitor activity	3.66E-05	<i>CDKN1B,CDKN2A,SFN</i>



GO:0071901	negative regulation of protein serine/threonine kinase activity	3.71E-05	<i>GSTP1,CAVI,APC,CDKN2A</i>
GO:0034056	estrogen response element binding	5.18E-05	<i>ESR1,ESR2</i>
CORUM:586 2	CAV1-VDAC1-ESR1 complex	5.44E-05	<i>ESR1,CAVI</i>
CORUM:164 2	p16-cyclin D2-CDK4 complex	5.44E-05	<i>CCND2,CDKN2A</i>
GO:0071900	regulation of protein serine/threonine kinase activity	5.53E-05	<i>GSTP1,CAVI,CDKN1B,CCND2,APC,CDKN2A</i>
GO:0097193	intrinsic apoptotic signaling pathway	5.59E-05	<i>CD44,CAVI,SFN,HIC1,FHIT</i>
GO:0007050	cell cycle arrest	6.58E-05	<i>RASSF1,CDKN1B,APC,CDKN2A,SFN</i>
GO:0030330	DNA damage response, signal transduction by p53 class mediator	6.96E-05	<i>CD44,CDKN1B,SFN,HIC1</i>
GO:0030284	estrogen receptor activity	8.63E-05	<i>ESR1,ESR2</i>
GO:2001236	regulation of extrinsic apoptotic signaling pathway	8.72E-05	<i>GSTP1,TIMP3,CAVI,AR</i>
GO:0004601	peroxidase activity	1.04E-04	<i>PTGS2,GSTP1,GPX3</i>
GO:0072331	signal transduction by p53 class mediator	1.06E-04	<i>CD44,CDKN1B,SFN,HIC1,FHIT</i>
GO:0042770	signal transduction in response to DNA damage	1.12E-04	<i>CD44,CDKN1B,SFN,HIC1</i>
KEGG:05223	Non-small cell lung cancer	1.18E-04	<i>RASSF1,RARB,CDKN2A,FHIT</i>
GO:0016684	oxidoreductase activity, acting on peroxide as acceptor	1.22E-04	<i>PTGS2,GSTP1,GPX3</i>
GO:0009894	regulation of catabolic process	1.26E-04	<i>TIMP3,CAVI,CDKN1B,APC,CDKN2A,FHIT</i>
KEGG:04110	Cell cycle	1.33E-04	<i>CDKN1B,CCND2,CDKN1C,CDKN2A,SFN</i>
GO:1901990	regulation of mitotic cell cycle phase transition	1.57E-04	<i>CDKN1B,CCND2,APC,CDKN2A,SFN</i>
GO:0042562	hormone binding	1.63E-04	<i>EDNRB,CDH13,AR</i>
GO:1901987	regulation of cell cycle phase transition	2.07E-04	<i>CDKN1B,CCND2,APC,CDKN2A,SFN</i>
GO:0031400	negative regulation of protein modification	2.29E-04	<i>GSTP1,TIMP3,CAVI,APC,CDKN2A,SFN</i>

	process		
GO:0016342	catenin complex	2.41E-04	<i>CDH1,APC</i>
GO:0033483	gas homeostasis	2.41E-04	<i>GSTP1,CAVI</i>
GO:0005901	caveola	2.69E-04	<i>CDH1,CAVI,CDH13</i>
GO:0019887	protein kinase regulator activity	2.84E-04	<i>CDKN1B,APC,CDKN2A,SFN</i>
GO:0080135	regulation of cellular response to stress	2.94E-04	<i>CD44,GSTP1,CAVI,CDKN2A,MGMT,HIC1</i>
GO:0072593	reactive oxygen species metabolic process	3.67E-04	<i>PTGS2,GSTP1,CAVI,GPX3</i>
GO:0042176	regulation of protein catabolic process	3.69E-04	<i>TIMP3,CAVI,CDKN1B,APC,FHIT</i>
GO:0044853	plasma membrane raft	3.73E-04	<i>CDH1,CAVI,CDH13</i>
GO:0004861	cyclin-dependent protein serine/threonine kinase inhibitor activity	3.87E-04	<i>CDKN1B,CDKN2A</i>
GO:0045861	negative regulation of proteolysis	3.95E-04	<i>CD44,TIMP3,SFN,FHIT</i>
GO:0071407	cellular response to organic cyclic compound	3.98E-04	<i>CDH1,ESR1,CAVI,ESR2,AR</i>
GO:0097191	extrinsic apoptotic signaling pathway	4.24E-04	<i>GSTP1,TIMP3,CAVI,AR</i>
GO:0051117	ATPase binding	4.34E-04	<i>ESR1,CAVI,AR</i>
GO:0006367	transcription initiation from RNA polymerase II promoter	4.55E-04	<i>RARB,ESR1,ESR2,AR</i>
GO:0048545	response to steroid hormone	4.66E-04	<i>ESR1,CAVI,ESR2,AR</i>
GO:0016209	antioxidant activity	5.01E-04	<i>PTGS2,GSTP1,GPX3</i>
GO:0030178	negative regulation of Wnt signaling pathway	5.23E-04	<i>DKK3,CAVI,APC,HIC1</i>
GO:0045295	gamma-catenin binding	5.66E-04	<i>CDH1,APC</i>
GO:0045216	cell-cell junction organization	6.10E-04	<i>CDH1,CAVI,APC,CDH13</i>
KEGG:05222	Small cell lung cancer	6.14E-04	<i>PTGS2,RARB,CDKN1B,FHIT</i>
GO:0005496	steroid binding	6.54E-04	<i>ESR1,CAVI,ESR2</i>
REAC:69236	G1 Phase	6.69E-04	<i>CDKN1B,CCND2,CDKN2A</i>
REAC:69231	Cyclin D associated events in G1	6.69E-04	<i>CDKN1B,CCND2,CDKN2A</i>
GO:0008630	intrinsic apoptotic signaling pathway in	7.41E-04	<i>CD44,SFN,HIC1</i>

	response to DNA damage		
GO:0000082	G1/S transition of mitotic cell cycle	8.48E-04	<i>CDKN1B,CCND2,CDKN2A,SFN</i>
GO:0004860	protein kinase inhibitor activity	8.68E-04	<i>CDKN1B,CDKN2A,SFN</i>
GO:0017015	regulation of transforming growth factor beta receptor signaling pathway	8.68E-04	<i>DKK3,CAVI,CDKN1C</i>
GO:1903844	regulation of cellular response to transforming growth factor beta stimulus	8.68E-04	<i>DKK3,CAVI,CDKN1C</i>
GO:1902532	negative regulation of intracellular signal transduction	9.49E-04	<i>CD44,GSTP1,ESR1,TIMP3,CAVI</i>
KEGG:01522	Endocrine resistance	9.70E-04	<i>ESR1,CDKN1B,ESR2,CDKN2A</i>
GO:0019210	kinase inhibitor activity	9.71E-04	<i>CDKN1B,CDKN2A,SFN</i>
GO:0006352	DNA-templated transcription, initiation	9.89E-04	<i>RARB,ESR1,ESR2,AR</i>
GO:0034330	cell junction organization	1.01E-03	<i>CDH1,CAVI,APC,CDH13</i>
GO:0045736	negative regulation of cyclin-dependent protein serine/threonine kinase activity	1.02E-03	<i>APC,CDKN2A</i>
GO:1904030	negative regulation of cyclin-dependent protein kinase activity	1.02E-03	<i>APC,CDKN2A</i>
GO:0004602	glutathione peroxidase activity	1.02E-03	<i>GSTP1,GPX3</i>
GO:0044843	cell cycle G1/S phase transition	1.03E-03	<i>CDKN1B,CCND2,CDKN2A,SFN</i>
GO:0000785	chromatin	1.17E-03	<i>ESR1,CCND2,CDKN2A,AR,HIC1</i>
GO:0019901	protein kinase binding	1.30E-03	<i>GSTP1,CAVI,CCND2,APC,CDKN2A</i>
OMIM:17680 7	Prostate cancer	1.40E-03	<i>CDH1,AR</i>
GO:0014070	response to organic cyclic compound	1.52E-03	<i>CDH1,ESR1,CAVI,ESR2,AR</i>
GO:0007346	regulation of mitotic cell cycle	1.55E-03	<i>CDKN1B,CCND2,APC,CDKN2A,SFN</i>
HP:0007379	Neoplasm of the genitourinary tract	1.60E-03	<i>CDH1,CDKN1B,CDKN1C,APC,AR,FHIT</i>
GO:0043280	positive regulation of cysteine-type endopeptidase activity involved in apoptotic process	1.66E-03	<i>CDKN1B,CDKN2A,DAPK1</i>
HP:0100641	Neoplasm of the adrenal cortex	1.83E-03	<i>CDKN1B,CDKN1C,APC</i>

GO:2000377	regulation of reactive oxygen species metabolic process	1.87E-03	<i>PTGS2,GSTP1,CAVI</i>
GO:0010951	negative regulation of endopeptidase activity	1.93E-03	<i>CD44,TIMP3,SFN</i>
GO:0033993	response to lipid	1.95E-03	<i>GSTP1,ESR1,CAVI,ESR2,AR</i>
GO:0016538	cyclin-dependent protein serine/threonine kinase regulator activity	1.96E-03	<i>CDKN1B,CDKN2A</i>
GO:1904886	beta-catenin destruction complex disassembly	1.96E-03	<i>CAVI,APC</i>
GO:0044772	mitotic cell cycle phase transition	2.05E-03	<i>CDKN1B,CCND2,APC,CDKN2A,SFN</i>
GO:0030155	regulation of cell adhesion	2.10E-03	<i>CD44,CDH1,CAVI,CDH13,CDKN2A</i>
GO:0045786	negative regulation of cell cycle	2.12E-03	<i>RASSF1,CDKN1B,APC,CDKN2A,SFN</i>
GO:2001056	positive regulation of cysteine-type endopeptidase activity	2.16E-03	<i>CDKN1B,CDKN2A,DAPK1</i>
GO:0019900	kinase binding	2.27E-03	<i>GSTP1,CAVI,CCND2,APC,CDKN2A</i>
GO:0010466	negative regulation of peptidase activity	2.34E-03	<i>CD44,TIMP3,SFN</i>
GO:0043409	negative regulation of MAPK cascade	2.41E-03	<i>GSTP1,TIMP3,CAVI</i>
GO:0019897	extrinsic component of plasma membrane	2.47E-03	<i>CDH1,APC,S100A6</i>
GO:0044770	cell cycle phase transition	2.51E-03	<i>CDKN1B,CCND2,APC,CDKN2A,SFN</i>
GO:0030111	regulation of Wnt signaling pathway	2.53E-03	<i>DKK3,CAVI,APC,HIC1</i>
GO:2000045	regulation of G1/S transition of mitotic cell cycle	2.54E-03	<i>CDKN1B,CCND2,SFN</i>
GO:0030518	intracellular steroid hormone receptor signaling pathway	2.60E-03	<i>ESR1,ESR2,AR</i>
GO:0010950	positive regulation of endopeptidase activity	2.67E-03	<i>CDKN1B,CDKN2A,DAPK1</i>
GO:0010564	regulation of cell cycle process	2.74E-03	<i>CDKN1B,CCND2,APC,CDKN2A,SFN</i>
GO:0043516	regulation of DNA damage response, signal transduction by p53 class mediator	2.75E-03	<i>CD44,HIC1</i>
GO:0022407	regulation of cell-cell adhesion	2.79E-03	<i>CD44,CDH1,CAVI,CDKN2A</i>

GO:0022411	cellular component disassembly	2.82E-03	<i>CD44,CDH1,CAVI,APC,CDKN2A</i>
GO:0043401	steroid hormone mediated signaling pathway	2.88E-03	<i>ESR1,ESR2,AR</i>
GO:0016328	lateral plasma membrane	2.97E-03	<i>CDH1,APC</i>
GO:0010952	positive regulation of peptidase activity	3.03E-03	<i>CDKN1B,CDKN2A,DAPK1</i>
GO:2001235	positive regulation of apoptotic signaling pathway	3.11E-03	<i>TIMP3,CAVI,SFN</i>
GO:1902806	regulation of cell cycle G1/S phase transition	3.26E-03	<i>CDKN1B,CCND2,SFN</i>
GO:0000122	negative regulation of transcription from RNA polymerase II promoter	3.43E-03	<i>ESR1,CAVI,EDNRB,ESR2,HIC1</i>
GO:0048732	gland development	3.50E-03	<i>DKK3,CAVI,AR</i>
GO:0043627	response to estrogen	3.66E-03	<i>ESR1,CAVI</i>
GO:2001238	positive regulation of extrinsic apoptotic signaling pathway	3.91E-03	<i>TIMP3,CAVI</i>
GO:0045428	regulation of nitric oxide biosynthetic process	3.91E-03	<i>PTGS2,CAVI</i>
GO:0016504	peptidase activator activity	3.91E-03	<i>CAVI,CDKN1B</i>
GO:0030308	negative regulation of cell growth	3.92E-03	<i>CDKN1B,ESR2,CDKN2A</i>
REAC:10958 1	Apoptosis	3.95E-03	<i>CDH1,APC,SFN,DAPK1</i>
GO:0004857	enzyme inhibitor activity	4.00E-03	<i>TIMP3,CDKN1B,CDKN2A,SFN</i>
GO:1901991	negative regulation of mitotic cell cycle phase transition	4.01E-03	<i>CDKN1B,APC,SFN</i>
HP:0007378	Neoplasm of the gastrointestinal tract	4.13E-03	<i>CDH1,CDKN1B,CDKN1C,APC,EDNRB,CDKN2A</i>
GO:2001020	regulation of response to DNA damage stimulus	4.19E-03	<i>CD44,MGMT,HIC1</i>
REAC:53578 01	Programmed Cell Death	4.22E-03	<i>CDH1,APC,SFN,DAPK1</i>
GO:0010565	regulation of cellular ketone metabolic process	4.28E-03	<i>DKK3,PTGS2,CAVI</i>

GO:0045862	positive regulation of proteolysis	4.31E-03	<i>CAVI,CDKN1B,CDKN2A,DAPK1</i>
GO:0045296	cadherin binding	4.42E-03	<i>CDH1,APC,CDH13,SFN</i>
GO:1901988	negative regulation of cell cycle phase transition	4.47E-03	<i>CDKN1B,APC,SFN</i>
GO:0071383	cellular response to steroid hormone stimulus	4.47E-03	<i>ESR1,ESR2,AR</i>
GO:0071396	cellular response to lipid	4.53E-03	<i>GSTP1,ESR1,ESR2,AR</i>
GO:0070664	negative regulation of leukocyte proliferation	4.71E-03	<i>GSTP1,CDKN2A</i>
GO:0007179	transforming growth factor beta receptor signaling pathway	4.86E-03	<i>DKK3,CAVI,CDKN1C</i>
KEGG:04390	Hippo signaling pathway	5.10E-03	<i>CDH1,RASSF1,CCND2,APC</i>
OMIM:114480	BREAST CANCER;;BREAST CANCER, FAMILIALBREAST CANCER, FAMILIAL MALE, INCLUDED	5.24E-03	<i>CDH1,ESR1</i>
GO:0070373	negative regulation of ERK1 and ERK2 cascade	5.27E-03	<i>GSTP1,TIMP3</i>
GO:0009755	hormone-mediated signaling pathway	5.28E-03	<i>ESR1,ESR2,AR</i>
GO:0007093	mitotic cell cycle checkpoint	5.38E-03	<i>CDKN1B,APC,SFN</i>
GO:0010038	response to metal ion	5.38E-03	<i>CDH1,CAVI,CDKN1B</i>
GO:0031329	regulation of cellular catabolic process	5.41E-03	<i>TIMP3,CAVI,CDKN2A,FHIT</i>
GO:0090090	negative regulation of canonical Wnt signaling pathway	5.49E-03	<i>DKK3,CAVI,APC</i>
GO:0051090	regulation of sequence-specific DNA binding transcription factor activity	5.54E-03	<i>ESR1,ESR2,CDKN2A,AR</i>
KEGG:04115	p53 signaling pathway	5.64E-03	<i>CCND2,CDKN2A,SFN</i>
GO:0007160	cell-matrix adhesion	5.71E-03	<i>CD44,CDH13,CDKN2A</i>
GO:2001234	negative regulation of apoptotic signaling pathway	5.94E-03	<i>CD44,GSTP1,AR</i>
GO:1903426	regulation of reactive oxygen species biosynthetic process	6.51E-03	<i>PTGS2,CAVI</i>

GO:0042310	vasoconstriction	6.51E-03	<i>CAVI,EDNRB</i>
GO:0006809	nitric oxide biosynthetic process	6.51E-03	<i>PTGS2,CAVI</i>
GO:0007162	negative regulation of cell adhesion	6.52E-03	<i>CDH1,CDH13,CDKN2A</i>
GO:0030520	intracellular estrogen receptor signaling pathway	6.83E-03	<i>ESR1,ESR2</i>
KEGG:04917	Prolactin signaling pathway	6.92E-03	<i>ESR1,CCND2,ESR2</i>
GO:0061134	peptidase regulator activity	7.02E-03	<i>TIMP3,CAVI,CDKN1B</i>
GO:0090092	regulation of transmembrane receptor protein serine/threonine kinase signaling pathway	7.02E-03	<i>DKK3,CAVI,CDKN1C</i>
GO:0016049	cell growth	7.07E-03	<i>CDKN1B,ESR2,CDKN2A,AR</i>
GO:0045121	membrane raft	7.15E-03	<i>CDH1,CAVI,CDH13</i>
GO:0046209	nitric oxide metabolic process	7.17E-03	<i>PTGS2,CAVI</i>
GO:0098857	membrane microdomain	7.27E-03	<i>CDH1,CAVI,CDH13</i>
GO:0071359	cellular response to dsRNA	7.51E-03	<i>ESR1,CAVI</i>
GO:0071560	cellular response to transforming growth factor beta stimulus	7.54E-03	<i>DKK3,CAVI,CDKN1C</i>
GO:0045926	negative regulation of growth	7.54E-03	<i>CDKN1B,ESR2,CDKN2A</i>
GO:0090287	regulation of cellular response to growth factor stimulus	7.67E-03	<i>DKK3,CAVI,CDKN1C</i>
GO:0071559	response to transforming growth factor beta	7.80E-03	<i>DKK3,CAVI,CDKN1C</i>
GO:0048145	regulation of fibroblast proliferation	7.86E-03	<i>GSTP1,S100A6</i>
GO:0043124	negative regulation of I-kappaB kinase/NF-kappaB signaling	7.86E-03	<i>GSTP1,ESR1</i>
GO:2001057	reactive nitrogen species metabolic process	7.86E-03	<i>PTGS2,CAVI</i>
GO:0048144	fibroblast proliferation	8.22E-03	<i>GSTP1,S100A6</i>
GO:0005925	focal adhesion	8.26E-03	<i>CD44,CDH1,CAVI,CDH13</i>
GO:0005924	cell-substrate adherens junction	8.43E-03	<i>CD44,CDH1,CAVI,CDH13</i>
GO:0006921	cellular component disassembly involved	8.58E-03	<i>APC,CDKN2A</i>

	in execution phase of apoptosis		
GO:0007156	homophilic cell adhesion via plasma membrane adhesion molecules	8.58E-03	<i>CDH1,CDH13</i>
GO:0030055	cell-substrate junction	8.77E-03	<i>CD44,CDH1,CAVI,CDH13</i>
GO:0050678	regulation of epithelial cell proliferation	9.38E-03	<i>CAVI,CDKN1C,CDH13</i>
GO:0016055	Wnt signaling pathway	9.68E-03	<i>DKK3,CAVI,APC,HIC1</i>
GO:0198738	cell-cell signaling by wnt	9.77E-03	<i>DKK3,CAVI,APC,HIC1</i>
GO:0042180	cellular ketone metabolic process	1.00E-02	<i>DKK3,PTGS2,CAVI</i>
GO:0072332	intrinsic apoptotic signaling pathway by p53 class mediator	1.05E-02	<i>CD44,FHIT</i>
GO:0006939	smooth muscle contraction	1.05E-02	<i>CAVI,EDNRB</i>
GO:1990778	protein localization to cell periphery	1.08E-02	<i>CDH1,CAVI,AR</i>
GO:1903409	reactive oxygen species biosynthetic process	1.13E-02	<i>PTGS2,CAVI</i>
GO:0070372	regulation of ERK1 and ERK2 cascade	1.18E-02	<i>CD44,GSTP1,TIMP3</i>
GO:0010948	negative regulation of cell cycle process	1.20E-02	<i>CDKN1B,APC,SFN</i>
GO:0051301	cell division	1.22E-02	<i>APC,CDKN2A,SFN</i>
GO:0002673	regulation of acute inflammatory response	1.22E-02	<i>PTGS2,GSTP1</i>
KEGG:05215	Prostate cancer	1.26E-02	<i>GSTP1,CDKN1B,AR</i>
GO:0051345	positive regulation of hydrolase activity	1.26E-02	<i>ESR1,CDKN1B,CDKN2A,DAPK1</i>
GO:0048660	regulation of smooth muscle cell proliferation	1.26E-02	<i>CDKN1B,CDH13</i>
GO:2000379	positive regulation of reactive oxygen species metabolic process	1.26E-02	<i>PTGS2,GSTP1</i>
HP:0100631	Neoplasm of the adrenal gland	1.27E-02	<i>CDKN1B,CDKN1C,APC</i>
GO:0045930	negative regulation of mitotic cell cycle	1.27E-02	<i>CDKN1B,APC,SFN</i>
GO:1905114	cell surface receptor signaling pathway involved in cell-cell signaling	1.29E-02	<i>DKK3,CAVI,APC,HIC1</i>
GO:0090068	positive regulation of cell cycle process	1.29E-02	<i>CDKN1B,CCND2,SFN</i>
GO:0007265	Ras protein signal transduction	1.29E-02	<i>RASSF1,CDH13,CDKN2A</i>



GO:0098589	membrane region	1.31E-02	<i>CDH1,CAVI,CDH13</i>
GO:0060828	regulation of canonical Wnt signaling pathway	1.31E-02	<i>DKK3,CAVI,APC</i>
GO:0030522	intracellular receptor signaling pathway	1.33E-02	<i>ESR1,ESR2,AR</i>
GO:0032870	cellular response to hormone stimulus	1.34E-02	<i>ESR1,CAVI,ESR2,AR</i>
GO:0019217	regulation of fatty acid metabolic process	1.35E-02	<i>PTGS2,CAVI</i>
GO:0043407	negative regulation of MAP kinase activity	1.35E-02	<i>GSTP1,CAVI</i>
GO:0048659	smooth muscle cell proliferation	1.35E-02	<i>CDKN1B,CDH13</i>
GO:0048565	digestive tract development	1.40E-02	<i>RARB,EDNRB</i>
GO:0070371	ERK1 and ERK2 cascade	1.41E-02	<i>CD44,GSTP1,TIMP3</i>
GO:0051091	positive regulation of sequence-specific DNA binding transcription factor activity	1.41E-02	<i>ESR1,ESR2,AR</i>
GO:0008134	transcription factor binding	1.41E-02	<i>ESR1,CDKN2A,AR,GPX3</i>
GO:0050673	epithelial cell proliferation	1.43E-02	<i>CAVI,CDKN1C,CDH13</i>
GO:0000075	cell cycle checkpoint	1.43E-02	<i>CDKN1B,APC,SFN</i>
GO:0019216	regulation of lipid metabolic process	1.44E-02	<i>DKK3,PTGS2,CAVI</i>
GO:0019898	extrinsic component of membrane	1.44E-02	<i>CDH1,APC,S100A6</i>
GO:0006977	DNA damage response, signal transduction by p53 class mediator resulting in cell cycle arrest	1.45E-02	<i>CDKN1B,SFN</i>
GO:0031330	negative regulation of cellular catabolic process	1.45E-02	<i>TIMP3,FHIT</i>
GO:0031252	cell leading edge	1.46E-02	<i>CDH1,APC,S100A6</i>
GO:0072431	signal transduction involved in mitotic G1 DNA damage checkpoint	1.49E-02	<i>CDKN1B,SFN</i>
GO:1902400	intracellular signal transduction involved in G1 DNA damage checkpoint	1.49E-02	<i>CDKN1B,SFN</i>
GO:0043154	negative regulation of cysteine-type endopeptidase activity involved in apoptotic process	1.49E-02	<i>CD44,SFN</i>

GO:0072413	signal transduction involved in mitotic cell cycle checkpoint	1.54E-02	<i>CDKN1B,SFN</i>
GO:1902402	signal transduction involved in mitotic DNA damage checkpoint	1.54E-02	<i>CDKN1B,SFN</i>
GO:1902403	signal transduction involved in mitotic DNA integrity checkpoint	1.54E-02	<i>CDKN1B,SFN</i>
GO:2001022	positive regulation of response to DNA damage stimulus	1.54E-02	<i>MGMT,HIC1</i>
GO:1903037	regulation of leukocyte cell-cell adhesion	1.55E-02	<i>CD44,CAVI,CDKN2A</i>
KEGG:05205	Proteoglycans in cancer	1.56E-02	<i>CD44,ESR1,TIMP3,CAVI</i>
GO:0050839	cell adhesion molecule binding	1.58E-02	<i>CDH1,APC,CDH13,SFN</i>
GO:0072657	protein localization to membrane	1.58E-02	<i>CDH1,CAVI,AR,SFN</i>
GO:0055123	digestive system development	1.59E-02	<i>RARB,EDNRB</i>
GO:0031589	cell-substrate adhesion	1.63E-02	<i>CD44,CDH13,CDKN2A</i>
GO:0007009	plasma membrane organization	1.63E-02	<i>CDH1,CAVI,AR</i>
GO:0071363	cellular response to growth factor stimulus	1.64E-02	<i>CD44,DKK3,CAVI,CDKN1C</i>
GO:0097746	regulation of blood vessel diameter	1.64E-02	<i>CAVI,EDNRB</i>
GO:0035296	regulation of tube diameter	1.64E-02	<i>CAVI,EDNRB</i>
GO:0072422	signal transduction involved in DNA damage checkpoint	1.64E-02	<i>CDKN1B,SFN</i>
GO:0001046	core promoter sequence-specific DNA binding	1.64E-02	<i>ESR1,ESR2</i>
GO:0072401	signal transduction involved in DNA integrity checkpoint	1.64E-02	<i>CDKN1B,SFN</i>
GO:0043331	response to dsRNA	1.69E-02	<i>ESR1,CAVI</i>
GO:0050680	negative regulation of epithelial cell proliferation	1.69E-02	<i>CAVI,CDKN1C</i>
GO:0072395	signal transduction involved in cell cycle checkpoint	1.69E-02	<i>CDKN1B,SFN</i>
GO:0045732	positive regulation of protein catabolic	1.69E-02	<i>CAVI,CDKN1B,APC</i>

	process		
GO:0070848	response to growth factor	1.79E-02	<i>CD44,DKK3,CAVI,CDKN1C</i>
GO:0002040	sprouting angiogenesis	1.80E-02	<i>PTGS2,CDH13</i>
GO:0035150	regulation of tube size	1.80E-02	<i>CAVI,EDNRB</i>
GO:0050880	regulation of blood vessel size	1.80E-02	<i>CAVI,EDNRB</i>
GO:0001952	regulation of cell-matrix adhesion	1.85E-02	<i>CDH13,CDKN2A</i>
GO:0006919	activation of cysteine-type endopeptidase activity involved in apoptotic process	1.85E-02	<i>CDKN1B,CDKN2A</i>
GO:0044819	mitotic G1/S transition checkpoint	1.85E-02	<i>CDKN1B,SFN</i>
GO:0031571	mitotic G1 DNA damage checkpoint	1.85E-02	<i>CDKN1B,SFN</i>
GO:0010035	response to inorganic substance	1.85E-02	<i>CDH1,CAVI,CDKN1B</i>
GO:0098590	plasma membrane region	1.88E-02	<i>CDH1,CAVI,APC,CDH13</i>
GO:0042177	negative regulation of protein catabolic process	1.90E-02	<i>TIMP3,FHIT</i>
GO:0044783	G1 DNA damage checkpoint	1.90E-02	<i>CDKN1B,SFN</i>
GO:0097194	execution phase of apoptosis	2.01E-02	<i>APC,CDKN2A</i>
GO:0033138	positive regulation of peptidyl-serine phosphorylation	2.01E-02	<i>CD44,CAVI</i>
GO:0051346	negative regulation of hydrolase activity	2.04E-02	<i>CD44,TIMP3,SFN</i>
HP:0008256	Adrenocortical adenoma	2.10E-02	<i>CDKN1B,APC</i>
REAC:4641262	Disassembly of the destruction complex and recruitment of AXIN to the membrane	2.10E-02	<i>CAVI,APC</i>
REAC:418990	Adherens junctions interactions	2.10E-02	<i>CDH1,CDH13</i>
GO:0030856	regulation of epithelial cell differentiation	2.12E-02	<i>CAVI,SFN</i>
GO:0040007	growth	2.17E-02	<i>CDKN1B,ESR2,CDKN2A,AR</i>
GO:0001676	long-chain fatty acid metabolic process	2.18E-02	<i>PTGS2,GSTP1</i>
GO:0007043	cell-cell junction assembly	2.18E-02	<i>CAVI,APC</i>
GO:0007178	transmembrane receptor protein serine/threonine kinase signaling pathway	2.19E-02	<i>DKK3,CAVI,CDKN1C</i>

GO:0060070	canonical Wnt signaling pathway	2.22E-02	<i>DKK3,CAVI,APC</i>
GO:2000117	negative regulation of cysteine-type endopeptidase activity	2.24E-02	<i>CD44,SFN</i>
GO:2001237	negative regulation of extrinsic apoptotic signaling pathway	2.24E-02	<i>GSTP1,AR</i>
GO:0009725	response to hormone	2.24E-02	<i>ESR1,CAVI,ESR2,AR</i>
GO:0071248	cellular response to metal ion	2.29E-02	<i>CDH1,CDKN1B</i>
GO:0071158	positive regulation of cell cycle arrest	2.35E-02	<i>CDKN1B,SFN</i>
GO:0002526	acute inflammatory response	2.35E-02	<i>PTGS2,GSTP1</i>
GO:0043296	apical junction complex	2.41E-02	<i>CDH1,APC</i>
REAC:32996 85	Detoxification of Reactive Oxygen Species	2.53E-02	<i>GSTP1,GPX3</i>
GO:0033002	muscle cell proliferation	2.53E-02	<i>CDKN1B,CDH13</i>
GO:0001936	regulation of endothelial cell proliferation	2.60E-02	<i>CAVI,CDH13</i>
GO:0045785	positive regulation of cell adhesion	2.65E-02	<i>CD44,CAVI,CDH13</i>
GO:0000981	RNA polymerase II transcription factor activity, sequence-specific DNA binding	2.70E-02	<i>RARB,ESR1,ESR2,AR</i>
GO:0003018	vascular process in circulatory system	2.72E-02	<i>CAVI,EDNRB</i>
GO:2000134	negative regulation of G1/S transition of mitotic cell cycle	2.78E-02	<i>CDKN1B,SFN</i>
GO:2001257	regulation of cation channel activity	2.78E-02	<i>CAVI,DAPK1</i>
GO:0032434	regulation of proteasomal ubiquitin-dependent protein catabolic process	2.78E-02	<i>CAVI,FHIT</i>
GO:0022408	negative regulation of cell-cell adhesion	2.78E-02	<i>CDH1,CDKN2A</i>
GO:0045787	positive regulation of cell cycle	2.86E-02	<i>CDKN1B,CCND2,SFN</i>
REAC:19525 8	RHO GTPase Effectors	2.90E-02	<i>CDH1,CDKN1B,AR,SFN</i>
GO:0022617	extracellular matrix disassembly	2.91E-02	<i>CD44,CDH1</i>
GO:1902807	negative regulation of cell cycle G1/S phase transition	2.91E-02	<i>CDKN1B,SFN</i>

HP:0100570	Carcinoid tumor	2.93E-02	<i>CDKN1B,APC</i>
GO:0006631	fatty acid metabolic process	2.95E-02	<i>PTGS2,GSTP1,CAVI</i>
TF:M06093_0	Factor: ZNF17; motif: KGGTCCAASRTT; match class: 0	3.10E-02	<i>ESR2,S100A6</i>
GO:0071241	cellular response to inorganic substance	3.11E-02	<i>CDH1,CDKN1B</i>
GO:0033135	regulation of peptidyl-serine phosphorylation	3.25E-02	<i>CD44,CAVI</i>
GO:0044773	mitotic DNA damage checkpoint	3.25E-02	<i>CDKN1B,SFN</i>
REAC:453279	Mitotic G1-G1/S phases	3.25E-02	<i>CDKN1B,CCND2,CDKN2A</i>
GO:0001558	regulation of cell growth	3.26E-02	<i>CDKN1B,ESR2,CDKN2A</i>
GO:0010469	regulation of receptor activity	3.39E-02	<i>CAVI,DAPK1</i>
GO:0001935	endothelial cell proliferation	3.39E-02	<i>CAVI,CDH13</i>
GO:0009896	positive regulation of catabolic process	3.46E-02	<i>CAVI,CDKN1B,APC</i>
HP:0010787	Genital neoplasm	3.46E-02	<i>CDH1,CDKN1C,APC,AR</i>
HP:0100568	Neoplasm of the endocrine system	3.46E-02	<i>CDKN1B,CDKN1C,APC,EDNRB</i>
REAC:111465	Apoptotic cleavage of cellular proteins	3.49E-02	<i>CDH1,APC</i>
GO:0001726	ruffle	3.60E-02	<i>APC,S100A6</i>
GO:0030031	cell projection assembly	3.67E-02	<i>CAVI,APC,CDH13</i>
GO:0034332	adherens junction organization	3.67E-02	<i>CDH1,CDH13</i>
GO:0071453	cellular response to oxygen levels	3.67E-02	<i>PTGS2,CAVI</i>
GO:0051259	protein oligomerization	3.70E-02	<i>CAVI,AR,GPX3</i>
GO:0044774	mitotic DNA integrity checkpoint	3.74E-02	<i>CDKN1B,SFN</i>
GO:0007200	phospholipase C-activating G-protein coupled receptor signaling pathway	3.74E-02	<i>ESR1,EDNRB</i>
GO:0033559	unsaturated fatty acid metabolic process	3.82E-02	<i>PTGS2,GSTP1</i>
GO:0046890	regulation of lipid biosynthetic process	3.82E-02	<i>DKK3,PTGS2</i>
GO:0071156	regulation of cell cycle arrest	3.82E-02	<i>CDKN1B,SFN</i>

HP:0006744	Adrenocortical carcinoma	3.90E-02	<i>CDKN1C,APC</i>
GO:0009895	negative regulation of catabolic process	3.97E-02	<i>TIMP3,FHIT</i>
GO:0070486	leukocyte aggregation	3.99E-02	<i>CD44,CAVI,CDKN2A</i>
GO:0050900	leukocyte migration	4.02E-02	<i>CD44,CAVI,EDNRB</i>
GO:0008637	apoptotic mitochondrial changes	4.04E-02	<i>CDKN2A,SFN</i>
GO:0030027	lamellipodium	4.35E-02	<i>CDH1,APC</i>
GO:0030335	positive regulation of cell migration	4.55E-02	<i>PTGS2,APC,CDH13</i>
GO:0061136	regulation of proteasomal protein catabolic process	4.59E-02	<i>CAVI,FHIT</i>
TF:M06596_0	Factor: ZNF486; motif: GKGCCAACGC; match class: 0	4.63E-02	<i>RASSF1,CAVI</i>
GO:0005913	cell-cell adherens junction	4.79E-02	<i>CDH1,APC,SFN</i>
TF:M06762_0	Factor: ZNF222; motif: NGGTCRAAACGA; match class: 0	4.88E-02	<i>APC,HIC1</i>
GO:2001242	regulation of intrinsic apoptotic signaling pathway	4.91E-02	<i>CD44,CAVI</i>
GO:2000147	positive regulation of cell motility	4.96E-02	<i>PTGS2,APC,CDH13</i>
GO:0010810	regulation of cell-substrate adhesion	5.00E-02	<i>CDH13,CDKN2A</i>
GO:0007264	small GTPase mediated signal transduction	5.00E-02	<i>RASSF1,CDH13,CDKN2A</i>
GO:0048514	blood vessel morphogenesis	5.00E-02	<i>PTGS2,CAVI,CDH13</i>
HPA:035030_13	skin 1; keratinocytes[Supportive,High]	5.00E-02	<i>CD44,CDH1,CAVI,SFN</i>
REAC:67913_12	TP53 Regulates Transcription of Cell Cycle Genes	5.00E-02	<i>CDKN1B,SFN</i>
HP:0002884	Hepatoblastoma	5.00E-02	<i>CDKN1C,APC</i>
TF:M01075_0	Factor: PLZF; motif: KTNNTNGNNGNTAAAGYTTKATYWGTTTC; match class: 0	5.00E-02	<i>ESR1,CDKN2A</i>
KEGG:05224	Breast cancer	5.00E-02	<i>ESR1,APC,ESR2</i>

**Table S3: Positions of CpG islands, their lengths, GC% frequency, A+T skew and G+ C skew**

Name of the Gene	Number	Begin	End	Length (bp)	G+C frequency	CpGo/e ratio	start-p	AT skew	GC skew	Strand (Strand-p*)
<i>CD44</i>	1/2	4867	6082	1216	0.6250	0.6317	0.2744	0.0175	0.0158	plus (0.5119)
	2/2	42038	42990	953	0.5026	0.5839	0.1354	-0.2025	-0.0647	plus (0.8005)
<i>CDH13</i>	1/2	1186	2348	1062	0.5358	0.7138	0.2635	-0.0426	0.0861	plus (0.8396)
	2/2	3776	4473	598	0.4983	0.6213	0.1300	-0.0667	-0.0537	plus (0.5103)
<i>DAPK1</i>	1/5	4368	6649	2282	0.6275	0.7948	0.6125	-0.0282	0.0936	plus (0.8317)
	2/5	15354	16010	657	0.5145	0.5810	0.1197	-0.1536	-0.1006	plus (0.5910)
	3/5	68245	68986	742	0.4623	0.5802	0.1034	0.0125	0.0029	minus (0.5176)
	4/5	111991	112553	563	0.5044	0.5868	0.1127	0.0323	0.0282	plus (0.5130)
	5/5	213095	213988	894	0.5917	0.5751	0.1720	-0.1068	0.0057	plus (0.7828)
<i>RASSF1</i>	1/4	1	775	710	0.6437	0.6666	0.2634	0.0751	0.0197	minus (0.6304)
	2/4	4662	5981	1320	0.6333	0.7253	0.3953	-0.0041	0.0048	plus (0.5345)
	3/4	7357	9377	2021	0.6299	0.7862	0.5673	-0.0267	0.0621	plus (0.7609)
	4/4	17226	18227	1002	0.6118	0.7304	0.3371	0.0334	0.0832	plus

										(0.6854)
<i>AR</i>	1/2	4747	5738	992	0.6452	0.5754	0.2149	0.0909	-0.0813	minus (0.8875)
	2/2	6828	8070	1243	0.6275	0.6702	0.3186	-0.0626	-0.0077	plus (0.6491)
	2/2	11108	12081	974	0.6068	0.9936	0.6361	0.0235	-0.1100	minus (0.8467)
<i>CDKN2A</i>	1/7	3194	5951	2758	0.6211	0.8151	0.6925	0.0392	0.1138	plus (0.7552)
	2/7	9024	10208	1185	0.5156	0.5846	0.1597	-0.0244	-0.0311	minus (0.5302)
	3/7	22772	23591	820	0.5037	0.5974	0.1343	-0.2334	-0.0460	plus (0.8788)
	4/7	23861	25353	1493	0.5700	0.7233	0.3570	0.0530	0.2056	plus (0.9011)
	5/7	28024	29086	1063	0.5795	0.6163	0.2106	0.0067	-0.0065	minus (0.5331)
	6/7	30508	31597	1090	0.5064	0.7890	0.3172	0.1078	0.0507	minus (0.6171)
	7/7	31843	32542	700	0.4800	0.6731	0.1591	0.0000	-0.0714	minus (0.7174)
<i>GSTP1</i>	1/1	4243	6057	1815	0.6105	0.7338	0.4543	0.0976	-0.0253	minus (0.8000)



**Table S4: PEpID showing the positions of methylated cytosines, transcription start sites as well as chromosome number and method of sequencing**

<b>Name of the Gene</b>	<b>Specimen</b>	<b>Methods</b>	<b>Chromosome</b>	<b>Position of Methylated Cytosines</b>	<b>Transcription Start Site</b>
<i>AR</i>	NORMAL; TUMOR	MSO MICROARRAY	X	66766506	66763873
<i>CD44</i>	LNCaP	METHYL RRBS	11	35160462; 35160567; 35160821; 35161274; 35165242; 35166165; 35178009; 35222210	35160416
<i>CDH13</i>	LNCaP; PrEC	METHYL RRBS	16	82660761; 82666919; 8267133; 82687412; 82746778; 82940932; 82943269; 82974840; 83022386; 83095051; 83126975; 83170755; 83341449; 83362860; 83386443; 83483585; 83497855; 83548520; 83566448; 83617792; 83619879; 83657635; 83659882; 83666921; 83679935; 83715823; 83723402; 83766892; 83770446; 83811075; 83824308; 83830706	82660398
<i>CDKN2A</i>	NORMAL; PRIMARY TUMOR	MSO MICROARRAY	9	21967890; 21968233; 21968329; 21968461; 21968681; 21968832; 21969748; 21971248; 21976436; 21990090; 21993500; 21994108	21994490
<i>DAPK</i>	LNCaP; PrEC	METHYL RRBS	9	90112519; 90113695; 90114156; 90119028; 90132131; 90165959; 90166717; 90170784; 90182688; 90197021; 90219911; 90229671; 90225528; 90238633; 90272914; 90275049; 90279531; 90290324; 90292552; 90296441; 90299031; 90299466; 90321259; 90321475; 90322142	90112755
<i>GSTP1</i>	NORMAL; TUMOR; PRIMARY TUMOR	MSO MICROARRAY	11	67350499; 67350944; 67350955; 67350976; 67350989; 67350991; 67351018; 67351055; 67351089; 67351110; 67351141; 67351145; 67351177; 67351205; 67351209; 67351271; 67351340; 67351378; 67351392; 67351434; 67351456; 67351468; 67351490; 67351553; 67351571; 67351597; 67351608; 67351702; 67531720; 67351741; 67351757; 67351777; 67351786; 67351874; 67352041	67351065
<i>RASSF1</i>	LNCaP	METHYL RRBS	3	50375349; 50375459; 50375496; 50376216; 50378169;	50378367

				50378251; 50378283; 50378413; 50378425; 50378508; 50378591; 50378611; 50378717; 50378749	
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