

Supplementary materials

Table S1. Pyroptosis-related genes selected for oligonucleotide microarrays analysis.

Gene symbol					
<i>ABL1</i>	<i>CASP6</i>	<i>EZH2</i>	<i>IRF2</i>	<i>PANX1</i>	<i>SUZ12</i>
<i>ACE2</i>	<i>CASP8</i>	<i>FADD</i>	<i>IRF3</i>	<i>PARP1</i>	<i>TFAM</i>
<i>ADORA1</i>	<i>CASP9</i>	<i>FGF21</i>	<i>JUN</i>	<i>PDCD6IP</i>	<i>TFAP2A</i>
<i>ADORA2A</i>	<i>CD14</i>	<i>FMR1</i>	<i>KCNQ1OT1</i>	<i>PECAM1</i>	<i>TLR2</i>
<i>ADORA2B</i>	<i>CDC37</i>	<i>FNDC4</i>	<i>KIF23</i>	<i>PGF</i>	<i>TLR3</i>
<i>ADORA3</i>	<i>CDK9</i>	<i>FOXO3</i>	<i>KLF3-AS1</i>	<i>PKM</i>	<i>TLR8</i>
<i>AGER</i>	<i>CEBPB</i>	<i>FOXP3</i>	<i>LRPPRC</i>	<i>PKN2</i>	<i>TNF</i>
<i>AIM2</i>	<i>CEP55</i>	<i>FPR2</i>	<i>LY96</i>	<i>PLCG1</i>	<i>TNFRSF13B</i>
<i>ALK</i>	<i>CHI3L1</i>	<i>GBP1</i>	<i>LYST</i>	<i>POLA1</i>	<i>TP53</i>
<i>ANXA1</i>	<i>CHMP1A</i>	<i>GJA1</i>	<i>MALT1</i>	<i>POLA2</i>	<i>TP63</i>
<i>ANXA2</i>	<i>CHMP2A</i>	<i>GLMN</i>	<i>MAP3K7</i>	<i>POP1</i>	<i>TRAF6</i>
<i>APAF1</i>	<i>CHMP2B</i>	<i>GPB1</i>	<i>MAPK14</i>	<i>PPARG</i>	<i>TREM1</i>
<i>APIP</i>	<i>CHMP3</i>	<i>GPX4</i>	<i>MDM2</i>	<i>PRDM1</i>	<i>TREM2</i>
<i>APOE</i>	<i>CHMP4A</i>	<i>GSDMB</i>	<i>MEFV</i>	<i>PRF1</i>	<i>TRIM21</i>
<i>APOL1</i>	<i>CHMP6</i>	<i>GSDMD</i>	<i>MEG3</i>	<i>PRIM1</i>	<i>TRIM24</i>
<i>ASIC1</i>	<i>CHMP7</i>	<i>GSK3B</i>	<i>MELK</i>	<i>PRIM2</i>	<i>TRIM31</i>
<i>ATF6</i>	<i>CLEC5A</i>	<i>GZMA</i>	<i>METTL3</i>	<i>PRKACA</i>	<i>TRPM2</i>
<i>ATG3</i>	<i>CPTP</i>	<i>GZMB</i>	<i>MKI67</i>	<i>PRMT5</i>	<i>TUBB6</i>
<i>ATG7</i>	<i>CRTAC1</i>	<i>HDAC6</i>	<i>MMP1</i>	<i>PRTN3</i>	<i>TXNIP</i>
<i>BAK1</i>	<i>CSNK1A1</i>	<i>HMGB1</i>	<i>MST1</i>	<i>PTEN</i>	<i>UBE2D2</i>
<i>BAX</i>	<i>CTSG</i>	<i>HSP90AA1</i>	<i>MYD88</i>	<i>PTGS2</i>	<i>UBE2D3</i>
<i>BCL2</i>	<i>CTSV</i>	<i>HSP90AB1</i>	<i>NAIP</i>	<i>PTPN11</i>	<i>UBR2</i>
<i>BECN1</i>	<i>CXCL8</i>	<i>HTRA1</i>	<i>NEAT1</i>	<i>PYCARD</i>	<i>UCP1</i>
<i>BHLHE40</i>	<i>CYCS</i>	<i>HUWE1</i>	<i>NEDD4</i>	<i>RAB5A</i>	<i>USF2</i>
<i>BHLHE41</i>	<i>DDX3X</i>	<i>ICAM1</i>	<i>NFE2L2</i>	<i>RBBP4</i>	<i>USP24</i>
<i>BIRC2</i>	<i>DHX9</i>	<i>IFI16</i>	<i>NFKB1</i>	<i>RBBP7</i>	<i>USP47</i>
<i>BIRC3</i>	<i>DNMT1</i>	<i>IFIH1</i>	<i>NFS1</i>	<i>RIPK1</i>	<i>USP8</i>
<i>BNIP3</i>	<i>DNMT3A</i>	<i>IKZF1</i>	<i>NINJ1</i>	<i>SCAF11</i>	<i>UTS2</i>
<i>BRCC3</i>	<i>DNMT3B</i>	<i>IL13</i>	<i>NLRP1</i>	<i>SDHB</i>	<i>VCAM1</i>
<i>BRD4</i>	<i>DPEP1</i>	<i>IL13RA2</i>	<i>NLRP2</i>	<i>SEC22B</i>	<i>VDR</i>
<i>BSG</i>	<i>DPP8</i>	<i>IL18</i>	<i>NLRP3</i>	<i>SERPINB1</i>	<i>VIM</i>
<i>BST2</i>	<i>DRD2</i>	<i>IL18BP</i>	<i>NLRX1</i>	<i>SEZ6L2</i>	<i>VPS28</i>
<i>BTK</i>	<i>DUOX1</i>	<i>IL1A</i>	<i>NOD1</i>	<i>SIRT1</i>	<i>VPS4B</i>
<i>CAMP</i>	<i>E2F4</i>	<i>IL1B</i>	<i>NOD2</i>	<i>SLC16A4</i>	<i>VTN</i>
<i>CAPN1</i>	<i>EED</i>	<i>IL1RN</i>	<i>NOS1</i>	<i>SNIP1</i>	<i>XIST</i>
<i>CARD8</i>	<i>EGFR</i>	<i>IL32</i>	<i>NOS2</i>	<i>SQSTM1</i>	<i>YWHAE</i>
<i>CASP1</i>	<i>ELANE</i>	<i>IL36G</i>	<i>NR1H2</i>	<i>STAT3</i>	<i>YWHAZ</i>
<i>CASP3</i>	<i>ELAVL1</i>	<i>IL6</i>	<i>OSM</i>	<i>STK4</i>	<i>ZBP1</i>
<i>CASP4</i>	<i>EPHA2</i>	<i>IRAK3</i>	<i>P2RX7</i>	<i>STXBP2</i>	<i>ZNF532</i>
<i>CASP5</i>	<i>ERP44</i>	<i>IRF1</i>	<i>PAK2</i>	<i>STXBP3</i>	

Table S2. The classification of selected pyroptosis-related genes with a description of their function based on the STRING database.

Gene	Function	RT-qPCR results		
		[H] vs. [C]	[L] vs. [C]	[LH] vs. [C]
	Role in the formation of the NLRP3 inflammasome;			
TXNIP	may act as an oxidative stress mediator by inhibiting thioredoxin activity or by limiting its bioavailability	↓*	↓*	↓*
CXCL8	It is released from several cell types in response to an inflammatory stimulus; involved in neutrophil activation	↑*	↑*	↑
BCL2	Regulates cell death by controlling the mitochondrial membrane permeability; may attenuate inflammation by impairing NLRP1-inflammasome activation, hence CASP1 activation and IL1B release	Ns	Ns	Ns
BAX	Can induce either apoptosis or pyroptosis during stress factors and depending on caspases; Can induce pyroptosis via BAK/BAX-caspase 3-GSDME pathway	Ns	↓*	Ns
CASP1	Main function is to cleave GSDMD; activated by inflammasome	↑	Ns	Ns
CASP9	Cysteine-aspartate protease involved in apoptosis; indirectly associated with CASP3/GSDME pathway which can result in pyroptosis in cells	Ns	Ns	Ns

[C]—control; [L]—lutein-treated ARPE-19 cells; [H]—H₂O₂-treated ARPE-19 cells; [LH]—lutein- and H₂O₂-treated ARPE-19 cells; ↑, ↓—higher and lower gene expression; *—statistical significance ($p < 0.05$), Tukey's post hoc test; Ns—not statistically significant; RT-qPCR—reverse transcription quantitative real-time polymerase chain reaction; TXNIP—thioredoxin-interacting protein; CXCL8—C-X-C motif chemokine ligand 8; BCL2—B-cell lymphoma; BAX—BCL2-associated X protein; CASP1—caspase-1; CASP9—caspase-9; NLRP3—NOD-, LRR- and pyrin domain-containing protein 3; NLRP1—NOD-, LRR- and pyrin domain-containing protein 1; IL1B—interleukin 1 beta; BAK—BCL2 homologous antagonist killer; GSDME—gasdermin E; CASP3—caspase 3; GSDMD—gasdermin D; STRING database—Search Tool for the Retrieval of Interacting Genes / Proteins.