

Table S9.Cluster\_MDP-ADIPOR2-Sample\_AS vs Con. Path-Analysis

## UpPath\_Result

PathwayID	PathwayTerm	QGeneInPath	QGeneSum	BGeneInPath	BGeneSum	P-Value	FDR	Enrichment	(-log10P)
Path:05134	Legionellosis	9	79	57	8039	3.29697E-09	5.58194E-07	4	8.481884851
Path:04978	Mineral	9	79	60	8039	5.29094E-09	5.58194E-07	15.26392405	8.276467351
Path:03040	Spliceosome	10	79	146	8039	1.4158E-06	9.95783E-05	6.969828334	5.848996606
	Non-alcoholic								
Path:04932	fatty liver	9	79	155	8039	1.89848E-05	0.001001446	5.908615762	4.721594873
Path:04657	IL-17 signaling	7	79	93	8039	3.25116E-05	0.001371988	7.659316728	4.487962271
Path:05417	Lipid and	10	79	214	8039	4.19335E-05	0.001474663	4.755116527	4.377438495
Path:05162	Measles	8	79	139	8039	6.05832E-05	0.00165789	5.856661506	4.217647912
	NF-kappa B								
Path:04064	signaling	7	79	103	8039	6.28584E-05	0.00165789	6.915693745	4.201636784
Path:04668	TNF signaling	7	79	112	8039	0.00010709	0.002328021	6.359968354	3.970251542
	Kaposi								
	sarcoma-								
Path:05167	associated	9	79	194	8039	0.000110333	0.002328021	4.720801253	3.957295589
Path:05323	Rheumatoid	6	79	91	8039	0.000255191	0.004895036	6.709417165	3.593133889
Path:05140	Leishmaniasis	5	79	75	8039	0.000813596	0.014027736	6.783966245	3.089591046
Path:05133	Pertussis	5	79	76	8039	0.000864268	0.014027736	6.694703531	3.063351521
	Protein								
Path:04141	processing in	7	79	170	8039	0.001347567	0.018398782	4.190096798	2.870449538
Path:05020	Prion disease	9	79	273	8039	0.001350732	0.018398782	3.354708583	2.869430755
	Human T-cell								
Path:05166	leukemia virus	8	79	221	8039	0.001399563	0.018398782	3.683601581	2.854007473
	Chemical								
Path:05208	carcinogenesis -	8	79	223	8039	0.001482366	0.018398782	3.650564795	2.82904447
Path:05222	Small cell lung	5	79	92	8039	0.002036329	0.023564761	5.530407265	2.691152017
Path:04210	Apoptosis	6	79	136	8039	0.002121945	0.023564761	4.489389427	2.673265809
Path:04936	Alcoholic liver	6	79	142	8039	0.002637192	0.027822376	4.299696916	2.578858244
	Longevity								
	regulating								
Path:04213	pathway -	4	79	62	8039	0.00312936	0.031442613	6.565128624	2.504544525

	Epstein-Barr									
Path:05169	virus infection	7	79	201	8039	0.003482901	0.033404184	3.543862964	2.45805891	
Path:04218	Cellular	6	79	156	8039	0.004201181	0.038541273	3.91382668	2.376628562	
Path:05012	Parkinson	8	79	266	8039	0.004421472	0.038766165	3.0604359	2.354433169	
Path:05145	Toxoplasmosis	5	79	111	8039	0.004593147	0.038766165	4.583760976	2.33788961	
Path:05164	Influenza A	6	79	170	8039	0.006366471	0.051666359	3.591511541	2.196101249	
	Antigen									
Path:04612	processing and	4	79	77	8039	0.006795754	0.053107563	5.286207463	2.167762319	
	NOD-like									
Path:04621	receptor	6	79	182	8039	0.00879109	0.065950059	3.354708583	2.055957271	
	Amyotrophic									
Path:05014	lateral sclerosis	9	79	364	8039	0.009064226	0.065950059	2.516031437	2.042669267	
Path:05135	Yersinia	5	79	137	8039	0.010994602	0.074654799	3.713850134	1.95882048	
	Transcriptional									
Path:05202	misregulation	6	79	192	8039	0.011269166	0.074654799	3.179984177	1.948108211	
	Estrogen									
Path:04915	signaling	5	79	138	8039	0.011322055	0.074654799	3.686938176	1.946074744	
Path:05144	Malaria	3	79	49	8039	0.012167501	0.077798265	6.230173082	1.914798602	
Path:05010	Alzheimer	9	79	384	8039	0.012592954	0.07815039	2.384988133	1.89987239	
Path:05200	Pathways in	11	79	530	8039	0.013993744	0.084362282	2.111989491	1.854066091	
Path:05142	Chagas disease	4	79	101	8039	0.017190096	0.096093046	4.030078957	1.764721693	
	Pathways of									
	neurodegenerati									
Path:05022	on - multiple	10	79	476	8039	0.017577745	0.096093046	2.137804489	1.755036839	
	Toll-like									
Path:04620	receptor	4	79	102	8039	0.017761274	0.096093046	3.990568379	1.750525887	
Path:05146	Amoebiasis	4	79	102	8039	0.017761274	0.096093046	3.990568379	1.750525887	
	C-type lectin									
Path:04625	receptor	4	79	104	8039	0.018938938	0.099902898	3.91382668	1.722644376	
Path:04659	Th17 cell	4	79	107	8039	0.020794661	0.107016428	3.804093221	1.682048149	
	Human									
Path:05163	cytomegaloviru	6	79	223	8039	0.022047104	0.110760449	2.737923597	1.656648459	

	Cytosolic									
Path:04623	DNA-sensing	3	79	62	8039	0.02281357	0.111945656	4.923846468	1.641806756	
Path:04010	MAPK	7	79	294	8039	0.025011716	0.119942548	2.422845087	1.601856507	
Path:05152	Tuberculosis	5	79	178	8039	0.030415112	0.140236501	2.858412744	1.516910581	
	Prolactin									
Path:04917	signaling	3	79	70	8039	0.031237514	0.140236501	4.361121157	1.50532353	
	Epithelial cell									
	signaling in									
Path:05120	Helicobacter	3	79	70	8039	0.031237514	0.140236501	4.361121157	1.50532353	
Path:04115	p53 signaling	3	79	73	8039	0.034763154	0.151899255	4.181897	1.458880831	
Path:05132	Salmonella	6	79	249	8039	0.035275183	0.151899255	2.452035992	1.45253073	
Path:05214	Glioma	3	79	75	8039	0.037223588	0.157083542	4.070379747	1.429181766	
Path:05220	Chronic	3	79	76	8039	0.038486597	0.159228861	4.016822119	1.414690491	
Path:04068	FoxO signaling	4	79	131	8039	0.039642913	0.160858745	3.107160112	1.401834436	
Path:00190	Oxidative	4	79	134	8039	0.042511434	0.169243635	3.037596826	1.371494241	
	Escherichia coli									
Path:05130	infection	5	79	197	8039	0.04405341	0.172134621	2.582728266	1.356020468	

## DownPath\_Result

PathwayID	PathwayTerm	QGeneInPath	QGeneSum	BGeneInPath	BGeneSum	P-Value	FDR	Enrichment (-log10P)	
Path:05415	Diabetic cardiomyopathy	24	317	203	8039	1.28982E-06	0.000224506	2.998181846	5.889470847
Path:04145	Phagosome	20	317	150	8039	1.55368E-06	0.000224506	3.38128286	5.808639535
Path:05169	Epstein-Barr virus infection	23	317	201	8039	3.79636E-06	0.000365716	2.901847231	5.420633152
Path:05016	Huntington disease	29	317	306	8039	9.44946E-06	0.000682723	2.403362817	5.024593106
Path:05132	Salmonella infection	25	317	249	8039	1.49177E-05	0.000862246	2.546146732	4.826296788
Path:05012	Parkinson disease	24	317	266	8039	0.000123819	0.005156187	2.288086146	3.907214394
Path:00030	Pentose phosphate pathway	7	317	30	8039	0.000128988	0.005156187	5.917245005	3.889450591
Path:01200	Carbon metabolism	14	317	115	8039	0.000160019	0.005156187	3.087258264	3.795829294
Path:05205	Proteoglycans in cancer	20	317	205	8039	0.000160573	0.005156187	2.47410941	3.794326715
Path:05221	Acute myeloid leukemia	10	317	67	8039	0.000264761	0.007651595	3.785018127	3.577145851
Path:03050	Proteasome	8	317	46	8039	0.000376606	0.009894479	4.410368948	3.424112225
Path:04110	Cell cycle	14	317	126	8039	0.000419175	0.010095136	2.817735717	3.377604403
Path:05163	Human cytomegalovirus infection	20	317	223	8039	0.000490598	0.010906377	2.274405511	3.309273975
Path:05010	Alzheimer disease	29	317	384	8039	0.000548036	0.011313038	1.915179745	3.26119056
Path:00190	Oxidative phosphorylation	14	317	134	8039	0.000782744	0.015080869	2.649512689	3.106380228

Path:04141	Protein processing in endoplasmic reticulum	16	317	170	8039	0.00106394	0.017808616	2.386787901	2.973082851
Path:05020	Prion disease	22	317	273	8039	0.001111917	0.017808616	2.043632498	2.953927489
Path:05014	Amyotrophic lateral sclerosis	27	317	364	8039	0.001114629	0.017808616	1.881070822	2.952869489
Path:00010	Glycolysis / Gluconeogenesis	9	317	67	8039	0.001170809	0.017808616	3.406516314	2.931514078
Path:05161	Hepatitis B	15	317	162	8039	0.001781639	0.025259714	2.348113097	2.749180344
Path:00480	Glutathione metabolism	8	317	58	8039	0.001835481	0.025259714	3.497878821	2.736250121
Path:05146	Amoebiasis	11	317	102	8039	0.002179088	0.028625286	2.734861137	2.661725322
Path:03030	DNA replication	6	317	36	8039	0.002566717	0.032251355	4.226603575	2.590622045
Path:05203	Viral carcinogenesis	17	317	204	8039	0.002821768	0.033084168	2.113301788	2.549478695
Path:05220	Chronic myeloid leukemia	9	317	76	8039	0.002861952	0.033084168	3.003113067	2.54333762
Path:04613	Neutrophil extracellular trap formation	16	317	190	8039	0.003352102	0.037259903	2.13554707	2.474682778
Path:05170	Human immunodeficiency virus 1 infection	17	317	210	8039	0.003806954	0.040748505	2.052921737	2.419422404
Path:05167	Kaposi sarcoma-associated herpesvirus infection	16	317	194	8039	0.004115632	0.0424792	2.091515171	2.385563482

Path:04142	Lysosome	12	317	128	8039	0.004514841	0.04499273	2.377464511	2.345357504
	Relaxin signaling pathway								
Path:04926	Relaxin signaling pathway	12	317	129	8039	0.004806953	0.046054117	2.359034554	2.318130147
Path:03040	Spliceosome	13	317	146	8039	0.004940061	0.046054117	2.258048485	2.30626769
	Human papillomavirus infection								
Path:05165	Human papillomavirus infection	23	317	331	8039	0.005757318	0.051995774	1.762148923	2.239779818
	Pathways of neurodegeneration - multiple diseases								
Path:05022	Pathways of neurodegeneration - multiple diseases	30	317	476	8039	0.007065185	0.06187389	1.59829547	2.150876479
	Platinum drug resistance								
Path:01524	Platinum drug resistance	8	317	73	8039	0.007734679	0.065744773	2.779136597	2.111557695
	Cellular senescence								
Path:04218	Cellular senescence	13	317	156	8039	0.008537027	0.070491451	2.113301788	2.068693346
Path:05160	Hepatitis C	13	317	157	8039	0.008987641	0.070869236	2.099841267	2.046354284
	Biosynthesis of amino acids								
Path:01230	Biosynthesis of amino acids	8	317	75	8039	0.009073224	0.070869236	2.705026288	2.042238368
	HIF-1 signaling pathway								
Path:04066	HIF-1 signaling pathway	10	317	109	8039	0.010623661	0.080795739	2.326570775	1.973725788
Path:04510	Focal adhesion	15	317	200	8039	0.012502126	0.092643957	1.901971609	1.903016138
Path:05215	Prostate cancer	9	317	97	8039	0.01400437	0.099974694	2.352954568	1.853736423
	FoxO signaling pathway								
Path:04068	FoxO signaling pathway	11	317	131	8039	0.014183261	0.099974694	2.129433862	1.848223902
	Chemical carcinogenesis - reactive oxygen species								
Path:05208	Chemical carcinogenesis - reactive oxygen species	16	317	223	8039	0.014920598	0.102667921	1.819524409	1.826213785
Path:05142	Chagas disease	9	317	101	8039	0.017863563	0.120059761	2.259768248	1.748031911
	Non-alcoholic fatty liver disease								
Path:04932	Non-alcoholic fatty liver disease	12	317	155	8039	0.019287666	0.126684894	1.963325532	1.714720334

	Central carbon metabolism in									
Path:05230	cancer	7	317	70	8039	0.019839484	0.127413573	2.535962145	1.702469635	
Path:04144	Endocytosis	17	317	252	8039	0.021358694	0.130197887	1.710768114	1.670425311	
Path:04216	Ferroptosis	5	317	41	8039	0.021624563	0.130197887	3.092636762	1.665052668	
Path:05219	Bladder cancer	5	317	41	8039	0.021624563	0.130197887	3.092636762	1.665052668	
	PI3K-Akt signaling pathway									
Path:04151	pathway	22	317	354	8039	0.022773244	0.134315661	1.576021672	1.642575108	
Path:05152	Tuberculosis	13	317	178	8039	0.023500953	0.135573725	1.852107185	1.628914527	
Path:05134	Legionellosis	6	317	57	8039	0.024029537	0.135573725	2.669433837	1.619254603	
	Spinocerebellar ataxia									
Path:05017	ataxia	11	317	142	8039	0.024393888	0.135573725	1.964477718	1.61271897	
	Osteoclast differentiation									
Path:04380	differentiation	10	317	126	8039	0.026826669	0.146281268	2.012668369	1.571433256	
	Human T-cell leukemia virus 1 infection									
Path:05166	1 infection	15	317	221	8039	0.028183855	0.150835815	1.721241275	1.549999608	
	Citrate cycle (TCA cycle)									
Path:00020	(TCA cycle)	4	317	30	8039	0.028961736	0.15218076	3.38128286	1.538175404	
	Pancreatic cancer									
Path:05212	cancer	7	317	76	8039	0.029676479	0.153151827	2.335754607	1.527587634	
	Antigen processing and presentation									
Path:04612	presentation	7	317	77	8039	0.031586366	0.160148419	2.305420132	1.500500331	
	Natural killer cell mediated cytotoxicity									
Path:04650	cytotoxicity	10	317	130	8039	0.03237023	0.161293041	1.950740112	1.489854219	
Path:05131	Shigellosis	16	317	247	8039	0.034771584	0.170321824	1.642728515	1.458775531	
	Leukocyte transendothelial migration									
Path:04670	migration	9	317	114	8039	0.03572319	0.172066701	2.002075378	1.447049761	

Path:00983	Drug metabolism - other enzymes	7	317	80	8039	0.037805112	0.179109466	2.218966877	1.422449468
Path:03410	Base excision repair	4	317	33	8039	0.039466675	0.183965629	3.073893509	1.403769463
Path:04714	Thermogenesis	15	317	232	8039	0.040708336	0.186741416	1.639630697	1.390316645
Path:05144	Malaria	5	317	49	8039	0.042737495	0.190017478	2.587716475	1.369190936
Path:00600	Sphingolipid metabolism	5	317	49	8039	0.042737495	0.190017478	2.587716475	1.369190936
Path:05110	Vibrio cholerae infection	5	317	50	8039	0.046017549	0.201501087	2.535962145	1.337076513
Path:05162	Measles	10	317	139	8039	0.04768525	0.205687124	1.824433198	1.321615934