

Supplemental Table 1. KEGG pathways differentially expressed between primary and metastatic ID8_{VEGF-eLuc} tumors.

Gene Set	Number of Genes	Direction	FDR	Genes
Citrate Cycle TCA Cycle	26	Down	1.85E-06	IDH1, SDHC, PCK1, IDH3B, ACO1, SDHB, MDH2, SUCLG1, SUCLG2, IDH2, IDH3A, SDHD, DLAT, IDH3G, PDHA1, CS, OGDH, MDH1, ACLY, DLST, DLD, SDHA, PCK2, SUCLA2, PDHB, ACO2
Valine Leucine and Isoleucine Degradation	38	Down	6.97E-05	HIBCH, AOX1, ALDH9A1, IVD, HMGCS2, DBT, MCCC1, HADH, ACADM, HMGCL, HADHB, HADHA, ACADS, ALDH2, HIBADH, BCAT2, MCEE, ACADSB, BCKDHA, ECHS1, BCKDHB, ACAD8, ACAT1, PCCB, HSD17B10, ALDH3A2, DLD, ALDH6A1, HMGCS1, AUH, MCCC2, PCCA, OXCT1, ABAT, MUT, ACAT2, ACAA2, ALDH7A1
Ppar signaling pathway	40	Down	4.30E-04	CYP27A1, ACADL, DBI, RXRA, SLC27A4, PCK1, NR1H3, PLTP, HMGCS2, FABP4, ACADM, FABP3, AQP7, CPT2, SCP2, ACOX3, CD36, UBC, PPARG, OLR1, ILK, CPT1C, PLIN1, ACSL1, LPL, SLC27A1, ME1, ACSL4, ACOX1, PCK2, ADIPOQ, PPARD, RXRB, PDPK1, ANGPTL4, SLC27A6, CPT1A, ACSL5, FADS2, SORBS1
Ribosome	80	Up	0.00299212	RPL31, RPL37A, RPL35, RPL7, RPL7A, RPL12, RPS21, RPL22L1, RPL34, RPL22, RPS20, UBA52, RPS6, RPS8, RPL11, RPL5, RPLP0, RPL6, RPL21, RPL9, RPL32, RPS9, RPL28, RPS5, RPS19, RPS16, RPL18, RPL27A, RPLP2, RPS11, RPL13A, RPS17, RPS3, RPS13, RPS15A, RPL13, RPL18A, RPS25, RPL4, RPS27L, RSL24D1, RPL29, RPSA, RPL14, RPLP1, RPL10, RPL36A, RPL39, RPS4X, RPS15, RPS12, RPL41, RPS26, RPL26, RPL19, RPL27, RPL38,

				RPS27A, RPL23A, RPL23, RPS7, RPS29, RPS23, RPS24, RPL15, RPL37, RPL8, RPL30, MRPL13, RPL3, RPL35A, RPL24, FAU, RPS2, RPL10A, RPL36, RPS10, RPS28, RPS18, RPL17
Butanoate Metabolism	23	Down	0.01448559	ALDH9A1, HMGCS2, BDH2, HADH, HMGCL, AACs, HADHA, ACADS, ALDH2, AKR1B10, ACSM3, ECHS1, ACAT1, PDHA1, ALDH3A2, HMGCS1, ALDH5A1, PDHB, OXCT1, ABAT, BDH1, ACAT2, ALDH7A1
Thyroid Cancer	22	Down	0.01448559	TPR, RXRA, TPM3, NRAS, PPARG, BRAF, TCF7L1, KRAS, MAPK3, CCND1, CDH1, CTNNB1, MAP2K1, CCDC6, MAP2K2, TCF7, NCOA4, MYC, MAPK1, TFG, RXRB, TCF7L2
Propanoate Metabolism	27	Down	0.01600618	HIBCH, ALDH9A1, ACSS2, ACSS1, ACADM, ACACB, HADHA, ALDH2, SUCLG1, SUCLG2, LDHB, LDHA, MCEE, ECHS1, MLYCD, ACAT1, PCCB, ACSS3, ACACA, ALDH3A2, ALDH6A1, SUCLA2, PCCA, ABAT, MUT, ACAT2, ALDH7A1
Basal Cell Carcinoma	28	Down	0.01633638	FZD7, WNT6, FZD5, WNT4, DVL1, FZD1, FZD9, SMO, TCF7L1, FZD4, WNT11, CTNNB1, DVL2, FZD2, AXIN2, TCF7, GLI3, PTCH1, WNT5A, BMP4, FZD6, WNT10B, DVL3, GSK3B, AXIN1, APC, SUFU, TCF7L2
Glyoxylate and Dicarbolxylate Metabolism	13	Down	0.01633638	ACO1, GRHPR, HYI, MTHFD2L, MDH2, MTHFD2, MTHFD1L, CS, AFMID, MDH1, MTHFD1, ACO2, PGP
Pyruvate Metabolism	28	Down	0.01816834	ALDH9A1, ACSS2, PCK1, ACSS1, GRHPR, ACACB, MDH2, ALDH2, LDHB, LDHA, DLAT, ACAT1, ME1, PDHA1, ACACA, MDH1, ACYP2, ALDH3A2, DLD, ACYP1, PCK2, PDHB, HAGH, ACAT2, HAGHL, GLO1, ALDH7A1, ME2
Wnt Signaling Pathway	100	Down	0.01816834	FZD7, WNT6, FZD5, CACYBP, PPP2R5A, PLCB1, PLCB4, CSNK2A1, TBL1XR1, CAMK2D, PPP3CA, VANGL1, PRKACB, MAP3K7, WNT4, CTNNBIP1, DVL1, JUN, FZD1, CTBP1, FZD9, RAC1, CUL1, RUVBL1, TCF7L1, CCND2, LRP6, FZD4, WNT11, PRKCB, CTBP2, CCND1, SFRP1, PPP2CB, PRKACA, NKD1, NFATC3, NFAT5, CSNK2A2, PPP2R1B, RHOA, CTNNB1, SMAD3, TBL1X, PORCN, PRKX, PPP3R1, FBXW11, MAPK9, PPP2CA, DVL2, FZD2, AXIN2, RAC3, CAMK2B, TCF7, NLK, PRKCA, ROCK2, DAAM1, PSEN1, PPP2R5C, PPP2R5E, SFRP4, NKD2, WNT5A, PPP3CB, CAMK2G, MAPK8, CHD8, PPP3CC, FZD6, MYC, RBX1, EP300, RAC2, CSNK1E, WNT10B, DVL3, SENP2, GSK3B, CREBBP, PPP2R1A, AXIN1, PPARC, CCND3, CSNK2B, PPP2R5D, DAAM2, APC, CSNK1A1, SMAD2, ROCK1, SMAD4, NFATC1, BTRC, TCF7L2, LRP5, PPP2R5B, PLCB3
Insulin Signaling Pathway	103	Down	0.01927561	EIF4E2, INPP5D, IRS1, AKT3, TSC1, RAPGEF1, PYGB, PTPN1, PCK1, PRKCI, PIK3CA, FOXO1, SHC1, PRKAB2, NRAS, EIF4E, PRKACB, MKNK1, PIK3R3, MTOR, RPS6, PTPRF, PIK3CD, PPP1CB, ACACB, PPP1CC, RHEB, PRKAG2, PPARGC1A,

				PRKAB1, SH2B2, PDE3A, BRAF, HK2, RAF1, KRAS, AKT2, GYS1, PDE3B, MAPK3, PHKG2, CALM3, LIPE, EIF4EBP1, PRKACA, PHKB, INSR, IRS2, IKBKB, PIK3R2, PRKAR2A, CBL, MAP2K1, PIK3CB, ARAF, PHKA2, ELK1, PRKX, PHKA1, MAP2K2, HK1, MKNK2, MAPK9, INPP5K, CRK, FLOT2, ACACA, PRKAR1A, RPTOR, SREBF1, RPS6KB1, GRB2, EXOC7, FASN, CALM1, PRKAR2B, PIK3CG, SOS2, PYGL, AKT1, PIK3R1, SOCS4, PCK2, MAPK8, PRKAA1, PRKAG1, MAPK1, CRKL, GSK3B, CBLB, FLOT1, TRIP10, RHOQ, PDPK1, TSC2, SOS1, CALM2, PPP1CA, PYGM, BAD, RPS6KB2, PPP1R3C, SORBS1
Terpenoid Backbone Biosynthesis	13	Down	0.02176993	PDSS1, PMVK, HMGCS2, FDPS, DHDDS, MVK, MVD, ACAT1, IDI1, HMGCS1, GGPS1, HMGCR, ACAT2
Melanogenesis	61	Down	0.02696552	FZD7, CREB1, WNT6, FZD5, PLCB1, PLCB4, GNAS, CREB3L1, NRAS, CAMK2D, GNAI3, PRKACB, CREB3, WNT4, DVL1, KIT, FZD1, GNAI1, FZD9, MITF, CREB3L2, TCF7L1, RAF1, KRAS, FZD4, WNT11, PRKCB, MAPK3, CALM3, PRKACA, ADCY7, CTNNB1, MAP2K1, GNAI2, PRKX, MAP2K2, DVL2, FZD2, CAMK2B, TCF7, PRKCA, ADCY3, CALM1, EDN1, WNT5A, CAMK2G, EDNRB, FZD6, EP300, ADCY6, WNT10B, MAPK1, DVL3, ADCY5, GSK3B, CREBBP, ADCY9, CALM2, GNAQ, TCF7L2, PLCB3
Fatty Acid Metabolism	29	Down	0.02696552	ALDH9A1, ACADL, ADH7, ADH5, HADH, ACADM, CPT2, HADHB, ACOX3, HADHA, ACADS, ALDH2, ACADSB, CPT1C, ECHS1, ACSL1, GCDH, ACAT1, ACSL4, ALDH3A2, ACADVL, ACOX1, ECI2, ECI1, ACAT2, ACAA2, ALDH7A1, CPT1A, ACSL5
Gap Junction	59	Down	0.03059318	TUBA4A, PLCB1, PLCB4, SRC, GNAS, TUBB4B, PDGFC, NRAS, GUCY1A3, GNAI3, PRKACB, PDGFRA, GNAI1, PRKG2, PDGFA, ITPR1, TUBA8, RAF1, KRAS, ITPR2, PRKCB, MAPK3, TJP1, PRKACA, ADCY7, TUBB3, PDGFD, MAP2K5, MAP2K1, GNAI2, PRKX, GJA1, MAP2K2, CDK1, GNA11, EGFR, MAPK7, PRKCA, GRB2, CSNK1D, ADCY3, SOS2, TUBB2A, TUBB2B, TUBA1C, PDGFB, ADCY6, TUBA1B, TUBA1A, MAPK1, ADCY5, ADCY9, ITPR3, SOS1, MAP3K2, PDGFRB, TUBB6, GNAQ, PLCB3