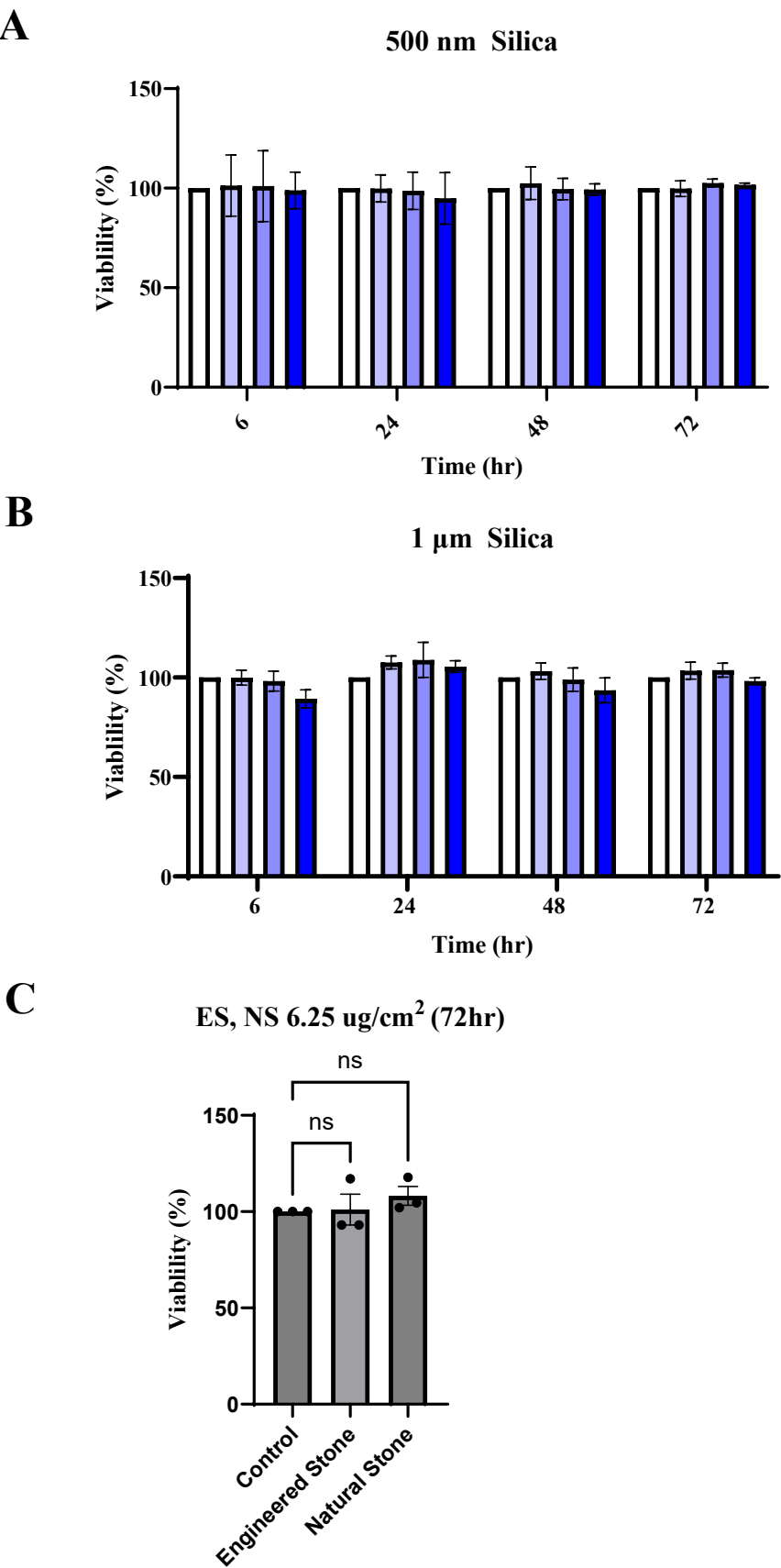
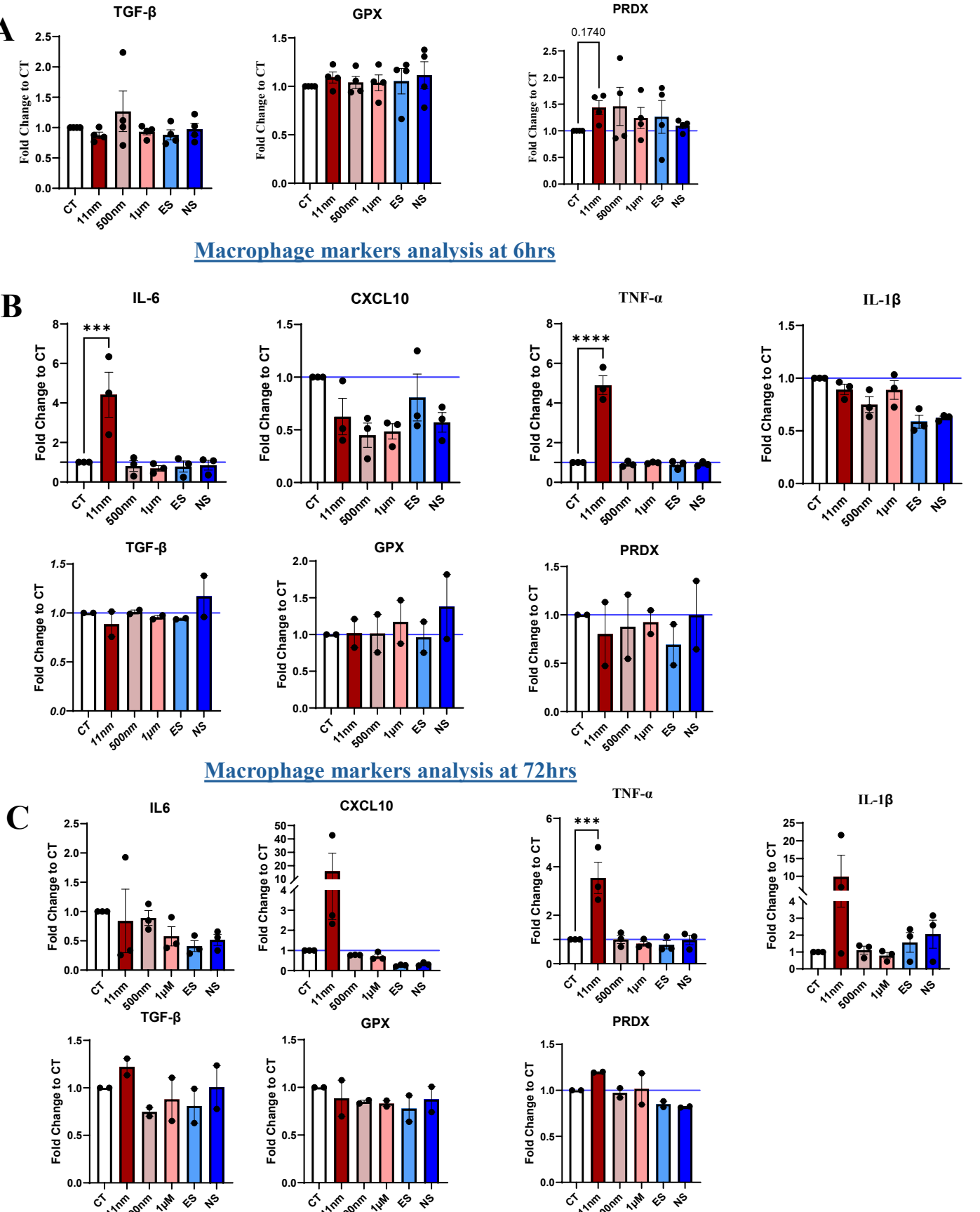


Supplementary Figure 1



Supplementary Figure 1: Cytotoxic analysis: Macrophages were treated with 3.12, 6.25, and 25 $\mu\text{g}/\text{cm}^2$ doses of 500 nm and 1 μm silica particles. MTT assays were performed at 6, 24, 48 and 72 hours to assess toxicity. A) Toxicity analysis of 500 nm silica particles. B) Toxicity analysis of 1 μm silica particles. C) Toxicity analysis of silica dust (6.25 $\mu\text{g}/\text{cm}^2$) from engineered stone and natural stone at 72 hrs of exposure. Data are represented as mean $\pm$ SEM; $n = 3\text{--}4$ biological replicates. Statistical analysis was performed using one-way ANOVA followed by Sidak's multiple comparison test.

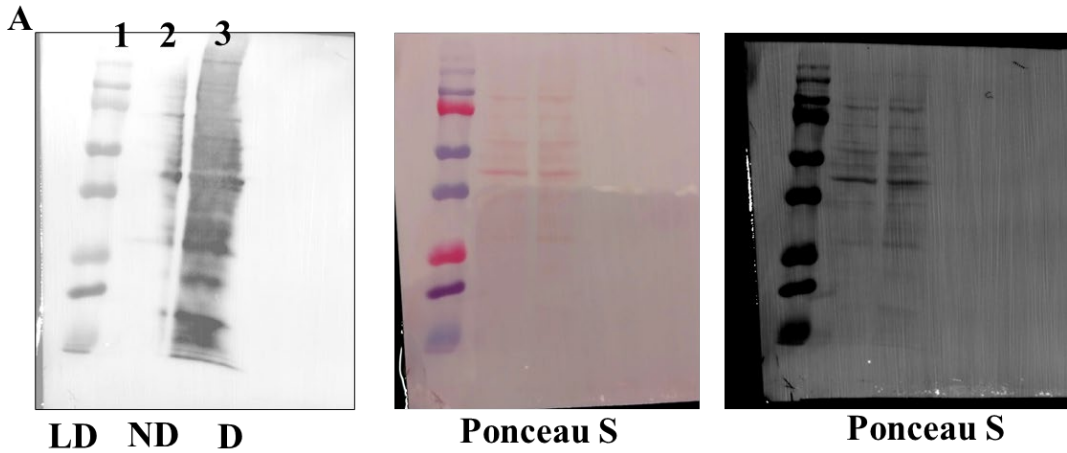
Supplementary Figure 2



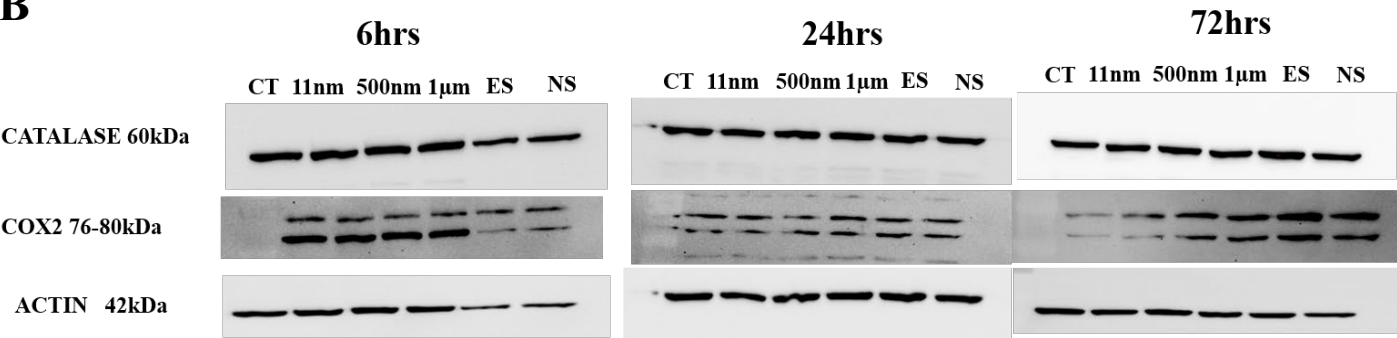
Supplementary Figure 2: Macrophage M1 and M2 marker analysis at 6, 24, and 72 hours of exposure from (6.25 μ g/cm²) 11nm, 500 nm, 1 μ m silica particles, dust from engineered stone (ES) and natural stone (NS). A) M2 marker expression at 24 hours. B) M1 and M2 marker expression at 6 hours of exposure. C) M1 and M2 marker expression at 72 hours of exposure. Data are represented as mean $\pm$ SEM; n = 3–4 biological replicates. Statistical analysis was performed using one-way ANOVA followed by Sidak's multiple comparison test.

Supplementary Figure 3

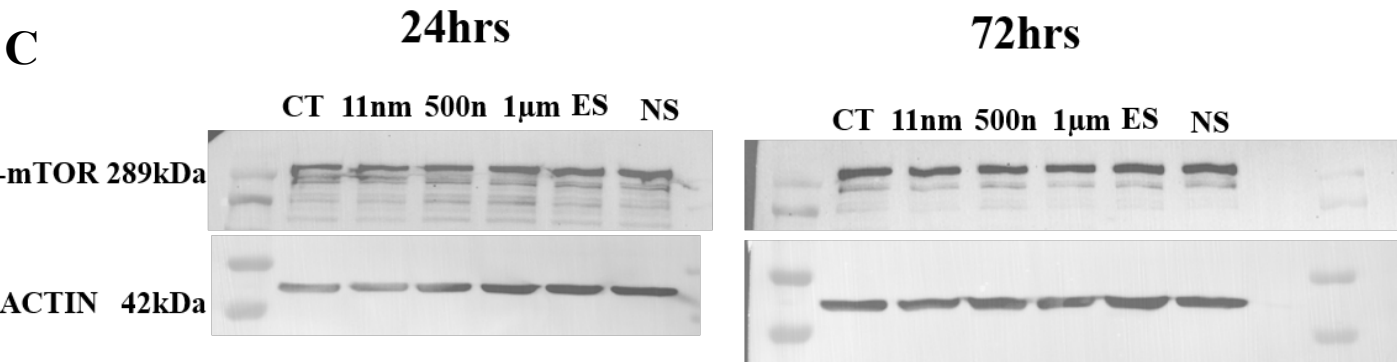
A



B



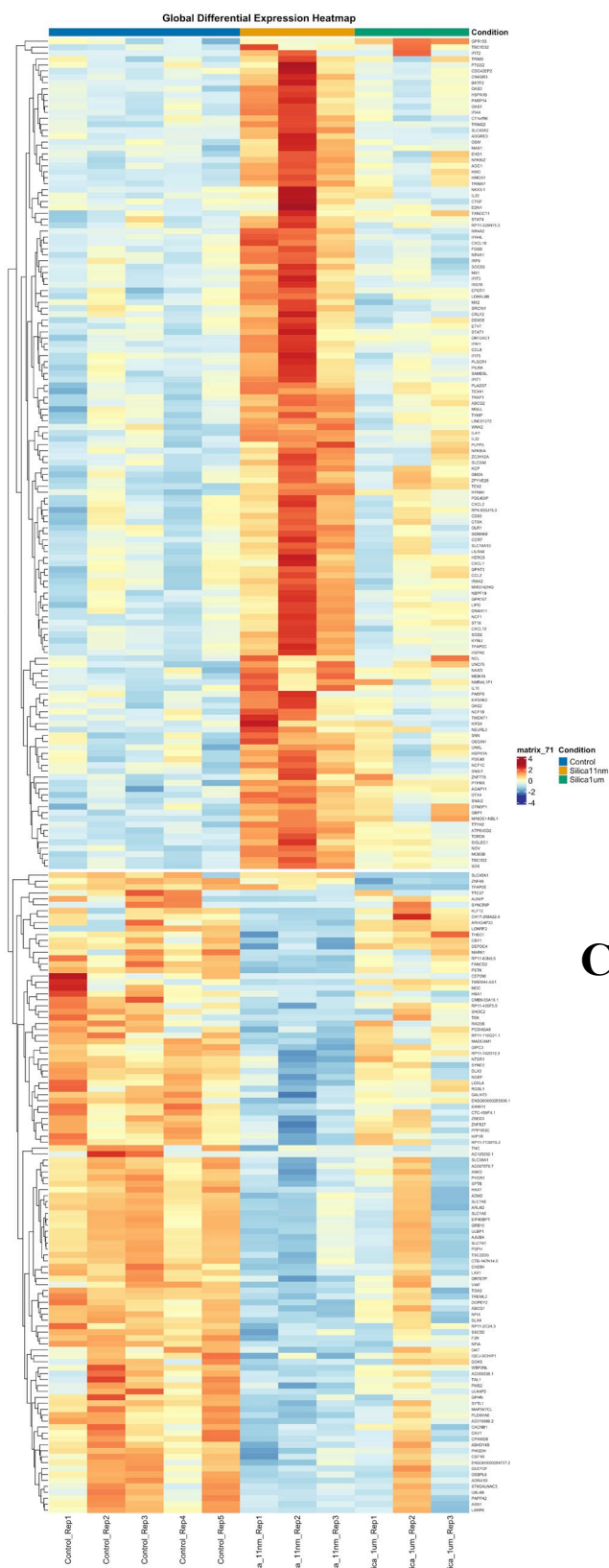
C



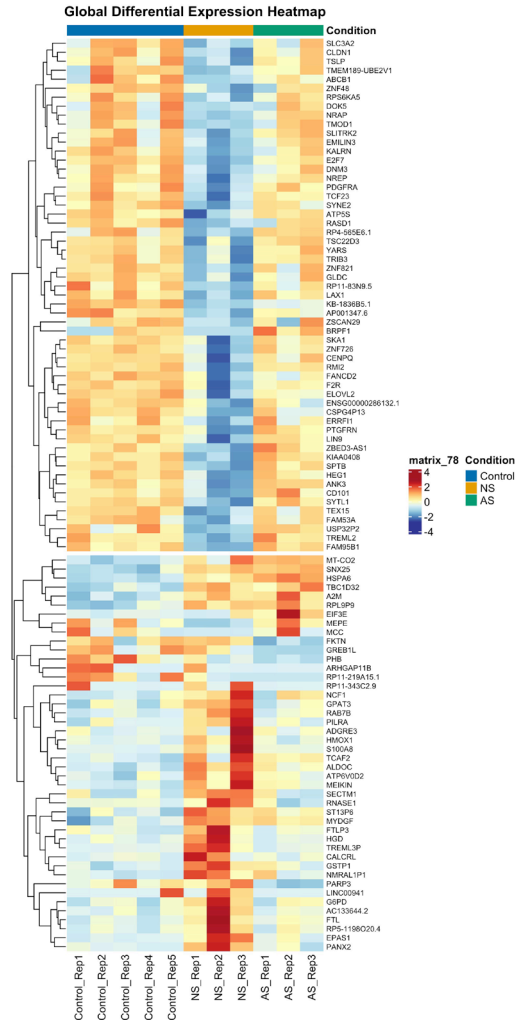
Supplementary Figure 3: A) Validation of the OxyBlot assay using derivatised (D) and non-derivatised (ND) protein samples. B) Time course analysis of protein expression of catalase and COX2 in macrophages treated with (6.25 µg/cm²) 11nm, 500 nm, 1 µm silica particles, dust from engineered stone (ES) and natural stone (NS). C) Time course analysis of p-mTOR protein in macrophages treated with (6.25 µg/cm²) 500 nm, 1 µm silica particles, silica dust from engineered stone (ES) and natural stone (NS). n=1

Supplementary Figure 4

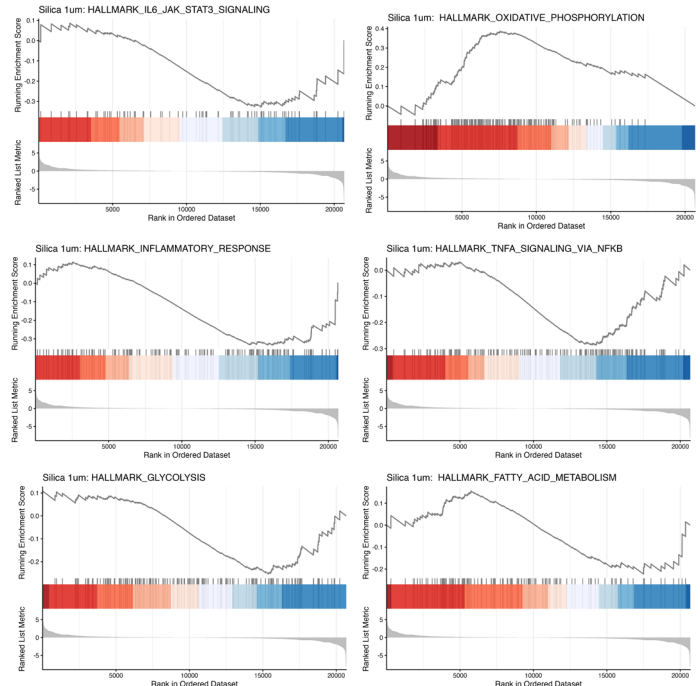
A



B



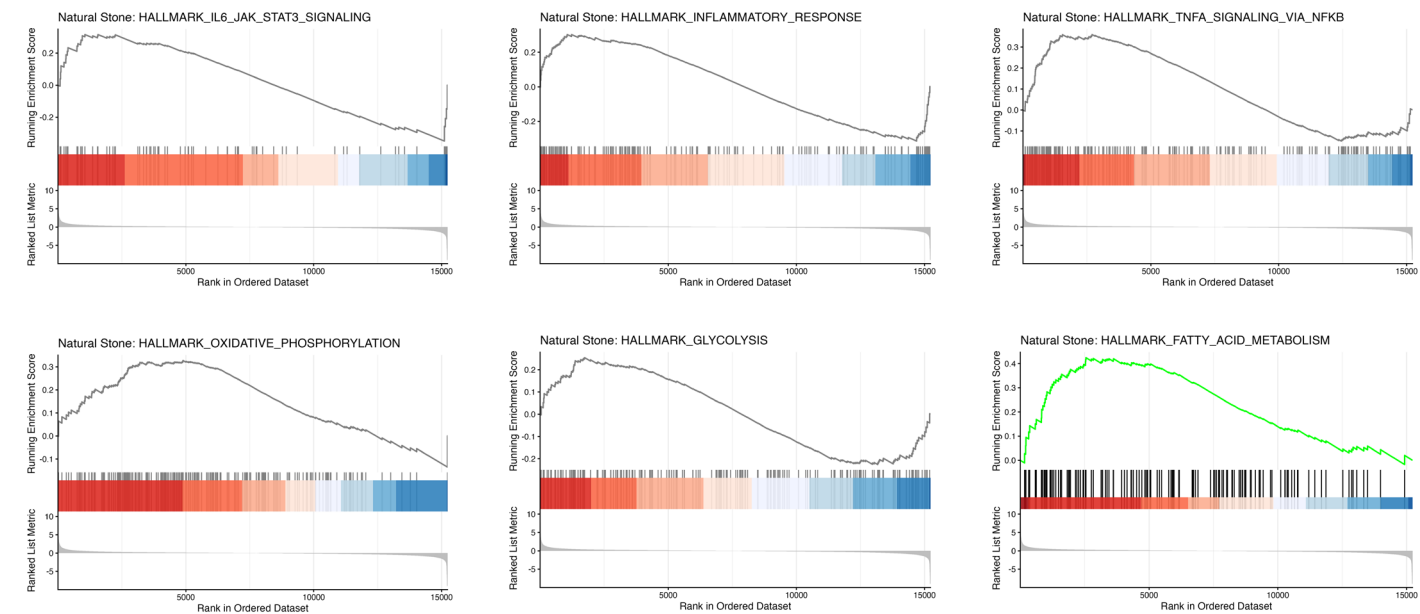
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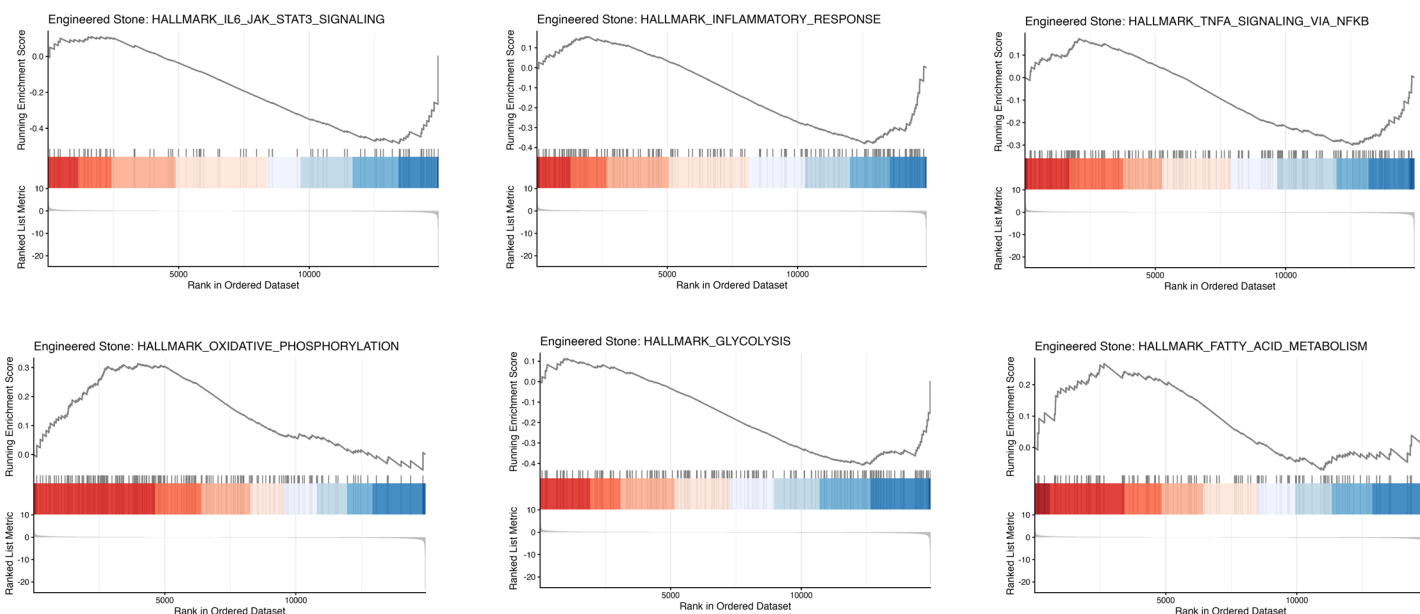
Supplementary Figure 4: A) Heatmap showing top differentially expressed genes in control vs 11nm vs 1µm groups. B) Heatmap showing top differentially expressed genes in control vs NS (natural stone) vs AS (engineered stone) groups. C) GSEA analysis was performed for the Hallmark gene in macrophages treated with 1 µm silica particles (6.25 µg/cm²) vs Control. Enrichment plots for selected pathways.

Supplementary Figure 5

A

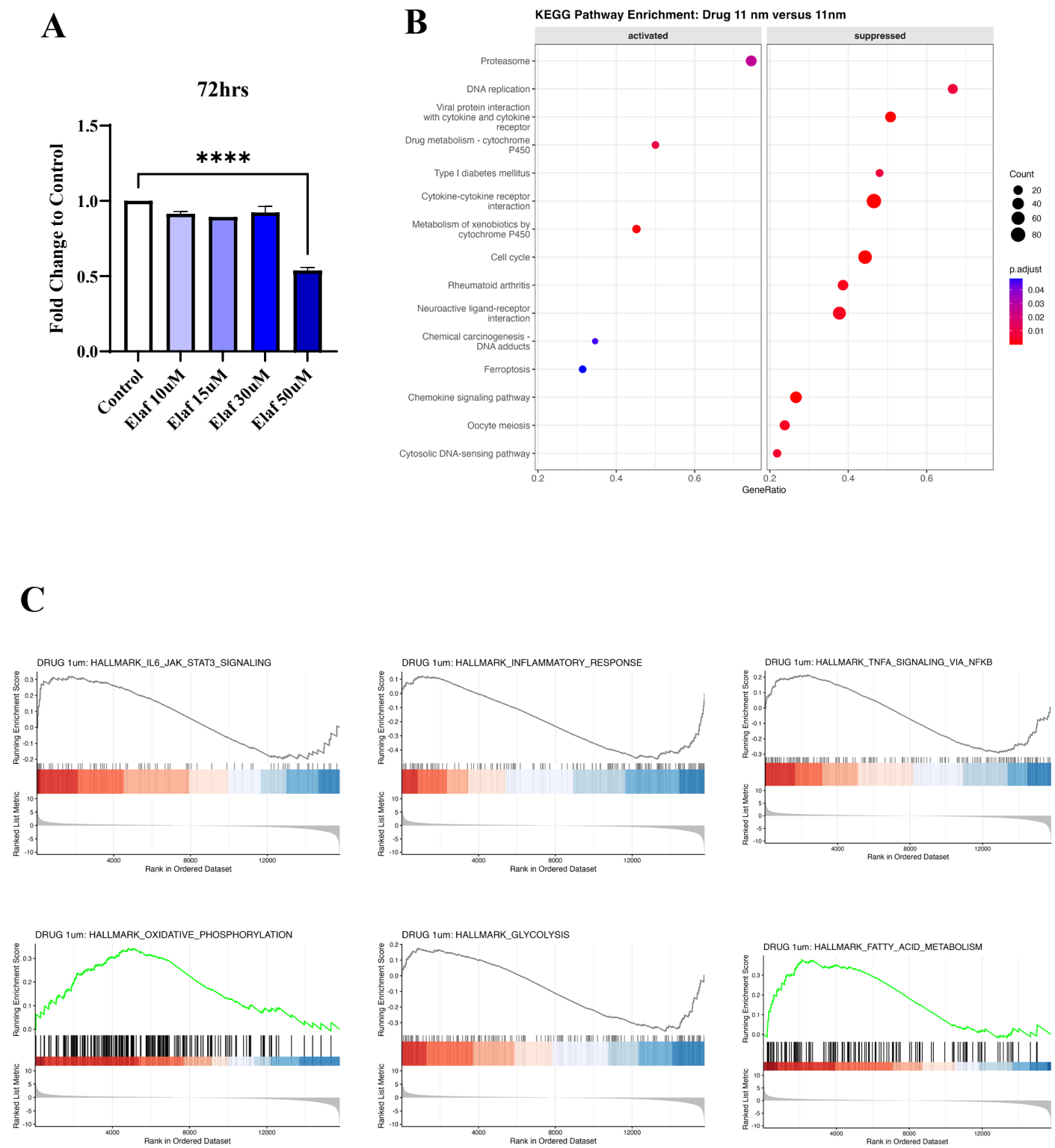


B



Supplementary Figure 5: GSEA analysis was performed for the Hallmark gene in macrophages treated with silica dust from engineered stone (ES) and natural stone (NS) ($6.25 \mu\text{g}/\text{cm}^2$). A) Enrichment plots for selected pathways for NS silica particles ($6.25 \mu\text{g}/\text{cm}^2$) vs Control. B) Enrichment plots for selected pathways for ES silica particles ($6.25 \mu\text{g}/\text{cm}^2$) vs Control.

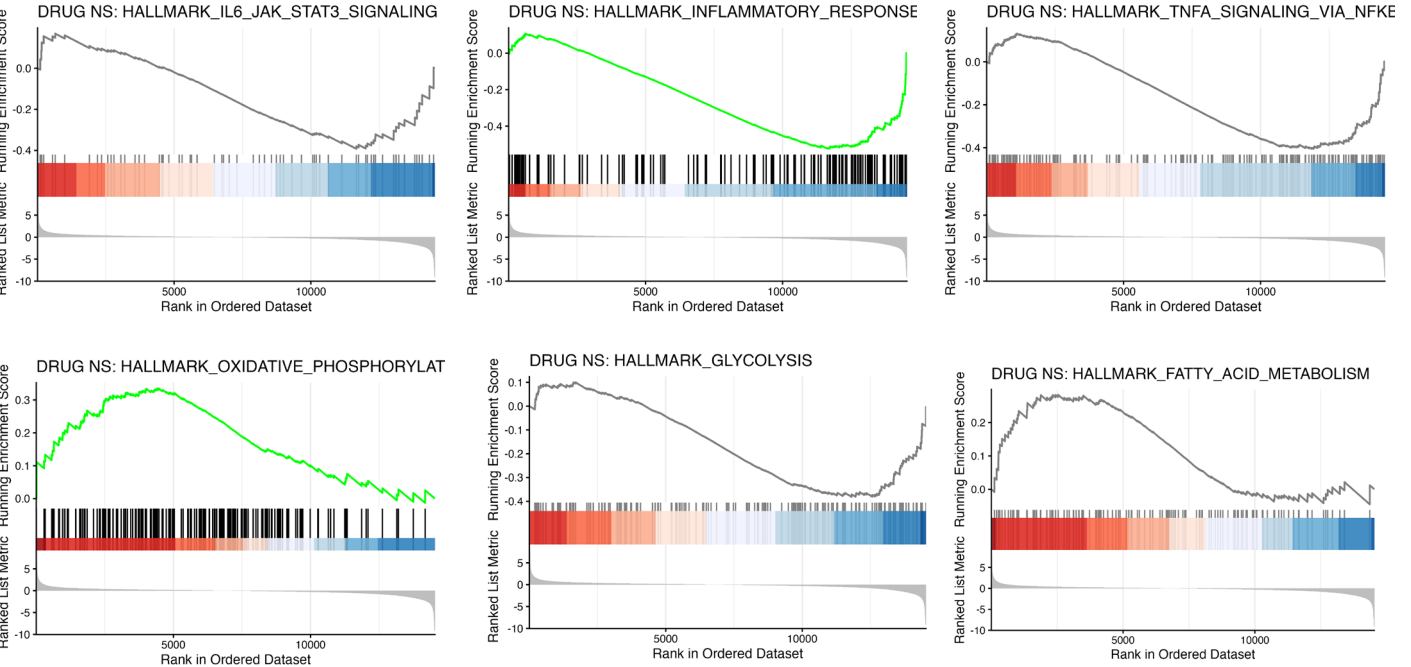
Supplementary Figure 6



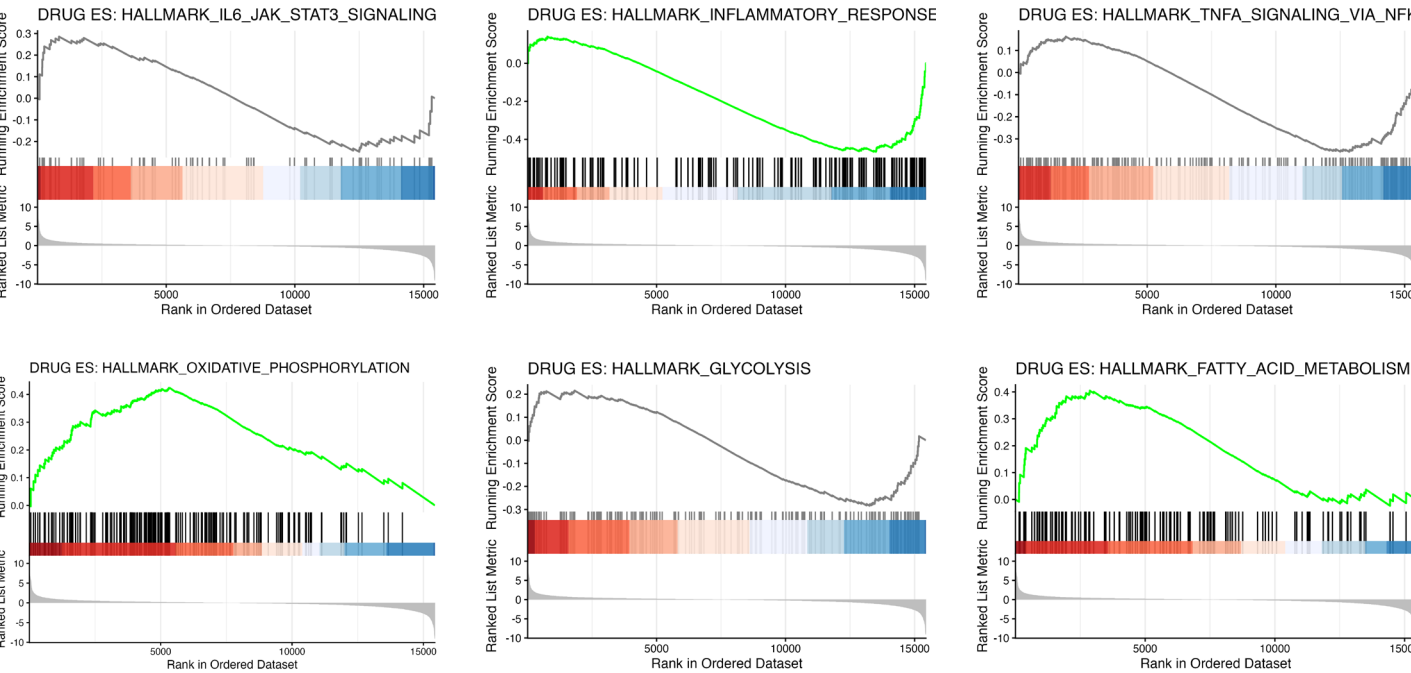
Supplementary Figure 6: A) Cellular toxicity assessment of different doses of Elafibranor at 72hrs of treatment. B) GSEA analysis for KEGG pathways in Drug (Elafibranor) +11nm Silica particle vs 11nm Silica particle group. C) GSEA analysis for Hallmark genes Drug (Elafibranor) + 1µm Silica particle vs 1µm Silica particle groups.

Supplementary Figure 7

A



B



Supplementary Figure 7: A) GSEA analysis for Hallmark genes Drug (Elafibranor) + Natural stone (NS) Silica particle vs NS Silica particle groups. B) GSEA analysis for Hallmark genes Drug (Elafibranor) + Engineered stone (ES) Silica particle vs ES Silica particle groups.