Supporting Material for

Folate-Dependent Thymidylate Synthesis Capacity Modifies *Apc*^{min}-Mediated Intestinal Cancer Risk in Mice

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Includes:

Tables S1-S2

Supporting Tables

Table S1. *Shmt1*-mediated changes in gene expression in colon tissue from mice fed the folate and chloline deficient diet for five weeks were evaluated by microarray analysis.

Predicted increases and decreases in gene expression are shown as *Shmt1*$^{-/+}$ relative to *Shmt1*$^{+/+}$ or *Shmt1*$^{-/-}$ relative to *Shmt1*$^{+/+}$. Of the genes predicted to have increased or decreased expression in response to *Shmt1* expression, nine were selected to be assessed by qRT-PCR (in bold, also see Table S4). However, only one gene tested (*Upp*) showed consistent differences in expression between mutant and wildtype animals. The microarray data presented in this publication have been deposited in NCBI's Gene Expression Omnibus (*1*) and are accessible through GEO Series accession number GSE14645.

ID	Gene	$\log_2$(*Shmt*$^{-/-}$/*Shmt1*$^{+/+}$)	$\log_2$(*Shmt1*$^{-/+}$/*Shmt1*$^{+/+}$)
1453887_a_at	**Tiam1**	0.922	0.628
1456134_x_at	**Yif1**	0.809	2.004
1427344_s_at	Rasd2	0.793	-0.469
1460004_x_at	Stx6	0.792	0.669
1448232_x_at	**Tuba6**	0.775	1.175
1427161_at	Cenpf	0.752	0.016
1460735_at	Svil	0.714	0.397
1455788_x_at		0.683	0.787
1425318_a_at	C030022K24Rik	0.667	0.337
1439377_x_at	**Cdc20**	0.660	0.106
1449237_at	Aloxe3	0.648	0.853
1421072_at	Irx5	0.623	0.631
1439167_at	Pecr	0.606	0.772
1449264_at	Syt11	0.550	0.876
1426294_at	Hapln1	0.548	0.374
1438006_at	4933439F18Rik	0.545	0.312
1448723_at	Rdh7	0.541	0.202
1450659_at	Rgs7	0.537	0.366
1436862_at	Doc2a	0.532	0.151
1437974_a_at	Hk1	0.511	0.106
1447926_at	Arl5	0.509	0.292
1424010_at	Mfap4	0.508	-0.301
1437526_x_at	Hnrpr	0.494	0.600

1427066_a_at	4933439F18Rik	0.489	0.355
1420667_at	Doc2b	0.470	0.257
1450591_at	Olfr154	0.463	0.417
1449075_at	4930539P14Rik	0.462	0.419
1428586_at	D7Ertd743e	0.460	0.727
1436236_x_at		0.455	0.178
1450920_at	Ccnb2	0.454	0.166
1417853_at	Clca1 /// Clca2	0.453	0.408
1451898_a_at	Sema6c	0.440	0.267
1437338_x_at		0.439	0.405
1438973_x_at	Gja1	0.433	0.578
1437837_x_at	Poldip3	0.424	0.713
1437463_x_at	Tgfbi	0.417	0.655
1426470_at	Tbp	0.415	0.752
1427509_at		0.413	0.325
1416839_at	Mut	0.405	0.208
1456100_at	LOC280621	0.399	-0.266
1451830_a_at	Spnb2	0.395	0.084
1417547_at	Sart3	0.393	0.055
1421922_at		0.392	0.071
1456250_x_at	Tgfbi	0.379	0.676
1438534_x_at	BC004004	0.377	0.512
1424844_at	1110030H02Rik	0.371	0.188
1425184_at	2810433K01Rik	0.366	0.709
1433909_at	Bk	0.361	0.271
1420757_at	Myf5	0.360	0.504
1439382_x_at	Ddr1	0.355	0.910
1452477_at	3110057O12Rik	0.349	0.286
1449864_at	Il4	0.345	0.684
1434599_a_at	Tjp2	0.344	0.015
1456013_x_at	Slc35a4	0.343	0.143
1455232_at	Cml2	0.341	0.641
1424611_x_at	Trub2	0.339	0.083
1449251_at	Ndph	0.335	0.847
1434589_x_at	Surf4	0.333	0.268
1422101_at	Tnfrsf23	0.331	0.935
1426810_at	Jmjd1a	0.329	0.295
1450941_at		0.326	0.441
1456730_x_at		0.322	0.269
1425038_at	Slc22a19	0.319	0.018
1437035_x_at	Rnf14	0.317	0.283
1418890_a_at	Rab3d	0.316	0.020
1450630_at	Qtrt1	0.316	0.305
1427948_a_at	Zfp99	0.315	0.561
1434134_at	Wdr42a	0.312	0.335
1449076_x_at	AL024210	0.308	0.684

1460364_at		0.307	0.168
1416265_at	Capn10	0.296	-0.090
1422412_x_at	Ear3	0.295	1.165
1451566_at	BC005471	0.292	0.086
1424117_at	BC056474	0.290	0.248
1422816_a_at	Mutyh	0.289	-0.037
1420883_at	Sln	0.287	-0.001
1425448_x_at	Atp6v0b	0.285	0.511
1460672_at	2410002F23Rik	0.281	0.404
1456598_at	D5Ertd577e /// LOC433920	0.279	0.544
1429043_at	Smndc1	0.278	0.385
1448814_at	Gab1	0.277	0.629
1451044_at	Sip1	0.277	0.223
1451453_at	Dapk2	0.277	-0.226
1451872_a_at	Neurl	0.276	0.347
1419817_s_at	D1Ertd161e	0.273	0.368
1424836_a_at	Clasp2	0.273	0.276
1454838_s_at	AW548124	0.272	0.597
1455941_s_at	Map2k5	0.270	0.173
1451522_s_at	Lrch4	0.269	0.355
1420083_at		0.269	0.380
1455747_at	Ggtla1	0.267	0.318
1424012_at	4930506L13Rik	0.266	0.249
1427983_at	Suhw3	0.264	0.439
1427129_a_at	Hnrpr	0.264	0.187
1438250_s_at	Taf9	0.262	0.286
1448002_x_at	2610001J05Rik	0.261	0.299
1456534_at		0.259	0.239
1422659_at	Camk2d	0.253	0.104
1416987_at	Elp4	0.253	0.468
1426595_at	Slc18a1	0.248	0.422
1437341_x_at	Cnp1	0.245	0.009
1455731_at	Slc29a3	0.244	0.112
1423278_at	Ptprk	0.237	0.168
1422050_at	Nkx1-2	0.234	0.480
1420483_at	**Cnnm3**	0.231	0.761
1417274_at	Snrpa	0.224	-0.041
1424238_at	Sirt7	0.223	0.118
1456462_x_at	Ppp1cb	0.220	0.558
1415898_at	Mgst1	0.209	0.260
1454604_s_at	Tm4sf12	0.209	0.548
1425486_s_at	Mtmr6	0.205	0.227
1436242_a_at	Cklf	0.205	0.152
1426856_at		0.202	0.535
1420741_x_at	2310069N01Rik	0.202	0.450
1418152_at	Nsbp1	0.199	0.222

1426840_at	Ythdf3	0.196	0.307
1438415_s_at	1300010K09Rik	0.191	0.263
1426208_x_at	Plagl1	0.183	0.371
1448672_a_at	Zfp289	0.175	0.059
1428772_at	Xpot	0.173	-0.261
1423948_at	Bag2	0.170	-0.741
1425198_at	Ptpn2	0.166	0.609
1434510_at	1810018P12Rik	0.165	0.129
1419154_at	Tmprss2	0.165	-0.188
1434515_at	Ncoa1	0.164	0.346
1452243_at	Kcnj14	0.162	-0.624
1418068_at		0.161	-0.664
1438511_a_at	1190002H23Rik	0.160	0.647
1416832_at	Slc39a8	0.160	0.377
1429491_s_at	Rif1	0.159	0.277
1419945_s_at	Rab2	0.156	0.203
1448461_a_at	1500006O09Rik	0.152	0.193
1438992_x_at	Atf4	0.151	0.543
1450765_a_at	Pde6h	0.149	0.599
1426728_x_at	Ptdss2	0.149	0.231
1428585_at	Actn1	0.146	0.003
1437724_x_at	Pitpnm1	0.146	0.211
1455912_x_at		0.145	0.156
1426593_a_at	Fbxo22	0.144	0.403
1421228_at	Ccl7	0.143	0.780
1417404_at	Elovl6	0.143	-0.268
1433527_at	Ireb2	0.138	0.289
1437290_at	1110001C20Rik	0.134	0.152
1434148_at	Tcf4	0.134	0.216
1451070_at	Gdi1	0.129	-0.071
1424458_at	Jmjd2c	0.127	0.279
1460228_at	Usf2	0.127	0.467
1420618_at	Cpeb4	0.127	0.298
1425680_a_at	Btrc	0.126	0.027
1415800_at	Gja1	0.125	0.328
1424850_at	Map3k1	0.125	0.211
1453207_at	Pcp2	0.121	0.109
1453198_at	MGI:3028594	0.111	0.469
1428988_at	Abcc3	0.110	-0.029
1451993_at	9130404D08Rik	0.108	0.522
1424211_at	5730438N18Rik	0.106	0.412
1456195_x_at	Itgb5	0.106	-0.263
1415688_at	Ube2g1	0.103	0.280
1452007_at	Sybl1	0.101	0.257
1417719_at	Sap30	0.100	-0.257
1428099_a_at	Sfrs1	0.097	0.225

1460217_at	Plfr	0.096	0.392
1429620_at	8430406I07Rik	0.094	0.610
1448101_s_at	Trim27	0.093	0.260
1451526_at	Arhgap12	0.090	0.245
1452291_at	Centd1	0.089	0.234
1427949_at	Zfp294	0.086	0.312
1425516_at	Ogt	0.086	0.223
1429568_x_at	2510010F15Rik	0.083	-0.214
1423458_at	Slc35a5	0.080	0.348
1436900_x_at	Leprot	0.079	0.158
1437302_at	Adrb2	0.078	0.665
1434121_at	Lgi4	0.072	0.257
1428094_at	Lamp2	0.071	0.324
1454738_x_at	Pex6	0.070	-0.164
1438808_at		0.065	0.649
1455932_at		0.060	0.322
1423902_s_at	Arhgef12	0.055	0.218
1450128_at	Pla2g2a	0.053	-0.289
1449334_at	Timp3	0.051	0.629
1422912_at	Bmp4	0.049	0.276
1448658_at	Sart1	0.048	-0.347
1450136_at	Cd38	0.038	0.463
1452735_at	Pcnp	0.037	0.116
1422278_at	Drd3	0.037	0.367
1460634_at	Ralgds	0.037	-0.340
1437687_x_at	Fkbp9	0.037	-0.338
1425725_s_at	Ppp2r5c	0.035	0.438
1426873_s_at	Jup	0.026	0.122
1419089_at	Timp3	0.020	0.494
1417751_at	Stk10	0.012	-0.222
1416458_at	Arf2	0.012	-0.209
1426462_at	Gphn	0.012	-0.212
1417917_at	Cnn1	0.006	-0.641
1429643_a_at	Pde1c	0.003	0.214
1417272_at	9130005N14Rik	0.000	-0.285
1420549_at	Gbp1	-0.003	-0.551
1421877_at	Mapk9	-0.012	-0.320
1424373_at	Armcx3	-0.016	-0.235
1419063_at	Ugt8	-0.018	0.676
1428319_at	Pdlim7	-0.020	-0.498
1448406_at	Cri1	-0.024	0.273
1419138_at	B3galt4	-0.027	-0.180
1426043_a_at	Capn3	-0.027	-0.368
1450269_a_at	Pfkl	-0.031	-0.284
1454670_at	Rere	-0.031	0.189
1417698_at	Gtf2f1	-0.033	-0.222

1418312_at	Zfp276	-0.034	-0.423
1422524_at	Abcb6	-0.037	-0.192
1426752_at	Phf17	-0.038	0.150
1452368_at	Bcr	-0.040	-0.242
1421837_at	Rps18	-0.041	0.317
1424572_a_at	H2afy	-0.044	-0.147
1424090_at	Sdcbp2	-0.063	-0.295
1426716_at	Tdrd7	-0.069	-0.456
1422909_at	Smc6l1	-0.072	0.254
1460370_at	Top1mt	-0.074	-0.188
1437712_x_at	Exosc4	-0.074	-0.222
1422437_at		-0.076	-0.754
1425365_a_at	Cyp2d13	-0.080	-1.005
1452035_at	Col4a1	-0.081	-0.487
1423075_at	Lman2	-0.082	-0.387
1433467_at	Slc7a6	-0.083	-0.391
1436542_at	Ptger1	-0.086	-0.233
1451271_a_at	Acat1	-0.088	-0.212
1422579_at	Hspe1	-0.093	-0.192
1422351_at	Olfr480	-0.102	-0.456
1416431_at	Tubb6	-0.104	-0.558
1418430_at	Kif5b	-0.105	-0.227
1432263_a_at	Cox7a2l	-0.107	0.159
1423669_at	Col1a1	-0.108	-0.510
1427495_at	Scn7a	-0.109	0.696
1452540_a_at	Hist1h2bc /// Hist1h2be /// Hist1h2bl /// Hist1h2bm /// Hist1h2bp /// LOC432734	-0.109	-0.214
1416351_at	Map2k1	-0.110	-0.243
1423771_at	Prkcdbp	-0.111	-0.407
1451057_x_at		-0.119	-0.086
1431274_a_at	Hspa9a	-0.120	0.323
1416762_at	S100a10	-0.121	-0.108
1452081_a_at	9130017N09Rik	-0.123	-0.310
1427935_at	2610208E05Rik	-0.123	-0.210
1438477_a_at	Mcee	-0.124	-0.154
1451450_at	2010011I20Rik	-0.125	-0.128
1417143_at	Edg2	-0.126	0.098
1453033_at	2010003O02Rik	-0.126	0.411
1460323_at	Tars	-0.127	-0.228
1423617_at	2610019N19Rik	-0.128	-0.302
1423304_a_at	Rnf111	-0.130	0.036
1451687_a_at		-0.130	-0.203
1416109_at	Fuca1	-0.134	0.031
1418177_at	Gabrg2	-0.137	0.546
1426912_at	Rfwd2	-0.139	-0.392
1424303_at	AV216087	-0.139	0.551

1424408_at	Lims2	-0.140	-0.405
1423505_at	Tagln	-0.141	-0.240
1449517_at	Qpctl	-0.143	-0.458
1430371_x_at	Eif2ak3	-0.147	0.215
1453096_x_at	Rpl27	-0.148	-0.094
1435231_at	Coq4	-0.150	-0.193
1416064_a_at	Hspa5	-0.153	-0.391
1449477_s_at	Slc2a10	-0.153	-0.354
1423099_a_at	Mettl3	-0.155	-0.227
1426793_a_at	Rpl14	-0.159	-0.098
1417259_a_at	Capzb	-0.171	-0.139
1417947_at	Pcna	-0.174	-0.200
1448861_at	Traf5	-0.175	-0.312
1453030_at	Rnf184	-0.182	-0.282
1431422_a_at	Dusp14	-0.186	-0.217
1450120_at	Scn1a	-0.191	-0.236
1420455_at	Gcm2	-0.217	-0.350
1460639_a_at	Atox1	-0.222	0.005
1420451_at	Accn5	-0.230	0.579
1423642_at	4930542G03Rik	-0.230	-0.178
1452249_at	Prickle1	-0.241	-0.171
1417189_at	Psme2	-0.242	-0.220
1447961_s_at	Mrpl38	-0.243	-0.410
1423895_a_at	Cugbp2	-0.243	0.268
1453722_s_at	Sfrs1	-0.244	-0.236
1427209_at	Baz2a	-0.245	-0.490
1429294_at	Trip13	-0.245	-0.442
1427532_at	Tcrim	-0.250	0.245
1424409_at	Cldn23	-0.253	-0.297
1420992_at	Ankrd1	-0.256	-0.717
1448961_at	Plscr2	-0.262	0.219
1452279_at	Pfc	-0.264	-0.027
1416827_at	Tbxas1	-0.266	-0.532
1437589_x_at	2810038K19Rik	-0.267	-0.268
1448186_at	**Pnliprp2**	-0.267	-1.295
1424693_at	4933407N01Rik	-0.278	-0.516
1422380_at	V1rb5	-0.280	-0.135
1417381_at	C1qa	-0.283	-0.022
1420875_at		-0.286	-0.122
1426871_at	Fbxo33	-0.306	0.005
1426292_at	6330581L23Rik	-0.308	-0.499
1434033_at	Tle1	-0.309	-0.459
1423587_a_at	Exosc10	-0.313	-0.443
1415861_at	Tyrp1	-0.319	0.075
1428580_at	Blvra	-0.331	-0.190
1419035_s_at	Csnk2a1	-0.333	-0.053

1448925_at	Twist2	-0.338	-0.036
1425719_a_at	Nmi	-0.367	-0.154
1450933_at	Pde7a	-0.368	-0.057
1451781_at	Nfatc2ip	-0.370	-0.052
1421775_at	Fcer1a	-0.384	0.080
1416856_at	3230401D17Rik	-0.389	0.058
1417804_at	Rasgrp2	-0.392	-0.319
1452348_s_at		-0.398	0.110
1453913_a_at	Tap2	-0.401	-0.279
1426147_s_at	Cldn10	-0.401	0.404
1442344_at		-0.402	-0.145
1418950_at	Drd2	-0.406	-0.343
1453184_at	2310040C09Rik	-0.412	-0.417
1425644_at	Lepr	-0.418	0.725
1431395_a_at	Iqgap1	-0.422	-0.267
1427987_at	Safb2	-0.423	-0.164
1452432_at	Tfpi	-0.428	-0.090
1425396_a_at	Lck	-0.432	-0.111
1422611_s_at	Igf2bp3	-0.433	-0.073
1448511_at	Ptprcap	-0.433	0.083
1453865_a_at	DXImx46e	-0.436	-0.360
1429247_at	Anxa6	-0.459	-0.155
1448160_at	Lcp1	-0.478	-0.223
1435477_s_at	Fcgr2b	-0.498	-0.113
1450361_at	Prop1	-0.552	0.010
1422904_at	Fmo2	-0.577	0.683
1426589_at	Gab3	-0.621	-0.042
1417620_at	Rac2	-0.650	-0.493
1453086_at	6330408A02Rik	-0.669	-0.620
1418194_at	Galnt10	-0.698	-0.503
1423562_at	ORF31	-0.700	-0.544
1420464_s_at	Pira1 /// Pira3 /// Pira4 /// Pira6 /// Pirb	-0.716	-0.023
1420577_at	Aicda	-0.761	-0.492
1425156_at	9830147J24Rik	-0.769	-0.657
1427503_at	AI324046	-0.771	-1.470
1450118_a_at	Tnnt3	-0.777	-0.743
1420819_at		-0.807	0.160
1419192_at	Il4i1	-0.809	-0.689
1425178_s_at	Shmt1	-0.823	-0.380
1427351_s_at	Igh-6	-0.841	-1.319
1425179_at	Shmt1	-0.915	-0.245
1419762_at	Ubd	-0.931	-0.180
1448562_at	**Upp1**	-0.946	-0.412
1448479_at	**Psmd3**	-0.967	-0.814
1449475_at	Atp12a	-0.972	-0.090
1419178_at	Cd3g	-1.011	-0.226

1417995_at	Ptpn22	-1.175	-0.469
1425233_at	2210407C18Rik	-1.227	-0.514
1423467_at	Ms4a4b	-1.342	-0.431
1435865_at	**Hist3h2a**	-1.604	-0.221
1419060_at	Gzmb	-1.954	-0.815
1425177_at	Shmt1	-2.271	-0.957
1460629_at		-3.630	-0.655

Table S2. Quantitative RT-PCR verification of the microarray analysis. Nine genes were selected from the microarray results to be tested for changes in gene expression by quantitative RT-PCR. The gene tested, Affymetrix identification number, primer sequences, and universal probe library numbers are indicated.

Gene	Affymetrix ID	Primer1	Primer2	Universal Probe Library No.
Tiam1	1453887_a_at	ggaatatttgatgacactgttcca	tggacactgggtaagaccact	7
Yif1	1456134_x_at	accattcggcatatggagtc	tgtatcatcgaagagtggagga	50
Cdc20	1439377_x_at	acatcaaggcgctgtcaag	aatgtgccggtcactggt	63
Upp1	1448562_at	catcaccatcatccgcatt	ctgcgtgatgacaacagagc	50
Psmd3	1448479_at	gatgaacagcaagcgctaca	gcggttctgagtgctgatct	98
Hist3h2a	1435865_at	tggagggaggtgtactaggg	ttgggtagtggttgtgcattt	66
Tuba6	1448232_x_at	gttttcgcggaccacttc	attgccgatctggacacc	58
Cnnm3	1420483_at	tcttcaacgataccaaactggac	aatggccaggtgggactt	25
Pnliprp2	1448186_at	cacaaacgagaatccaaacaac	aagttggaagcattgatggtg	53

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