Evaluation of Early Biomarkers of Atherosclerosis Associated with Polychlorinated Biphenyl Exposure: An in Vitro and in Vivo Study

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Figure S1. Functional analyses of genes targeted by differentially expressed miRNAs. High-throughput sequencing analysis of differentially expressed miRNAs after 5 μM PCB29-pQ treatment of HUVECs for 24 h (n = 3). Target gene of differentially expressed genes were screened and functional analyses performed. Gene ontology has three ontologies: molecular function, cellular component, and biological process. The exact data are presented in Excel Table S3.

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Figure S4. The expression of HDAC7 level in HUVECs transfected with HDAC7-AS1 siRNA or pEZ-M61-HDAC7-AS1. (a) Predicted relationship between ENST00000080059 (HDAC7) and ENST00000599515 (HDAC7-AS1) via RNAplex (http://www.tbi.univie.ac.at/RNA/RNAplex.1.html) (b) After transfection with NC siRNA or HDAC7-AS1 siRNA (25, 50, or 100 nM) for 48 h, the silencing efficiency of HDAC7-AS1 siRNA in HUVECs was determined by RT-qPCR. Data are presented as mean ± SD (n = 3). (c) After transfection with 2.5 μg pEZ-M61-NC or pEZ-M61-HDAC7-AS1 (2.5, 5, or 7.5 μg) for 6 h, HUVECs were treated with 5 μM PCB29-pQ. HDAC7-AS1 level was determined by RT-qPCR. Data are presented as mean ± SD (n = 3). HDAC7 expression of PCB29-pQ-exposed cells or control after (d) transfection with 25 nM NC siRNA or 25 nM pEZ-M61-NC siRNA for 24 h or (e) transfection with 2.5 μg pEZ-M61-NC or 2.5 μg pEZ-M61-HDAC7-AS1 for 6 h. Data are presented as mean ± SD (n = 3). The housekeeping gene β-actin was used for quantification, and the primer information is shown Table S3. P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. For b and c, expression is shown relative to NC siRNA control and pEZ-M61-NC controls, respectively. The exact mean and SD values are presented in Table S21.

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Figure S6. Volcano plots analyzing differential expression with mRNA sequencing (mRNA-Seq) in the control group and PCB29-pQ group. The abscissa represents the logarithmic values of two different groups, and the ordinate represents mRNAs differences (fold change ≥2 and P value <0.05) between two groups. Red dots indicated PCB29-pQ group is higher relative to control group. Green dots indicated lower expression in PCB29-pQ group than control group (judgment standard is P value <0.05, and the difference multiple is more than 2). Black dots indicated no difference between two groups.

Figure S7. Target genes TGF-β2 and PPME1 protein levels in HUVECs exposed to PCB29-pQ with MIR-7-5p inhibitor or TGF-β2/PPME1 siRNA. After co-transfection with 100 nM NC inhibitor or MIR-7-5p inhibitor and NC siRNA or TGF-β2/PPME1 siRNA (25 nM) for 24 h, HUVECs were treated with 5 μM PCB29-pQ for 24 h. (n = 3). Protein levels of (a) PPME1 and (b) TGF-β2 were detected by western blotting (upper panel). The relative protein expression levels (lower panel) were quantified by ImageJ software. Data are presented as mean ± SD (n = 3). β-Actin was used as an internal loading control. Data are graphed relative to the expression in cells exposed to the NC inhibitor and NC siRNA together. The exact mean and SD values are presented in Table S22.
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Figure S9. The tube forming ability in HUVECs exposed to PCB29-pQ and transfected with a MIR-7-5p inhibitor. (Left panel) After transfection with 100 nM NC inhibitor or 100 nM MIR-7-5p inhibitor for 48 h, followed by exposure to 5 μM PCB29-pQ for 24 h, cells were plated on Matrigel to conduct tube formation assay. Scale bar = 200 μm. (Right panel) Quantification of tube formation through measurement of branch point number with ImageJ software. Data were presented as mean ± SD (n = 3). P values were determined by two-way ANOVA, followed by Tukey’s post hoc test. The exact mean and SD values are presented in Table S24.

Figure S10. Apoptosis and proliferation rates in HUVECs exposed to PCB29-pQ and transfected with a MIR-7-5p mimic or pEZ-M61-HDAC7-AS1. (a) Cell apoptosis was assessed by Annexin V-FITC/PI double staining with a flow cytometer. (n = 3). (b) Cell proliferation was measured by BrdU/PI double staining with a flow cytometer. (n = 3).

Figure S11. HDAC7-AS1, MIR-7-5p, TGF-β2, PPME1 mRNA levels, TGF-β2 and PPME1 protein levels, and apoptosis or proliferation rates in HUVECs exposed to PCB29-pQ and transfected with a MIR-7-5p inhibitor or HDAC7-AS1 siRNA. After co-transfection with 100 nM NC inhibitor or 100 nM MIR-7-5p inhibitor and NC siRNA or HDAC7-AS1 siRNA (25 nM) for 24 h, HUVECs were treated with 5 μM PCB29-pQ for 24 h. RNAs expression of (a) MIR-7-5p, (b) HDAC7-AS1, (c) TGF-β2 and (d) PPME1 were detected by RT-qPCR. β-actin was used as a housekeeping gene, except U6 was used for MIR-7-5p quantification. The primer information is shown in Table S3-4. (e) Protein levels of TGF-β2 and PPME1 were detected by western blotting. β-Actin was used as an internal loading control. (f) TGF-β2, (g) PPME1 protein expression levels were quantified by ImageJ software. Data were presented as mean ± Standard Deviation (SD) (n = 3). (h) Cell viability was measured by CCK-8 kit. Data were presented as mean ± SD (n = 3). (i) Cell apoptosis was performed by Annexin V-FITC/PI assay with a flow cytometer. (j) Cell proliferation was performed by BrdU/PI staining. P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. Data are graphed relative to the cells exposed to NC inhibitor, NC siRNA, and vehicle control. The exact mean and SD values are presented in Table S25.
Figure S12. HE staining of aortic root cross-sections and TC and TG levels in ApoE⁻/⁻ mice were intravenous (i.v.) injected with AAV-HDAC7-AS1. Male ApoE⁻/⁻ mice were i.v. injected with AAV-HDAC7-AS1 via tail vein (4x10^10 particles/mouse) to create an HDAC7-AS1 overexpressed model. Male ApoE⁻/⁻ mice that received the AAV vector were used as AAV control mice. Control and HDAC7-AS1 overexpressed ApoE⁻/⁻ mice were fed a Western high-fat diet for 12 weeks and tap water ad libitum. Mice were injected with 5 mg/kg body weight of PCB29-pQ or equal volumes of corn oil by i.p. injection once a week for 12 continuous weeks with the first two injections during the 1st week (3 days apart). (a) (Left panel) HE of the aortic root plaque area in the aortic root was quantified by ImageJ software. Data are presented as mean ± Standard Deviation (SD). Scale bar = 200 μm. (b) TC level and (c) LDL-C level. Data are presented as mean ±SD (n = 5). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. The exact mean and SD values are presented in Table S26.

Figure S13. CAV1 phosphorylation and TGF-β, PPME1, and inflammatory factor levels in HUVECs exposed PCB29-pQ with CAV1 siRNA. (a) HUVECs were treated with 5 μM PCB29-pQ for 1, 3, and 6 h. (upper panel) Protein levels of p-CAV1 and CAV1 were detected by western blotting. β-Actin was used as an internal loading control. The relative protein expression levels (lower panel) were quantified by ImageJ software. Data are presented as mean ± SD (n = 3). After transfection with 25 nM NC siRNA or CAV1 siRNA for 48 h, HUVECs were treated with 5 μM PCB29-pQ for 24 h. The siRNA information is shown in Table S6. (b) Protein levels of p-CAV1, CAV1, IL-1β, IL-6, and TNFα were detected by western blotting. β-Actin was used as an internal loading control. (c-h) p-CAV1, CAV1, IL-1β, IL-6, and TNFα were quantified by ImageJ software. Data are presented as mean ± SD (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. Data are graphed relative to the NC siRNA group. The exact mean and SD values are presented in Table S27.

Figure S14. p-CAV1 level in ApoE⁻/⁻ mice that were i.v. injected with AAV-HDAC7-AS1. Male ApoE⁻/⁻ mice were i.v. injected with AAV-HDAC7-AS1 via tail vein (4x10^10 particles/mouse) to create an HDAC7-AS1 overexpressed model. Male ApoE⁻/⁻ mice that received the AAV vector were considered as AAV control mice. Control and HDAC7-AS1 overexpressed ApoE⁻/⁻ mice were fed a Western high-fat diet for 12 weeks and tap water ad libitum. Mice were injected with 5 mg/kg body weight of PCB29-pQ or equal volumes of corn oil by i.p. injection once a week for 12 continuous weeks with the first two injections during the 1st week (3 days apart). (Left panel) The presence of p-CAV1 in aortic root cross-sections was detected by double immunostaining with the use of antibodies against p-CAV1 (red), endothelial cell marker CD31 (green), and nucleus marker DAPI (blue), respectively. Scale bar = 100 μm. White arrows represent the colocalization of p-CAV1 (red) and CD31 (green). (Right panel) Co-localization of p-CAV1 and CD31 was analyzed by Pearson’s correlation coefficient. Data were presented as mean ± SD (n = 3). The exact mean and SD values are presented in Table S28.

Figure S15. Gene type identification of ApoE and CAV1 knockout mice. DNA from the tail of offspring mice was extracted and analyzed by PCR and agarose gel electrophoresis. (a) Homozygous of ApoE: 245 bp; Heterozygous of ApoE: 245 bp & 155 bp; WT of ApoE: 155 bp. (b) Homozygous of CAV1: 410 bp; Heterozygous of CAV1: 690 bp & 410 bp; WT of CAV1: 690 bp. The PCR primer sequences for ApoE and CAV1 mice genotyping are shown in Table S2.
Figure S16. Immunohistochemistry staining of CD68 and TC and LDL-C levels in ApoE<sup>−/−</sup> and ApoE<sup>−/−</sup>/CAV1<sup>−/−</sup> mice. ApoE<sup>−/−</sup> mice were crossed with CAV1<sup>−/−</sup> mice to generate ApoE<sup>−/−</sup>/CAV1<sup>−/−</sup> mice. ApoE<sup>−/−</sup> or ApoE<sup>−/−</sup>/CAV1<sup>−/−</sup> mice were fed a Western high-fat diet for 12 weeks and tap water ad libitum. Mice were treated with 5 mg/kg body weight of PCB29-pQ or equal volumes of corn oil by i.p. injection. (a) (Left panel) Immunohistochemistry staining of CD68 detected macrophage infiltration located at the aortic wall. Scale bar = 200 μm. (Right panel) Quantification proportion of positive CD68 expressions area to total aortic section using ImageJ software. Data are presented as mean ± SD (n = 3). Serum (b) TC level and (c) LDL-C levels. Data are presented as mean ±SD (n = 5). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. The exact mean and SD values are presented in Table S29.

Figure S17. Adhesion molecules, pro-inflammatory cytokines and p65 protein expression levels in HUVEC exposed to PCB29-pQ. HUVECs were treated with 5 μM PCB29-pQ for 1, 3, or 6 h. (a) IL-1β, IL-6, TNF-α, ICAM-1, and VCAM-1 expressions in cell lysates were analyzed by western blotting. (b-f) IL-1β, IL-6, TNF-α, ICAM-1, and VCAM-1 expressions were quantified by ImageJ software. Data are presented as mean ± Standard Deviation (SD) (n = 3). (g) Calcein-AM-loaded THP-1 cells (10<sup>6</sup> cells/ml) were added to HUVECs and then incubated for 3 h. The unbound cells were washed off, and attached fluorescent monocytes were visualized using an optical microscope. (Left panel) The fluorescence intensity of Calcein-AM was quantified using ImageJ software. Data are presented as mean ± SD (n = 3). P value was determined by unpaired Student’s t-test. (h) HUVECs were treated with 5 μM PCB29-pQ for 1, 3, or 6 h. IκBα and p-p65 levels were analyzed by western blotting analysis. β-Actin was used as an internal loading control. (i-j) IκBα and p-p65 levels were quantified by ImageJ software. Data are presented as mean ± SD (n = 3). (k) HUVECs were pretreated with 5 μM p65 inhibitor PDTC for 1 h, followed with 5 μM PCB29-pQ exposure for 6 h. IL-1β, IL-6, and TNF-α in cell lysates were analyzed by western blotting. β-Actin was used as an internal loading control. (l-n) IL-1β, IL-6, and TNF-α protein expression levels were quantified by ImageJ software. Data were presented as mean ± SD (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. The exact mean and SD values are presented in Table S30.

Figure S18. Adhesion molecules, pro-inflammatory cytokines and p65 protein expression levels in HUVEC exposed to PCB29-pQ with CAV1 siRNA. HUVECs were transfected with NC siRNA or 25 nM CAV1 siRNA for 48 h and then treated with 5 μM PCB29-pQ for 6 h. (a) IL-1β, IL-6, TNF-α, ICAM-1 and VCAM-1 expressions were analyzed by western blotting. β-Actin was used as an internal loading control. (b-f) IL-1β, IL-6, TNF-α, ICAM-1 and VCAM-1 expression levels were quantified by ImageJ software. Data were presented as mean ± Standard Deviation (SD) (n = 3). (g) IκBα, p-p65, and p65 expressions were analyzed by western blotting. β-Actin was used as an internal loading control. (h-i) IκBα, p-p65, and p65 expression levels were quantified by ImageJ software. Data were presented as mean ± SD (n = 3). (j) (Left panel) Immunofluorescence analysis of p65. Green staining represents the location of p65. Nuclei shown in blue were stained with DAPI. Scale bar = 10 μm. (Right panel) Co-localization of p-CAV1 and DAPI was analyzed by Pearson’s correlation coefficient. Data were presented as mean ± SD (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. The exact mean and SD values are presented in Table S31.
Figure S19. Inflammatory factors and ROS levels in HUVEC exposed to PCB29-pQ. HUVECs were pretreated with 40 μM VC, 20 μM VE or 5 mM NAC for 1 h, followed with 5 μM PCB29-pQ exposure for 6 h. (n = 3). (a) p-p65, p65, IL-1β, IL-6, TNFα, ICAM-1 and VCAM-1 in cell lysates were analyzed by western blotting. (b-g) p-p65, p65, IL-1β, IL-6, TNFα, ICAM-1 and VCAM-1 expression levels were quantified by ImageJ software. Data were presented as mean ± Standard Deviation (SD) (n = 3). (h) ROS levels were detected by DCFH-DA (10 μM) probe. Data were presented as mean ± SD (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. In all graphs, data is normalized to the control cell groups. The exact mean and SD values are presented in Table S32.

Figure S20. p-CAV1 and CAV1 levels in HUVEC exposed to PCB29-pQ and antioxidants. HUVECs were pretreated with 40 μM VC, 20 μM VE or 5 mM NAC for 1 h, followed by 5 μM PCB29-pQ exposure for 6 h. HUVECs were pretreated with (a) 40 μM VC, 20 μM VE or 5 mM NAC, (b) 200 U/ml PEG-SOD, 500 U/ml PEG-CAT and 5 mM GSH-MEE for 1 h, followed with 5 μM PCB29-pQ exposure for 6 h. (Left panel) p-CAV1 and CAV1 in cell lysates were analyzed by western blotting. β-Actin was used as an internal loading control. (Right panel) p-CAV1 and CAV1 expression levels were quantified by ImageJ software. Data were presented as mean ± Standard Deviation (SD) (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. All data is graphed relative to the control cell groups. The exact mean and SD values are presented in Table S33.

Figure S21. Heatmap showing correlation scores between factors. Plasma RNA was extracted by TRNzol universal reagent. CHD group (n = 77) contains patients with > 50% coronary artery stenosis, and the control group (n = 50) contains subjects with < 50% coronary artery stenosis. RT-qPCR analysis of HDAC7-AS1, MIR-7-5p, TGF-β2, PPME1, IL-1β, IL6 and TNFα expressions. Spearman’s rank correlation coefficient was used to assess the correlation between the two indicated factors. P value of < 0.05 was considered significant. The size and color of circle represents the correlation between two factors. X’s mean no significance. Summary data can be found in Table S11.

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Table S32. Protein expression of inflammatory factors and ROS levels in HUVEC exposed to PCB29-pQ.

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Additional File- Excel Document
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Figure S7. Target genes TGF-β2 and PPME1 protein levels in HUVECs exposed to PCB29-pQ with MIR-7-5p inhibitor or TGF-β2/PPME1 siRNA. After co-transfection with 100 nM NC inhibitor or MIR-7-5p inhibitor and NC siRNA or TGF-β2/PPME1 siRNA (25 nM) for 24 h, HUVECs were treated with 5 μM PCB29-pQ for 24 h. (n = 3). Protein levels of (a) PPME1 and (b) TGF-β2 were detected by western blotting (upper panel). The relative protein expression levels (lower panel) were quantified by ImageJ software. Data are presented as mean ± SD (n = 3). β-Actin was used as an internal loading control. Data are graphed relative to the expression in cells exposed to the NC inhibitor and NC siRNA together. The exact mean and SD values are presented in Table S22.
Figure S8. Luciferase analysis of the activity of MIR-7-5p bind to TGF-β2, PPME1, and HDAC7-AS1 in HUVECs transfected with NC mimic or MIR-7-5p mimic. (a) HUVECs were transfected with NC mimic or MIR-7-5p mimic for 48 h, together with NC-3’UTR, TGF-β2 (WT)-3’UTR, or TGF-β2 (MUT)-3’UTR. (b) HUVECs were transfected with 50 nM NC mimic or 50 nM MIR-7-5p mimic for 48 h, together with NC-3’UTR, PPME1 (WT)-3’UTR, or PPME1 (MUT)-3’UTR. (c) HUVECs were transfected with 50 nM NC mimic or 50 nM MIR-7-5p mimic for 48 h, together with Luc-NC, Luc-HDAC7-AS1-WT, or Luc-HDAC7-AS1-MUT. For all panels, Gaussia luciferase activity was analyzed, corresponding to TGF-β2, PPME1, and HDAC7-AS1 transcription. Data are presented as mean ± SD (n = 3). P values were determined by two-way ANOVA, followed by Tukey’s post hoc test. Data are graphed relative to the NC-mimic treated, NC-3’UTR controls. The exact mean and SD values are presented in Table S23.
Figure S9. The tube forming ability in HUVECs exposed to PCB29-pQ and transfected with a MIR-7-5p inhibitor. (Left panel) After transfection with 100 nM NC inhibitor or 100 nM MIR-7-5p inhibitor for 48 h, followed by exposure to 5 μM PCB29-pQ for 24 h, cells were plated on Matrigel to conduct tube formation assay. Scale bar = 200 μm. (Right panel) Quantification of tube formation through measurement of branch point number with ImageJ software. Data were presented as mean ± SD (n = 3). P values were determined by two-way ANOVA, followed by Tukey’s post hoc test. The exact mean and SD values are presented in Table S24.
Figure S10. Apoptosis and proliferation rates in HUVECs exposed to PCB29-pQ and transfected with a MIR-7-5p mimic or pEZ-M61-HDAC7-AS1. (a) Cell apoptosis was assessed by Annexin V-FITC/PI double staining with a flow cytometer. (n = 3). (b) Cell proliferation was measured by BrdU/PI double staining with a flow cytometer. (n = 3).
Figure S11. HDAC7-AS1, MIR-7-5p, TGF-β2, PPME1 mRNA levels, TGF-β2 and PPME1 protein levels, and apoptosis or proliferation rates in HUVECs exposed to PCB29-pQ and transfected with a MIR-7-5p inhibitor or HDAC7-AS1 siRNA. After co-transfection with 100 nM NC inhibitor.
or 100 nM *MIR-7-5p* inhibitor and NC siRNA or *HDAC7-ASI* siRNA (25 nM) for 24 h, HUVECs were treated with 5 μM PCB29-pQ for 24 h. RNAs expression of (a) *MIR-7-5p*, (b) *HDAC7-ASI*, (c) *TGF-β2* and (d) *PPME1* were detected by RT-qPCR. *β-actin* was used as a housekeeping gene, except U6 was used for *MIR-7-5p* quantification. The primer information is shown in Table S3-4. (e) Protein levels of *TGF-β2* and *PPME1* were detected by western blotting. *β-Actin* was used as an internal loading control. (f) *TGF-β2*, (g) *PPME1* protein expression levels were quantified by ImageJ software. Data were presented as mean ± Standard Deviation (SD) (n = 3). (h) Cell viability was measured by CCK-8 kit. Data were presented as mean ± SD (n = 3). (i) Cell apoptosis was performed by Annexin V-FITC/PI assay with a flow cytometer. (j) Cell proliferation was performed by BrdU/PI staining. P values were determined by one-way ANOVA, followed by Tukey’s *post hoc* test. Data are graphed relative to the cells exposed to NC inhibitor, NC siRNA, and vehicle control. The exact mean and SD values are presented in Table S25.
Figure S12. HE staining of aortic root cross-sections and TC and TG levels in ApoE<sup>−/−</sup> mice were intravenous (i.v.) injected with AAV-HDAC7-AS1. Male ApoE<sup>−/−</sup> mice were i.v. injected with AAV-HDAC7-AS1 via tail vein (4×10<sup>10</sup> particles/mouse) to create an HDAC7-AS1 overexpressed mice model. Male ApoE<sup>−/−</sup> mice that received the AAV vector were used as AAV control mice. Control and HDAC7-AS1 overexpressed ApoE<sup>−/−</sup> mice were fed a western high-fat diet for 12 weeks and tap water ad libitum. Mice were injected with 5 mg/kg body weight of PCB29-pQ or equal volumes of corn oil by i.p. injection once a week for 12 continuous weeks with the first two injections during the 1<sup>st</sup> week (3 days apart). (a) (Left panel) HE of the aortic root (Right panel) plaque area in the aortic root was quantified by ImageJ software. Data are presented as mean ± Standard Deviation (SD). Scale bar = 200 μm. (b) TC level and (c) LDL-C level. Data are presented as mean ±SD (n = 5). P values were
determined by one-way ANOVA, followed by Tukey’s *post hoc* test. The exact mean and SD values are presented in Table S26.
Figure S13. CAV1 phosphorylation and TGF-β, PPME1, and inflammatory factor levels in HUVECs exposed PCB29-pQ with CAV1 siRNA. (a) HUVECs were treated with 5 μM PCB29-pQ for 1, 3, and 6 h. (upper panel) Protein levels of p-CAV1 and CAV1 were detected by western blotting. β-Actin was used as an internal loading control. The relative protein expression levels (lower panel) were quantified by ImageJ software. Data are presented as mean ± SD (n = 3). After transfection with 25 nM NC siRNA or CAV1 siRNA for 48 h, HUVECs were treated with 5 μM PCB29-pQ for 24 h. The siRNA information is shown in Table S6. (b) Protein levels of p-CAV1, CAV1, IL-1β, IL-6, and TNFα were detected by western blotting. β-Actin was used as an internal loading control. (c-h) p-CAV1, CAV1, IL-1β, IL-6, and TNFα were quantified by ImageJ software. Data are presented as mean ± SD (n = 3).
± SD (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. Data are graphed relative to the NC siRNA group. The exact mean and SD values are presented in Table S27.
Figure S14. p-CAV1 level in ApoE<sup>−/−</sup> mice that were i.v. injected with AAV-HDAC7-AS1. Male ApoE<sup>−/−</sup> mice were i.v. injected with AAV-HDAC7-AS1 via tail vein (4×10<sup>10</sup> particles/mouse) to create an HDAC7-AS1 overexpressed mice model. Male ApoE<sup>−/−</sup> mice that received the AAV vector were considered as AAV control mice. Control and HDAC7-AS1 overexpressed ApoE<sup>−/−</sup> mice were fed a Western high-fat diet for 12 weeks and tap water ad libitum. Mice were injected with 5 mg/kg body weight of PCB29-pQ or equal volumes of corn oil by i.p. injection once a week for 12 continuous weeks with the first two injections during the 1<sup>st</sup> week (3 days apart). (Left panel) The presence of p-CAV1 in aortic root cross-sections was detected by double immunostaining with the use of antibodies against p-CAV1 (red), endothelial cell marker CD31 (green), and nucleus marker DAPI (blue), respectively. Scale bar = 100 μm. White arrows represent the colocalization of p-CAV1 (red) and CD31 (green). (Right panel) Co-localization of p-CAV1 and CD31 was analyzed by Pearson’s correlation coefficient. Data were presented as mean ± SD (n = 3). The exact mean and SD values are presented in Table S28.
Figure S15. Gene type identification of ApoE and CAV1 knockout mice. DNA from the tail of offspring mice was extracted and analyzed by PCR and agarose gel electrophoresis. (a) Homozygous of ApoE: 245 bp; Heterozygous of ApoE: 245 bp & 155 bp; WT of ApoE: 155 bp. (b) Homozygous of CAV1: 410 bp; Heterozygous of CAV1: 690 bp & 410 bp; WT of CAV1: 690 bp. The PCR primer sequences for ApoE and CAV1 mice genotyping are shown in Table S2.
Figure S16. Immunohistochemistry staining of CD68 and TC and LDL-C levels in ApoE\(^{-/-}\) and ApoE\(^{-/-}\)/CAV1\(^{-/-}\) mice. ApoE\(^{-/-}\) mice were crossed with CAV1\(^{-/-}\) mice to generate ApoE\(^{-/-}\)/CAV1\(^{-/-}\) mice. ApoE\(^{-/-}\) or ApoE\(^{-/-}\)/CAV1\(^{-/-}\) mice were fed a Western high-fat diet for 12 weeks and tap water ad libitum. Mice were treated with 5 mg/kg body weight of PCB29-pQ or equal volumes of corn oil by i.p. injection. (a) (Left panel) Immunohistochemistry staining of CD68 detected macrophage infiltration located at the aortic wall. Scale bar = 200 μm. (Right panel) Quantification proportion of positive CD68 expressions area to total aortic section using was performed by ImageJ software. Data are presented as mean ± SD (n = 3). Serum (b) TC level and (c) LDL-C levels. Data are presented as mean ±SD (n = 5). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. The
exact mean and SD values are presented in Table S29.
Figure S17. Adhesion molecules, pro-inflammatory cytokines and p65 protein expression levels in HUVEC exposed to PCB29-pQ. HUVECs were treated with 5 μM PCB29-pQ for 1, 3, or 6 h. (a) IL-1β, IL-6, TNF-α, ICAM-1, and VCAM-1 expressions in cell lysates were analyzed by western blotting. (b-f) IL-1β, IL-6, TNF-α, ICAM-1, and VCAM-1 expressions were quantified by ImageJ.
software. Data are presented as mean ± Standard Deviation (SD) (n = 3). (g) Calcein-AM-loaded THP-1 cells (10^6 cells/ml) were added to HUVECs and then incubated for 3 h. The unbound cells were washed off, and attached fluorescent monocytes were visualized using an optical microscope. (Left panel) The fluorescence intensity of Calcein-AM was quantified using ImageJ software. Data are presented as mean ± SD (n = 3). P value was determined by unpaired Student’s t-test. (h) HUVECs were treated with 5 μM PCB29-pQ for 1, 3, or 6 h. IkBα and p-p65 levels were analyzed by western blotting analysis. β-Actin was used as an internal loading control. (i-j) IkBα and p-p65 levels were quantified by ImageJ software. Data are presented as mean ± SD (n = 3). (k) HUVECs were pretreated with 5 μM p65 inhibitor PDTC for 1 h, followed with 5 μM PCB29-pQ exposure for 6 h. IL-1β, IL-6, and TNF-α in cell lysates were analyzed by western blotting. β-Actin was used as an internal loading control. (I-n) IL-1β, IL-6, and TNF-α protein expression levels were quantified by ImageJ software. Data were presented as mean ± SD (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. The exact mean and SD values are presented in Table S30.
Figure S18. Adhesion molecules, pro-inflammatory cytokines and p65 protein expression levels in HUVEC exposed to PCB29-pQ with CAV1 siRNA. HUVECs were transfected with NC siRNA or 25 nM CAV1 siRNA for 48 h and then treated with 5 μM PCB29-pQ for 6 h. (a) IL-1β, IL-6, TNF-α, ICAM-1 and VCAM-1 expressions were analyzed by western blotting. β-Actin was used as an internal loading control. (b-f) IL-1β, IL-6, TNF-α, ICAM-1 and VCAM-1 expression levels were quantified by ImageJ software. Data were presented as mean ± Standard Deviation (SD) (n = 3). (g) IκBα, p-p65, and p65 expressions were analyzed by western blotting. β-Actin was used as an internal
loading control. (h-i) IκBα, p-p65, and p65 expression levels were quantified by ImageJ software. Data were presented as mean ± SD (n = 3). (j) (Left panel) Immunofluorescence analysis of p65. Green staining represents the location of p65. Nuclei shown in blue were stained with DAPI. Scale bar = 10 μm. (Right panel) Co-localization of p-CAV1 and DAPI was analyzed by Pearson’s correlation coefficient. Data were presented as mean ± SD (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. The exact mean and SD values are presented in Table S31.
Figure S19. Inflammatory factors and ROS levels in HUVEC exposed to PCB29-pQ. HUVECs were pretreated with 40 μM VC, 20 μM VE or 5 mM NAC for 1 h, followed with 5 μM PCB29-pQ exposure for 6 h. (n = 3). (a) p-p65, p65, IL-1β, IL-6, TNFα, ICAM-1 and VCAM-1 in cell lysates were analyzed by western blotting. (b-g) p-p65, p65, IL-1β, IL-6, TNFα, ICAM-1 and VCAM-1 expression levels were quantified by ImageJ software. Data were presented as mean ± Standard Deviation (SD) (n = 3). (h) ROS levels were detected by DCFH-DA (10 μM) probe. Data were presented as mean ± SD (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. In all graphs, data is normalized to the control cell groups. The exact mean and SD values are presented in Table S32.
Figure S20. p-CAV1 and CAV1 levels in HUVEC exposed to PCB29-pQ and antioxidants.

HUVECs were pretreated with 40 μM VC, 20 μM VE or 5 mM NAC for 1 h, followed by 5 μM PCB29-pQ exposure for 6 h. HUVECs were pretreated with (a) 40 μM VC, 20 μM VE or 5 mM NAC, (b) 200 U/ml PEG-SOD, 500 U/ml PEG-CAT and 5 mM GSH-MEE for 1 h, followed with 5 μM PCB29-pQ exposure for 6 h. (Left panel) p-CAV1 and CAV1 in cell lysates were analyzed by western blotting. β-Actin was used as an internal loading control. (Right panel) p-CAV1 and CAV1 expression levels were quantified by ImageJ software. Data were presented as mean ± Standard Deviation (SD) (n = 3). P values were determined by one-way ANOVA, followed by Tukey’s post hoc test. All data is graphed relative to the control cell groups. The exact mean and SD values are presented in Table S33.
Figure S21. Heatmap showing correlation scores between factors. Plasma RNA was extracted by TRNzol universal reagent. CHD group (n = 77) contains patients with > 50% coronary artery stenosis, and the control group (n = 50) contains subjects with < 50% coronary artery stenosis. RT-qPCR analysis of HDAC7-AS1, MIR-7-5p, TGF-β2, PPME1, IL-1β, IL6 and TNFα expressions. Spearman’s rank correlation coefficient was used to assess the correlation between the two indicated factors. P value of < 0.05 was considered significant. The size and color of circle represents the correlation between two factors. X’s mean no significance. Summary data can be found in Table S11.
| Producers                              | Antibodies (Item No.)                                                                 | Dilution     |
|----------------------------------------|----------------------------------------------------------------------------------------|--------------|
| Proteintech Group, Inc. (Wuhan, China) | Goat anti-rabbit IgG (H+L), oralite 488 conjugate (# SA00013-2)                       | 1:500 (IF)   |
|                                        | Mouse TNF-α monoclonal antibody (# 60291-1-lg)                                         | 1:1000 (WB)  |
|                                        | Rabbit ICAM-1 monoclonal antibody (# 60299-1-lg)                                      | 1:1000 (WB); 1:500 (IF) |
|                                        | Rabbit VCAM-1 monoclonal antibody (# 66294-1-lg)                                      | 1:1000 (WB); 1:500 (IF) |
|                                        | Rabbit CAV1 polyclonal primary antibody (#66067-1-lg)                                 | 1:1000 (WB)  |
|                                        | Rabbit Ago2 polyclonal antibody (#10686-1-AP)                                         | 1:500 (RIP)  |
| Sangon Biotech Co. Ltd. (Wuhan, China) | HRP-conjugated Goat Anti-Rabbit IgG secondary antibody (# D11058)                     | 1:2000 (WB)  |
|                                        | HRP-conjugated Rabbit Anti-mouse IgG secondary antibody (# D110098)                    | 1:2000 (WB)  |
|                                        | Rabbit β-actin polyclonal antibody (# D110001)                                        | 1:5000 (WB)  |
|                                        | Rabbit TGF-β2 antibody (# D262351)                                                    | 1:1000 (WB); 1:500 (IF) |
| Wanlei Co. Ltd. (Shenyang, China)      | Rabbit IL-6 polyclonal antibody (# WL02841)                                           | 1:1000 (WB)  |
Rabbit IL-1β polyclonal antibody (# WL00891) 1:1000 (WB)

Rabbit IκBα antibody (# WL00148) 1:1000 (WB)

Bosss Biotech Co., Ltd. (Beijing, China)

Rabbit p65 antibody (# bs-20159R) 1:1000 (WB)

Rabbit p-p65 (pSer536) antibody (# bs-0982R) 1:1000 (WB) 1:500 (IF)

Servicebio (Wuhan, China)

Rabbit vWF polyclonal antibody (# GB11020) 1:500 (IF)

CD31 polyclonal antibody (# GB11063-2) 1:500 (IF)

Cell Signaling Technology (Boston, USA)

Rabbit p-CAV1 (Tyr14) antibody (# 3251) 1:1000 (WB) 1:500 (IF)

CUSABIO (Wuhan, China)

Rabbit PPME1 antibody (# CSB-PA018501LA01HU) 1:1000 (WB) 1:500 (IF)

Abcam (Cambridge, MA, USA)

Rabbit CD68 antibody (#ab283654) 1:500 (IHC)

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**Table S2. PCR primer sequences for ApoE and CAV1 mice genotype.**

| Primer Type     | 5' - 3'                  |
|-----------------|--------------------------|
| **ApoE**        |                          |
| Common          | GCCTAGCCGAGGGAGAGCCG      |
| Wild type Forward | TGTGACTGAGGAGCTCTGCAGC   |
| Mutant Forward  | GCCGCCGCAGACTGCTACTCT    |
| **CAV1**        |                          |
| Common          | CTTGAGTTCTGTAGCCCAAG      |
| Wild type Forward | GTGTATGACGCGCACACCAAG   |
| Mutant Forward  | CTAGTGAGACGCTGCTACTTCC    |

Sequences are mouse unless otherwise specified.
Table S3. PCR program for ApoE and CAV1 mice genotype.

| Step | 1 CYCLE (1 cycle) | 2 CYCLE (35 cycles) | 3 CYCLE (1 cycle) |
|------|-------------------|---------------------|-------------------|
| Temp. | 94 °C             | 94 °C               | 72 °C             |
| Time  | 2 min             | 30 sec              | 30 sec            |

Table S4. RT-qPCR primer sequences for lncRNAs and mRNAs.

| Gene            | Sequence (5’ to 3’)                                      |
|-----------------|--------------------------------------------------------|
| LINC01547-F     | AGGCCAAGAGACAACAGCGATTAC                                |
| LINC01547-R     | GCCAAGTGTTGGACTCAGAGCTTC                                |
| SLCO4A1-AS1-F   | CTGTCAGCCGCCTTCTTGCC                                   |
| SLCO4A1-AS1-R   | GCGAGGAGCATGGAACCTGTC                                  |
| NRSN2-AS1-F     | ATAGAGCGAGATGTGCGACTG                                  |
| NRSN2-AS1-R     | CGACAGTACCTCAACAGCCACAC                                 |
| FGD5-AS1-F      | GTTGGAGAAGACAGCTGTC                                     |
| FGD5-AS1-R      | AGACCCAGAAGAGCTGCA                                     |
| MCM3AP-AS1-F    | AGAAGCTCTGCGATCAGATCCTC                                |
| MCM3AP-AS1-R    | CACATGCACCCTGAACTGGAAGAG                               |
| TUG1-F          | TAGCAGTTCCCCAATCCTTG                                   |
| TUG1-R          | CACAAATTTCCCCATCATTCC                                  |
| RP3-416H24.1-F  | GCCCTTCTGCAACCACCTACTC                                 |
| RP3-416H24.1-R  | GCAGAGCCAGAACTGGAACATAGG                               |
| AC002550.5-F    | CTGTCAGCCGCCTTCTTGCC                                   |
| AC002550.5-R    | GCGAGGAGCATGGAACCTGTC                                  |
| HDAC7-AS1-F     | GCCCTTCTAGCCACAAGGACACTC                               |
| HDAC7-AS1-R     | GCGAAGCGGAGCCCTGTC                                     |
| SLFLN1-AS-F     | AACTGAAACACAGAGGCAATGCA                                 |
| SLFLN1-AS-R     | CCAAGGAGCAGAGCAGACAC                                  |
| HDAC7-F         | TGCAACCACACCTCTTGTC                                   |
| HDAC7-R         | ACTTCGCTTGCCTTCTTGTC                                   |
| TGF-β2-F        | GTGCTGAAACAGGATTGA                                    |
| TGF-β2-R        | AAGGAGAGCCATCGCCTTC                                   |
| (mouse) TGF-β2-F| TCGACATGGAAGTATGTATGCG                                 |
| (mouse) TGF-β2-R| CCCTGGTACTGTTGATGATGGA                                 |
| PPME1-F         | CAGTCCCTGCTTCTTGCTGAT                                  |
| PPME1-R         | TTTCCACCATGACTTCCGAG                                   |
| (mouse) PPME1-F | AGTCAGAGCCGAGCCAGAT                                   |
| (mouse) PPME1-R | TCGAAAGATCTTCCTGCCACTT                                 |
| IL-1β-F         | TTCGACACATGGGAATACGAG                                  |
| IL-1β-R         | TTGTGCATGAGGATCGG                                     |
| (mouse) IL-1β-F | GCAACTGTCTCTGAACTCAACT                                 |
| (mouse) IL-1β-R | ATCTTTTGAGGTTGCTCCACACT                                |
| IL-6-F          | ACTCACCTCTCAGGAAATGGA                                  |
| IL-6-R          | CCACTTTGGAGGTTGCTCAACT                                 |
| (mouse) IL-6-F  | TAGTCCTCTCACCAGGAT                                    |
Table S5. RT-qPCR primer sequences for miRNAs.

| miRNA      | Forward (5’ to 3’)                  |
|------------|-------------------------------------|
| **MIR-7-5p** | UGGAAGACUAGUGAUUUUGUUGU            |
| **MIR-24-3p** | UGGUCAGUUCAGCAGGAACAG            |
| **MIR-9-5p** | UCUUUGGUUAUCUAGCUUGUAUGA          |

Sequences are human unless otherwise specified.

Table S6. RT-qPCR program.

RT-qPCR program (For mRNA and lncRNA)

| Step            | 1 Hot-Start DNA Polymerase Activation | 2 PCR | 3 Melt Curve |
|-----------------|--------------------------------------|-------|-------------|
|                 | HOLD                                 | CYCLE (40 cycles) | CYCLE (1 cycle) |
|                 | Denature  | Anneal | Extend | Denature  | Anneal | Extend |
| Temp.           | 95 ℃     | 95 ℃    | 50-60 ℃  | 72 ℃     | 95 ℃       | 60 ℃     | 95 ℃     |
| Time            | 10 min   | 15 sec  | 30 sec  | 30 sec   | 15 sec   | 60 sec   | 15 sec   |
RT-qPCR program (For miRNA)

| Step | 1 | 2 | 3 | 4 |
|------|---|---|---|---|
| Hot-Start DNA Polymerase Activation | HOLD | CYCLE (5 cycles) | CYCLE (40-45 cycles) | CYCLE (1 cycle) |
| Temp. | 95 ℃ | 94 ℃ | 63-65 ℃ | 94 ℃ |
| Time | 15 min | 20 sec | 30 sec | 34 sec |
| | | | | 20 sec |
| | | | | 34 sec |
| | | | | 15 sec |
| | | | | 60 sec |
| | | | | 15 sec |

Table S7. siRNAs, mimic, and inhibitor target sequences.

| Producers | Item No. | Gene | Target sequences |
|-----------|----------|------|------------------|
| Shanghai Gene Pharma Co., Ltd. (Shanghai, China) | # A01001 | TGF-β2 siRNA | 5’-GCGGCCUAUUUGUUAGAA-3’ |
| | # A01001 | PPME1 siRNA | 3’-UUCUAAAGCAUAGGC-5’ |
| | # A01001 | HDAC7-AS1 siRNA | 5’-GAAUGAAGUGGCAAGGAU-3’ |
| | # A01001 | CAV1 siRNA | 3’-AUCCUUGCCAGUUUUCAUUC-5’ |
| | # B01001 | MIR-7-5p mimic | 5’-GATTGTGAGTTGAGTTGA-3’ |
| | # B03001 | MIR-7-5p inhibitor | 3’-TCAACTTCACTCAACATC-5’ |
| | | | 5’-CAACAAAACACAUAGUCUUCCA-3’ |

Sequences are human unless otherwise specified.

Table S8. Patient characteristics and clinical results.

| Cardiovascular risk factors | Control (n=50) | CHD (n=77) | P |
|-----------------------------|----------------|------------|---|
| Male, n (%)                 | 27 (54.0)      | 59 (76.6)  | 0.011 |
| Age, years, mean ± SD       | 62.18 ± 10.78  | 64.08 ± 7.769 | 0.252 |
| Diabetes, n (%)              | 17 (34.0)      | 32 (41.6)  | 0.457 |
| Hypertension, n (%)          | 33 (66.0)      | 56 (74.7)  | 0.319 |
| Hyperlipidemia, n (%)        | 41 (82.0)      | 68 (88.3)  | 0.435 |
| Current smoke, n (%) | 20 (40.0) | 43 (55.8) | 0.103 |
|----------------------|----------|----------|------|
| Body mass index, kg/m², mean ± SD | 25.94 ± 3.433 | 25.88 ± 3.082 | 0.917 |

**Blood biochemical analysis**

| Parameter                  | Mean ± SD         | Mean ± SD         | p-value |
|---------------------------|-------------------|-------------------|---------|
| TG (mM), mean ± SD        | 4.017 ± 0.814     | 4.112 ± 1.113     | 0.610   |
| TC (mM), mean ± SD        | 1.900 ± 1.608     | 1.910 ± 1.483     | 0.971   |
| LDL-C (mM), mean ± SD     | 2.207 ± 0.532     | 2.430 ± 0.994     | 0.151   |
| HDL-C (mM), mean ± SD     | 1.065 ± 0.423     | 1.019 ± 0.374     | 0.523   |
| FBG (mM), mean ± SD       | 5.644 ± 1.325     | 6.298 ± 2.154     | 0.061   |
| HbA1c (%), mean ± SD      | 6.312 ± 0.157     | 6.626 ± 1.493     | 0.231   |
| hs-CRP (mg/L), mean ± SD  | 2.622 ± 3.526     | 8.418 ± 16.30     | 0.036   |
| ALT(U/L), mean ± SD       | 25.55 ± 16.97     | 23.46 ± 16.64     | 0.498   |
| AST(U/L), mean ± SD       | 24.92 ± 11.78     | 29.03 ± 44.01     | 0.524   |
| Albumin (g/L), mean ± SD  | 39.37 ± 2.737     | 38.58 ± 2.640     | 0.112   |
| T-BIL (μM), mean ± SD     | 15.31 ± 6.063     | 14.05 ± 6.475     | 0.279   |
| Urea (mM), mean ± SD      | 4.954 ± 1.323     | 5.498 ± 1.880     | 0.081   |
| Creatinine (μM), mean ± SD| 64.91 ± 13.32    | 70.38 ± 17.20     | 0.061   |
| Uric acid (μM), mean ± SD | 361.3 ± 88.16    | 348.4 ± 95.36     | 0.452   |

Data are presented as Mean ± SD or n (%). CHD, coronary heart disease; TC, total cholesterol; TG, total triglyceride; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; FBG, fasting blood glucose; hs-CRP, high-sensitivity C-reactive protein; ALT, alanine aminotransferase; AST, aspartate aminotransferase; T-BIL, total bilirubin. To compare the differences between two groups with normally distributed variables, Student’s t test was used. To test for differences between two groups with skewed variables, the nonparametric Mann-Whitney U test was used. In addition, categorical variables were showed as number with percent and analyzed by the χ² test.
Table S9. **MIR-7-5p** binding sites for **HDAC7-AS1** as identified by Mireap, miRanda, and TargetScan.

| miRNA      | Target Gene | Score | Energy (kcal/mol) | 3’-miRNA-5’-alignment-5’-utr-3’                      |
|------------|-------------|-------|-------------------|-----------------------------------------------------|
| HSA-MIR-7-5p | HDAC7-AS1   | 119   | -13.6             | 3’ uuGUUG-UUUUAGUGAUCAGAAGGu 5’ : ||| :||| :||| :||| 5’ ccTAACCTTGGAGAC-GAGGCTTCCg 3’ |
| HSA-MIR-7-5p | HDAC7-AS1   | 117   | -15.34            | 3’ uuGUUGUUUAGUGA-UCAGAaggu 5’ |||| :||| :||| 5’ acCAACCAGATCCTCAGTCTgacg 3’ |
| HSA-MIR-7-5p | HDAC7-AS1   | 115   | -16.82            | 3’ uguGU-G-UUUUAGUGAUCAGAAGGu 5’ |||| :||| :||| 5’ cagtACATCAGCCACCAGTCTCTCa 3’ |
| HSA-MIR-7-5p | HDAC7-AS1   | 114   | -7.86             | 3’ uguuguuu-UAGUGAUCAGAAGGu 5’ |||| :||| :||| 5’ ctt gtcttc ACCTCCTGAGGCTTCCc 3’ |
| HSA-MIR-7-5p | HDAC7-AS1   | 111   | -11.1             | 3’ uguuguuU- UUUUAGUGAUCAGAAGGu 5’ : ||| :||| :||| :||| :||| 5’ cacc CGGGGCCCCACGCCTTCTa 3’ |

Mireap (v2.0) ([http://sourceforge.net/projects/mireap/](http://sourceforge.net/projects/mireap/));

miRanda (v3.3a) ([http://cbio.mskcc.org/microrna_data/miRanda-aug2010.tar.gz](http://cbio.mskcc.org/microrna_data/miRanda-aug2010.tar.gz));

TargetScan (v7.0) ([http://www.targetscan.org/vert_71/](http://www.targetscan.org/vert_71/));

Table S10. Negatively correlated miRNA-gene pairs: **MIR-7-5p** and its target genes.

| miRNA   | Gene   | P value   | asso_sign (miRNA-Target gene) |
|---------|--------|-----------|-------------------------------|
| MIR-7-5p| CTSK   | 0.000142241 | UP-DOWN                       |
|         | CSMD3  | 1.89E-06   | UP-DOWN                       |
|         | HSPBAP1| 9.02E-05   | UP-DOWN                       |
|         | YPEL2  | 0.000112022| UP-DOWN                       |
|         | GLS    | 6.58E-20   | UP-DOWN                       |
|         | FAMI110C| 0.000660921| UP-DOWN                       |
|         | PPME1  | 1.12E-53   | UP-DOWN                       |
|         | IFITM10| 0.009667697| UP-DOWN                       |
|         | ABL2   | 7.28E-39   | UP-DOWN                       |
|         | TGFB2  | 6.75E-12   | UP-DOWN                       |
|         | SH2D5  | 2.27E-65   | UP-DOWN                       |
The R package edgeR (http://www.bioconductor.org/packages/release/bioc/html/edgeR.html) was used to identify differentially expressed transcripts across the samples or groups as evaluated using RNA-seq. mRNA and miRNA with a fold change ≥ 2 and P < 0.05 were considered as significant differentially expressed genes (DEGs).

Table S11. Results of correlation analysis between two indicated factors.

|             |        | r     | P     |
|-------------|--------|-------|-------|
| **HDAC7-AS1** | **MIR-7-5p** |       |       |
|             | **TGF-β2** | 0.04843 | 0.6758 |
|             | **PPME1** | 0.1826  | 0.1119 |
|             | **IL-1β** | 0.1533  | 0.1833 |
|             | **IL-6**  | -0.3336 | 0.003  |
|             | **TNF-α** | 0.002393 | 0.9835 |
|             | **hs-CRP** | -0.1602 | 0.1953 |
| **MIR-7-5p** | **TGF-β2** | -0.5835 | 0.001  |
|             | **PPME1** | -0.24  | 0.0353 |
|             | **IL-1β** | 0.07496 | 0.5171 |
|             | **IL-6**  | 0.201  | 0.0796 |
|             | **TNF-α** | 0.1395  | 0.2264 |
|             | **hs-CRP** | 0.3304  | 0.0063 |
| **TGF-β2**  | **PPME1** | 0.1337  | 0.2463 |
|             | **IL-1β** | 0.172  | 0.1346 |
|             | **IL-6**  | -0.04524 | 0.696  |
|             | **TNF-α** | 0.113  | 0.3277 |
|             | **hs-CRP** | -0.1098 | 0.3763 |
| **PPME1**   | **IL-1β** | 0.03938 | 0.7338 |
|             | **IL-6**  | -0.04292 | 0.7109 |
|             | **TNF-α** | 0.04688 | 0.6856 |
|             | **hs-CRP** | 0.06204 | 0.618  |
| **IL-1β**   | **IL-6**  | 0.2419  | 0.0341 |
|             | **TNF-α** | 0.4351  | 0.0001 |
|             | **hs-CRP** | 0.2608  | 0.0331 |
| **IL-6**    | **TNF-α** | 0.313  | 0.0056 |
|             | **hs-CRP** | 0.2887  | 0.0178 |
| **TNFα**    | **hs-CRP** | 0.4069  | 0.0006 |
Spearman’s rank correlation coefficient was used to assess the correlation between two indicated mRNAs.

Table S12. Univariable and multivariable logistic regression analysis for determining the independent risk factors of CHD.

| Variables            | OR    | 95% CI          | P     | Adjusted OR* | 95% CI   | P     |
|----------------------|-------|-----------------|-------|--------------|----------|-------|
| Gender (male)        | 2.647 | 1.233-5.683     | 0.013 | 2.266        | 0.343-14.961 | 0.396 |
| Age                  | 1.028 | 0.987-1.027     | 0.180 |              |          |       |
| Diabetes             | 2.020 | 0.981-4.159     | 0.056 | 1.397        | 0.266-7.325 | 0.692 |
| Hypertension         | 1.527 | 0.708-3.793     | 0.280 |              |          |       |
| Hyperlipidemia       | 1.263 | 0.606-2.632     | 0.533 |              |          |       |
| Current smoker       | 2.020 | 0.981-4.159     | 0.056 | 0.897        | 0.195-4.134 | 0.890 |
| BMI                  | 1.009 | 0.947-1.076     | 0.781 |              |          |       |
| TG                   | 1.016 | 0.801-1.288     | 0.898 |              |          |       |
| TC                   | 1.163 | 0.810-1.668     | 0.413 |              |          |       |
| LDL-C                | 1.557 | 0.922-2.628     | 0.098 | 2.090        | 0.735-5.944 | 0.167 |
| HDL-C                | 0.779 | 0.314-1.937     | 0.592 |              |          |       |
| FBG                  | 1.235 | 0.984-1.550     | 0.068 | 1.277        | 0.834-1.955 | 0.261 |
| HbA1c                | 1.063 | 0.917-1.213     | 0.415 |              |          |       |
| hs-CRP               | 1.211 | 1.085-1.351     | 0.011 | 1.169        | 0.999-1.368 | 0.052 |
| ALT                  | 0.993 | 0.972-1.014     | 0.506 |              |          |       |
| AST                  | 1.005 | 0.991-1.019     | 0.517 |              |          |       |
| Albumin              | 0.885 | 0.770-1.016     | 0.083 | 0.869        | 0.679-1.112 | 0.264 |
| T-BIL                | 0.973 | 0.919-1.030     | 0.034 |              |          |       |
| Urea                 | 1.286 | 0.982-1.686     | 0.068 | 1.313        | 0.756-2.292 | 0.331 |
| Creatinine           | 1.027 | 1.002-1.052     | 0.035 | 1.019        | 0.957-1.085 | 0.549 |
| Uric acid            | 1.000 | 0.996-1.003     | 0.912 |              |          |       |
| HDAC7-AS1            | 0.238 | 0.125-0.451     | 0.032 | 0.430        | 0.157-1.177 | 0.101 |
| MIR-7-5p             | 1.551 | 1.223-1.966     | 0.003 | 2.168        | 1.060-4.434 | 0.034 |
| TGF-β2               | 0.553 | 0.357-0.857     | 0.008 | 0.651        | 0.265-1.599 | 0.349 |
| PPME1                | 0.644 | 0.438-0.947     | 0.025 | 0.379        | 0.193-0.743 | 0.005 |
| IL-1β                | 2.722 | 1.677-4.416     | 0.001 | 1.599        | 0.928-1.756 | 0.091 |
| TNFα                 | 1.179 | 0.961-1.446     | 0.114 |              |          |       |
| IL6                  | 1.223 | 1.006-1.487     | 0.043 | 1.095        | 0.771-1.555 | 0.613 |

OR, Odds ratio; CI, confidence interval; CHD, coronary heart disease; TC, total cholesterol; TG, total triglyceride; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol.
FBG, fasting blood glucose; hs-CRP, high-sensitivity C-reactive protein; ALT, alanine aminotransferase; AST, aspartate aminotransferase.

* Corresponds to adjustment for gender, diabetes, current smoker, LDL-C, FBG, albumin, hs-CRP, urea, creatinine, Uric acid, HDAC7-AS1, MIR-7-5p, TGF-β2, PPME1, IL-1β and IL-6.

Table S13. High-throughput IncRNA and miRNA sequence analysis and relevant qPCR results from HUVECs treated with 5 μM PCB29-pQ.

|                        | Control       | PCB29-pQ      |
|------------------------|---------------|---------------|
|                        | Cq values     | Mean (normalized) | SD (normalized) | Cq values     | Mean (normalized) | SD (normalized) |
| **HDAC7-AS1**          | 21.70         | 1.00           | 0.02            | 19.71         | 3.57             | 0.61            |
|                        | 21.68         | 1.00           | 0.02            | 19.88         | 3.57             | 0.61            |
|                        | 21.64         | 1.00           | 0.02            | 19.40         | 3.57             | 0.61            |
| **RP3-416H24.1**       | 21.74         | 1.00           | 0.05            | 22.53         | 0.52             | 0.08            |
|                        | 21.60         | 1.00           | 0.05            | 22.62         | 0.52             | 0.08            |
|                        | 21.70         | 1.00           | 0.05            | 22.21         | 0.52             | 0.08            |
| **LINC01547**          | 21.57         | 1.00           | 0.07            | 19.81         | 2.20             | 1.00            |
|                        | 21.48         | 1.00           | 0.07            | 21.28         | 2.20             | 1.00            |
|                        | 21.69         | 1.00           | 0.07            | 20.06         | 2.20             | 1.00            |
| **TUG1**               | 21.81         | 1.00           | 0.04            | 21.74         | 0.93             | 0.06            |
|                        | 21.77         | 1.00           | 0.04            | 21.73         | 0.93             | 0.06            |
|                        | 21.70         | 1.00           | 0.04            | 21.57         | 0.93             | 0.06            |
| **MCM3AP-AS1**         | 21.86         | 1.00           | 0.01            | 21.59         | 0.97             | 0.08            |
|                        | 21.83         | 1.00           | 0.01            | 21.72         | 0.97             | 0.08            |
|                        | 21.85         | 1.00           | 0.01            | 21.83         | 0.97             | 0.08            |
| **FGD5-AS1**           | 21.86         | 1.00           | 0.02            | 24.44         | 0.17             | 0.02            |
|                        | 21.92         | 1.00           | 0.02            | 24.34         | 0.17             | 0.02            |
|                        | 21.87         | 1.00           | 0.02            | 24.09         | 0.17             | 0.02            |
Figure 1d

|          | Bio-NC          |          | Bio-MIR-7-5p |          |
|----------|-----------------|----------|--------------|----------|
|          | Cq values       | Mean     | SD           | Cq values | Mean     | SD         |
|          | Normalized      | Normalized | Normalized   | Normalized | Normalized | Normalized |
|          | 21.89           | 1.00     | 0.01         | 17.98     | 15.31    | 3.72       |
|          | 21.89           | 17.97    |              |           |          |            |
|          | 21.87           | 17.40    |              |           |          |            |

Mean and SD values are the ones presented in Figure 1c-d. Data reported relative to control or Bio-NC.

**Table S14.** The expression of *HDAC7-AS1, MIR-7-5p* and *TGF-β2/PPME1* in HUVECs exposed to 5 μM PCB29-pQ.

|          | Control          |          | PCB29-pQ     |          |          |
|----------|------------------|----------|--------------|----------|----------|
|          | Cq values        | Mean     | SD           | Cq values | Mean     | SD         |
|          | Normalized       | Normalized | Normalized   | Normalized | Normalized | Normalized |
| Figure 2a |                  |          |              |          |          |            |
|          | *TGF-β2*         | 21.91    | 1.00         | 0.01      | 22.76    | 0.48       |
|          |                  | 21.93    |              | 23.02     |          |            |
|          |                  | 21.92    |              | 22.68     |          |            |
|          | *PPME1*          | 22.17    | 1.00         | 0.03      | 22.46    | 0.71       |
|          |                  | 22.09    |              | 22.36     |          |            |
|          |                  | 22.13    |              | 22.50     |          |            |

|          | Control          |          | PCB29-pQ     |          |          |
|----------|------------------|----------|--------------|----------|----------|
|          | Grayscale values | Mean     | SD           | Grayscale values | Mean     | SD         |
|          | Normalized       | Normalized | Normalized   | Normalized | Normalized | Normalized |
| Figure 2b (Right panel) |                |          |              |          |          |            |
|          | *TGF-β2*         | 49800.52 | 1.00         | 0.30      | 13613.11 | 0.23       |
|          |                  | 49779.34 |              | 13624.50  |          |            |
|          |                  | 49799.71 |              | 13598.56  |          |            |
|          | *PPME1*          | 63958.41 | 1.00         | 0.20      | 43513.44 | 0.54       |
|          |                  |          |              |          |          |            |
### Figure 2c

| Gene   | NC mimic | MIR-7-5p mimic |
|--------|----------|----------------|
|        | Cq       | Mean (normalized) | SD (normalized) | Cq       | Mean (normalized) | SD (normalized) |
| **TGF-β2** | 25.54 | 0.03 | 26.88 | 0.49 | 0.06 |
|         | 25.45 | 0.03 | 27.13 |       |     |
|         | 25.53 |       | 27.20 |       |     |
| **PPME1** | 25.69 | 0.03 | 26.90 | 0.68 | 0.04 |
|         | 25.77 | 0.03 | 26.73 |       |     |
|         | 25.70 |       | 26.79 |       |     |

### Figure 2d (Right panel)

| Gene   | NC mimic | MIR-7-5p mimic |
|--------|----------|----------------|
|        | Grayscale values | Mean (normalized) | SD (normalized) | Grayscale values | Mean (normalized) | SD (normalized) |
| **TGF-β2** | 60469.01 | 1.00 | 29146.83 | 0.41 | 0.08 |
|         | 60473.45 | 0.20 | 29101.17 |       |     |
|         | 60443.78 |       | 29128.81 |       |     |
| **PPME1** | 52334.05 | 1.00 | 52342.9 | 0.32 | 0.06 |
|         | 52312.78 | 0.17 | 52253.98 |       |     |
|         | 52288.09 |       | 52338.05 |       |     |

### Figure 2f

| Treatment | Luciferase activity | Mean | SD | Luciferase activity | Mean | SD | Luciferase activity | Mean | SD |
|-----------|---------------------|------|----|---------------------|------|----|---------------------|------|----|
| NC mimic + pEZ-M61-NC | 29.48 |       | 29.81 | 0.30 | 25.60 | 25.05 | 0.28 | 30.35 | 31.46 | 1.38 |
| pEZ-M61-NC + MIR-7-5p mimic | 29.86 |       | 25.37 | 0.08 | 25.34 | 33.00 | 31.02 | 31.02 | 31.02 | 31.02 |
| MIR-7-5p mimic + pEZ-M61-HDAC7-AS1 luciferase activity | 30.08 |       | 25.34 | 0.08 | 25.37 | 33.00 | 31.02 | 31.02 | 31.02 | 31.02 |
Mean and SD values are the ones presented in Figure 2a, b, c, d and f. Expression is relative to control or NC mimic for data from 2a, b, c, and d. For Figure 2F, data is expressed as luciferase activity (a.u.)

Table S15. Endothelial injury and atherogenesis in *ApoE*−/− mice exposed to PCB29-pQ, and apoptotic rate in HUVECs exposed to PCB29-pQ.

|                        | Control                                                                 | PC29-pQ                                                                 |
|------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|
|                        | Individual values | Mean | SD | Individual values | Mean | SD |
| **Figure 3a (Right panel; % plaque area)** | 13.01 | 14.89 | 1.80 | 54.48 | 45.47 | 11.17 |
|                        | 15.08 | | | 48.96 | | |
|                        | 16.59 | | | 32.98 | | |
| **Figure 3b (Right panel; Pearson’s correlation coefficient)** | 0.50 | 0.33 | 0.18 | 0.94 | 0.98 | 0.03 |
|                        | 0.15 | | | 0.99 | | |
|                        | 0.33 | | | 1.00 | | |
| **Figure 3d (cell viability, %)** | NC inhibitor + NC siRNA | 99.07 | 100.00 | 5.85 | 84.14 | 81.21 | 5.21 |
|                        | 109.28 | | | 75.19 | | |
|                        | 91.65 | | | 84.30 | | |
|                        | NC siRNA + MIR-7-5p inhibitor | 115.81 | 111.17 | 5.40 | 95.23 | 97.03 | 5.85 |
|                        | 105.25 | | | 92.29 | | |
|                        | 112.46 | | | 103.57 | | |
|                        | MIR-7-5p inhibitor + TGF-β 2 siRNA | 63.92 | 60.10 | 3.36 | 49.93 | 50.27 | 5.01 |
|                        | 57.62 | | | 55.44 | | |
|                        | 58.76 | | | 45.44 | | |
|              | Mean | SD  |
|--------------|------|-----|
| **MIR-7-5p** | 64.33| 5.86|
| inhibitor    |      |     |
| **PPME1**    | 54.74| 5.86|
| siRNA        |      |     |
|              | 53.70|     |

Mean and SD values are the ones presented in Figure 3a, b and d.
Table S16. Measures of endothelial injury in cells and protein and mRNA expression of TGF-β2 and PPME1 in HUVECs transfected with a HDAC7-AS1 overexpression vector or a MIR-7-5p mimic exposed to 5 μM PCB29-pQ.

|                  | NC mimic + pEZ-M61-NC | NC mimic + pEZ-M61-NC + PCB29-pQ | NC mimic + pEZ-M61-HDAC7-AS1 + PCB29-pQ | MIR-7-5p mimic + pEZ-M61-HDAC7-AS1 + PCB29-pQ |
|------------------|------------------------|----------------------------------|----------------------------------------|------------------------------------------|
|                  | Cq values | Mean (normalized) | SD (normalized) | Cq values | Mean (normalized) | SD (normalized) | Cq values | Mean (normalized) | SD (normalized) | Cq values | Mean (normalized) | SD (normalized) |
| Figure 4a        | 23.01      | 1.00              | 0.03            | 21.70      | 2.11              | 0.24            | 25.50      | 0.29              | 0.02            | 16.74      | 16.46              | 11.57          |
|                  | 23.09      |                   |                 | 21.67      |                   |                 | 25.60      |                   |                 | 16.73      |                   |                 |
|                  | 23.06      |                   |                 | 21.41      |                   |                 | 25.70      |                   |                 |           |                   |                 |
| Figure 4b        | 23.17      | 1.00              | 0.09            | 23.38      | 0.60              | 0.02            | 20.23      | 11.72             | 0.29            | 19.76      | 19.71              | 0.44           |
|                  | 22.92      |                   |                 | 23.38      |                   |                 | 20.27      |                   |                 | 19.66      |                   |                 |
|                  | 23.06      |                   |                 | 23.45      |                   |                 | 20.30      |                   |                 |           |                   |                 |
| Figure 4c        | 22.92      | 1.00              | 0.02            | 23.59      | 0.47              | 0.00            | 24.30      | 0.63              | 0.03            | 24.35      | 24.17              | 0.07           |
|                  | 22.95      |                   |                 | 23.63      |                   |                 | 24.42      |                   |                 |           |                   |                 |
|                  | 22.90      |                   |                 | 23.63      |                   |                 | 24.35      |                   |                 |           |                   |                 |
| Figure 4d        | 23.12      | 1.00              | 0.02            | 23.01      | 0.78              | 0.02            | 23.93      | 0.94              | 0.02            | 23.99      | 23.76              | 0.10           |
|                  | 23.07      |                   |                 | 23.10      |                   |                 | 23.97      |                   |                 |           |                   |                 |
|                  | 23.09      |                   |                 | 23.06      |                   |                 | 23.94      |                   |                 |           |                   |                 |

|                  | NC mimic + pEZ-M61-NC | NC mimic + pEZ-M61-NC + PCB29-pQ | NC mimic + pEZ-M61-HDAC7-AS1 + PCB29-pQ | MIR-7-5p mimic + pEZ-M61-HDAC7-AS1 + PCB29-pQ |
|------------------|------------------------|----------------------------------|----------------------------------------|------------------------------------------|
|                  | Grayscale values | Mean (normalized) | SD (normalized) | Grayscale values | Mean (normalized) | SD (normalized) | Grayscale values | Mean (normalized) | SD (normalized) |
| Figure 4f        | 26963.37           | 1.00              | 0.20            | 16137.55       | 0.61              | 0.12            | 28054.02       | 1.03              | 0.11            | 4054.58         | 0.15              | 0.03            |
|                      | 26947.55 | 16115.34 | 28059.10 | 4076.37 |
|----------------------|----------|----------|----------|----------|
|                      | 26987.28 | 16118.57 | 28038.02 | 4068.09  |
| Figure 4g            | 34607.94 | 2472.08  | 79170.54 | 4518.18  |
|                      | 34653.02 | 2490.17  | 79273.68 | 4527.56  |
|                      | 34649.21 | 2488.51  | 79264.95 | 4534.10  |

Mean and SD values are the ones presented in Figure 4a (relative MIR-7-5p mRNA level), b (relative HDAC7-AS1 mRNA level), c (relative TGF-β2 mRNA level), d (relative PPME1 mRNA level), f (relative TGF-β2/β-actin protein level), g (relative PPME1/β-actin protein level), and h (cell viability, %). Results presented relative to NC mimic + pEZ-M61-NC.
Table S17. Atherosclerosis and inflammation in ApoE\(^{-/-}\) mice exposed to PCB29-pQ accompanied by AAV\(-HDAC7-AS1\) treatment.

|                      | AAV-NC | AAV-NC + PCB29-pQ | AAV-HDAC7-AS1 | AAV-HDAC7-AS1 + PCB29-pQ |
|----------------------|--------|-------------------|---------------|--------------------------|
|                      | Mean   | SD                | Mean          | SD                       |
|                      |        |                   |               |                          |
| Figure 5a (Right panel) | 10.87  | 12.63 1.79        | 21.48         | 25.78 3.93               |
|                      | 12.58  |                    | 26.69         | 7.17                      |
|                      | 14.44  |                    | 29.17         | 8.95                      |
|                      | 0.67   | 0.70 0.06         | 0.27          | 0.95                      |
|                      | 0.66   |                    | 0.23          | 0.92                      |
|                      | 0.76   |                    | 0.27          | 0.93                      |

|                      | Mean   | SD                | Mean          | SD                       |
|----------------------|--------|-------------------|---------------|--------------------------|
|                      |        |                   |               |                          |
| Figure 5c            | 10.87  | 12.63 1.79        | 21.48         | 25.78 3.93               |
|                      | 12.58  |                    | 26.69         | 7.17                      |
|                      | 14.44  |                    | 29.17         | 8.95                      |
|                      | 0.67   | 0.70 0.06         | 0.27          | 0.95                      |
|                      | 0.66   |                    | 0.23          | 0.92                      |
|                      | 0.76   |                    | 0.27          | 0.93                      |

|                      | Mean   | SD                | Mean          | SD                       |
|----------------------|--------|-------------------|---------------|--------------------------|
|                      |        |                   |               |                          |
| Figure 5d            | 24.72  | 1.00 0.29         | 26.83         | 0.25 0.10                |
|                      | 25.47  |                    | 27.68         | 0.25 0.10                |
|                      | 24.86  |                    | 27.83         | 0.25 0.10                |
|                      | 25.36  |                    | 22.63         | 5.79 1.81                |
|                      | 24.70  |                    | 23.57         | 5.79 1.81                |
|                      | 25.09  |                    | 22.71         | 5.79 1.81                |
|                      | 24.60  | 1.00 0.24         | 28.62         | 0.14 0.05                |
|                      | 24.87  |                    | 27.88         | 0.14 0.05                |
|                      | 25.20  |                    | 27.62         | 0.14 0.05                |
|                      | 24.56  |                    | 26.09         | 0.33 0.02                |
|                      | 24.24  |                    | 26.22         | 0.33 0.02                |
|                      | 23.76  |                    | 26.00         | 0.33 0.02                |
|                      | 24.74  |                    | 21.78         | 4.57 1.52                |

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Mean and SD values are the ones presented in Figure 5a (plaque area, % of whole aorta), c (Pearson’s correlation coefficient), d (relative $HDAC7$-ASI mRNA level), e (relative $MIR-7-5p$ mRNA level), f (relative $TGF-\beta2$ mRNA level), g (relative $PPME1$ mRNA level), h (relative $IL-1\beta$ mRNA level), i (relative $IL6$ mRNA level), (relative $TNF\alpha$ mRNA level), and k (Pearson’s correlation coefficient). Data in panels 5d through 5J are normalized to AAV-NC.

Table S18. Inflammation and atherogenesis in $ApoE^{-/-}$ and $ApoE^{-/-}CAV1^{-/-}$ mice exposed to PCB29-pQ.

|         | $ApoE^{-/-}$ | $ApoE^{-/-}/CAV1^{-/-}$ |
|---------|--------------|--------------------------|
|         | Individual values | Mean | SD | Individual values | Mean | SD | Individual values | Mean | SD |
| Figure 6a (Right panel) | | | | | | | |
| Figure 5i | 23.31 | 22.76 | 26.74 | 25.84 |
|           | 24.25 | 22.25 | 27.92 | 27.46 |
| Figure 5j | 24.01 | 22.69 | 28.17 | 26.14 |
|           | 24.14 | 23.26 | 26.68 | 26.44 |
|           | 24.39 | 22.05 | 27.09 | 26.33 |
| AA V-NC | 23.25 | 23.05 | 30.36 | 26.23 |
| AA V-NC + PCB29-pQ | 25.77 | 22.58 | 25.97 | 27.98 |
| AA V-HDAC7-ASI | 24.07 | 21.93 | 24.86 | 28.05 |
| AA V-HDAC7-ASI + PCB29-pQ | | | | |
|         | Control |         |         |         | PCB29-pQ |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|         | 18.02   | 18.86   | 0.84    | 7.57    | 18.86   | 22.60   | 25.78   | 2.76    |
|         | 18.86   | 4.54    | 6.78    | 10.90   | 19.70   | 27.59   | 10.03   | 10.94   |
|         | 19.70   | 8.24    | 1.97    | 0.94    |         | 27.15   | 11.90   |         |

**Figure 6b** (Right panel)

|         | ApoE\(^{-/-}\) | ApoE\(^{-/-}\)/CAV1\(^{-/-}\) |
|---------|----------------|------------------------------|
|         | Individual    | Mean | SD  | Individual    | Mean | SD  |
| Control | values        | Mean | SD  | values        | Mean | SD  |
|         | 16.00         | 14.88| 2.53| 10.00         | 9.00 | 1.73|
|         | 14.00         | 11.00| 1.73| 8.00          | 12.00|       |
|         | 20.00         | 8.00 | 1.73|               | 8.00 | 1.73|
|         | 15.00         | 2.00 | 1.73|               | 8.00 | 1.73|
|         | 16.00         | 7.00 | 1.73|               |       |     |
|         | 12.00         | 16.00| 1.73|               | 12.00|     |
|         | 13.00         | 11.00| 1.73|               | 11.00|     |
|         | 13.00         | 18.00| 1.73|               | 18.00|     |
|         | 13.00         | 28.00| 1.73|               | 10.00|     |
|         | 13.00         | 29.00| 1.73|               | 13.00|     |
|         | 13.00         | 24.00| 1.73|               | 14.00|     |
|         | 13.00         | 26.00| 1.73|               | 12.00|     |

**Figure 6c** (p-p65/p65 ratio)

|         | ApoE\(^{-/-}\) | ApoE\(^{-/-}\)/CAV1\(^{-/-}\) |
|---------|----------------|------------------------------|
|         | Mean | SD  | Mean | SD  |
| Control | 1.00 | 0.16| 0.23 | 0.09|
| PCB29-pQ | 2.33 | 0.86| 0.96 | 0.17|
| Figure 6c (p-CAV1/CAV1 ratio) | ApoE\(^+/\) | ApoE\(^+/\)/CAV1\(^+/\) | ApoE\(^+/\) | ApoE\(^+/\)/CAV1\(^+/\) |
|-------------------------------|-------------|----------------|-------------|----------------|
|                              | Mean        | SD            | Mean        | SD            |
| Control                       | 1.00        | 0.11          | 0.08        | 0.02          |
| PCB29-pQ                      | 3.75        | 0.92          | 0.07        | 0.01          |

| Control ApoE\(^+/\) | ApoE\(^+/\)/CAV1\(^+/\) | PCB29-pQ ApoE\(^+/\) | ApoE\(^+/\)/CAV1\(^+/\) |
|---------------------|------------------------|---------------------|------------------------|
| Figure 6c (p-p65) Grayscale values | 18025.72 | 15823.21 | 7120.71 | 7710.74 | 17526.13 | 17479.45 | 8560.24 | 9882.45 |
|                     | 18017.23 | 15808.01 | 7137.93 | 7726.64 | 17416.06 | 17442.11 | 8593.80 | 9883.14 |
|                     | 17994.76 | 15840.00 | 7124.79 | 7711.38 | 17585.55 | 17606.18 | 8572.30 | 9853.36 |
| Figure 6c (p65) Grayscale values | 21915.41 | 17645.41 | 18709.33 | 17144.99 | 13269.30 | 10481.24 | 11373.95 | 11423.09 |
|                     | 21890.29 | 17623.68 | 18726.23 | 17160.83 | 13420.54 | 10315.40 | 11402.96 | 11403.68 |
|                     | 21920.01 | 17614.19 | 18723.14 | 17145.52 | 13415.86 | 10358.81 | 11403.80 | 11389.21 |
| Figure 6c (p-CAV1) Grayscale values | 9486.03 | 8721.17 | 484.76 | 840.55 | 21084.55 | 25457.17 | 1837.09 | 507.38 |
|                     | 9484.11 | 8723.01 | 516.13 | 880.38 | 21127.93 | 25430.59 | 1824.28 | 422.53 |
|                     | 9504.05 | 8703.10 | 478.96 | 857.29 | 21099.89 | 25474.25 | 2003.54 | 621.80 |
| Figure 6c (CAV1) Grayscale values | 19233.40 | 13857.08 | 3048.81 | 5964.90 | 20226.02 | 20341.42 | 4573.50 | 5367.20 |
|                     | 19238.14 | 13878.08 | 3088.71 | 6004.51 | 20239.88 | 20364.73 | 4463.46 | 5460.55 |
|                     | 19217.17 | 13861.90 | 3071.12 | 5979.90 | 20269.11 | 20407.64 | 4663.11 | 5260.69 |

| Figure 6d (Right panel) | ApoE\(^+/\) | ApoE\(^+/\)/CAV1\(^+/\) |
|-------------------------|-------------|----------------|
| Individual values | Mean | SD | Individual values | Mean | SD |
| Control                | 0.29 | 0.19 | 0.10 | 0.15 | 0.09 | 0.06 |
|                        | 0.19 | 0.86 | 0.09 | 0.59 | 0.57 | 0.58 |
| PCB29-pQ               | 0.96 | 0.10 | 0.04 | 0.84 | 0.02 |
| Figure 6e (Right panel) |  |  | ApoE<sup>−/−</sup> |  |  | ApoE<sup>−/−</sup>/CAV1<sup>−/−</sup> |  |  |
|-------------------------|---|---|-----------------|---|---|---------------------|---|---|
| Individual values | Mean | SD | Individual values | Mean | SD |
| Control | 0.18 | 0.23 | 0.15 | 0.05 | 0.13 | 0.13 |
| 0.10 | 0.40 | | | | |
| PCB29-pQ | 0.99 | 0.93 | 0.11 | 0.53 | 0.49 | 0.04 |
| 1.00 | 0.81 | | | | |

| Figure 6f |  |  | ApoE<sup>−/−</sup> |  |  | ApoE<sup>−/−</sup>/CAV1<sup>−/−</sup> |  |  |
|------------|---|---|-----------------|---|---|---------------------|---|---|
| Individual values | Mean | SD | Individual values | Mean | SD |
| Control | 440.40 | 365.54 | 157.76 | 263.67 | 272.87 | 60.05 |
| 183.36 | 296.01 | 312.06 | 595.89 | | | |
| PCB29-pQ | 639.27 | 760.11 | 174.41 | 563.34 | 523.07 | 39.67 |
| 942.63 | 594.96 | 702.90 | 470.79 | | | |

| Figure 6g |  |  | ApoE<sup>−/−</sup> |  |  | ApoE<sup>−/−</sup>/CAV1<sup>−/−</sup> |  |  |
|------------|---|---|-----------------|---|---|---------------------|---|---|
| Individual values | Mean | SD | Individual values | Mean | SD |
| Control | 1468.8 | 1336.34 | 408.68 | 878.90 | 919.93 | 205.04 |
| 986.7 | | | 675.60 | | | |
Mean and SD values are the ones presented in Figure 6a (plaque area, % of whole aorta), b (plaque area, % of whole aorta), c (ratio of p-p65/p65 and pCAV1/CAV1 protein), d (Pearson’s correlation coefficient), e (Pearson’s correlation coefficient), f (IL-6 (pg/ml)), and g (TNFα (pg/ml)).

Data in figure 6c normalized to control ApoE<sup>−/−</sup> mice.

Table S19. Plasma **HDAC7-AS1** (a), **MIR-7-5p** (b), **TGF-β2** (c), **PPME1** (d), **IL-1β** (e), **IL-6** (f), and **TNFα** (g) levels in patients with CHD.

| Figure 7a | Figure 7b | Figure 7c | Figure 7d | Figure 7e | Figure 7f | Figure 7g |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Control   | CHD       | Control   | CHD       | Control   | CHD       | Control   |
| 24.40     | 17.03     | 26.95     | 21.46     | 17.38     | 32.35     | 23.17     |
| 24.38     | 16.70     | 21.71     | 18.75     | 27.06     | 31.23     | 25.94     |
| 24.73     | 17.50     | 23.92     | 19.60     | 27.22     | 27.76     | 21.96     |
| 26.39     | 18.01     | 24.19     | 21.27     | 25.71     | 30.52     | 25.84     |
| 26.66     | 18.62     | 23.32     | 20.38     | 26.91     | 27.98     | 22.52     |
|           |           |           |           | 22.52     | 32.47     | 25.92     |
|           |           |           |           | 25.92     | 27.88     | 23.76     |
|           |           |           |           | 23.76     | 25.85     | 26.42     |
|           |           |           |           | 25.85     | 14.24     | 25.02     |


|    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 24.63 | 29.38 | 24.02 | 18.65 | 22.69 | 28.15 | 22.00 | 32.32 | 29.56 | 23.34 | 26.87 | 23.90 | 26.55 | 23.10 |
| 20.82 | 26.60 | 24.21 | 19.90 | 26.20 | 28.91 | 22.73 | 31.89 | 27.86 | 29.65 | 24.99 | 26.18 | 24.61 | 28.84 |
| 23.75 | 27.35 | 26.49 | 20.30 | 21.52 | 32.17 | 24.02 | 28.22 | 29.81 | 26.42 | 29.28 | 26.11 | 26.27 | 27.15 |
| 23.73 | 25.62 | 25.65 | 20.36 | 26.50 | 30.99 | 21.59 | 31.79 | 25.57 | 26.88 | 29.21 | 27.14 | 28.76 | 29.10 |
| 23.48 | 27.79 | 25.69 | 21.38 | 21.88 | 28.96 | 24.75 | 31.06 | 30.67 | 29.34 | 26.95 | 24.87 | 26.84 | 27.30 |
| 21.54 | 17.03 | 22.34 | 22.38 | 24.32 | 28.93 | 24.20 | 31.08 | 28.53 | 26.98 | 26.79 | 25.66 | 25.37 | 27.99 |
| 25.02 | 18.47 | 27.15 | 18.97 | 22.97 | 30.76 | 25.56 | 33.10 | 28.05 | 26.14 | 26.17 | 22.90 | 27.85 | 29.56 |
| 25.71 | 27.46 | 26.63 | 22.45 | 22.97 | 27.62 | 24.36 | 31.48 | 27.66 | 27.62 | 28.52 | 24.70 | 26.99 | 23.61 |
| 27.24 | 24.41 | 22.03 | 19.47 | 23.41 | 29.54 | 24.97 | 33.91 | 28.62 | 22.97 | 25.47 | 20.60 | 25.51 | 21.46 |
| 26.00 | 26.54 | 22.93 | 21.68 | 27.37 | 22.61 | 22.12 | 31.18 | 28.34 | 24.86 | 27.30 | 23.71 | 26.18 | 24.04 |
| 25.59 | 27.31 | 23.93 | 21.62 | 19.07 | 21.69 | 22.73 | 33.09 | 28.44 | 27.58 | 24.79 | 23.96 | 27.19 | 21.28 |
| 22.93 | 26.28 | 23.83 | 19.80 | 24.84 | 20.37 | 24.34 | 28.62 | 29.27 | 27.66 | 28.34 | 25.85 | 25.64 | 24.52 |
| 24.91 | 24.47 | 23.21 | 19.05 | 24.31 | 20.61 | 24.50 | 27.25 | 29.48 | 27.54 | 25.62 | 25.07 | 25.77 | 19.55 |
| 27.63 | 28.80 | 24.73 | 21.78 | 24.79 | 21.91 | 23.89 | 33.00 | 27.57 | 26.11 | 25.50 | 22.57 | 27.13 | 22.91 |
| 25.98 | 27.10 | 26.02 | 20.82 | 24.55 | 20.34 | 24.25 | 30.97 | 29.76 | 28.82 | 25.57 | 25.63 | 25.43 | 24.42 |
| 24.31 | 25.62 | 26.22 | 20.33 | 23.14 | 31.55 | 21.64 | 29.10 | 29.07 | 29.52 | 26.27 | 24.04 | 25.36 | 26.40 |
| 24.56 | 26.77 | 22.76 | 19.64 | 24.07 | 21.17 | 23.40 | 27.67 | 29.37 | 28.93 | 27.40 | 23.99 | 27.00 | 25.65 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 25.97 | 25.95 | 23.12 | 18.46 | 26.98 | 19.34 | 24.75 | 29.08 | 28.37 | 25.95 | 26.61 | 23.82 | 27.34 | 22.43 |
| 22.61 | 26.23 | 25.47 | 16.88 | 21.48 | 31.40 | 24.52 | 30.81 | 25.08 | 27.64 | 27.63 | 23.43 | 27.00 | 23.91 |
| 23.53 | 28.28 | 26.95 | 17.52 | 28.94 | 30.97 | 23.50 | 31.62 | 30.07 | 25.54 | 25.23 | 24.00 | 25.12 | 23.47 |
| 20.89 | 26.15 | 31.41 | 19.84 | 30.12 | 27.30 | 23.47 | 28.22 | 28.83 | 27.22 | 25.25 | 24.97 | 24.37 | 25.67 |
| 25.70 | 26.94 | 28.53 | 21.62 | 25.47 | 30.87 | 24.79 | 32.74 | 27.76 | 28.90 | 24.64 | 28.41 | 26.23 | 24.63 |
| 23.08 | 18.17 | 25.56 | 22.58 | 22.05 | 30.14 | 21.02 | 20.98 | 26.73 | 27.65 | 23.51 | 25.26 | 24.57 | 21.11 |
| 24.53 | 17.10 | 27.49 | 18.32 | 21.63 | 30.16 | 22.93 | 20.44 | 24.76 | 28.33 | 25.76 | 25.69 | 26.09 | 25.41 |
| 22.56 | 16.96 | 21.82 | 20.76 | 25.13 | 32.18 | 23.42 | 19.50 | 29.77 | 29.08 | 25.28 | 26.64 | 26.62 | 26.56 |
| 24.80 | 17.17 | 25.41 | 22.99 | 27.80 | 30.56 | 21.78 | 19.56 | 26.22 | 27.77 | 28.06 | 24.81 | 28.60 | 24.76 |
| 23.42 | 16.98 | 28.78 | 21.06 | 26.59 | 32.99 | 24.27 | 19.06 | 30.13 | 28.13 | 26.37 | 25.42 | 24.48 | 23.35 |
| 24.93 | 17.58 | 25.71 | 21.40 | 25.39 | 30.26 | 25.43 | 17.99 | 28.87 | 25.10 | 24.59 | 25.31 | 26.69 | 25.76 |
| 24.80 | 16.43 | 23.40 | 22.40 | 24.45 | 32.17 | 25.03 | 20.08 | 26.36 | 28.20 | 24.82 | 25.48 | 27.06 | 24.72 |
| 21.34 | 18.70 | 23.48 | 22.66 | 21.98 | 27.70 | 25.80 | 19.72 | 29.34 | 27.89 | 26.37 | 24.72 | 27.92 | 24.73 |
| 23.56 | 18.01 | 18.09 | 18.42 | 23.86 | 26.33 | 24.45 | 20.57 | 26.82 | 28.16 | 26.79 | 24.88 | 27.88 | 24.41 |
| 23.84 | 18.62 | 21.36 | 18.37 | 23.75 | 32.08 | 21.80 | 23.20 | 28.89 | 29.05 | 24.64 | 22.85 | 27.09 | 25.68 |
| 23.78 | 29.38 | 22.55 | 18.47 | 20.19 | 30.05 | 25.88 | 20.93 | 28.22 | 28.18 | 26.81 | 25.03 | 27.07 | 22.59 |
|    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|    |     |     |     |    24.61 | 26.60 | 24.64 | 17.85 | 22.25 | 28.18 | 23.52 | 20.19 | 28.08 | 26.65 | 26.81 | 25.67 | 25.28 | 23.95 |
| 24.43 | 27.35 | 24.50 | 18.46 | 28.17 | 26.75 | 26.83 | 30.58 | 26.96 | 26.85 | 26.04 | 24.18 | 26.43 | 19.96 |
| 24.17 | 25.62 | 23.62 | 19.98 | 24.66 | 28.16 | 23.29 | 30.42 | 25.06 | 28.19 | 23.88 | 24.73 | 28.14 | 23.87 |
| 25.59 | 27.79 | 23.61 | 20.76 | 20.29 | 29.89 | 23.20 | 29.99 | 27.17 | 29.17 | 24.94 | 26.37 | 25.59 | 25.67 |
| 24.24 | 17.03 | 24.86 | 19.84 | 27.33 | 30.70 | 24.03 | 26.32 | 30.90 | 26.86 | 27.18 | 25.30 | 23.76 | 22.52 |
| 24.80 | 18.47 | 28.15 | 17.52 | 26.22 | 27.30 | 22.84 | 29.89 | 29.40 | 27.64 | 26.81 | 24.49 | 27.41 | 20.09 |
| 24.22 | 27.46 | 22.87 | 21.62 | 26.29 | 31.82 | 23.52 | 29.16 | 28.27 | 28.14 | 28.09 | 25.03 | 29.05 | 22.80 |
| 25.07 | 24.41 | 31.84 | 22.58 | 28.20 | 20.06 | 22.68 | 29.18 | 29.66 | 26.93 | 27.23 | 25.27 | 26.13 | 25.30 |
| 25.53 | 26.54 | 19.78 | 22.99 | 26.37 | 19.52 | 23.43 | 31.21 | 26.81 | 27.03 | 26.17 | 26.15 | 26.30 | 25.30 |
| 22.12 | 27.31 | 15.95 | 18.32 | 22.16 | 20.61 | 20.88 | 29.58 | 30.93 | 21.96 | 28.98 | 23.39 | 26.28 | 20.07 |
| 25.14 | 26.28 | 18.64 | 16.88 | 23.59 | 24.97 | 24.95 | 32.02 | 30.59 | 27.74 | 26.02 | 26.37 | 25.63 | 19.47 |
| 24.55 | 24.47 | 22.69 | 21.06 | 25.51 | 20.18 | 23.72 | 29.29 | 31.18 | 29.14 | 28.14 | 25.12 | 26.25 | 22.92 |
| 28.80 | 21.40 | 17.99 | 25.51 | 28.80 | 21.40 | 21.83 | 31.20 | 27.67 | 23.81 | 26.54 |
| 27.10 | 22.40 | 17.99 | 25.51 | 28.80 | 21.40 | 21.83 | 31.20 | 27.67 | 23.81 | 26.54 |
| 25.62 | 22.66 | 22.55 | 25.35 | 26.42 | 24.18 | 23.85 |
| 26.77 | 22.78 | 28.39 | 31.10 | 26.48 | 25.32 | 25.19 |
| 25.95 | 22.53 | 26.76 | 29.08 | 27.60 | 24.06 | 23.24 |
| 26.23 | 18.47 | 25.04 | 27.20 | 24.20 | 21.22 | 19.64 |
| 28.28 | 17.85 | 25.60 | 25.77 | 25.13 | 27.01 | 23.34 |
| 26.15 | 19.98 | 25.56 | 27.18 | 21.71 | 24.07 | 20.92 |
| 26.94 | 20.36 | 24.00 | 28.92 | 20.16 | 25.66 | 24.19 |
| 18.17 | 21.38 | 24.10 | 29.72 | 24.06 | 24.33 | 24.80 |
| 17.10 | 22.38 | 25.80 | 26.32 | 24.95 | 26.94 | 26.30 |
| 16.96 | 18.97 | 24.15 | 30.84 | 27.50 | 26.60 | 24.20 |
| 17.17 | 22.45 | 28.67 | 19.08 | 25.90 | 24.91 | 23.40 |
| 16.98 | 19.47 | 28.12 | 18.54 | 22.59 | 25.61 | 25.06 |
| 17.58 | 21.68 | 27.74 | 21.27 | 26.42 | 24.18 | 24.29 |
| 18.70 | 21.62 | 23.58 | 21.19 | 22.78 | 25.95 | 24.94 |
| 19.07 | 19.80 | 23.18 | 28.50 | 24.59 | 29.75 | 23.96 |
| 20.22 | 19.05 | 21.90 | 28.33 | 24.62 | 26.11 | 23.12 |
| 26.62 | 21.78 | 24.63 | 28.35 | 20.44 | 28.57 | 22.86 |
| 26.54 | 25.50 | 23.31 | 28.33 | 20.87 | 26.74 | 25.48 |
|       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|
| 18.63 | 24.72 | 22.90 | 29.86 | 25.99 | 25.41 | 24.0 |
| 18.34 | 18.42 | 28.97 | 29.74 | 20.77 | 32.32 | 22.3 |
| 18.34 | 18.37 | 28.83 | 30.04 | 24.53 | 26.12 | 21.7 |
| 18.34 | 24.85 | 29.06 | 28.80 | 23.03 | 27.66 | 23.6 |
| 20.06 | 21.93 | 29.07 | 27.53 | 24.04 | 26.57 | 23.3 |
| 25.70 | 19.08 | 28.96 | 27.53 | 23.73 | 22.95 | 22.9 |
| 25.59 | 22.20 | 29.18 | 27.51 | 22.36 | 24.15 | 21.0 |

Cq values are the ones presented in Figure 7a-g.

|               | Control |       | CHD  |       |
|---------------|---------|-------|------|-------|
|               | Mean    | SD    | Mean | SD    |
| Figure 7a     | 1.00    | 0.88  | 0.29 | 0.49  |
| Figure 7b     | 1.00    | 1.60  | 4.52 | 5.65  |
| Figure 7c     | 1.00    | 1.24  | 0.40 | 0.95  |
| Figure 7d     | 1.00    | 1.45  | 0.44 | 1.07  |
| Figure 7e     | 1.00    | 1.67  | 3.34 | 8.17  |
| Figure 7f     | 1.00    | 1.35  | 2.55 | 4.55  |
| Figure 7g     | 1.00    | 1.66  | 4.37 | 8.01  |

Mean and SD values are the ones presented in Figure 7a-g.
Table S20. The expression of select lncRNAs in HUVECs exposed to PCB29-pQ.

| lncRNA       | Cq values (Control) | Cq values (PCB29-pQ) |
|--------------|---------------------|----------------------|
|              | Mean (normalized)   | SD (normalized)      | Mean (normalized) | SD (normalized) |
| LINC01547    | 26.22               | 1.00                 | 0.04             | 26.75          | 1.00 | 0.07 |
|              | 26.28               | 26.86                | 26.67            |
|              | 26.16               |                      |                   |
| SLCO4A1-AS1  | 25.42               | 1.00                 | 0.04             | 24.96          | 2.07 | 0.02 |
|              | 25.52               | 24.93                |                  |
|              | 25.43               |                      |                   |
| NRSN2-AS1    | 27.58               | 1.00                 | 0.11             | 27.69          | 1.34 | 0.27 |
|              | 27.27               | 27.27                |                  |
|              | 27.52               |                      |                   |
| FGD5-AS1     | 26.39               | 1.00                 | 0.03             | 27.44          | 0.71 | 0.02 |
|              | 26.32               | 27.36                |                  |
|              | 26.39               | 27.42                |                  |
| MCM3AP-AS1   | 26.52               | 1.00                 | 0.02             | 27.77          | 0.65 | 0.04 |
|              | 26.58               | 27.73                |                  |
|              | 26.54               | 27.60                |                  |
| TUG1         | 25.44               | 1.00                 | 0.05             | 26.86          | 0.53 | 0.03 |
|              | 25.41               | 27.00                |                  |
|              | 25.55               | 26.92                |                  |
| RP3-416H24.1 | 27.29               | 1.00                 | 0.08             | 28.63          | 0.62 | 0.02 |
|              | 27.52               | 28.65                |                  |
|              | 27.41               | 28.56                |                  |
| AC002550.5   | 24.52               | 1.00                 | 0.34             | 24.81          | 1.80 | 0.12 |
|              | 25.36               | 24.75                |                  |
|              | 25.24               | 24.63                |                  |
| RP5-1057I20.4| 24.46               | 1.00                 | 0.08             | 27.49          | 0.18 | 0.01 |
| (HADC7-AS1)  | 24.52               | 27.57                |                  |
### Table S21. The expression of HDAC7 level in HUVECs transfected with HDAC7-AS1 siRNA or pEZ-M61-HDAC7-AS1.

|          | NC siRNA          | HDAC7-AS1 siRNA (25 nm) | HDAC7-AS1 siRNA (50 nm) | HDAC7-AS1 siRNA (100 nm) |
|----------|-------------------|-------------------------|-------------------------|-------------------------|
|          | Cq values | Mean (normalized) | SD (normalized) | Cq values | Mean (normalized) | SD (normalized) | Cq values | Mean (normalized) | SD (normalized) |
| Figure S4b | 23.74     | 1.00 | 0.03  | 24.89     | 0.58 | 0.02  | 25.36     | 0.41 | 0.02  | 25.71     | 0.33 | 0.02  |
Mean and SD values are the ones presented in Figure S4b-e. All data is \textit{HDAC1}-\textit{AS1} mRNA levels reported relative to levels in NC siRNA or pEZ-M61-NC.
Table S22. Protein TGF-β2 and PPME1 levels in HUVECs exposed to PCB29-pQ with MIR-7-5p inhibitor or TGF-β2/PPME1 siRNA.

|                        | NC inhibitor + NC siRNA | NC inhibitor + NC siRNA + PCB29-pQ | NC siRNA + MIR-7-5p inhibitor | NC siRNA + MIR-7-5p inhibitor + PCB29-pQ | MIR-7-5p inhibitor + TGF-β2 siRNA | MIR-7-5p inhibitor + TGF-β2 siRNA + PCB29-pQ |
|------------------------|-------------------------|-------------------------------------|-------------------------------|------------------------------------------|-----------------------------------|------------------------------------------|
| **Figure S7a** (Lower panel) | Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values |
|                         | 13486.08               | 4773.18               | 24453.20               | 9189.13               | 9331.76               | 6005.81               |
|                         | 13486.08               | 4807.88               | 23710.78               | 9553.25               | 9037.81               | 6698.18               |
|                         | 13508.49               | 4833.88               | 24159.95               | 9516.47               | 9203.93               | 6424.71               |
| **Figure S7b** (Lower panel) | Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values |
|                         | 12610.66               | 13479.47              | 28440.61               | 14589.18              | 5921.18               | 1069.50               |
|                         | 12527.00               | 13590.42              | 28704.73               | 13716.52              | 6436.83               | 1139.45               |
|                         | 12510.71               | 13746.54              | 27936.61               | 14791.59              | 6066.13               | 1023.26               |

|                        | NC inhibitor + NC siRNA | NC inhibitor + NC siRNA + PCB29-pQ | NC siRNA + MIR-7-5p inhibitor | NC siRNA + MIR-7-5p inhibitor + PCB29-pQ | MIR-7-5p inhibitor + TGF-β2 siRNA | MIR-7-5p inhibitor + TGF-β2 siRNA + PCB29-pQ |
|------------------------|-------------------------|-------------------------------------|-------------------------------|------------------------------------------|-----------------------------------|------------------------------------------|
| **Figure S7a** (Lower panel) | Mean (normalized) | SD (normalized) | Mean (normalized) | SD (normalized) | Mean (normalized) | SD (normalized) |
|                         | 1.00                    | 0.00                  | 0.40                      | 0.00                       | 2.02                  | 0.03                       |
|                         |                         |                       |                             |                           |                      |                           |
|                         |                         |                       |                             |                           |                      |                           |
|                         |                         |                       |                             |                           |                      |                           |
|                         |                         |                       |                             |                           |                      |                           |
|                         |                         |                       |                             |                           |                      |                           |
|                         |                         |                       |                             |                           |                      |                           |
|                         |                         |                       |                             |                           |                      |                           |

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Mean and SD values are the ones presented in Figure S7a-b (Lower panel). All data is presented as fold difference relative to NC inhibitor + NC siRNA.

**Table S23. Luciferase analysis of the activity of MIR-7-5p bind to TGF-β2, PPME1, and HDAC7-AS1 in HUVECs transfected with NC mimic or MIR-7-5p mimic.**

| Figure S8a | NC mimic  | MIR-7-5p mimic |
|------------|-----------|---------------|
|            | luciferase activity | Mean (normalized) | SD (normalized) | luciferase activity | Mean (normalized) | SD (normalized) |
| NC-3’UTR   | 2.95      | 1.00          | 0.05            | 3.07      | 1.11          | 0.05 |
|            | 2.90      |               |                 | 3.07      |               |     |
|            | 2.67      |               |                 | 3.32      |               |     |
| TGF-β2 (WT)- 3’UTR | 0.55  | 1.00          | 0.07            | 0.48      | 0.86          | 0.03 |
|            | 0.57      |               |                 | 0.51      |               |     |
|            | 0.63      |               |                 | 0.51      |               |     |
| TGF-β2 (MUT)- 3’UTR | 0.16  | 1.00          | 0.08            | 0.18      | 1.03          | 0.07 |
|            | 0.16      |               |                 | 0.16      |               |     |
| Figure S8b |
|-----------|
| **NC mimic** | **Mean** | **SD** | **MIR-7-5p mimic** | **Mean** | **SD** |
| luciferase activity | luciferase activity |
| NC-3’UTR | 3.00 | 1.00 | 0.01 | 3.35 | 1.12 |
| | 3.03 | | | 3.35 | |
| | 3.02 | | | 3.44 | |
| PPME1 (WT)- 3’UTR | 0.67 | 1.00 | 0.02 | 0.50 | |
| | 0.66 | | | 0.49 | 0.72 |
| | 0.69 | | | 0.47 | |
| PPME1 (MUT)- 3’UTR | 0.19 | 1.00 | 0.00 | 0.23 | 0.23 |
| | 0.19 | | | 0.23 |
| | 0.19 | | | 0.23 |

| Figure S8c |
|-----------|
| **NC mimic** | **Mean** | **SD** | **MIR-7-5p mimic** | **Mean** | **SD** |
| luciferase activity | luciferase activity |
| NC | 3.03 | 1.00 | 0.08 | 2.56 | 0.96 |
| | 2.73 | | | 2.53 |
| | 2.58 | | | 2.89 |
| HDAC7-AS1-WT | 0.65 | 1.00 | 0.07 | 0.32 | 0.52 |
| | 0.57 | | | 0.35 |
| | 0.65 | | | 0.31 |
| HDAC7-AS1-MUT | 0.16 | 1.00 | 0.10 | 0.16 | 1.34 |
| | 0.15 | | | 0.31 |
| | 0.13 | | | 0.12 |

Mean and SD values are the ones presented in Figure S8a-c. All data presented as fold difference relative to NC mimic. All data is expressed as luciferase activity (a.u.).
Table S24. The tube forming ability in HUVECs exposed to PCB29-pQ and transfected with a MIR-7-5p inhibitor.

| Figure S9 (Right panel) | Control | PCB29-pQ |
|-------------------------|---------|----------|
|                         | Individual values | Mean | SD | Individual values | Mean | SD |
| NC inhibitor            | 188.48  | 186.50   | 2.12 | 103.11 | 102.00 | 1.41 |
|                         | 186.73  |          |      | 102.49 |          |      |
|                         | 184.29  |          |      | 100.41 |          |      |
| MIR-7-5p inhibitor      | 208.41  | 220.50   | 12.02 | 186.33 | 167.00 | 16.97 |
|                         | 220.68  |          |      | 160.12 |          |      |
|                         | 232.41  |          |      | 154.55 |          |      |

Mean and SD values are the ones presented in Figure S9 (Right panel). Number of branch points is presented.

Table S25. HDAC7-AS1, MIR-7-5p, TGF-β2, PPME1 levels and apoptosis or proliferation rates in HUVECs exposed to PCB29-pQ and transfected with a MIR-7-5p inhibitor or HDAC7-AS1 siRNA.

|                  | NC inhibitor + NC siRNA | NC inhibitor + NC siRNA + PCB29-pQ | NC inhibitor + HDAC7-AS1 siRNA + PCB29-pQ | MIR-7-5p inhibitor + HDAC7-AS1 siRNA + PCB29-pQ |
|------------------|-------------------------|------------------------------------|--------------------------------------------|------------------------------------------------|
|                  | Cq values | Mean (normalized) | SD (normalized) | Cq values | Mean (normalized) | SD (normalized) | Cq values | Mean (normalized) | SD (normalized) |
| Figure S11a      | 24.00     | 1.00               | 0.02            | 22.95     | 2.07               | 0.05            | 20.55     | 3.50               | 0.25             |
|                  | 24.03     |                    |                 | 22.90     |                    |                 | 20.35     |                    |                 |
|                  | 23.97     |                    |                 | 22.88     |                    |                 | 20.40     |                    |                 |
| Figure S11b      | 24.06     | 1.04               | 0.04            | 24.90     | 0.56               | 0.04            | 25.23     | 0.13               | 0.01             |
|                  | 24.11     |                    |                 | 24.75     |                    |                 | 25.23     |                    |                 |
|                  | 23.99     |                    |                 | 24.90     |                    |                 | 25.12     |                    |                 |
| Figure S11c      | 24.04     | 1.00               | 0.06            | 24.96     | 0.57               | 0.09            | 24.26     | 0.28               | 0.02             |
|                  | 24.05     |                    |                 | 24.75     |                    |                 | 24.48     |                    |                 |

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|          |             |             |             |             |             |             |             |             |             |             |             |             |
|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Figure S11d | 24.11       | 24.56       | 23.99       | 24.04       | 24.05       | 23.83       | 24.32       | 23.28       | 23.89       | 23.93       | 24.93       | 24.04       |
|          | 23.93       | 24.93       | 24.04       | 24.44       | 24.02       | 23.95       | 24.32       | 23.05       | 23.77       | 23.95       | 24.32       | 23.28       |
|          | 23.83       | 24.32       | 23.28       | 23.89       | 23.95       | 24.00       | 24.32       | 23.05       | 23.77       | 23.95       | 24.32       | 23.28       |
|          | 1.00        | 0.06        | 0.72        | 0.04        | 0.49        | 0.05        | 0.49        | 0.05        | 0.61        | 0.08        | 0.06        | 0.04        |

|          | NC inhibitor + NC siRNA | NC inhibitor + NC siRNA + PCB29-pQ | NC inhibitor + HDAC7-AS1 siRNA + PCB29-pQ | MIR-7-5p inhibitor + HDAC7-AS1 siRNA + PCB29-pQ |
|----------|--------------------------|-----------------------------------|---------------------------------------------|-----------------------------------------------|
|          | Grayscale values         | Mean (normalized) | SD (normalized) | Grayscale values         | Mean (normalized) | SD (normalized) | Grayscale values         | Mean (normalized) | SD (normalized) | Grayscale values         | Mean (normalized) | SD (normalized) |
| Figure S11f | 26471.34               | 1.00 | 0.03 | 19404.29 | 0.75 | 0.04 | 8350.731 | 0.32 | 0.02 | 24470.19 | 0.61 | 0.04 |
|          | 25571.42               | 18907.89 | 0.42 | 7680.765 | 7690.97 | 71457.98 | 21457.98 | 0.61 | 0.04 |
|          | 24789.01               | 17650.91 | 0.01 | 6270.91 | 6270.91 | 6270.91 | 6270.91 | 0.01 | 0.01 |
| Figure S11g | 35445.87               | 1.00 | 0.00 | 29143.95 | 0.84 | 0.00 | 14331.22 | 0.42 | 0.00 | 31926.00 | 0.61 | 0.00 |
|          | 35402.05               | 28836.87 | 0.05 | 14263.22 | 14351.63 | 31968.29 | 31968.29 | 0.61 | 0.00 |
|          | 35530.12               | 28979.22 | 0.12 | 14351.63 | 14351.63 | 31968.29 | 31968.29 | 0.61 | 0.00 |

|          | NC inhibitor + NC siRNA | NC inhibitor + NC siRNA + PCB29-pQ | NC inhibitor + HDAC7-AS1 siRNA + PCB29-pQ | MIR-7-5p inhibitor + HDAC7-AS1 siRNA + PCB29-pQ |
|----------|--------------------------|-----------------------------------|---------------------------------------------|-----------------------------------------------|
|          | Individ ual values       | Mean (normalized) | SD (normalized) | Individ ual values       | Mean (normalized) | SD (normalized) | Individ ual values       | Mean (normalized) | SD (normalized) | Individ ual values       | Mean (normalized) | SD (normalized) |
| Figure S11h | 100.92                  | 100.00 | 1.91 | 79.83 | 81.03 | 3.32 | 76.57 | 71.42 | 4.65 | 87.85 | 88.99 | 1.81 |
Mean and SD values are the ones presented in Figure S11a (mRNA expression of MIR-7-5p), b (mRNA expression of HDAC7-AS1), c (mRNA expression of TGFβ-2), and d (mRNA expression of PPME1), and f (protein expression of TGF-β2), g (protein expression of PPME1), and h (% cell viability). All data presented relative to NC inhibitor + NC siRNA.

Table S26. HE staining of aortic root cross-sections and total cholesterol (TC) and low-density lipoprotein (LDL) levels in ApoE−/− mice were i.v. injected with AAV-HDAC7-AS1.

| Figure S12a (Right panel) | AAV-NC | AAV-NC + PCB29-pQ | AAV-HDAC7-AS1 | AAV-HDAC7-AS1 + PCB29-pQ |
|---------------------------|--------|-------------------|---------------|--------------------------|
| Mean | SD | Mean | SD | Mean | SD | Mean | SD |
| 14.35 | 0.81 | 26.81 | 3.78 | 9.71 | 1.62 | 14.17 | 2.52 |
| Individual values | Individual values | Individual values | Individual values |
| 13.49 | 22.44 | 11.18 | 17.05 |
| 14.46 | 29.09 | 9.96 | 13.09 |
| 15.09 | 28.89 | 7.98 | 12.38 |
| Figure S12b | 31.60 | 6.03 | 70.40 | 11.89 | 32.20 | 9.83 | 47.60 | 9.32 |
| Individual values | Individual values | Individual values | Individual values |
| 36 | 68 | 26 | 43 |
| 39 | 69 | 34 | 41 |
| 28 | 74 | 47 | 55 |
| 24 | 87 | 21 | 60 |
| 31 | 54 | 33 | 39 |
| Figure S12c | 246.6 | 58.22 | 336.6 | 42.74 | 165.2 | 40.77 | 231.4 | 46.98 |
|                  | Individual values | Individual values | Individual values | Individual values |
|------------------|-------------------|-------------------|-------------------|-------------------|
| 0 h              | 267               | 310               | 211               | 187               |
|                  | 210               | 330               | 103               | 198               |
|                  | 201               | 352               | 190               | 208               |
|                  | 340               | 401               | 165               | 288               |
| 1 h              | 215               | 290               | 157               | 276               |
| 3 h              |                   |                   |                   |                   |
| 6 h              |                   |                   |                   |                   |

Mean and SD values are the ones presented in Figure S12a (Right panel) and Figure S12a (plaque area relative to aortic section), b (TC; mmol/l), and c (LDL; mmol/l).

**Table S27.** TGF-β2, PPME1, and inflammatory factors level in HUVECs exposed to PCB29-pQ with or without CAV1 siRNA.

|                  | 0 h     | 1 h     | 3 h     | 6 h     |
|------------------|---------|---------|---------|---------|
| **Figure S13a**  |         |         |         |         |
| (p-CAV1)         | 3549.9  | 14419.75| 21891.17| 41060   |
|                  | 3551.9  | 14458.87| 22463.19| 40411   |
|                  | 3544.5  | 14511.00| 22130.58| 40784   |
|                  | 0       | 0.01    | 0.01    | 0.06    |
|                  | 12.76   | 0.05    |         |         |
| **Figure S13a**  |         |         |         |         |
| (CAV1)           | 35207.65| 39533.43| 34135.36| 31824   |
|                  | 35245.36| 39410.19| 34430.60| 31567   |
|                  | 35224.65| 39808.55| 34124.48| 31747   |
|                | NC siRNA | NC siRNA + PCB29-pQ | CAV1 siRNA | CAV1 siRNA + PCB29-pQ |
|----------------|----------|----------------------|------------|------------------------|
|                | Grayscale values | Mean (normalized) | SD (normalized) | Grayscale values | Mean (normalized) | SD (normalized) | Grayscale values | Mean (normalized) | SD (normalized) | Grayscale values | Mean (normalized) | SD (normalized) |
| Figure S13c (p-CAV1) | 20472.92 | 1.05 | 0.00 | 29074.26 | 1.65 | 0.01 | 8883.024 | 0.42 | 0.01 | 6454.782 | 0.32 | 0.01 |
|                | 20411.51 |            |     | 29425.33 |            |     | 8531.782 |            |     | 6442.782 |            |     | 0.01 |
|                | 20471.34 |            |     | 29228.50 |            |     | 8789.317 |            |     | 6219.468 |            |     | 0.01 |
| Figure S13c (CAV1) | 36333.41 |            |     | 38767.5 |            |     | 16916.46 |            |     | 10561.56 |            |     | 0.01 |
|                | 36998.02 |            |     | 38129.48 |            |     | 17327.41 |            |     | 10408.2 |            |     | 0.01 |
|                | 36895.19 |            |     | 38340.43 |            |     | 17230.58 |            |     | 10447.02 |            |     | 0.01 |
| Figure S13d | 24553.22 |            |     | 12233.54 |            |     | 34677.92 |            |     | 31960.7 |            |     | 1.29 |
|                | 24553.22 |            |     | 12233.54 |            |     | 34618.22 |            |     | 31996.07 |            |     | 0.00 |
|                | 24478.97 |            |     | 12233.54 |            |     | 34383.39 |            |     | 32146.77 |            |     | 0.01 |
| Figure S13e | 28310.29 |            |     | 20444.51 |            |     | 27711.29 |            |     | 21154.87 |            |     | 0.74 |
|                | 27989.63 |            |     | 20778.41 |            |     | 27671.17 |            |     | 21232.24 |            |     | 0.00 |
|                | 28526.24 |            |     | 20288.1 |            |     | 27720.41 |            |     | 21147.29 |            |     | 0.00 |
| Figure S13f | 6365.974 |            |     | 29456.14 |            |     | 5738.782 |            |     | 8396.974 |            |     | 1.30 |
|                | 6527.317 |            |     | 30621.72 |            |     | 6009.317 |            |     | 8674.924 |            |     | 0.03 |
Table S28. Pearson’s correlation coefficient for expression of p-CAV1 and CD31 in ApoE\(^+\) mice that were i.v. injected with AAV-HDAC7-AS1.

|                  | AAV-NC        | AAV-NC + PCB29-pQ | AAV-HDAC7-AS1 | AAV-HDAC7-AS1 + PCB29-pQ |
|------------------|---------------|-------------------|---------------|-------------------------|
|                  | Individual    | Mean   | SD    | Individual    | Mean   | SD    | Individual    | Mean   | SD    | Individual    | Mean   | SD    |
| Figure S14       | Mean          | 0.35   | 0.43  | 0.92         | 0.02   | 0.02  | 0.17         | 0.31   | 0.12 |
| (Right panel)    | SD            | 0.47   | 0.07  | 0.93         | 0.04   | 0.05  | 0.38         | 0.38   |      |
|                  |               | 0.48   | 0.90  | 0.90         | 0.90   | 0.90  | 0.90         | 0.90   |      |

Mean and SD values are the ones presented in Figure S13a (Lower panel; p-CAV1/CAV1 ratio after treatment with PCB29-pQ for 0, 1, 3, or 6h, no CAV1 siRNA) and Figure c (p-CAV1/CAV1 ratio), d (TGF-β2), e (PPME1), f (IL-1β), g (IL-6), and h (TNF-α). Data for c-h were normalized to β-actin expression and presented as fold difference compared to NC siRNA.
Mean and SD values are the ones presented in Figure S14 (Right panel).

Table S29. Immunohistochemistry staining of CD68, total cholesterol (TC), and low-density lipoprotein level (LDL) in ApoE<sup>−/−</sup> and ApoE<sup>−/−</sup>/CAV1<sup>−/−</sup> mice.

|          |                     | ApoE<sup>−/−</sup> |                     | ApoE<sup>−/−</sup>/CAV1<sup>−/−</sup> |
|----------|---------------------|-------------------|---------------------|----------------------------------------|
|          | Individual values   | Mean   | SD     | Individual values   | Mean   | SD     |
| Figure S16a (Right panel) | Control             |         |       |                         |         |       |
|          | 19.85               | 16.00   | 3.35   | 6.33                    | 7.88   | 2.17   |
|          | 14.40               |         |       | 6.94                    |         |       |
|          | 13.75               |         |       | 10.35                   |         |       |
|          | PCB29-pQ            | 21.76   | 20.86  | 2.19                    | 11.70  | 12.38  |
|          | 22.45               |         |       |                         |         |       |
|          | 18.36               |         |       |                         | 9.95   | 2.83   |
|          |                     |         |       |                         |         |       |
| Figure S16b | Control             | 39.00   | 31.80  | 6.22                    | 25.00  | 33.80  |
|          | 32.00               |         |       |                         | 39.00  | 5.63   |
|          | 29.00               |         |       |                         | 32.00  |       |
|          | 23.00               |         |       |                         | 38.00  |       |
|          | 36.00               |         |       |                         | 35.00  |       |
|          |                     |         |       |                         |         |       |
|          | PCB29-pQ            | 69.00   | 71.80  | 10.57                   | 42.00  | 46.20  |
|          | 74.00               |         |       |                         | 39.00  | 6.14   |
|          | 85.00               |         |       |                         | 45.00  |       |
### Table S30. Adhesion molecules, pro-inflammatory cytokines and p65 protein expression level in HUVEC exposed to PCB29-pQ.

|          | 0 h          | 1 h          | 3 h          | 6 h          |
|----------|--------------|--------------|--------------|--------------|
|          | Grayscale values | Mean (normalized) | SD (normalized) | Grayscale values | Mean (normalized) | SD (normalized) | Grayscale values | Mean (normalized) | SD (normalized) | Grayscale values | Mean (normalized) | SD (normalized) |
|          |              |              |              |              |              |              |              |              |              |              |              |              |
| Figure S17b | 2171.031     | 1.00         | 0.02         | 32831.89     | 1.37         | 0.00         | 35262.31     | 1.53         | 0.01         | 34571.68       | 1.58         | 0.02         |
|          | 22002.72     | 33634.02     |              | 35212.19     |              | 34742.26     |              |              |              | 34389.10       |              |              |
|          | 22448.72     | 33584.48     |              |              |              |              |              |              |              | 34622.68       |              |              |
| Figure S17c | 5039.5 4 | 1.00 | 0.01 | 18047.31 | 3.63 | 0.04 | 26252.14 | 5.05 | 0.16 | 37682.02 | 6.42 | 0.13 |
| Figure S17d | 13157.73 | 1.00 | 0.03 | 29704.43 | 2.31 | 0.02 | 31683.31 | 2.39 | 0.04 | 41349.53 | 2.76 | 0.02 |
| Figure S17e | 16167.24 | 1.00 | 0.02 | 17999.00 | 1.19 | 0.01 | 26253.14 | 1.59 | 0.01 | 32660.29 | 1.79 | 0.00 |
| Figure S17f | 9014.2 2 | 1.00 | 0.03 | 20417.84 | 2.39 | 0.04 | 24193.53 | 2.63 | 0.04 | 35338.87 | 3.48 | 0.03 |
| Figure S17i | 12851.66 | 1.00 | 0.01 | 20475.39 | 1.69 | 0.06 | 28455.95 | 2.47 | 0.06 | 37633.19 | 3.40 | 0.01 |
| Figure S17j | 31806.92 | 1.00 | 0.00 | 25913.87 | 0.84 | 0.00 | 11533.10 | 0.40 | 0.02 | 11508.73 | 0.39 | 0.00 |
|                           | Control          | PCB29-pQ        |
|---------------------------|------------------|-----------------|
|                           | Individual values| Mean (normalized)| SD (normalized) | Individual values| Mean (normalized)| SD (normalized) |
|                           | 6.15             | 4.94            | 1.18           | 17.99            | 15.27           | 2.71           |
|                           | 4.89             |                 |                | 15.26            |                 |                |
|                           | 3.79             |                 |                | 12.56            |                 |                |

**Figure S17g (Right panel)**

|                           | Control          | PCB29-pQ        |
|---------------------------|------------------|-----------------|
|                           | Grayscale values| Mean (normalized)| SD (normalized) | Grayscale values| Mean (normalized)| SD (normalized) | Grayscale values| Mean (normalized)| SD (normalized) |
|                           | 24902.37         | 1.00            | 0.00           | 37563.55         | 1.57            | 0.00           | 25411.1         | 1.29            | 0.00           |
|                           | 24895.37         |                 |                | 37531.84         |                 |                | 25381.39        |                 |                |
|                           | 24917.2          |                 |                | 37384.19         |                 |                | 25371.63        |                 |                |
|                           | 7863.196         | 1.00            | 0.00           | 28066.72         | 3.72            | 0.00           | 12419.56        | 2.00            | 0.00           |
|                           | 7853.782         |                 |                | 28090.14         |                 |                | 12406.85        |                 |                |
|                           | 7863.196         |                 |                | 28115.67         |                 |                | 12380.32        |                 |                |

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Mean and SD values are the ones presented in Figure S17b (IL-1β), c (IL-6), d (TNFα), e (ICAM-1), f (VCAM-1), g (The fluorescence intensity of Calcein-AM) (a.u.), i (p-p65/p65 ratio), j (IκBα), l (IL-1β), m (IL-6), and n (TNF-α). Data in b-e normalized to β-actin and presented as fold difference compared to 0 h control. Data in i presented as fold difference compared to 0 h. Data in j normalized to β-actin and presented as fold difference compared to 0 h. Data in l-n normalized to β-actin and presented as fold difference compared to control.

Table S31. Adhesion molecules, pro-inflammatory cytokines and p65 protein expression levels in HUVEC exposed to PCB29-pQ with CAV1 siRNA.

|                     | NC siRNA          | NC siRNA + PCB29-pQ | CAV1 siRNA       | CAV1 siRNA + PCB29-pQ |
|---------------------|-------------------|----------------------|------------------|------------------------|
|                     | Grayscale values  | Mean (normalized)    | SD (normalized)  | Grayscale values      | Mean (normalized)    | SD (normalized)  | Grayscale values  | Mean (normalized)    | SD (normalized)  |
| Figure S18b         | 30214.87          | 1.00                 | 0.02             | 37211.05               | 1.24                 | 0.02             | 38170.58          | 23534.58               | 0.81                 | 0.03             | 38190.24          | 24898.73               | 0.86                 | 0.03             |
|                     | 30368.41          |                      |                  |                        |                      |                  | 23260.63          | 24800.87               |                        |                  | 24913.41          |                        |                  |                  |
| Figure S18c | 27480.92 | 1.00 | 0.01 | 33946.92 | 1.24 | 0.01 | 25009.53 | 0.91 | 0.01 | 13017.08 | 0.51 | 0.00 |
| Figure S18c | 27800.12 | 33688.38 | 24770.82 | 13238.20 | 0.00 |
| Figure S18c | 27472.05 | 34324.87 | 24471.58 | 13060.37 | 0.00 |
| Figure S18d | 16321.92 | 1.00 | 0.01 | 30156.51 | 1.87 | 0.00 | 14698.73 | 0.92 | 0.00 | 13659.00 | 0.91 | 0.01 |
| Figure S18d | 16318.75 | 30156.51 | 14738.73 | 13695.71 |
| Figure S18d | 16022.02 | 30156.51 | 14686.73 | 13699.00 |
| Figure S18e | 24843.80 | 1.00 | 0.00 | 34943.65 | 1.43 | 0.00 | 33345.68 | 1.36 | 0.01 | 19715.92 | 0.87 | 0.00 |
| Figure S18e | 24493.92 | 35010.12 | 19912.63 |
| Figure S18e | 24677.87 | 35044.12 | 19799.51 |
| Figure S18f | 16432.29 | 1.00 | 0.01 | 29701.36 | 1.83 | 0.00 | 16065.10 | 0.79 | 0.00 | 14917.08 | 0.99 | 0.01 |
| Figure S18f | 16188.22 | 29686.65 | 15005.20 |
| Figure S18f | 16438.29 | 29721.77 | 14972.78 |
| Figure S18h | 3963.368 | 1.00 | 0.01 | 7330.66 | 1.42 | 0.10 | 25073.10 | 0.17 | 0.00 | 28151.45 | 0.29 | 0.00 |
| Figure S18h | 4098.439 | 7178.832 | 28219.50 |
| Figure S18h | 4134.196 | 7261.953 | 27942.84 |
| Figure S18j | 21031.05 | 1.00 | 0.02 | 12072.82 | 0.53 | 0.02 | 30701.04 | 1.44 | 0.00 | 18197.58 | 0.84 | 0.01 |
Mean and SD values are the ones presented in Figure S18b (IL-1β), c (IL-6), d (TNF-α), e (ICAM-1), f (VCAM-1), h (p-p65/p65 ratio), I (IκBα), and j (Pearson’s coefficient). Data in c-f and i normalized to β-actin and presented as fold difference compared to NC siRNA. Data in h presented as fold difference compared to NC siRNA.

Table S32. Protein expression of inflammatory factors and ROS levels in HUVEC exposed to PCB29-pQ.

| Figure S19b | Control | PCB29-pQ | PCB29-pQ + VC | PCB29-pQ + VE | PCB29-pQ + NAC |
|-------------|---------|----------|---------------|---------------|----------------|
| Grayscale values | 13974.88 | 14314.47 | 6892.91 | 4899.10 | 6949.18 |
| Grayscale values | 12348.40 | 14314.47 | 6892.91 | 4899.10 | 6954.59 |
| Grayscale values | 13750.64 | 14314.47 | 6892.91 | 4899.10 | 6949.18 |

| Figure S19c | Control | PCB29-pQ | PCB29-pQ + VC | PCB29-pQ + VE | PCB29-pQ + NAC |
|-------------|---------|----------|---------------|---------------|----------------|
| Grayscale values | 15912.10 | 21827.13 | 11045.47 | 12279.83 | 16616.30 |
| Grayscale values | 15863.28 | 22036.83 | 11003.47 | 12345.83 | 16551.59 |
| Grayscale values | 15839.98 | 21941.25 | 11018.93 | 12351.83 | 16497.59 |
| Figure S19d | Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values |
|-------------|------------------|------------------|------------------|------------------|------------------|
|             | 16573.56         | 23407.17         | 16591.27         | 20362.92         | 15709.90         |
|             | 16479.90         | 23292.87         | 16712.22         | 20046.56         | 16281.73         |
|             | 16693.39         | 23259.34         | 16577.97         | 20474.51         | 15738.20         |
| Figure S19e | Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values |
|             | 24377.20         | 27848.27         | 9483.76          | 19209.90         | 16895.78         |
|             | 24422.78         | 27853.27         | 9527.47          | 19147.08         | 16898.95         |
|             | 24457.78         | 27858.27         | 9443.76          | 19198.78         | 16931.78         |
| Figure S19f | Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values |
|             | 20508.34         | 3491.42          | 24095.95         | 22248.27         | 506.34           |
|             | 20143.15         | 3515.83          | 24081.41         | 22567.15         | 494.34           |
|             | 20916.39         | 3403.59          | 23976.77         | 22010.61         | 506.34           |
| Figure S19g | Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values |
|             | 8957.13          | 11376.25         | 7745.71          | 4248.71          | 9647.69          |
|             | 9396.02          | 10545.05         | 7818.54          | 4345.42          | 9577.69          |
|             | 9970.21          | 10050.10         | 7784.83          | 4246.42          | 9650.40          |

| Figure S19h | Control | PCB29-pQ | PCB29-pQ + VC | PCB29-pQ + VE | PCB29-pQ + NAC |
|-------------|---------|----------|---------------|---------------|---------------|
| Fluorescence values | Fluorescence values | Fluorescence values | Fluorescence values | Fluorescence values |
|             | 1001.23 | 1391.82  | 1121.46       | 961.25        | 1041.36         |
|             | 1001.37 | 1361.78  | 1171.53       | 901.18        | 1081.41         |
|             | 1001.31 | 1351.76  | 1031.35       | 901.18        | 1091.42         |

| Figure S19b | Control | PCB29-pQ | PCB29-pQ + VC | PCB29-pQ + VE | PCB29-pQ + NAC |
|-------------|---------|----------|---------------|---------------|---------------|
| Mean (normalized) | SD (normalized) | Mean (normalized) | SD (normalized) | Mean (normalized) | SD (normalized) |
| 1.00        | 0.07    | 1.36     | 0.06          | 0.58          | 0.02          | 0.39          | 0.02          | 0.60          | 0.01          |
Mean and SD values are the ones presented in Figure S19b (p-65/p65 ratio), c (IL-1β), d (IL-6), e (TNF-α), f (ICAM-1), g (VCAM-1), and h (ROS level). Data in c-g are normalized to β-actin. All data presented as fold difference relative to control.

**Table S33. p-CAV1 protein expression relative to CAV1 total protein in HUVEC exposed to PCB29-pQ and antioxidants.**

|         | Control       | PCB29-pQ       | PCB29-pQ + VC | PCB29-pQ + VE | PCB29-pQ + NAC |
|---------|---------------|----------------|---------------|---------------|----------------|
| Mean    | (normalize d) | (normalize d) | (normalize d) | (normalize d) | (normalize d)  |
| SD      | (normalize d) | (normalize d) | (normalize d) | (normalize d) | (normalize d)  |
| Figur    | 1.00          | 0.03           | 2.02          | 0.03          | 0.82           |
| e S19c  |               |                |               |               |                |
| Figur    | 1.00          | 0.01           | 1.74          | 0.01          | 1.07           |
| e S19d  |               |                |               |               |                |
| Figur    | 1.00          | 0.00           | 1.41          | 0.10          | 0.41           |
| e S19e  |               |                |               |               |                |
| Figur    | 1.00          | 0.02           | 1.25          | 0.00          | 0.21           |
| e S19f  |               |                |               |               |                |
| Figur    | 1.00          | 0.05           | 1.40          | 0.09          | 0.88           |
| e S19g  |               |                |               |               |                |
| Figur    | 1.00          | 0.07           | 1.37          | 0.02          | 1.11           |
| e S19h  |               |                |               |               |                |
### Table 1: Grayscale Values for Figures S20a and S20b

|                    | Control | PCB29-pQ | PCB29-pQ + PEG-CAT | PCB29-pQ + PEG-SOD | PCB29-pQ + GSH-MEE |
|--------------------|---------|----------|---------------------|---------------------|---------------------|
|                    | Mean    | SD       | Mean                | SD                  | Mean                |
|                    | (normalized) | (normalized) | (normalized) | (normalized) | (normalized) |
| **Figure S20a**    | 1.00    | 0.17     | 20.01               | 0.32                | 8.35                |
|                    | 0.16    | 9.23     | 0.16                | 4.64                | 0.11                |

**Figure S20a (p-CAV1)**

| Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values |
|------------------|------------------|------------------|------------------|------------------|
| 13410.85         | 27941.75         | 11037.39         | 4832.47          | 10080.42         |
| 13993.92         | 27406.58         | 10979.39         | 5269.59          | 9641.52          |
| 13638.61         | 28534.65         | 9943.78          | 5056.23          | 9682.05          |

**Figure S20a (CAV1)**

| Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values |
|------------------|------------------|------------------|------------------|------------------|
| 30972.85         | 31152.49         | 28496.59         | 27020.02         | 22916.02         |
| 30766.20         | 30912.78         | 29202.61         | 26508.83         | 23050.15         |
| 30282.13         | 31115.78         | 29372.49         | 26523.42         | 23198.27         |

**Figure S20b (p-CAV1)**

| Grayscale values | Grayscale values | Grayscale values | Grayscale values | Grayscale values |
|------------------|------------------|------------------|------------------|------------------|
| 1181.16          | 30552.43         | 11266.49         | 12159.02         | 6742.50          |
| Figure S20b (CAV1) | 981.63 | 31232.09 | 11089.49 | 12099.44 | 6548.62 |
|--------------------|--------|----------|----------|----------|---------|
|                    | 1374.41| 30331.07 | 10787.42 | 12484.56 | 6891.33 |
| Grayscale values   |        |          |          |          |         |
| Grayscale values   | 22054.73 | 28945.39 | 24954.80 | 24981.15 | 27437.22 |
| Grayscale values   | 22386.22 | 28874.73 | 24947.92 | 24977.61 | 27180.97 |
| Grayscale values   | 22204.80 | 28874.44 | 24811.39 | 24980.73 | 27335.80 |

Mean and SD values are the ones presented in Figure S20a and b. Data presented as fold difference relative to control.