

**Supplementary materials for**  
**Inflammation-related pathology in the olfactory epithelium: its impact on the olfactory system in psychotic disorders**

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**Table S1. Significant genes identified via differential expression analysis between healthy controls and first episode psychosis patients.**

Analysis results from DESeq2. Meaning of columns: baseMean, mean of normalized counts for all samples; log2FoldChange, log2 of fold change; lfcSE, standard error value; stat, Wald statistic; padj, adjusted p-value after multiple comparison correction; #Pubmed, the number of publications which mentioned the gene and the keyword "immune," "inflammation," or "inflammatory" in their titles or abstracts. Nine genes, categorized as immune/ inflammation-related based on the threshold of 20 publications, were highlighted in gray shadow.

Gene	baseMean	log2FoldChange	lfcSE	stat	pvalue	padj	#Pubmed
TSLP	536.91	0.67	0.16	4.08	4.59E-05	0.04	1673
EGR2	630.97	1.18	0.30	3.99	6.74E-05	0.04	259
AOC3	97.67	-1.16	0.29	-3.99	6.58E-05	0.04	174
TRIB3	17921.37	0.59	0.15	4.02	5.79E-05	0.04	84
CNTN1	298.30	-1.37	0.34	-4.01	6.08E-05	0.04	57
RBFOX3	35.80	1.26	0.30	4.18	2.85E-05	0.03	49
HSPA2	309.34	-1.04	0.23	-4.55	5.41E-06	0.02	44
YWHAE	45854.68	-0.19	0.05	-4.05	5.13E-05	0.04	38
SIK1	3754.82	0.66	0.17	4.00	6.44E-05	0.04	28
UBE2V1	39412.73	-0.16	0.04	-4.45	8.48E-06	0.02	18
SOAT2	70.71	-0.94	0.21	-4.44	8.84E-06	0.02	11
EIF4G2	132111.40	-0.13	0.03	-4.31	1.66E-05	0.03	11
PAPPA2	1672.11	1.14	0.28	4.02	5.90E-05	0.04	11
KLHDC7B	945.63	1.03	0.26	3.91	9.11E-05	0.05	6
DMGDH	181.43	0.80	0.18	4.43	9.58E-06	0.02	5
SGCG	65.47	1.31	0.30	4.38	1.19E-05	0.02	5
MLLT10	3972.80	0.17	0.04	4.27	1.92E-05	0.03	5
ATP6V1C2	43.47	2.01	0.31	6.54	6.05E-11	8.43E-07	4
HIST1H3D	94.94	-0.77	0.19	-4.06	4.88E-05	0.04	4
EFHC1	1758.49	0.27	0.07	4.02	5.85E-05	0.04	2
TMEM189	39412.73	-0.16	0.04	-4.45	8.48E-06	0.02	1
RTCB	16622.00	-0.10	0.02	-3.99	6.68E-05	0.04	1
TMEM189- UBE2V1	39412.73	-0.16	0.04	-4.45	8.48E-06	0.02	0
GOLGA6L9	524.33	0.31	0.07	4.19	2.73E-05	0.03	0
HIST1H2AD	94.94	-0.77	0.19	-4.06	4.88E-05	0.04	0
FAM161B	1581.51	0.28	0.07	3.98	6.80E-05	0.04	0
NPIPA5	11144.46	0.27	0.07	3.95	7.88E-05	0.04	0

**Table S2. Two-group comparison of expression levels of co-expression network modules between first-episode psychosis patients and healthy controls.**

Six modules were identified by the WGCNA method. Among 13,935 genes expressed in olfactory neuronal cells, 8488 were not assigned to any modules.

<b>module</b>	<b>size</b>	<b>pvalue</b>	<b>padj</b>
I	124	6.24E-05	3.74E-04
II	223	4.96E-03	0.01
III	89	0.34	0.65
IV	3332	0.43	0.65
V	1319	0.59	0.70
VI	360	0.80	0.80

**Table S3. PubMed search results for genes in module II.**

gene	#Pubmed	gene	#Pubmed	gene	#Pubmed	gene	#Pubmed	gene	#Pubmed	gene	#Pubmed
MMP2	5237	FOXO4	68	LPAR6	14	SLC2A4RG	5	TPK1	2	PCDHGA2	0
VDR	1807	LY6E	62	LY75	14	SMARCC2	5	WDR81	2	PCDHGA3	0
JAK1	1777	NFATC4	59	GREM2	13	VPS9D1	5	ZADH2	2	PCDHGA4	0
ABCA1	1030	PDGFD	57	OLFML3	13	APBB1	4	ADSSL1	1	PCDHGA5	0
MCC	1019	RYK	50	PTPRS	13	CARD17	4	BTBD8	1	PCDHGA6	0
ADAM17	1008	ELF1	46	SIAE	13	EXOC4	4	CCDC140	1	PCDHGA7	0
IL1R1	832	FOXC2	44	BDH2	12	LZTS2	4	CFAP69	1	PCDHGA8	0
IVD	733	TTC7A	41	CD99L2	12	ZGPAT	4	DENND6B	1	PCDHGB3	0
CASP1	709	RNASET2	37	FKBP8	12	ADGRL2	3	EMG1	1	PCDHGB4	0
STAT2	695	CUX1	34	RPS6KA2	11	ATP9B	3	GTF3C4	1	PCDHGB5	0
LAMP1	658	PLXNB2	33	USP33	11	C6orf89	3	KCNK15	1	PCDHGB6	0
CD7	508	THRA	33	ALDH3B1	10	CALCOCO1	3	KCNS2	1	PCMTD2	0
C1S	452	TRIM8	31	CD302	10	CARD16	3	PCDHGA1	1	RNF149	0
NRP1	396	CLCA2	10	CLCA2	10	FAXDC2	3	PCDHGA9	1	SLC9B1	0
GRN	395	CTBP1	28	CMTR1	9	HGSNAT	3	PCDHGB1	1	SPATA6	0
CASP4	389	RTP4	28	PSD3	9	IPO9	3	PCDHGB2	1	TMCO4	0
C1R	386	UBE2L6	28	SLC44A1	9	LRRN4CL	3	PCDHGB7	1	TMEM140	0
LRP1	384	DPYD	27	TM9SF4	9	SLC9B2	3	PCDHGC4	1	TSTD3	0
IFI16	366	FBLN5	27	VPS39	9	ST6GAL2	3	PCDHGC5	1		
LRRK2	348	PTPN13	26	PGAP3	8	STARD5	3	PDZRN3	1		
CTSK	312	PLPP3	25	SLC9A9	8	TCTN1	3	PPM1M	1		
STK11	297	SIK3	25	LIME1	7	WDR11	3	RBM44	1		
DCN	271	TLE1	25	MICU1	7	WDR6	3	RRAGB	1		
NR3C1	266	BCAT1	24	NEK9	7	WRNIP1	3	SHISA4	1		
ARNT	252	LPCAT2	23	NME7	7	ZER1	3	SPG21	1		
FGF7	216	LTBP2	22	RABEP1	7	ANKRD23	2	TBC1D14	1		
NMI	177	STAG2	22	ZFR	7	DCAF6	2	WDR91	1		
PRKCA	163	TBX3	22	ALPK2	6	EFHC1	2	ABHD15	0		
CTSS	155	FOXL1	21	HECW2	6	EVC2	2	ANKRD39	0		
NFKBIZ	152	LRRFIP1	21	NIPBL	6	GLT8D2	2	C3orf18	0		
ANGPTL2	146	CTPS1	20	RGL1	6	GRAMD4	2	CCDC148	0		
CTSA	114	DCTD	20	SELIL3	6	MIER1	2	CDC26	0		
JCHAIN	106	PTPRG	18	SH3BP4	6	NXPE3	2	CTDSP2	0		
TMEM119	103	SNX9	18	TBC1D5	6	P4HTM	2	DISP2	0		
SATB1	101	SVEP1	18	TOB2	6	PCDHGC3	2	GCC1	0		
SLIT2	100	SECTM1	17	VPS11	6	PLEKHA6	2	LY75-CD302	0		
ATF1	89	TRPS1	17	ZDHHC1	6	RAD9B	2	MEIOC	0		
CLMP	89	INPP4B	16	BCAS3	5	RBM43	2	NIPAL2	0		
SOCS5	89	MXRA8	15	DDX60L	5	TBC1D17	2	PCDHGA10	0		
PBX1	85	AK3	14	IFT140	5	TJAP1	2	PCDHGA11	0		
DTNB	79	C1RL	14	RAPGEF2	5	TMEM98	2	PCDHGA12	0		

## Figure legends

### Figure S1. No effect of chronic OE inflammation on body weight, locomotion, and anxiety.

(A) Body weight. Control, n=9 (4 males, 5 females); IOI, n=7 (4 males, 3 females)

(B) Locomotion (left), percentage of time spent in central area (right) as indicated by the open field test. Control, n=9 (4 males, 5 females); IOI, n=7 (4 males, 3 females).

(C) The percentage of entries into the open arm as indicated by the elevated plus maze test.

Control, n=19 (9 males, 10 females); IOI, n=17 (8 males, 9 females)

Data are presented as the mean  $\pm$  s.e.m.

**Figure S1.**

