

**Table S1.** Top 25 upregulated and top 25 downregulated genes in COAD.

<i>Symbol</i>	<b>Entraze ID</b>	<b>P-value</b>	<b>Log2(fold change)</b>	<b>FDR</b>
CA1	759	7.23E-56	-10.51	9.89E-54
OTOP2	92736	6.37E-131	-9.48	6.54E-127
AQP8	343	1.73E-49	-9.28	1.55E-47
ZG16	653808	1.77E-42	-9.12	8.04E-41
CLCA4	22802	3.94E-42	-9.05	1.73E-40
TMIGD1	388364	9.76E-70	-8.95	3.78E-67
GUCA2B	2981	1.34E-81	-8.8	1.25E-78
CA4	762	3.86E-46	-8.72	2.48E-44
PYY	5697	5.85E-78	-8.68	4.29E-75
MS4A12	54860	7.77E-45	-8.52	4.40E-43
CD177	57126	6.82E-51	-7.86	6.83E-49
CA7	766	1.83E-85	-7.81	1.97E-82
GCG	2641	1.93E-64	-7.57	4.90E-62
CLDN8	9073	6.80E-58	-7.48	1.07E-55
GUCA2A	2980	5.19E-51	-7.2	5.27E-49
BEST4	266675	5.87E-94	-6.96	1.10E-90
CDKN2BAS	100048912	3.02E-68	-6.67	1.03E-65
SCARA5	286133	8.51E-50	-6.32	7.97E-48
SCGN	10590	4.18E-66	-6.26	1.24E-63
SST	6750	1.47E-64	-6.07	3.77E-62
CA2	760	3.18E-54	-5.92	3.91E-52
ABCG2	9429	8.98E-63	-5.43	2.00E-60
TMEM72	643236	3.43E-63	-5.1	7.73E-61
OSTalpha	200931	2.80E-43	-4.95	1.38E-41
MMP7	4316	2.71E-50	7.11	2.61E-48
CST1	1469	9.23E-49	6.86	7.80E-47
KRT80	144501	3.77E-112	6.71	1.29E-108
CDH3	1001	3.04E-131	6.55	6.24E-127
CLDN2	9075	1.94E-34	5.96	4.42E-33
FOXQ1	94234	5.68E-76	5.86	3.43E-73
ETV4	2118	2.54E-104	5.47	7.46E-101
KRT23	25984	1.59E-23	5.46	1.50E-22
KIAA1199	57214	2.09E-79	5.45	1.65E-76
C6orf223	221416	1.14E-74	5.31	5.69E-72
CA9	768	3.88E-28	5.28	5.20E-27
GRIN2D	2906	1.10E-66	4.78	3.48E-64
CLDN1	9076	1.99E-76	4.76	1.24E-73
PRSS22	64063	7.41E-69	4.59	2.62E-66
MMP3	4314	1.39E-22	4.49	1.22E-21
GYLTL1B	120071	8.09E-48	4.23	6.29E-46
TRIM29	23650	1.66E-40	4.15	6.41E-39
LY6G6D	58530	1.99E-10	4	6.69E-10
VWA2	340706	4.33E-45	3.92	2.49E-43
NKD1	85407	1.45E-23	3.91	1.37E-22
KLK10	5655	4.27E-19	3.89	2.84E-18
MMP11	4320	3.25E-37	3.73	9.32E-36

NKD2	85409	1.30E-36	3.71	3.55E-35
TESC	54997	6.37E-29	3.69	9.09E-28
MMP1	4312	7.16E-19	3.64	4.67E-18

**Table S2.** Top Molecular and Cellular Functions generated using IPA based on the top 25 upregulated and downregulated genes in COAD.

Name	p-value range	# Molecules
Cellular Movement	8.02E-03 - 3.35E-06	24
Molecular Transport	8.25E-03 - 5.44E-06	20
Protein Synthesis	6.02E-03 - 2.09E-07	9
Protein Degradation	6.02E-03 - 2.09E-07	8
Post-Translational Modification	2.50E-03 - 2.09E-07	5

**Table S3.** Main biomarkers application and target drugs, downloaded from IPA.

Symbol	Entrez Gene Name	Location	Type(s)	Biomarker Application(s)	Drug(s)
ABCG2	ATP binding cassette subfamily G member 2 (Junior blood group)	Plasma Membrane	transporter	efficacy,prognosis	
AQP8	aquaporin 8	Plasma Membrane	transporter		
BEST4	bestrophin 4	Plasma Membrane	other		
BMP3	bone morphogenetic protein 3	Extracellular Space	growth factor	diagnosis	
C6orf223	chromosome 6 open reading frame 223	Other	other		
CA2	carbonic anhydrase 2	Cytoplasm	enzyme	diagnosis,unspecified application	acetazolamide,benzthiazide,brimonidine/brinzolamide,brinzolamide,chlorothiazide,chlorothiazide/reserpine,chlorthalidone,diazoxide,dichlorophenamide,dorzolamide,dorzolamide/timolol,ethoxylzolamide,hydrochlorothiazide,methazolamide,phentermine/topiramate,quinethazone,sulfacetamide,topiramate,trichloromethiazide
CA4	carbonic anhydrase 4	Plasma Membrane	enzyme		acetazolamide,benzthiazide,chlorothiazide,chlorothiazide/reserpine,chlorthalidone,dichlorphenamide,ethoxylzolamide,hydrochlorothiazide,methazolamide,phentermine/topiramate,sulfacetamide,topiramate,trichloromethiazide
CA7	carbonic anhydrase 7	Cytoplasm	enzyme		acetazolamide,benzthiazide,chlorothiazide,chlorthalidone,dichlorphenamide,ethoxylzolamide,hydrochlorothiazide,methazolamide,sulfacetamide,topiramate,trichloromethiazide

CA9	carbonic anhydrase 9	Nucleus	enzyme	diagnosis,efficacy,prognosis,unspecified application	acetazolamide,benzthiazide,chlorothiazide,chlorthalidone,DTP348,girentuximab,hydrochlorothiazide,I 131 chimeric G250,iodine I-124 girentuximab,lutetium Lu-177 girentuximab,methazolamide,SLC-0111,sulfacetamide,topiramate,trichloromethiazide,Y 90 chimeric G250
CD177	CD177 molecule	Cytoplasm	other		
CDH3	cadherin 3	Plasma Membrane	other	diagnosis,efficacy,prognosis	FF21101, PCA062,PF-06671008,PF-3732010
CDKN2B-AS1	CDKN2B antisense RNA 1	Other	other		
CEMIP	cell migration inducing hyaluronidase 1	Cytoplasm	enzyme		
CLCA4	chloride channel accessory 4	Plasma Membrane		ion channel	
CLDN1	claudin 1	Plasma Membrane	other	prognosis	
CLDN2	claudin 2	Plasma Membrane	other	unspecified application	
CLDN8	claudin 8	Plasma Membrane	other		
CST1	cystatin SN	Extracellular Space	other		
ETV4	ETS variant transcription factor 4	Nucleus	transcription regulator	unspecified application	
FOXQ1	forkhead box Q1	Nucleus		transcription regulator	
GCG	Glucagon	Plasma Membrane	other	efficacy	ZP7570
GRIN2D	glutamate ionotropic receptor NMDA type subunit 2D	Plasma Membrane		ion channel	1-aminocyclopropane-1-carboxylic acid,aspirin/cafeine/orphenadrine,b esonprodil,bicifadine,brompheniramine/dextromethorphan/pseudoephedrine,carbinoxamine/dextromethorphan/pseudoephedrine,chlorpheniramine/dextromethorphan/phenylephrine,cycloserine,delucemine,dextromethorphan,dextromethorphan/morphine,dextromethorphan/promethazine,dextromethorphan/quinidine,fe lbamate,N-(2-indanyl)glycinamide,nebostinel,neramexane,orphenadrine,UK-240455
GUCA2A	guanylate cyclase activator 2A	Extracellular Space	other		
GUCA2B	guanylate cyclase activator 2B	Extracellular Space	other		
KLK10	kallikrein related peptidase 10	Extracellular Space	peptidase	diagnosis,prognosis,response to therapy	
KRT23	keratin 23	Cytoplasm	other		
KRT80	keratin 80	Cytoplasm	other		

LARGE2	LARGE xylosyl- and glucuronyltransferase 2	Cytoplasm	enzyme		
LY6G6D	lymphocyte antigen 6 family member G6D	Extracellular Space	other		
MMP1	matrix metalloproteinase 1	Extracellular Space	peptidase	diagnosis,efficacy,safety	marimastat,rebimastat
MMP11	matrix metalloproteinase 11	Extracellular Space	peptidase	diagnosis,disease progression,unspecified application	marimastat
MMP3	matrix metalloproteinase 3	Extracellular Space	peptidase	diagnosis,efficacy	marimastat
MMP7	matrix metalloproteinase 7	Extracellular Space	peptidase	diagnosis	marimastat
MS4A12	membrane spanning 4-domains A12	Plasma Membrane	other		
NKD1	NKD inhibitor of WNT signaling pathway 1	Other	other		
NKD2	NKD inhibitor of WNT signaling pathway 2	Nucleus	other		
OTOP2	otopetrin 2	Other		ion channel	
PRSS22	serine protease 22	Extracellular Space	peptidase		
PYY	peptide YY	Extracellular Space	other	efficacy	
SCARA5	scavenger receptor class A member 5	Plasma Membrane		transmembrane receptor	
SCGN	secretagogin, EF-hand calcium binding protein	Cytoplasm	other		
SST	Somatostatin	Extracellular Space	other	efficacy	somatostatin antagonist
TESC	Tescalcin	Cytoplasm	other		
TMEM72	transmembrane protein 72	Other	other		
TMIGD1	transmembrane and immunoglobulin domain containing 1	Other	other		
TRIM29	tripartite motif containing 29	Cytoplasm	transcription regulator	diagnosis	
VWA2	von Willebrand factor A domain containing 2	Extracellular Space	other	diagnosis	
ZG16	zymogen granule protein 16	Extracellular Space	other		