

Planell N et al. Supplementary Material

Supplementary Table 2. Biological pathways analysis by IPA. Pathway analysis was performed for those genes significantly perturbed in affected colonic biopsies from UC active and UC-in-remission samples compared to non-IBD controls (Supplementary Table 2A) or in UC active involved compared to non-IBD controls (Supplementary Table 2B), using Ingenuity Pathways Analysis (Ingenuity™ Systems, www.ingenuity.com).

In bold are shown those genes that were included in the real-time RT-PCR validation set.

Supplementary Table 2A. Main biological functions significantly perturbed in deregulated genes in both active and inactive UC versus non-IBD controls (patterns 2 and 3 of gene expression, Figure 2).

Biological functions	Genes
<u>Cell communication:</u> attachment of cells, cell-cell contact, disassembly of focal adhesions, adhesion of connective tissue cells, formation of tight junctions	SERPINB5 , SLC4A2, TGFB1, TGFBI , VCAM1, DSG2, ICAM2, ITGA2, ITGA6, PTEN, PTGER2, TFPI2 , TGFA, TGM2, VCAN , DSP, JAM2, JAM3, GJA1 , OCLN, PARD3, TJP1 , TJP3
<u>Cell death:</u> cell death of epithelial cell lines, cytotoxicity of tumor cell lines, apoptosis of endothelial cells, apoptosis of vascular endothelial cells, apoptosis of microvascular endothelial cells	FAS, FOXO3, GATA6, HGF, ITSN1, KLF5, LUM, MAP3K5, MAPK14, PARP1, SERPINA1, SERPINB5 , TGFB1, THBS1, TLR3, TNFRSF10A, TNFRSF10B, TNFRSF11B, TNFSF10, ABCG2 , JUN, MAP2K6, MET, PEA15, TCF3, TCF4, TGFA, TGFB1I1, TICAM1, TICAM2, TNFRSF1B, TRIM27, SMAD7 , TGFB2
<u>Cellular assembly and organization:</u> organization of actin and cytoskeleton, quantity of centrosome, proliferation of peroxisomes, induction of filaments, induction of actin stress fibers, fusion of liposome, formation of actin bundles, development of cytoplasm, stabilization of plasma membrane,	ABCD3, AKAP1, AKAP2/PALM2-AKAP2, ANG, ANKRD27, COL18A1, CTNND1, GAS7, GDA, GJC1, GNA11, GNA13, GNAQ, GNAS, GNG12, HGF, IPO4, JAG1, LAMP1, LAMP2, LIMK2, MAP1B, MAP1LC3A, MMP2, STAT3, SYNPO, TESK2, TGFB1, TGFBI , TPM2, TUBB, TWF1, UTRN, VCAM1, VIL1, WASL, XIAP, ZYX, ACTN1, MYO1B, DCN, SMAD4, SMAD7 , CALD1, ACOX1 , TJP1 , TJP3

remodeling of actin filaments	
<u>Cellular growth and proliferation:</u> proliferation of colon cancer cell lines, colony formation of tumor cell lines, proliferation of colon carcinoma cells	CADM1, CAV1, CLU, CTSD, E2F5, EDN1, EGFR, ELF3, ENO1, FOXA2, FOXO3, GADD45B, GJA1 , HGF, HMGA1, IGFBP7, IL6R , IL6ST, IP6K2, IRS1, KLF4, KLF6, NDRG1, NEK6, NF1, RUNX2, SERPINA1, SLPI, SMAD7 , SPARC, STEAP2, TFF1 , TNFSF10, TRIM22, VIP, ZEB1, DAPK2, NEDD9, NR5A2, PAK1, PDLIM4, PECAM1, PLD1, PPARG, SDC2, SLC26A2, SLC26A3, TCF4, TGFA, TGFBR2
<u>Cellular movement:</u> invasion of cancer cells, migration of cancer cells, invasion of colon cancer cell lines	CXCL12, ITGA2, ITGA6, SERPINB5 , TGFB1, TGFBR1, BSG, CD82, EGFR, TGFA, TGFBR2, FGFR1, TIMP3, WNT5A , ANPEP, CCDC88A, CD24, CD44, CD9, CDC25B, CDH11, CLDN3, EPHB4, GAB1, GAB2, GEM, GJA1 , GJB1, IGF2, ITGAV, JAM3, JUN, JUP, LAMA5, LAMC1, LCN2, LILRB1 , MMP3 , RUNX2, RUNX3, S100P , SDC2, SDCBP, SERP1, SERPINA1, SERPINE2, SLC9A3R1, SMAD4, SMAD7 , STAT3, STK38L, SYK, TAGLN, TCF3, TCIRG1, TFF1 , TFF2, TFPI2 , TGFBI , THBS1, TIMP1 , TJP1 , TNFSF10, VAV3, VCAN , VDR, WWTR1, XIAP
<u>Extracellular matrix:</u> ruffling of fibroblast cell lines, shape change of fibroblast cell lines, adhesion of stromal cells, cell spreading of fibroblast cell lines, blebbing of fibroblast cell lines	VCAM1, CDC42SE2, FAS, MARCKS, NF2, ROCK1, TNFRSF10B, ASAP1, CAST, DAB2, EFNA1, FLNA, FLNC, FN1, MET, PALLD, PTBP1, TGFB1I1, THBS1, TNIK, TSPAN7, VAV3, VCL, VIM, DIAPH1, INSR, NCK2, PTEN, RAB4A, AKAP12, ARHGEF11, FGD4, GNG12, ITGA6, MAPK14, ZAK
<u>Fatty acid metabolism:</u> synthesis of sterol and cholesterol, oxidation of lipids, accumulation of lipid, concentration of phospholipid, concentration of fatty acid, conversion of lipid, beta-oxidation of fatty acid, export of lipid, fatty acid metabolism,	ABCB11 , ABHD5, ACACA, ACAT1, ACOX1 , AQP7, IL1RN , INSIG1, INSR, PIK3C2B, PIK3CB, PON2, SLC36A1, SREBF2, SYK, TIMP1 , UCP2, VIP, ABCD3, ACAA2, ACADM, ACADS, ACADSB, ACOX2 , ACSL5, ACSL4 , MMP12, MMP3 , MSN, RXRB, STX12, ABCB1, ABCC6, ACAA1, ACBD3, ACOT4, ACOT8, ACOT9, ACSL3, ACSM3, ANXA1,

efflux of cholesterol	AQP8, ME1, ME3, SLC27A3
<u>Immune cell trafficking:</u> detachment of phagocytes	ANXA1, ANXA5, PTPRC, SIRPA
<u>Molecular transport:</u> secretion of hyaluronic acid, uptake of L-amino acid, import of protein, transport of oleic acid, transport of carbohydrate, uptake of essential amino acids, secretion of protein	AQP11, AQP3 , AQP7, FABP1, INSR, IRS1, LYN, MAP4K4, SLC23A1, SLC35A3, SLC35B4, SLC37A4, ACSL3, ACSL4 , ACSL5, SLC3A1, SLC6A19, SLC7A1, SLC7A5, SLC1A1, SLC36A1, SLC7A11
<u>Organismal injury and abnormalities:</u> edema	ABCA5, ABI1, AHR, ATP2A2, BCR, C1S, CA1, CA12, CA2, CAV1, CBF3, CCND2, CD93, CLU, COL18A1, CTSA, CXADR, DOCK1, E2F3, ECE1, EDN1, EDNRA, ENG, ENPP2, ENTPD1, ERCC6, F2R, F2RL1, F3, FBXW7, FCGRT, FKBP1A, FLNA, FLRT2, FLT1, FOXP1, GATA6, GJA1 , GPX2, HGF, HHEX, HIF1A, HMOX1, HSD17B7, IFT57, IGF2, IKBKB, IRAK3, ITGAV, JUN, PECAM1, PLAT, PODXL, POR, PRKAR1A, PTGER4, RXRA, SCP2, SERPING1, SETD2, SIRT1, SLC12A2, SMAD5, SMAD7 , SOD3, SPRED1, SYK, TGFB1, TIMP3, TNFAIP6, UBE4B
<u>Protein metabolism:</u> degradation of protein, metabolism of protein	ANPEP, CASP6, CASP7, CAST, CAT, CAV1, CBLC, CD46, CDC37, CDKN2AIP, CTSB, CTSC, CTSD, CTSH, FBXL12, FBXL4, FBXO3, FBXO32, FBXO8, GJA1, IL1RN , IRAK3, ITCH, LAMP2, LNX1, LPL, MMP12, MMP2, MMP3 , MYLIP, SERPINA1, SERPINB1, SERPINE2, TIMP3, TOPORS, VCP, WNT5A , EEF1A1, EEF2K, EIF2B2, EIF2B3, EIF2B4, EIF2B5, EIF2S1, EIF2S2, EIF3B, EIF3I, EIF4A1, EIF4B, EIF4E2, EIF4EBP2, EIF4G1, EIF5B, ETF1, IL7R , INSR, IRS1, ITGA2, JUN, LARP4B, LYN, MARS, SENP3, SERINC1, SERP1, SLC46A1, SLC7A1, SNRNP70, STIP1, THBS1, TNFRSF9, TNFSF10
<u>Tissue Morphology:</u>	APP, KLF4, PTEN, SLC4A2, TFF2, TGFA, BMP8B,

quantity of glandular epithelial cells	CXCL12, EPAS1, IL6ST, SMAD5, TGFB1, WNT5A , ZFX, ZNF148
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Supplementary Table 2B. Main biological functions significantly perturbed in deregulated genes in active UC versus non-IBD controls (pattern 1 of gene expression, Figure 2).

Biological functions	Genes
<u>Cell death:</u> apoptosis of tumor cell lines, cell death of endothelial cells, necrosis, cell viability, cell death of blood cells, cell survival, apoptosis, cell viability of tumor cell lines, cell death of immune cells, cell death, cell death of connective tissue cells	NFKBIZ , KLF7, SPIB, NCOA7, MNDA, FOXQ1, EGR3, PARP14, PHTF1, ELL2, CEBPD, ETV7
<u>Cellular growth and proliferation:</u> proliferation of cells, proliferation of endothelial cells, colony formation of cells, proliferation of blood cells, proliferation of fibroblasts, proliferation of tumor cell lines, proliferation of connective tissue cells, proliferation of immune cells, colony formation of tumor cell lines	SOCS 3, SOCS1, IFI6, HSP90B1, IFI16, RIPK2, CASP1, PRLR, TIMP3, ELMO1, PROK2, BIRC3, BCL2A1, CD27, ITGB2, CKAP2, IL8RB, CYCS, DDIT4, TRIM69, AIFM3, IL17A, GZMB, GPR65, RASSF5, EAF2, TGM2, SEMA4D, CEBPB, IL1A, IL1B , CD38, DLC1, SRGN, AGT, BCL6, CASP4, COPI, REG1A , REG1B, VEGFC, S1P1, RETNLB, IFITM1, BCAT1, REG3A, TIMP2, PTGS2, SHH, CRIP2, BCL6, IHH
<u>Cellular movement:</u> migration of cells, homing, cell movement of PBMCs, migration of tumor cells, infiltration of blood cells, recruitment of antigen presenting cells, cell movement of fibroblast cell lines, chemotaxis, cell movement of antigen presenting cells, recruitment of cells, cell movement of endothelial cells	NCF2, NCF4, MMP9, RHOH, CYBB, CD27, IL17A, IL1A, IL1B , IL8 , CCL2, CXCL2, PF4, IL17RB, CCR10, CXCL5 , CCL24, CCR2, TNFRSF17, CXCL6, CSF2RB, CXCR4, IL8RB, OSMR, IL15RA, CSF3R, IL7R , VEGFC, GHR, PRLR, CXCL10, CCL3, CCL4, CSCL11, CXCL9, IFNAR2, PF4, OSRM

<p><u>Hematological system development and functional communication:</u> quantity of hematopoietic cells, development of lymphocytes, development of blood cells, development of leukocytes,</p>	<p>CCL3, CCND1, CCND3, CCR2, CCR7, CD19, CD2, CD74, CD79A, CD81, CD86, CD9, CDK13, CDK6, CDKN1B, CEBPA, CREB1, CREBBP, CRIP2, CSF1R, CSF2RB, CUX1, CXCL11, CXCL12, CXCR4, CYLD, DEF6, DFFB, IFNGR1, IFNGR2, IGF1R, IGF2, IGHM, IHH, IKBKB, IKZF1, IL12RB1, IL15RA, IL18, IL18R1, IL1A, IL1B, IL1R1, IL1RN, IL23A, IL27RA, IL2RA, IL2RB, IL6R, IL6ST, IL7R</p>
<p><u>Immune cell trafficking:</u> infiltration by neutrophils, chemotaxis of leukocytes, adhesion of lymphocytes, adhesion of phagocytes, chemotaxis of phagocytes, chemotaxis of granulocytes, infiltration of granulocytes, infiltration of leukocytes, homing of phagocytes, chemotaxis of neutrophils, recruitment of antigen presenting cells, adhesion of immune cells, migration of neutrophils, chemotaxis of lymphocytes, cell movement of dendritic cells</p>	<p>NCF2, NCF4, MMP9, RHOH, CYBB, CD27, IL17A, IL1A, IL1B, IL8, CCL2, CXCL2, PF4, IL17RB, CCR10, CXCL5, CCL24, CCR2, TNFRSF17, CXCL6, CSF2RB, CXCR4, IL8RB, OSMR, IL15RA, CSF3R, IL7R, VEGFC, GHR, PRLR, CXCL10, CCL3, CCL4, CSCL11, CXCL9, IFNAR2, PF4, OSRM</p>
<p><u>Inflammatory response:</u> response of phagocytes, response of macrophages, inflammatory response, immune response of phagocytes, activation of leukocytes, cell movement of neutrophils, activation of antigen presenting cells, immune response of antigen presenting cells, activation of phagocytes, immune response of cells, activation of mononuclear leukocytes, activation of lymphocytes</p>	<p>IFI30, CD74, HLA-DRA, HLA-DRB5, HLA-DRB1, HLA-DMA, TAP2, DEFB4, DEFA5, DEFA6, S100A12, NOS2A, CSF3R, NLRP7, SP140, MX2, CYSLTR1, DARC, RTP4, TLR8, IL17RB, TLR1, NLRP1, TOLLIP, IGHM, IGL@, IGKC, IGHG1, IGHG3, IGHD, CLEC4E, CD64, IGHA1, LILRB1, LILRB2, GBP1, GBP5, GBP2, PAG1, SAMHD1, FCGR2C, FCGR3B, SERPINB4, LCP2, MICB, CLEC7A, CD93, VNN1, IL8, CD27, GPR65, CEBPB, BST2, TREM1, IFITM2, IGFS6</p>
<p><u>Tissue morphology:</u> quantity of lymphocytes, quantity of blood cells, quantity of leukocytes, quantity of antigen</p>	<p>MMP10, MMP28, MMP7, MMP9, PLAU, SERPINB4, SERPINE2, ADAM9, CAPN13, CPA3, MME, COLA42, MFAP2, ADAMTS5, FBN1, TIMP3,</p>

presenting cells, invasion of cancer cells, apoptosis of tumor cells, progression of tumor	NTN2L, BGN, MMRN2, E-SELECTIN, SELPLG, VCAN , L-SELECTIN, P-SELECTIN, ITGAM, PECAM1, ICAM1, ITGB2, JAM2, CLDN8, CLDN2, CLDN23, CLDN1, CD86, VWF, COL4A2, CD44, ITGA8, CLEC4A, SLAMF7, CD300A, NRP1, PTPRC
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