Supplemental Fig. S1. Classification of the TCGA human LGGs.

Supplemental Fig. S2.
Visualization of gene ontology categories in a two dimensional scatterplot, derived by applying multidimensional scaling to a matrix of the GO terms' semantic similarities. The size of the bubble indicates the frequency of the GO term whereas the color of the bubble indicates the p-value.

Supplemental Fig. S3. muIDH1-expressing mouse gliomas.
(A) The cartoon describes preparing wtIDH1 and muIDH1 gliomas. (B) and (C) Tumor genotyping. Tumor DNA was isolated from control gliomas (lack of wtIDH1 and muIDH1), wtIDH1 gliomas, and muIDH1 gliomas. Then, a gene locus containing IDH1 R132H mutation site was amplified using PCR, and PCR products were analyzed in a 2% agarose gel. Due to the absence of human IDH1 in the control DNA, the product band was missing. DNA bands were then cut and DNA was extracted for sequencing to genotype IDH1 mutation status. muIDH1 tumor DNA had the same mutation as the RCAS-muIDH1-H1-shP53 vector

Supplemental Fig. S4. Immunohistochemistry of Ink4a/Arf-/- muIDH1 and wtIDH1 gliomas for Olig2, Ki67, CD31 (n = 3 for each subtype).

Supplemental Fig. S5. Immunohistochemistry using 5-mc antibody. The different pictures represent two different mice in each group.

Supplemental Fig. S6. REVIGO plots using upregulated (A) and downregulated (B) genes in muIDH1 mouse gliomas.

Supplemental Fig.S7 Representative gating FACS plots to identify each immune cell type in mouse brain tumors.

Supplemental Fig. S8 Gene expressions of CCL-2, CXCL-2, and C5 in muIDH1 human glioma (TS603) relative to wtIDH1 human glioma cells (U3039, U3046, and U3065) *in vitro*. Error bars show the SD.

Supplemental Fig. S9. (A) Schedule for the antibody treatment for the neutrophil depletion in wtIDH1 and muIDH1 glioma-bearing mice. (B) Flow analysis of peripheral blood showing the depletion of Ly6G+ neutrophils in the treatment group (1A8) compared to the isotype control group (2A8). (D) Ntva_Ink4a/Arf+/- mice with wtIDH1 and muIDH1 gliomas were treated with an anti-Ly6g (1A8) or isotype control (2A3) antibody to deplete the neutrophil populations. We observed no significant effect on muIDH1 tumors, however saw a significant survival benefit for wtIDH1 tumors.

Supplemental Table S1. Distribution of glioma grades among the three subtypes (wtIDH1, muIDH1 OD, muIDH1 AS) in the TCGA samples analyzed

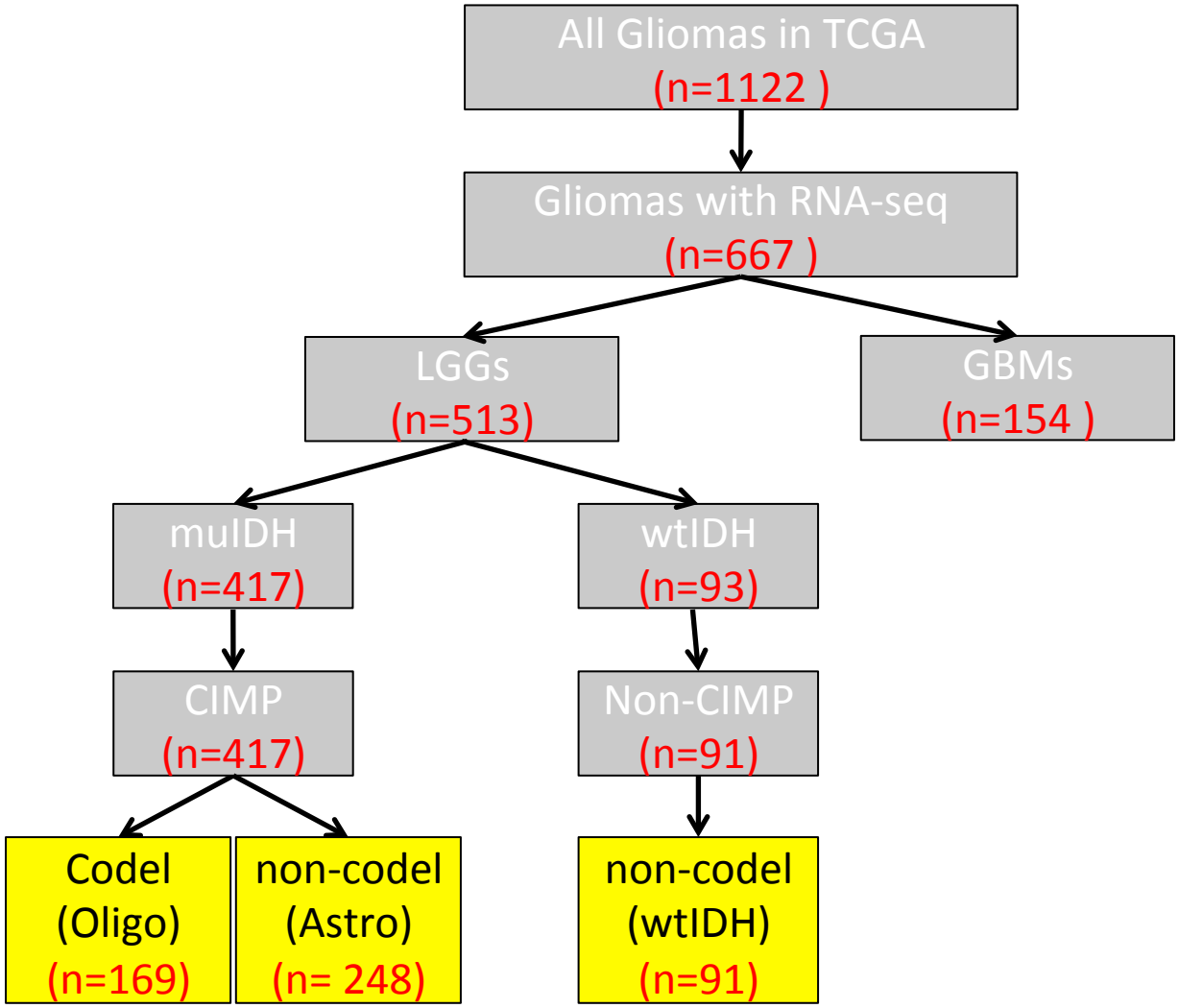
Supplemental Table S2. List of GO terms associated with upregulated genes in muIDH1 human LGG.

Supplemental Table S3. List of GO terms associated with downregulated genes in muIDH1 human LGG.

Supplemental Table S4. List of GO terms associated with downregulated genes overlapping between human and mouse data.

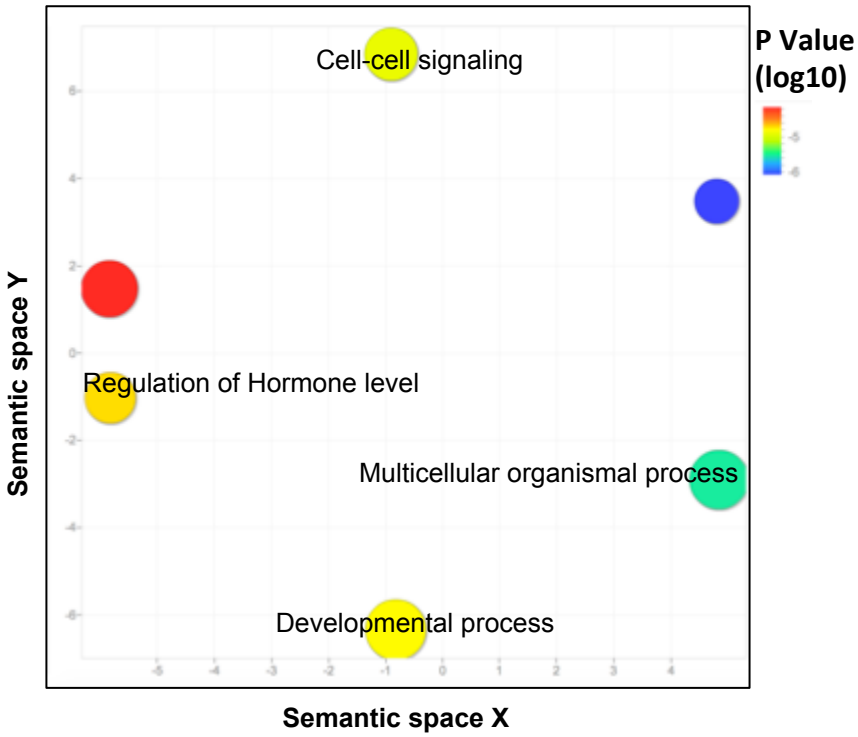
Supplemental Table S5. List of dye-conjugated antibodies used for mouse immune cells.

GENESDEV/2016/294991_Amankulor_Supplementary Fig. 1



GENESDEV/2016/294991_Amankulor_Supplementary Fig. 2

A



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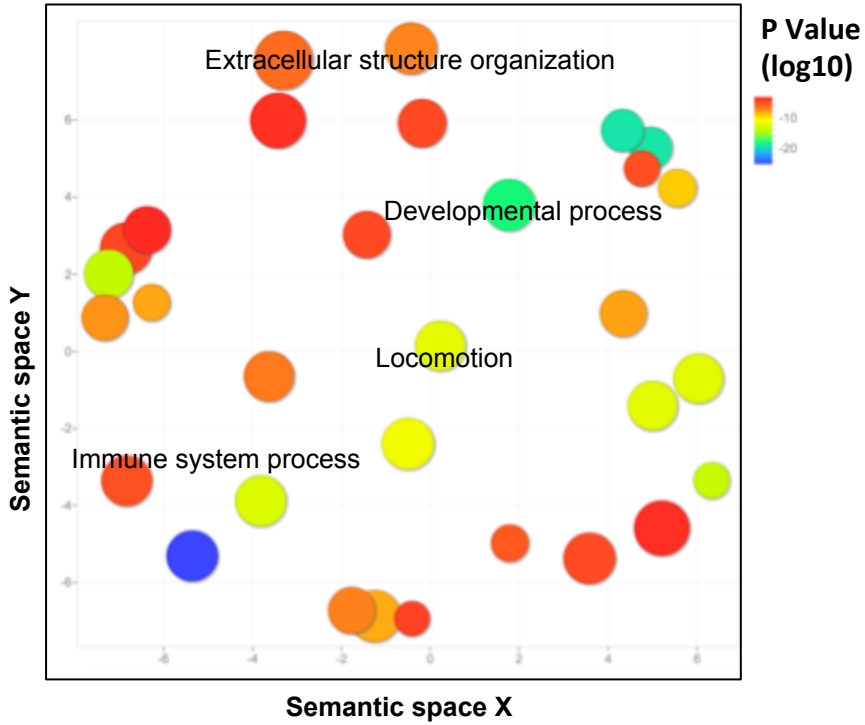
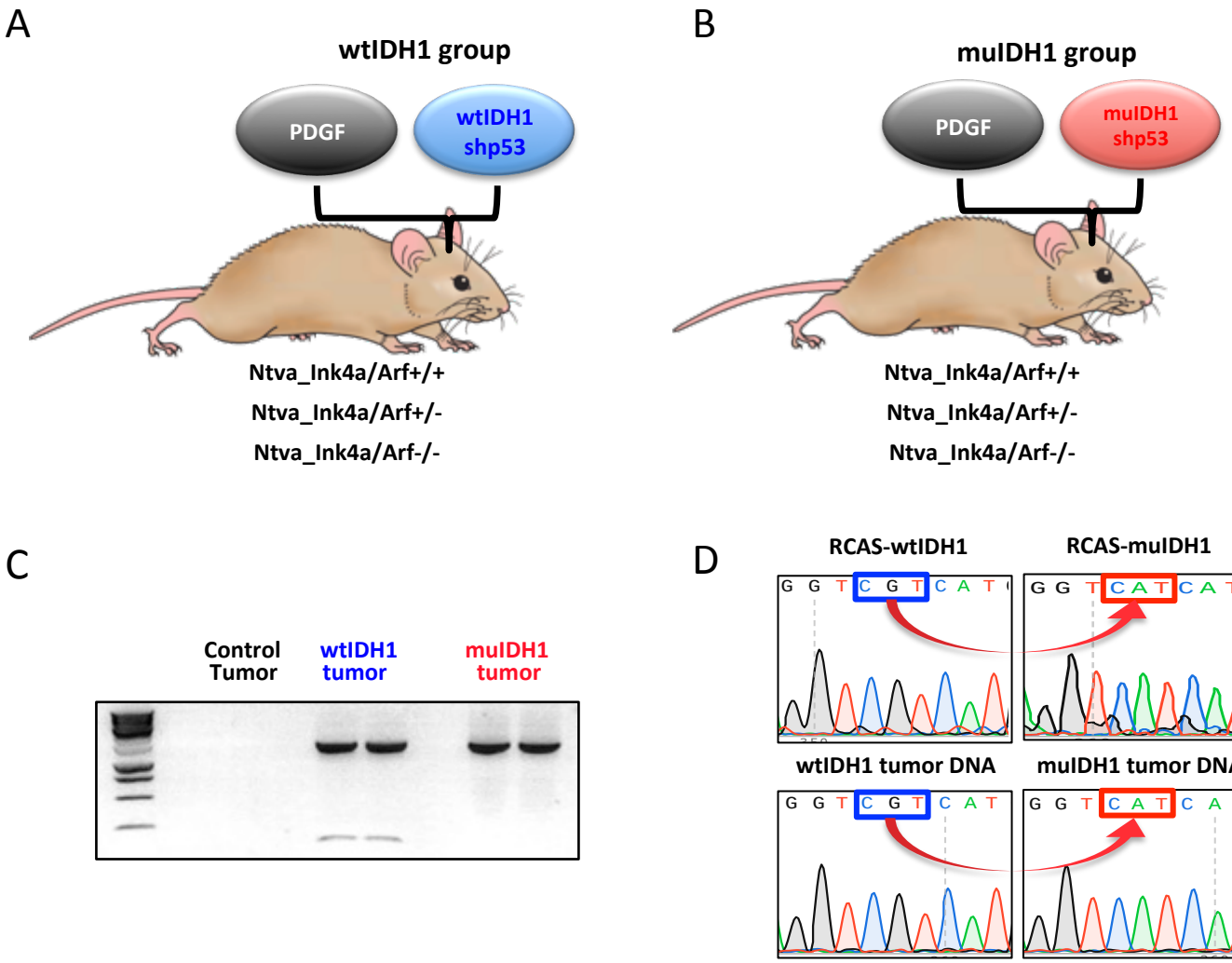
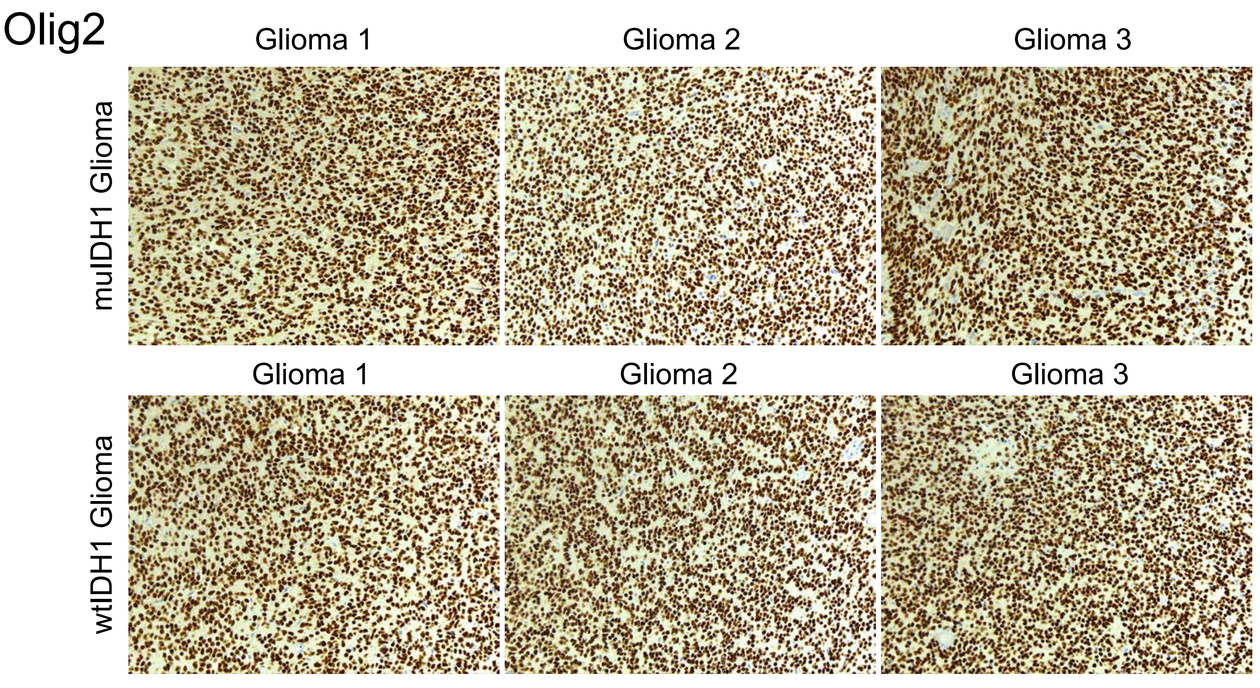
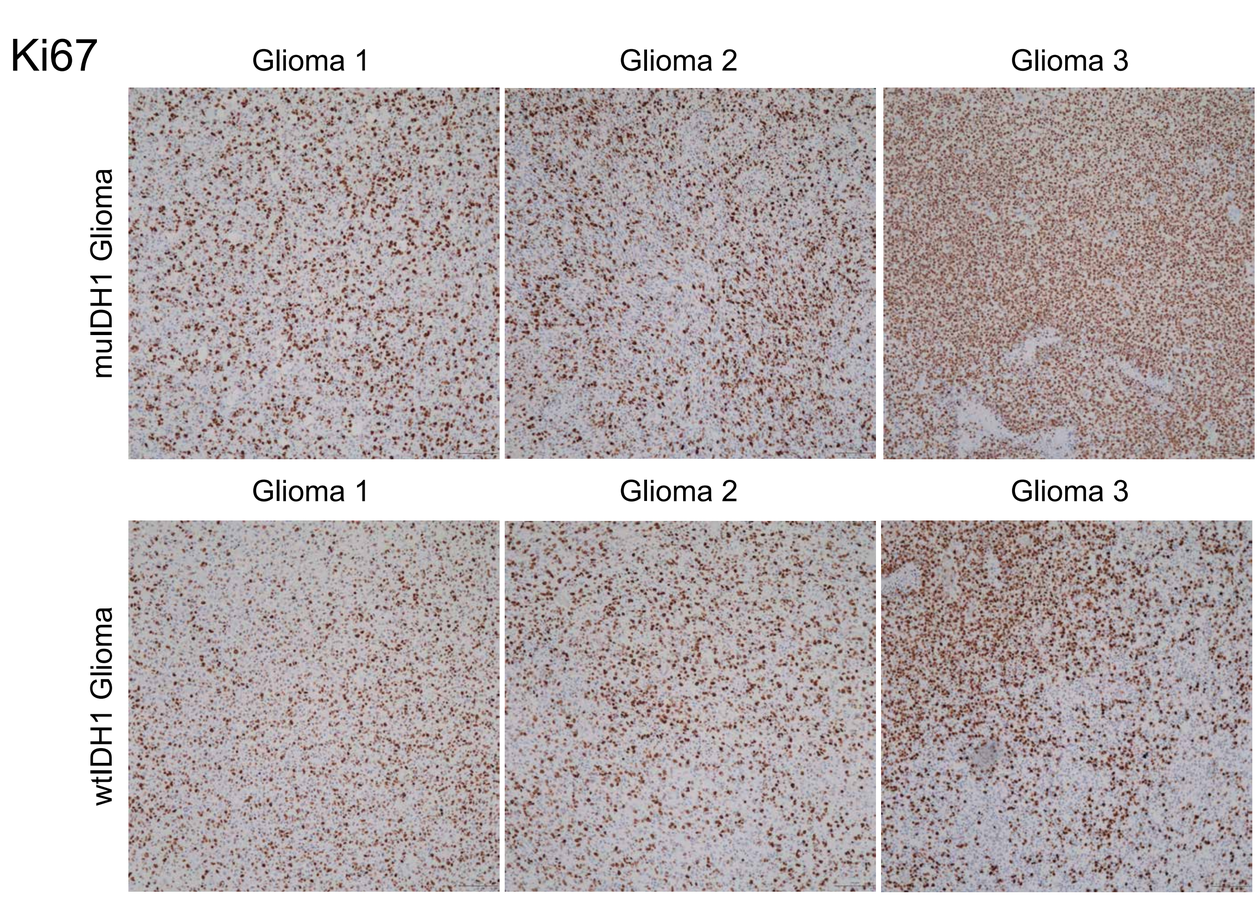


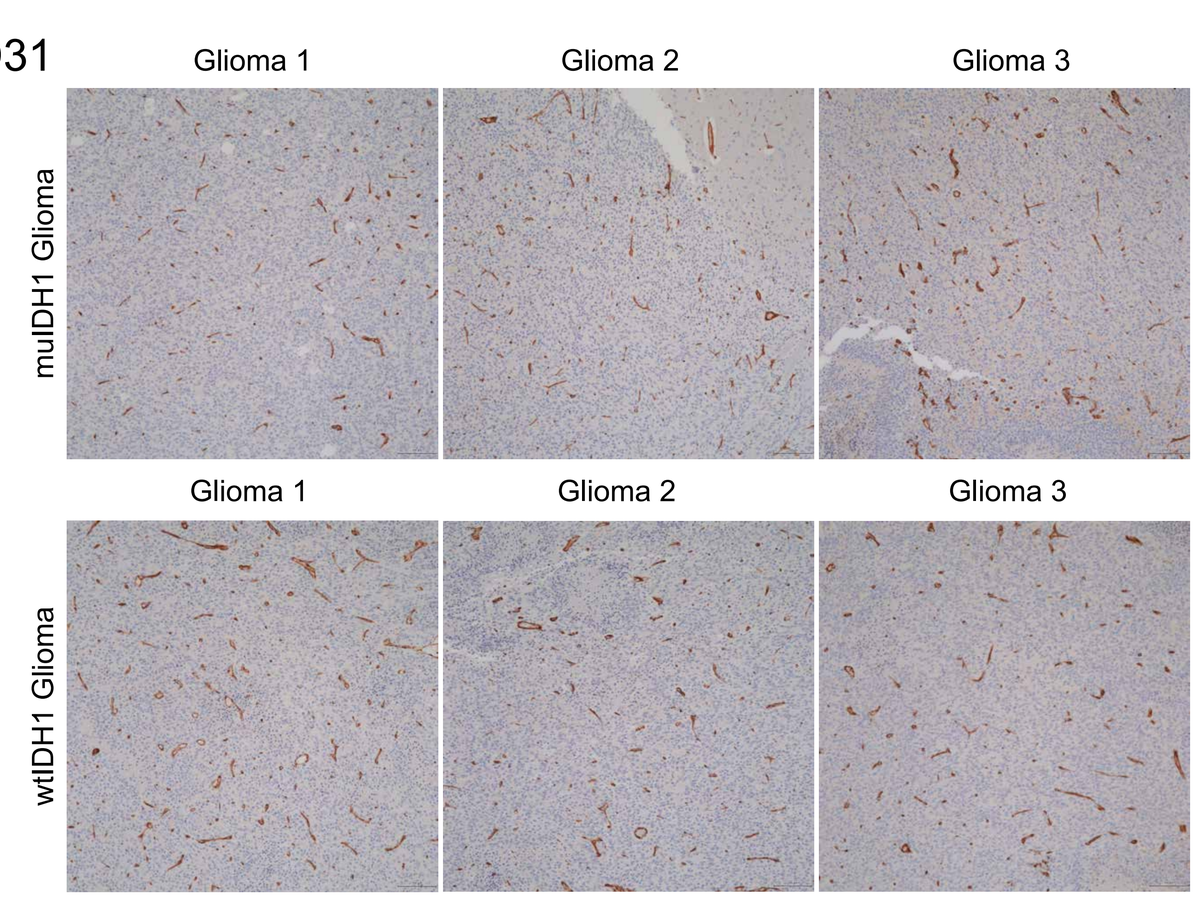
GENESDEV/2016/294991_Amankulor_Supplementary Fig. 3



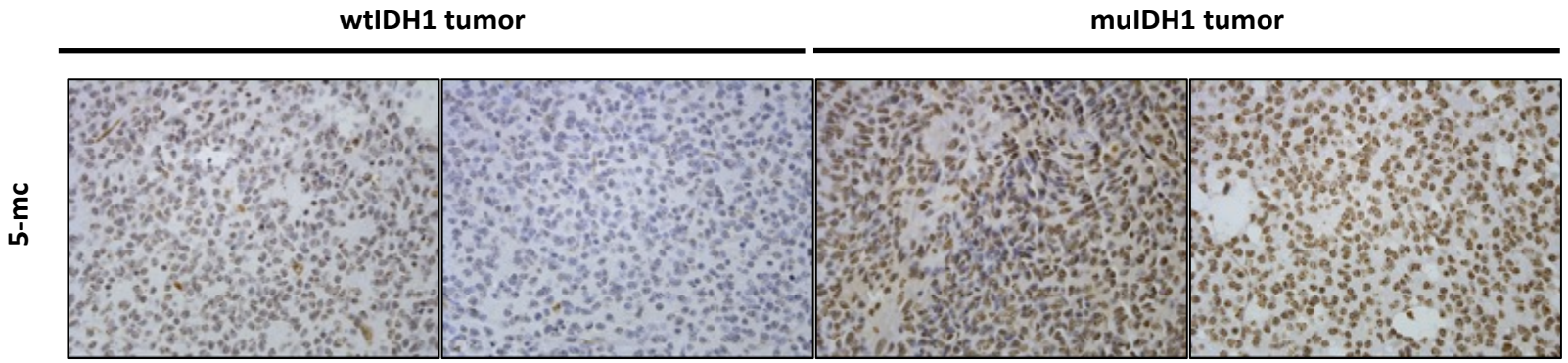
GENESDEV/2016/294991_Amankulor_Supplementary Fig. 4





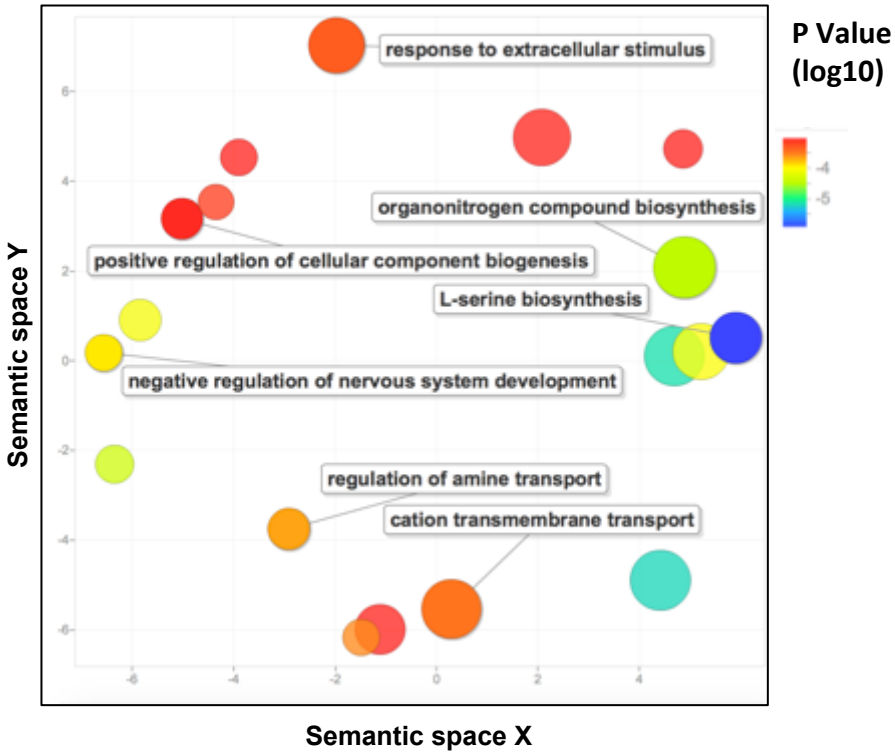


GENESDEV/2016/294991_Amankulor_Supplementary Fig. 5



GENESDEV/2016/294991_Amankulor_Supplementary Fig. 6

A



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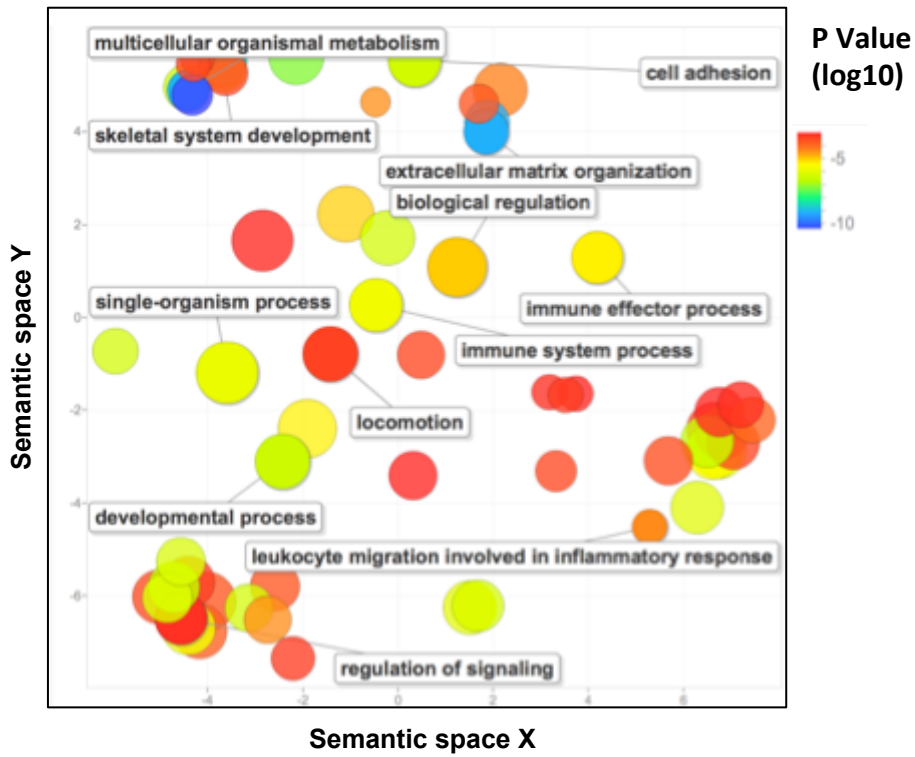
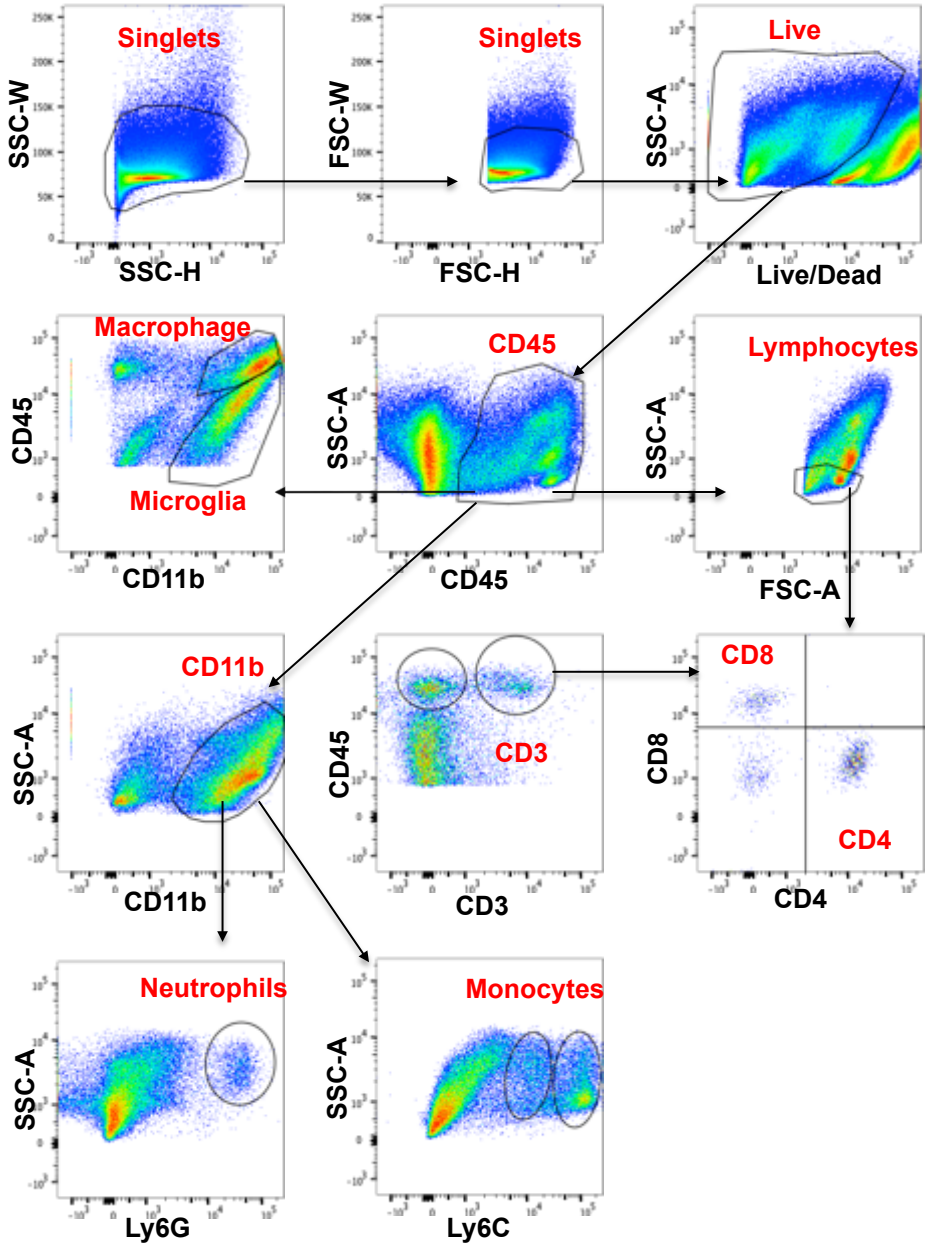
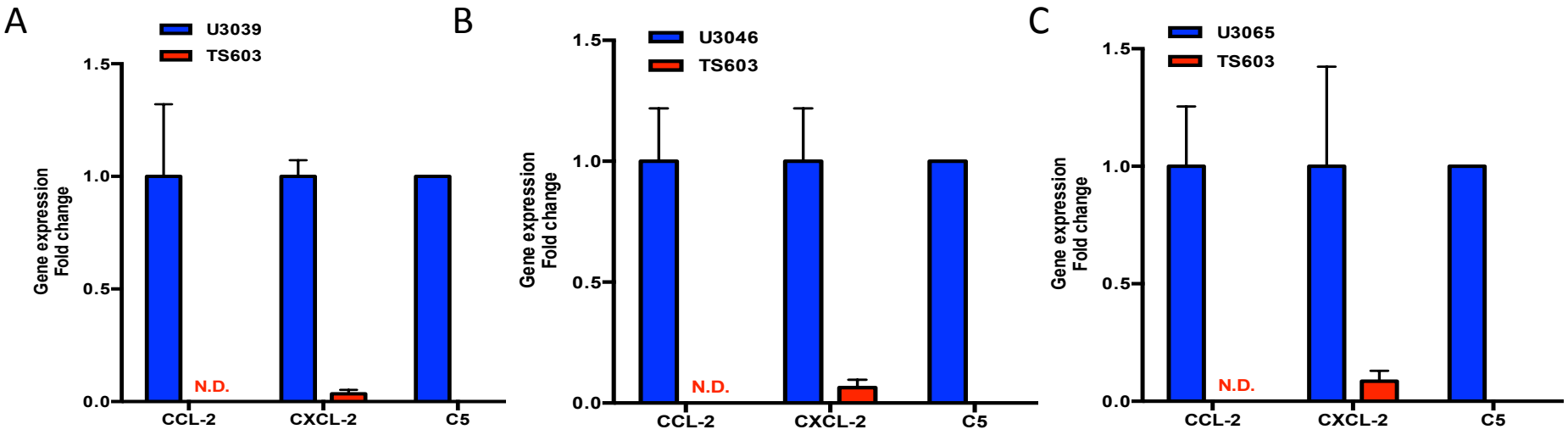


GENESDEV/2016/294991_Amankulor_Supplementary Fig. 7

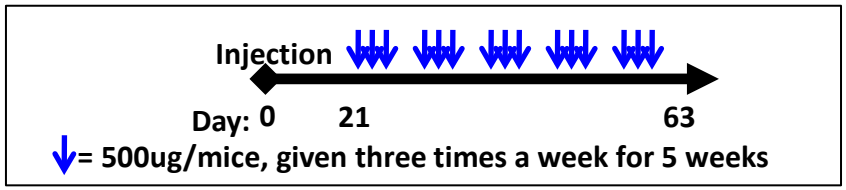


GENESDEV/2016/294991_Amankulor_Supplementary Fig. 8



GENESDEV/2016/294991_Amankulor_Supplementary Fig. 9

A



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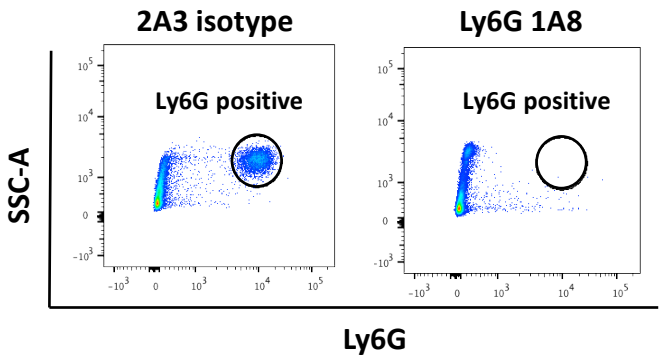

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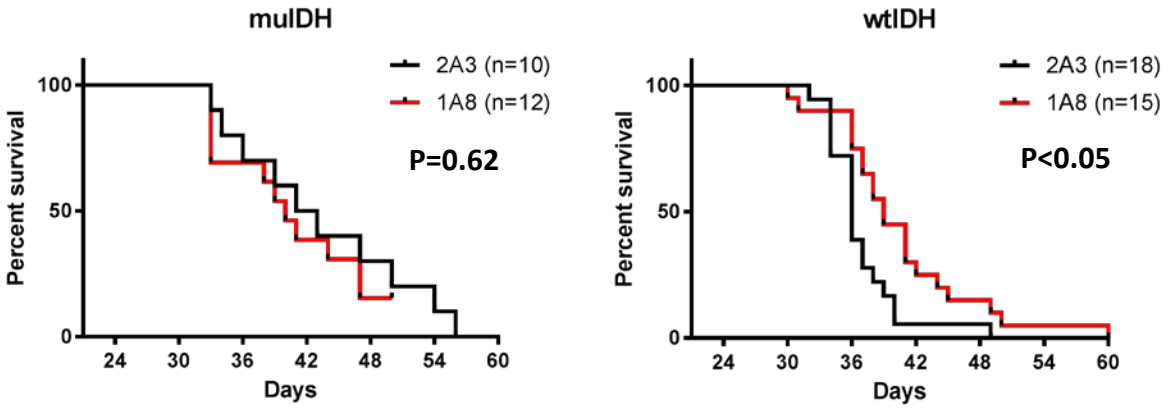

GENESDEV/2016/294991_Amankulor_Supplementary Table. 1

	No of samples	No of G2 samples	No of G3 samples	No of samples with NO grade information
wtIDH1	91	19	64	8
astrocytoma (muIDH1 samples)	248	114	102	32
oligodendroglioma (muIDH1 samples)	169	81	70	18

GENESDEV/2016/294991_Amankulor_Supplementary Table. 2

GO term	log10 p-value	Uniqueness
Multicellular organismal process (GO:0032501)	-5.5143	0.93
Developmental process (GO:0032502)	-4.7799	0.93
Regulation of multicellular organismal process (GO:0051239)	-4.1415	0.88
Regulation of hormone levels (GO:0051239)	-4.6968	0.86
Cell-cell signaling (GO:0007267)	-4.8827	0.85
Nephron tubule development (GO:0072080)	-6.0752	0.15
Multicellular organismal process (GO:0032501)	-5.5143	0.93
Developmental process (GO:0032502)	-4.7799	0.93
Regulation of multicellular organismal process (GO:0051239)	-4.1415	0.88

GENESDEV/2016/294991_Amankulor_Supplementary Table 3

GO term	log10 p-value	Uniqueness
Reproduction (GO:0000003)	-4.4413	1
Single-organism process (GO:0044699)	-5.9747	1
Immune system process (GO:0002376)	-4.7328	0.99
Reproductive process (GO:0022414)	-4.4698	0.99
Biological adhesion (GO:0022610)	-6.9914	0.99
Multicellular organismal process (GO:0032501)	-12.5768	0.99
Developmental process (GO:0032502)	-17.9031	0.99
Locomotion (GO:0040011)	-11.1746	0.99
Response to stimulus (GO:0050896)	-3.4049	0.99
Localization of cell (GO:0051674)	-12.1624	0.97
Outer dynein arm assembly (GO:0036158)	-4.6778	0.97
Cell adhesion (GO:0007155)	-6.6364	0.96
Fat-soluble vitamin metabolic process (GO:0006775)	-5.1331	0.95
Cell proliferation (GO:0008283)	-7.8697	0.94
Vitamin metabolic process (GO:0006766)	-4.5436	0.93
Cellular component movement (GO:0006928)	-11.9747	0.92
Single-organism catabolic process(GO:0044712)	-3.3206	0.92
Response to wounding (GO:0009611)	-6.9066	0.92
Response to external stimulus (GO:0009605)	-8.0991	0.91
Microtubule bundle formation (GO:0001578)	-9.0209	0.91
Extracellular structure organization (GO:0043062)	-19.0862	0.91
Extracellular matrix organization (GO:0030198)	-19.1475	0.9
Negative regulation of hydrolase activity (GO:0051346)	-3.1476	0.89
Regulation of multicellular organismal process (GO:0051239)	-13.8447	0.88
Negative regulation of biological process (GO:0048519)	-4.3107	0.87
Cellular response to vitamin (GO:0071295)	-4.1805	0.86
Negative regulation of viral genome replication (GO:0045071)	-7.9586	0.84
Regulation of cell proliferation (GO:0042127)	-7.3958	0.84
Cell motility (GO:0048870)	-12.1624	0.82
Collagen catabolic process (GO:0030574)	-13.767	0.53
Anatomical structure morphogenesis (GO:0009653)	-25.3063	0.39

GENESDEV/2016/294991_Amankulor_Supplementary Table 4

GO term	Human		Mouse	
GO term	Log10 p-value	Uniqueness	Log10 p-value	Uniqueness
Single-organism process (GO:0044699)	-5.9747	1	-9.1925	1
Immune system process (GO:0002376)	-4.7328	0.99	-13.5452	0.99
Biological adhesion (GO:0022610)	-6.9914	0.99	-14.3206	0.99
Multicellular organismal process (GO:0032501)	-12.5768	0.99	-6.1925	0.99
Developmental process (GO:0032502)	-17.9031	0.99	-9.3936	0.99
Locomotion (GO:0040011)	-11.1746	0.99	-16.2924	0.99
Response to stimulus (GO:0050896)	-3.4049	0.99	-4.9872	0.99
Localization of cell (GO:0051674)	-12.1624	0.97	-14.1186	0.94
Cell adhesion (GO:0007155)	-6.6364	0.96	-14.4802	0.97
Cell proliferation (GO:0008283)	-7.8697	0.94	-7.9136	0.95
Cellular component movement (GO:0006928)	-11.9747	0.92	-11.8069	0.92
Response to wounding (GO:0009611)	-6.9066	0.92	-13.58	0.82
Response to external stimulus (GO:0009605)	-8.0991	0.91	-16.0128	0.81
Extracellular structure organization (GO:0043062)	-19.0862	0.91	-9.4868	0.9
Extracellular matrix organization (GO:0030198)	-19.1475	0.9	-9.5258	0.9
Regulation of multicellular organismal process (GO:0051239)	-13.8447	0.88	-10.3116	0.79
Negative regulation of biological process (GO:0048519)	-4.3107	0.87	-9.3979	0.77
Regulation of cell proliferation (GO:0042127)	-7.3958	0.84	-8.6055	0.74

GENESDEV/2016/294991_Amankulor_Supplementary Table. 5

Antigen	Label	Manufacture	ul/test
CD45	AlexaFluor700	Biolegend	0.125
CD3ε	BV711	BD	4
CD4	BV786	BD	0.625
CD8a	PerCPCy5.5	Biolegend	0.625
gdTCR	BV421	Biolegend	1.25
CD49b	PE	Biolegend	2
CD19	PE-Cy7	BD	0.25
CD11b	APC	Ebioscience	0.5
Ly6C	BV605	Biolegend	2.5
Ly6G	PECF594	BD	0.25
FVD	eFL780	Ebioscience	0.15