Supporting Information

**Engineering core-shell chromium nanozymes with inflammation-suppressing, ROS-scavenging**

**and antibacterial properties for pulpitis treatment**
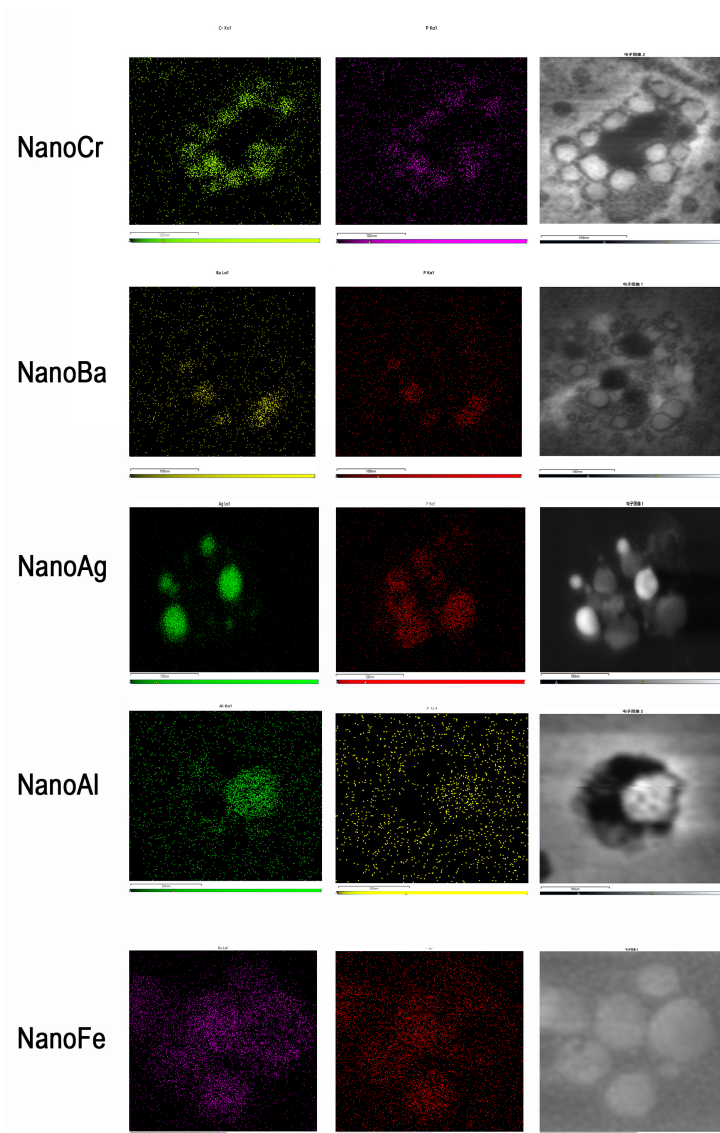
**Supplementary Figures**



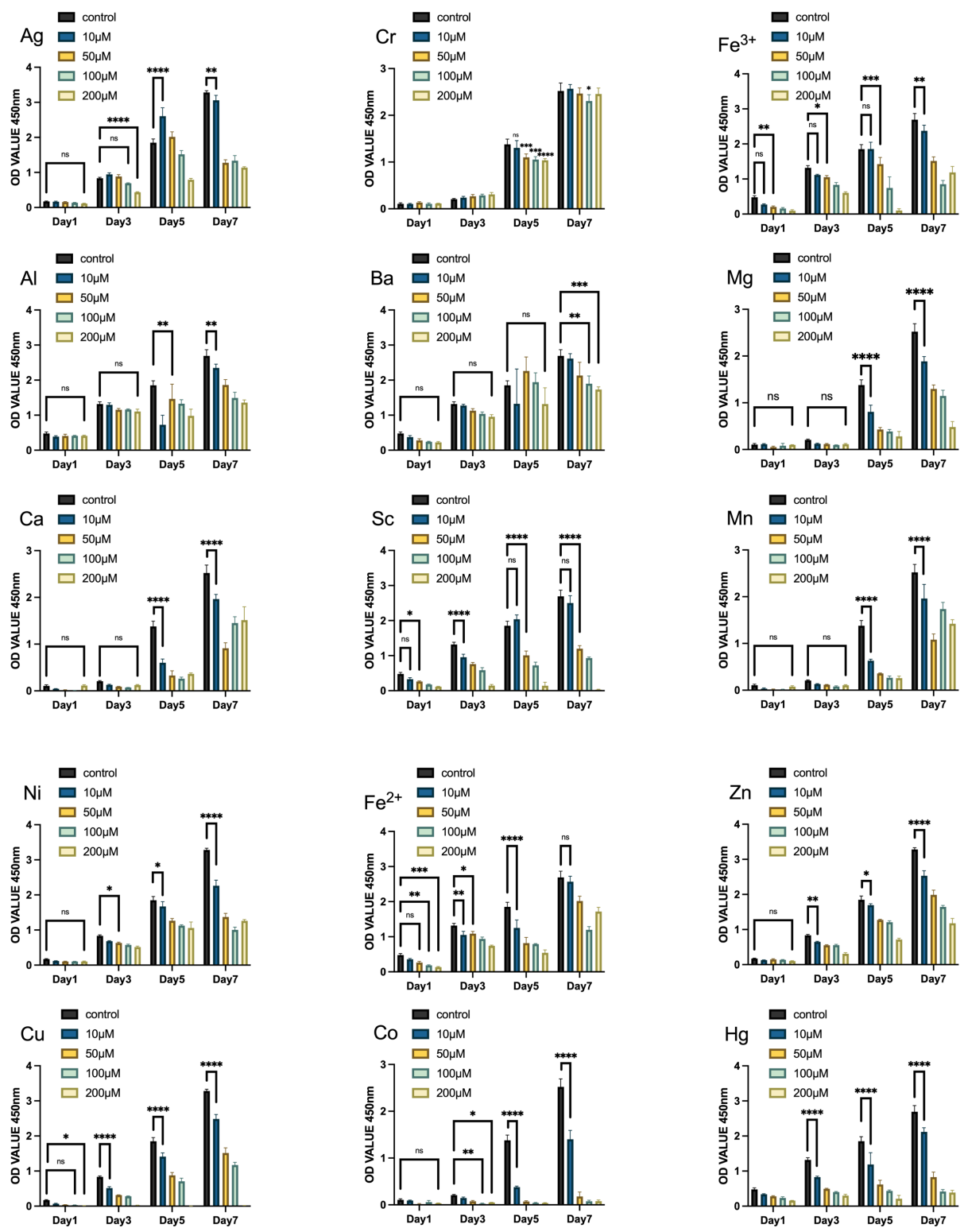Figure S1: TEM-EDS images of metal nanoparticles.

Figure S2: Influence of 15 kinds of metal nanoparticles on the proliferation of DPSCs (n=3/group). Detail values of CCK8 assay on days 1, 3, 5 and 7.
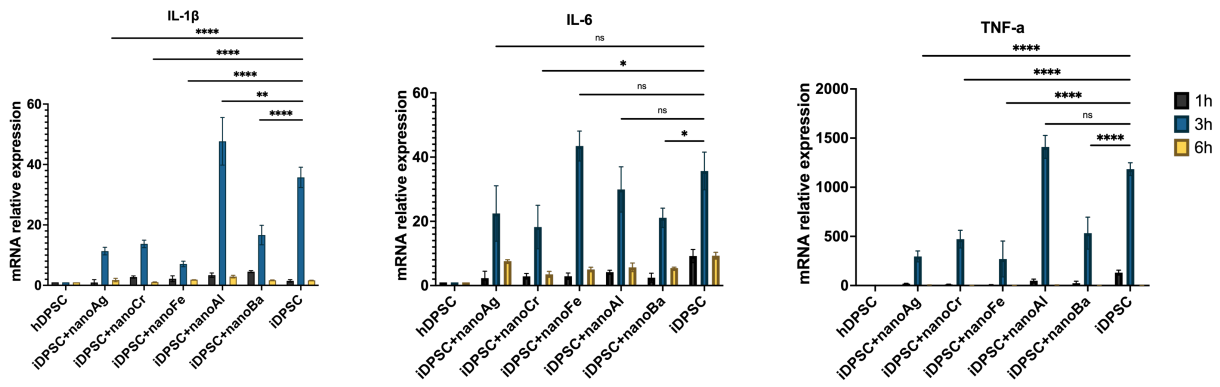
Figure S3: Detail values the expression of inflammatory cytokines (IL-1β, IL-6 and TNF-α) in DPSCs after treatment with nanoparticles for 1, 3 and 6 hours.
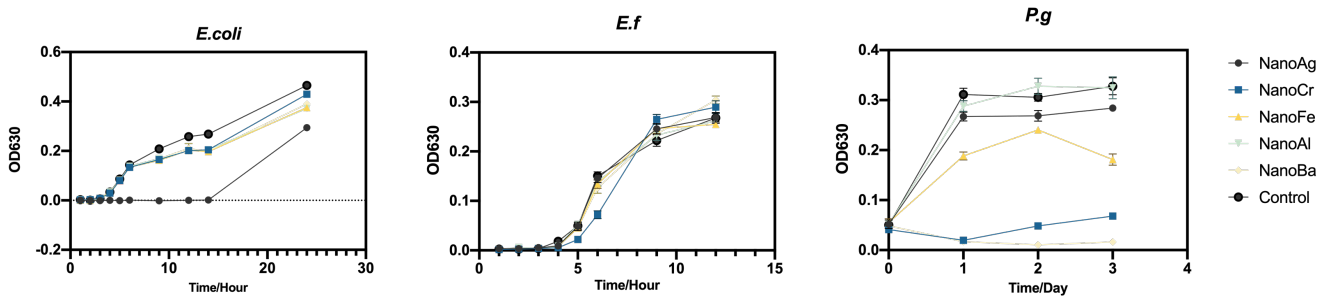


Figure S4: Growth curve of *E. coli*, *E.f* and *P. gingivalis* treated with different nanoparticles.
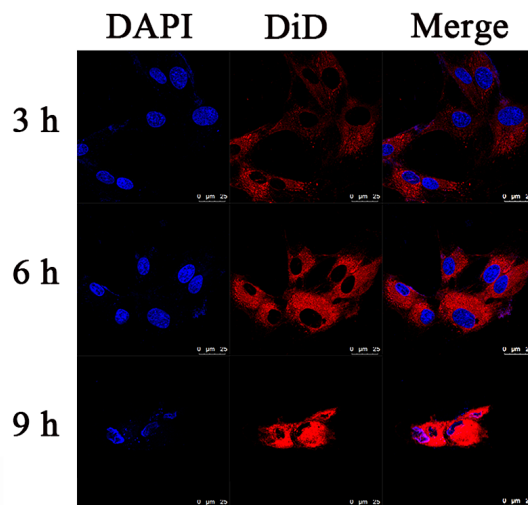


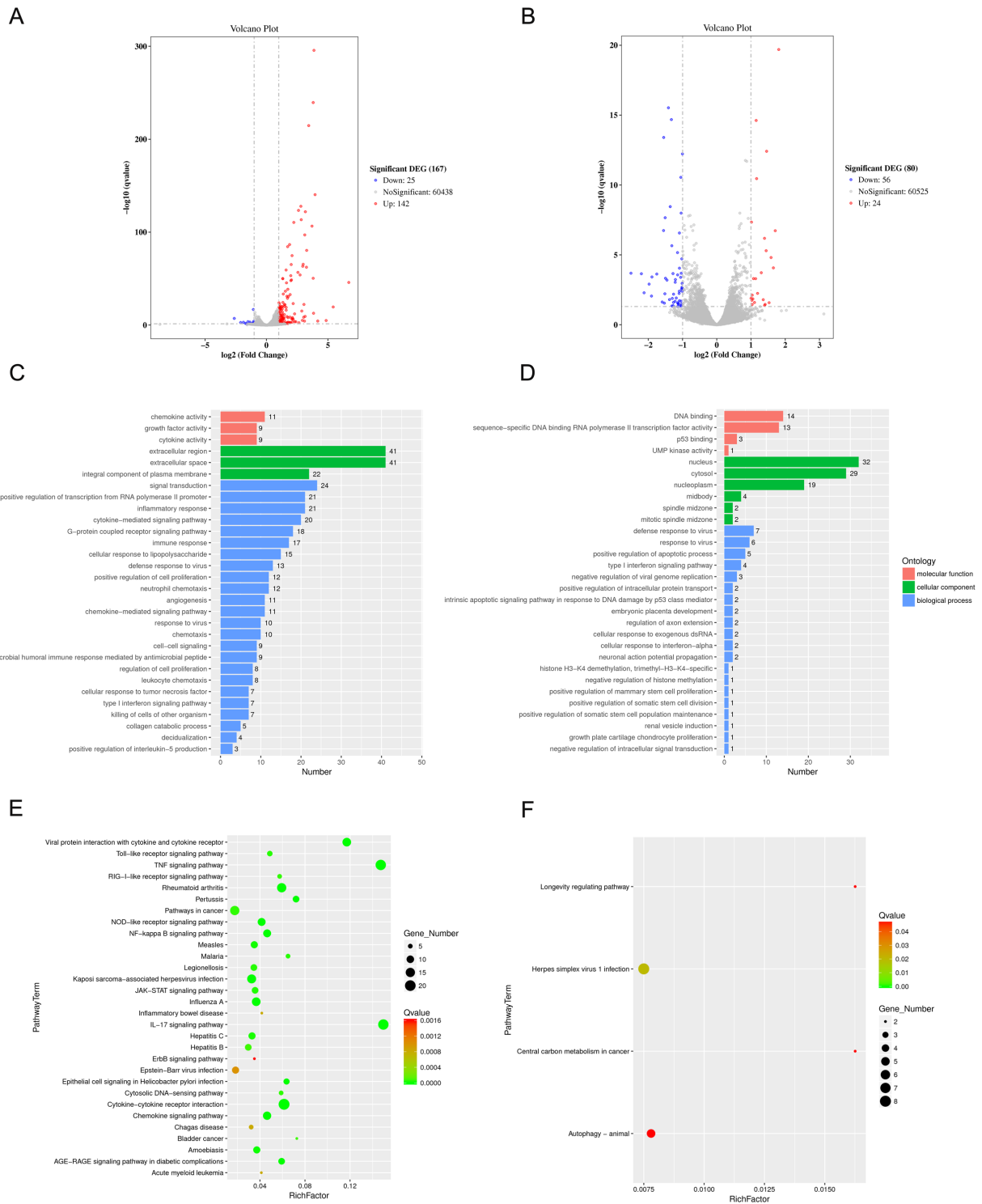Figure S5: Cellular uptake assay of NanoCr at 3h, 6h and 9h.

Figure S6: mRNA sequencing of DPSCs. Volcano map of genes that were significantly upregulated (red dots), downregulated (blue) and no significantly changed (gray): (hDPSCs vs. iDPSCs: (A) and iDPSCs vs. iDPSCs treated with NanoCr(B)). GO term enrichment of DEGs: (hDPSCs vs. iDPSCs: (C) and iDPSCs vs. iDPSCs treated with NanoCr(D)). KEGG pathway enrichment analysis of DEGs: (hDPSCs vs. iDPSCs: (E) and iDPSCs vs. iDPSCs treated with NanoCr(F)).
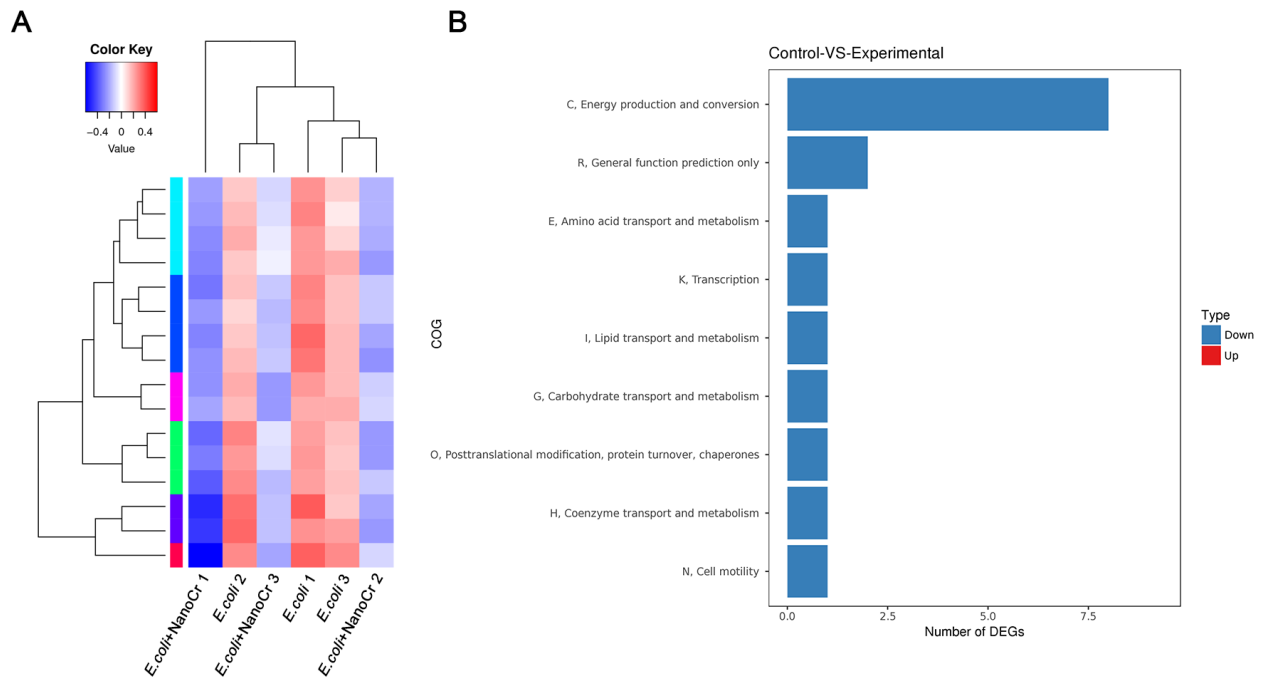
Figure S7: Transcriptome sequencing of *E. coli*. Clustered heatmap of differentially expressed genes depicting the up (red) and downregulated (blue) genes in *E. coli* treated with and without NanoCr (A). Cluster of orthologous groups (COG) distribution map of differentially expressed genes in *E. coli* treated with and without NanoCr (B).
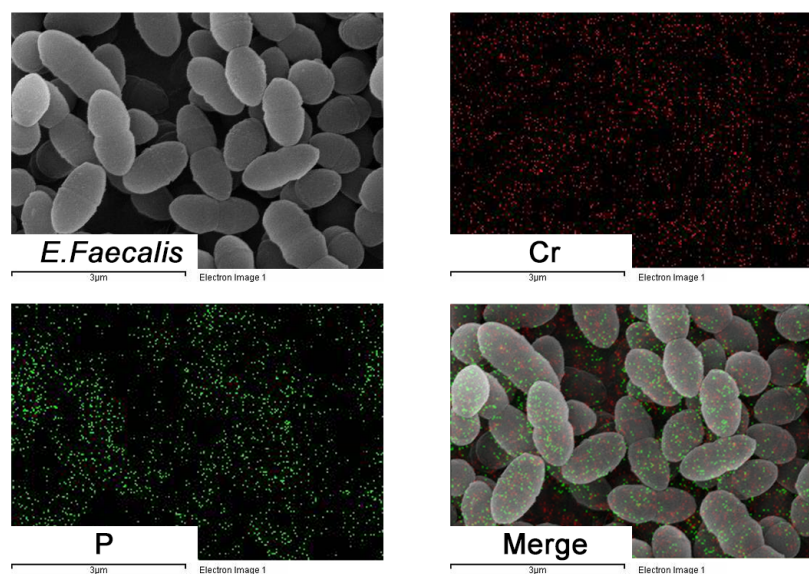


Figure S8: SEM–EDS elemental mapping of *E. faecalis*.

**Supplementary Tables**

**Table S1.** Primer sequences designed for the genes detected in reverse transcription (RT)-PCR

| Gene symbol | Forward primer (5′–3′) | Reverse primer (5′–3′) |
|:---:|:---:|:---:|
| IL-1β | TGCACGATGCACCTGTACGA | AGGCCCAAGGCCACAGGTAT |
| IL-6 | ACGAACTCCTTCTCCACAAGC | CTACATTTGCCGAAGAGCCC |
| TNF-α | CAGAGGGAAGAGTTCCCCAG | CCTCAGCTTGAGGGTTTGCTAC |
| GAPDH | GCAAATTCCATGGCACCGTC | GGGGTCATTGATGGCAACAATA |