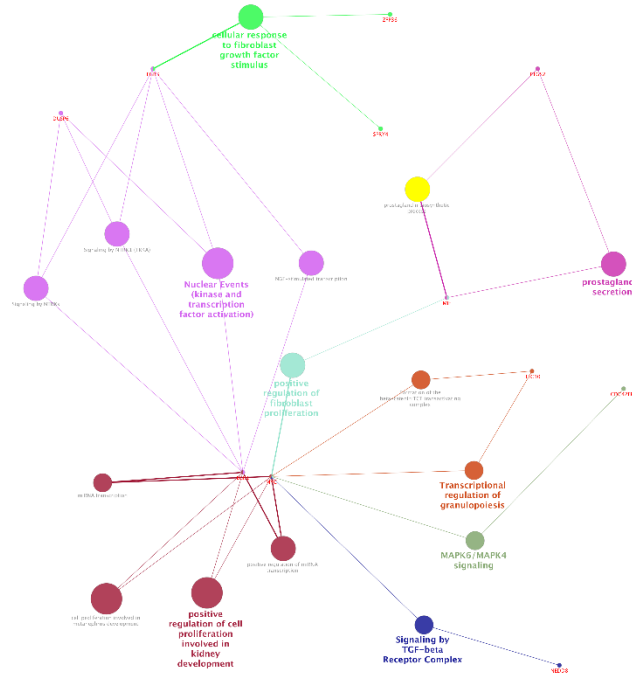


1 **Supplementary materials for Szeőcs et al. “Cell-free ascites from ovarian cancer**
2 **patients induces Warburg metabolism and cell proliferation through TGFβ-ERK**
3 **signaling”**

4

5 **Supplementary Figures**

6 **Supplementary Figure 1. The depiction of the results of the biological process reactome**
7 **pathway analysis**



8

9

10 **Supplementary Figure 2. The depiction of the results of the KEGG pathway analysis**

Supplemental Table 1. The list of the genes with dysregulated mRNA expression upon ascites treatment in A2780 cells

Regulation	True FC	Gene ID	p	Gene Symbol	Description
up	2,9477072	ENSG00000200237	3.6726982E-4	SNORA70	Small nucleolar RNA SNORA70 [Source:RFAM;Acc:RF00156]
up	2,7018178	ENSG00000229780	0.0016217054	UBE2Q1-AS1	UBE2Q1 antisense RNA 1 [Source:HGNC Symbol;Acc:HGNC:40722]
up	2,5710666	ENSG00000120738	0.0025615287	EGR1	early growth response 1 [Source:HGNC Symbol;Acc:HGNC:3238]
up	2,192126	ENSG00000264425	6.1804353E-6	MIR4653	microRNA 4653 [Source:HGNC Symbol;Acc:HGNC:41562]
up	2,179043	ENSG00000266563	0.0076324726	EIF1P5	eukaryotic translation initiation factor 1 pseudogene 5 [Source:HGNC Symbol;Acc:HGNC:49618]
up	2,1386595	ENSG00000179388	3.9478986E-5	EGR3	early growth response 3 [Source:HGNC Symbol;Acc:HGNC:3240]
up	1,9871191	ENSG00000230165	0.01687274	AURKAPS2	aurora kinase A pseudogene 2 [Source:HGNC Symbol;Acc:HGNC:18612]
up	1,9435551	ENSG00000232797	0.023352714	FAM207CP	family with sequence similarity 207 member C, pseudogene [Source:HGNC Symbol;Acc:HGNC:42676]
up	1,7827168	ENSG00000207187	0.02124332	SNORA64	Small nucleolar RNA SNORA64/SNORA10 family [Source:RFAM;Acc:RF00264]
up	1,7094568	ENSG00000073756	5.1847426E-4	PTGS2	prostaglandin-endoperoxide synthase 2 [Source:HGNC Symbol;Acc:HGNC:9605]
up	1,6764557	ENSG00000264585	0.041079063	MIR4449	microRNA 4449 [Source:HGNC Symbol;Acc:HGNC:41864]
up	1,6551335	ENSG00000237786	2.2137059E-4	GFOD1-AS1	GFOD1 antisense RNA 1 [Source:HGNC Symbol;Acc:HGNC:40956]
up	1,6327174	ENSG00000221420	6.6429275E-5	SNORA81	small nucleolar RNA, H/ACA box 81 [Source:HGNC Symbol;Acc:HGNC:32667]
up	1,6224425	ENSG00000271550	0.0029100254	BNIP3P11	BCL2 interacting protein 3 pseudogene 11 [Source:HGNC Symbol;Acc:HGNC:49724]
up	1,6073337	ENSG00000167617	0.0022706757	CDC42EP5	CDC42 effector protein 5 [Source:HGNC Symbol;Acc:HGNC:17408]
up	1,5232219	ENSG00000267541	0.017208245	MTCO2P2	mitochondrially encoded cytochrome c oxidase II pseudogene 2 [Source:HGNC Symbol;Acc:HGNC:25354]
up	1,5137937	ENSG00000265806	0.03795629	MIR4292	microRNA 4292 [Source:HGNC Symbol;Acc:HGNC:38348]
up	1,5077088	ENSG00000231940	0.04937398	RPS7P3	ribosomal protein S7 pseudogene 3 [Source:HGNC Symbol;Acc:HGNC:36518]
up	1,4689386	ENSG00000183055	0.011377843	FAM133CP	family with sequence similarity 133 member C, pseudogene [Source:HGNC Symbol;Acc:HGNC:44190]

up	1,4523611	ENSG00000277985	0.0076470156	SNORA67	small nucleolar RNA, H/ACA box 67 [Source:HGNC Symbol;Acc:HGNC:10224]
up	1,4276246	ENSG00000275559	0.014187338	DLEU2_6	Deleted in lymphocytic leukemia 2 conserved region 6 [Source:RFAM;Acc:RF02110]
up	1,4275063	ENSG00000214832	0.032082353	UPF3AP2	UPF3A pseudogene 2 [Source:HGNC Symbol;Acc:HGNC:30567]
up	1,4143887	ENSG00000164845	0.0032925047	FAM86FP	family with sequence similarity 86 member F, pseudogene [Source:HGNC Symbol;Acc:HGNC:42357]
up	1,4070482	ENSG00000228288	0.001366682	PCAT6	prostate cancer associated transcript 6 (non-protein coding) [Source:HGNC Symbol;Acc:HGNC:43714]
up	1,4037645	ENSG00000128016	0.02235977	ZFP36	ZFP36 ring finger protein [Source:HGNC Symbol;Acc:HGNC:12862]
up	1,3625283	ENSG00000104044	0.011527806	OCA2	OCA2 melanosomal transmembrane protein [Source:HGNC Symbol;Acc:HGNC:8101]
up	1,3567642	ENSG00000225263	0.023512835	PCDH9-AS3	PCDH9 antisense RNA 3 [Source:HGNC Symbol;Acc:HGNC:40427]
up	1,3556095	ENSG00000223768	0.005666636	LINC00205	long intergenic non-protein coding RNA 205 [Source:HGNC Symbol;Acc:HGNC:16420]
up	1,3456439	ENSG00000213977	0.04334673	TAX1BP3	Tax1 binding protein 3 [Source:HGNC Symbol;Acc:HGNC:30684]
up	1,3336275	ENSG00000115641	0.003807424	FHL2	four and a half LIM domains 2 [Source:HGNC Symbol;Acc:HGNC:3703]
up	1,3330634	ENSG00000205583	0.048959848	STAG3L1	stromal antigen 3-like 1 (pseudogene) [Source:HGNC Symbol;Acc:HGNC:33852]
up	1,3328687	ENSG00000224953	0.03022431	SRIP3	sorcin pseudogene 3 [Source:HGNC Symbol;Acc:HGNC:38735]
up	1,3266606	ENSG00000147804	0.016489785	SLC39A4	solute carrier family 39 member 4 [Source:HGNC Symbol;Acc:HGNC:17129]
up	1,3235443	ENSG00000233111	0.046089772	RAB1C	RAB1C, member RAS oncogene family pseudogene [Source:HGNC Symbol;Acc:HGNC:23683]
up	1,3233577	ENSG00000139318	0.0044674734	DUSP6	dual specificity phosphatase 6 [Source:HGNC Symbol;Acc:HGNC:3072]
up	1,3196259	ENSG00000142871	0.00361219	CYR61	cysteine rich angiogenic inducer 61 [Source:HGNC Symbol;Acc:HGNC:2654]
up	1,3176638	ENSG00000236044	0.0014407363	FABP5P2	fatty acid binding protein 5 pseudogene 2 [Source:HGNC Symbol;Acc:HGNC:31060]
up	1,3144366	ENSG00000187678	0.03410386	SPRY4	sprouty RTK signaling antagonist 4 [Source:HGNC Symbol;Acc:HGNC:15533]

up	1,3125435	ENSG00000276314	0.025724834	SNORD107	small nucleolar RNA, C/D box 107 [Source:HGNC Symbol;Acc:HGNC:32771]
up	1,3071051	ENSG00000237883	0.039194833	DGUOK-AS1	DGUOK antisense RNA 1 [Source:HGNC Symbol;Acc:HGNC:43441]
up	1,2937657	ENSG00000104447	0.016541978	TRPS1	transcriptional repressor GATA binding 1 [Source:HGNC Symbol;Acc:HGNC:12340]
up	1,2896274	ENSG00000231468	0.032214776	PRDX3P2	peroxiredoxin 3 pseudogene 2 [Source:HGNC Symbol;Acc:HGNC:39265]
up	1,2879456	ENSG00000231707	0.035567768	PABPC1P1	poly(A) binding protein cytoplasmic 1 pseudogene 1 [Source:HGNC Symbol;Acc:HGNC:8558]
up	1,2853307	ENSG00000278828	0.019756837	HIST1H3H	histone cluster 1 H3 family member h [Source:HGNC Symbol;Acc:HGNC:4775]
up	1,2839777	ENSG00000136997	0.014050976	MYC	v-myc avian myelocytomatosis viral oncogene homolog [Source:HGNC Symbol;Acc:HGNC:7553]
up	1,267008	ENSG00000215784	0.021528244	FAM72D	family with sequence similarity 72 member D [Source:HGNC Symbol;Acc:HGNC:33593]
up	1,2619482	ENSG00000159840	0.030144261	ZYX	zyxin [Source:HGNC Symbol;Acc:HGNC:13200]
up	1,2524849	ENSG00000218996	0.023981577	ARL4AP5	ADP ribosylation factor like GTPase 4A pseudogene 5 [Source:HGNC Symbol;Acc:HGNC:52374]
up	1,2479565	ENSG00000155090	0.035589546	KLF10	Kruppel like factor 10 [Source:HGNC Symbol;Acc:HGNC:11810]
up	1,2470483	ENSG00000181227	0.034849685	DLSTP1	dihydrolipoamide S-succinyltransferase pseudogene 1 [Source:HGNC Symbol;Acc:HGNC:2912]
down	1,2514668	ENSG00000119938	0.04149522	PPP1R3C	protein phosphatase 1 regulatory subunit 3C [Source:HGNC Symbol;Acc:HGNC:9293]
down	-1,266786	ENSG00000283277	0.045701448	FBXO31	F-box protein 31 [Source:HGNC Symbol;Acc:HGNC:16510]
down	1,2669684	ENSG00000240204	0.010574033	SMKR1	small lysine rich protein 1 [Source:HGNC Symbol;Acc:HGNC:43561]
down	1,2720221	ENSG00000253327	0.010656143	RAD21-AS1	RAD21 antisense RNA 1 [Source:HGNC Symbol;Acc:HGNC:32158]
down	1,2891599	ENSG00000221883	0.027453175	ARIH2OS	ariadne homolog 2 opposite strand [Source:HGNC Symbol;Acc:HGNC:34425]
down	1,2986972	ENSG00000236152	0.017886551	MRPS36P1	mitochondrial ribosomal protein S36 pseudogene 1 [Source:HGNC Symbol;Acc:HGNC:29771]
down	1,3027892	ENSG00000271672	0.047135614	DUXAP8	double homeobox A pseudogene 8 [Source:HGNC Symbol;Acc:HGNC:32187]

down	1,3240199	-	ENSG00000277072	0.027823128	STAG3L2	stromal antigen 3-like 2 (pseudogene) [Source:HGNC Symbol;Acc:HGNC:33886]
down	1,3281302	-	ENSG00000267691	0.010456534	SHC1P2	SHC adaptor protein 1 pseudogene 2 [Source:HGNC Symbol;Acc:HGNC:10842]
down	1,3439653	-	ENSG00000276168	0.022338718	RN7SL1	RNA, 7SL, cytoplasmic 1 [Source:HGNC Symbol;Acc:HGNC:10038]
down	1,3547242	-	ENSG00000254835	0.04004662	RNF185-AS1	RNF185 antisense RNA 1 [Source:HGNC Symbol;Acc:HGNC:41161]
down	1,3561497	-	ENSG00000226981	0.02642097	ABHD17AP6	abhydrolase domain containing 17A pseudogene 6 [Source:HGNC Symbol;Acc:HGNC:34044]
down	-1,378499	-	ENSG00000257446	0.0017799074	ZNF878	zinc finger protein 878 [Source:HGNC Symbol;Acc:HGNC:37246]
down	1,3803091	-	ENSG00000236679	0.041618254	RPL23AP24	ribosomal protein L23a pseudogene 24 [Source:HGNC Symbol;Acc:HGNC:36176]
down	1,3877183	-	ENSG00000240972	0.0033792865	MIF	macrophage migration inhibitory factor (glycosylation-inhibiting factor) [Source:HGNC Symbol;Acc:HGNC:7097]
down	1,4054805	-	ENSG00000263740	6.9457164E-6	RN7SL4P	RNA, 7SL, cytoplasmic 4, pseudogene [Source:HGNC Symbol;Acc:HGNC:10039]
down	1,4119443	-	ENSG00000129559	0.0014465789	NEDD8	neural precursor cell expressed, developmentally down-regulated 8 [Source:HGNC Symbol;Acc:HGNC:7732]
down	1,4263561	-	ENSG00000274012	0.0010322204	RN7SL2	RNA, 7SL, cytoplasmic 2 [Source:HGNC Symbol;Acc:HGNC:23134]
down	1,4359555	-	ENSG00000225423	0.009289591	TNPO1P1	transportin 1 pseudogene 1 [Source:HGNC Symbol;Acc:HGNC:45120]
down	1,4372994	-	ENSG00000231789	1.5836447E-6	PIK3CD-AS2	PIK3CD antisense RNA 2 [Source:HGNC Symbol;Acc:HGNC:51334]
down	1,4405223	-	ENSG00000172058	0.037489835	SERF1A	small EDRK-rich factor 1A [Source:HGNC Symbol;Acc:HGNC:10755]
down	1,4682686	-	ENSG00000104894	0.0155963795	CD37	CD37 molecule [Source:HGNC Symbol;Acc:HGNC:1666]
down	1,4721034	-	ENSG00000148290	0.01686941	SURF1	SURF1, cytochrome c oxidase assembly factor [Source:HGNC Symbol;Acc:HGNC:11474]
down	-1,583577	-	ENSG00000250412	0.03880814	KLHL2P1	kelch like family member 2 pseudogene 1 [Source:HGNC Symbol;Acc:HGNC:44046]
down	-1,612305	-	ENSG00000231500	0.02033639	RPS18	ribosomal protein S18 [Source:HGNC Symbol;Acc:HGNC:10401]

down	1,6299042	-	ENSG00000200913	0.04580613	SNORD46	small nucleolar RNA, C/D box 46 [Source:HGNC Symbol;Acc:HGNC:10186]
down	1,6430213	-	ENSG00000278771	0.009891675	Metazoa_SRP	Metazoan signal recognition particle RNA [Source:RFAM;Acc:RF00017]
down	1,6745209	-	ENSG00000231240	0.02600546	KLF2P1	Kruppel like factor 2 pseudogene 1 [Source:HGNC Symbol;Acc:HGNC:49280]
down	1,7078915	-	ENSG00000259419	0.009440136	HNRNPCP3	heterogeneous nuclear ribonucleoprotein C pseudogene 3 [Source:HGNC Symbol;Acc:HGNC:48815]
down	-1,889383	-	ENSG00000221184	0.0024979	MIR1254-1	microRNA 1254-1 [Source:HGNC Symbol;Acc:HGNC:35319]
down	1,9506652	-	ENSG00000205544	0.036315683	TMEM256	transmembrane protein 256 [Source:HGNC Symbol;Acc:HGNC:28618]
down	2,0208325	-	ENSG00000255526	9.0364943E-4	NEDD8-MDP1	NEDD8-MDP1 readthrough [Source:HGNC Symbol;Acc:HGNC:39551]
down	2,6719124	-	ENSG00000212385	0.004469624	RNU6-817P	RNA, U6 small nuclear 817, pseudogene [Source:HGNC Symbol;Acc:HGNC:47780]
down	3,5985348	-	ENSG00000278039	0.043509685	Xist_exon1	X-chromosome inactivation gene exon 1 [Source:RFAM;Acc:RF01880]

13

14 **Supplementary Table 2. The results of the biological process reactome pathway analysis**

15

Non corrected p values are indicated in the table.

ID	Term	Ontology Source	p value	Associated Genes
R-HSA:5687128	MAPK6/MAPK4 signaling	REACTOME_Pathways_25.05.2022	0,0087044	[CDC42EP5, MYC]
GO:0044344	cellular response to fibroblast growth factor stimulus	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,0007243	[EGR3, SPRY4, ZFP36]
GO:0048146	positive regulation of fibroblast proliferation	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,0039164	[MIF, MYC]

R-HSA:170834	Signaling by TGF-beta Receptor Complex	REACTOME_Pathways_25.05.2022	0,0087044	[MYC, NEDD8]
GO:0032310	prostaglandin secretion	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,0005483	[MIF, PTGS2]
GO:0001516	prostaglandin biosynthetic process	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,0013943	[MIF, PTGS2]
R-HSA:201722	Formation of the beta-catenin:TCF transactivating complex	REACTOME_Pathways_25.05.2022	0,0090846	[H3C10, MYC]
R-HSA:9616222	Transcriptional regulation of granulopoiesis	REACTOME_Pathways_25.05.2022	0,0088936	[H3C10, MYC]
R-HSA:166520	Signaling by NTRKs	REACTOME_Pathways_25.05.2022	0,0012172	[DUSP6, EGR1, EGR3]
R-HSA:187037	Signaling by NTRK1 (TRKA)	REACTOME_Pathways_25.05.2022	0,0007821	[DUSP6, EGR1, EGR3]
R-HSA:198725	Nuclear Events (kinase and transcription factor activation)	REACTOME_Pathways_25.05.2022	0,0001207	[DUSP6, EGR1, EGR3]
R-HSA:9031628	NGF-stimulated transcription	REACTOME_Pathways_25.05.2022	0,0017297	[EGR1, EGR3]
GO:0072203	cell proliferation involved in metanephros development	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,0001320	[EGR1, MYC]
GO:1901724	positive regulation of cell proliferation involved in kidney development	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,0000865	[EGR1, MYC]
GO:0061614	miRNA transcription	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,0050214	[EGR1, MYC]

GO:1902895	positive regulation of miRNA transcription	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,0027183	[EGR1, MYC]
------------	--	---	-----------	-------------

16

17 **Supplementary Table 3. The results of the KEGG pathway analysis**

18 Non corrected p values are indicated in the table.

ID	Term	Ontology Source	p value	Associated Genes
GO:0044344	cellular response to fibroblast growth factor stimulus	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,00079	[EGR3, SPRY4, ZFP36]
GO:0048146	positive regulation of fibroblast proliferation	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,00415	[MIF, MYC]
KEGG:05221	Acute myeloid leukemia	KEGG_25.05.2022	0,00533	[DUSP6, MYC]
KEGG:05222	Small cell lung cancer	KEGG_25.05.2022	0,00983	[MYC, PTGS2]
GO:0032310	prostaglandin secretion	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,00058	[MIF, PTGS2]
GO:0001516	prostaglandin biosynthetic process	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,00148	[MIF, PTGS2]
GO:0072203	cell proliferation involved in metanephros development	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,00014	[EGR1, MYC]
GO:1901724	positive regulation of cell proliferation involved in kidney development	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,00009	[EGR1, MYC]
GO:0061614	miRNA transcription	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,00533	[EGR1, MYC]

GO:1902895	positive regulation of miRNA transcription	GO_BiologicalProcess-EBI-UniProt-GOA-ACAP-ARAP_25.05.2022_00h00	0,00288	[EGR1, MYC]
------------	--	---	---------	-------------

19

20