ACCSCIENCE PUBLISHING

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RESEARCH ARTICLE

Hydroxyapatite/BMP-2–mineralized decellularized amniotic membrane scaffolds for orbital defect repair

Supplementary file

Table S1. Primer sequences

Gene	Primer sequences
mouse *Gapdh* F	TGCCCCCATGTTTGTGATG
mouse *Gapdh* R	TGTGGTCATGAGCCCTTCC
mouse *Fgfr2* F	GTCTCCGAGTATGAGTTGCCAG
mouse *Fgfr2* R	CCACTGCTTCAGCCATGACTAC
mouse *Fgfr3* F	ACAGGTGGTCATGGCAGAAGCT
mouse *Fgfr3* R	CTCCATCTCAGATACCAGGTCC
mouse *Bmpr1a* F	ATCCGATGGCTGGTTGTGCTCA
mouse *Bmpr1a* R	CCAAATCACGGTTGTAACGACCC
mouse *Smad9* F	GAAAACACCAGGAGGCACATTGG
mouse *Smad9* R	GCTCTGGACAAAGATGCTGCTG
mouse *Wnt4* F	GAGAACTGGAGAAGTGTGGCTG
mouse *Wnt4* R	CTGTGAGAAGGCTACGCCATAG
mouse *Irs1* F	TGTCACCCAGTGGTAGTTGCTC
mouse *Irs1* R	CTCTCAACAGGAGGTTTGGCATG
mouse *Tgfbr1* F	TGCTCCAAACCACAGAGTAGGC
mouse *Tgfbr1* R	CCCAGAACACTAAGCCCATTGC
mouse *Fbxo32* F	CTTCTCGACTGCCATCCTGGAT
mouse *Fbxo32* R	TCTTTTGGGCGATGCCACTCAG
mouse *Atm* F	CCAAGATGGCAGTGAACCAGAC
mouse *Atm* R	ATGCTGGACAGCTATGGTGGAG
mouse *Sirt1* F	GGAGCAGATTAGTAAGCGGCTTG
mouse *Sirt1* R	GTTACTGCCACAGGAACTAGAGG
mouse *Runx2* F	CCATCCATCCACTCCACCAC
mouse *Runx2* R	AGTTCTGAAGCACCTGCCTG
mouse *COL1* F	CGATGGATTCCCGTTCGAGT
mouse *COL1* R	GAGGCCTCGGTGGACATTAG
mouse *OPN* F	GCTGCTGACCTGAAGAAGAC
mouse *OPN* F	CAGGCTTGTCACATCTCTGG

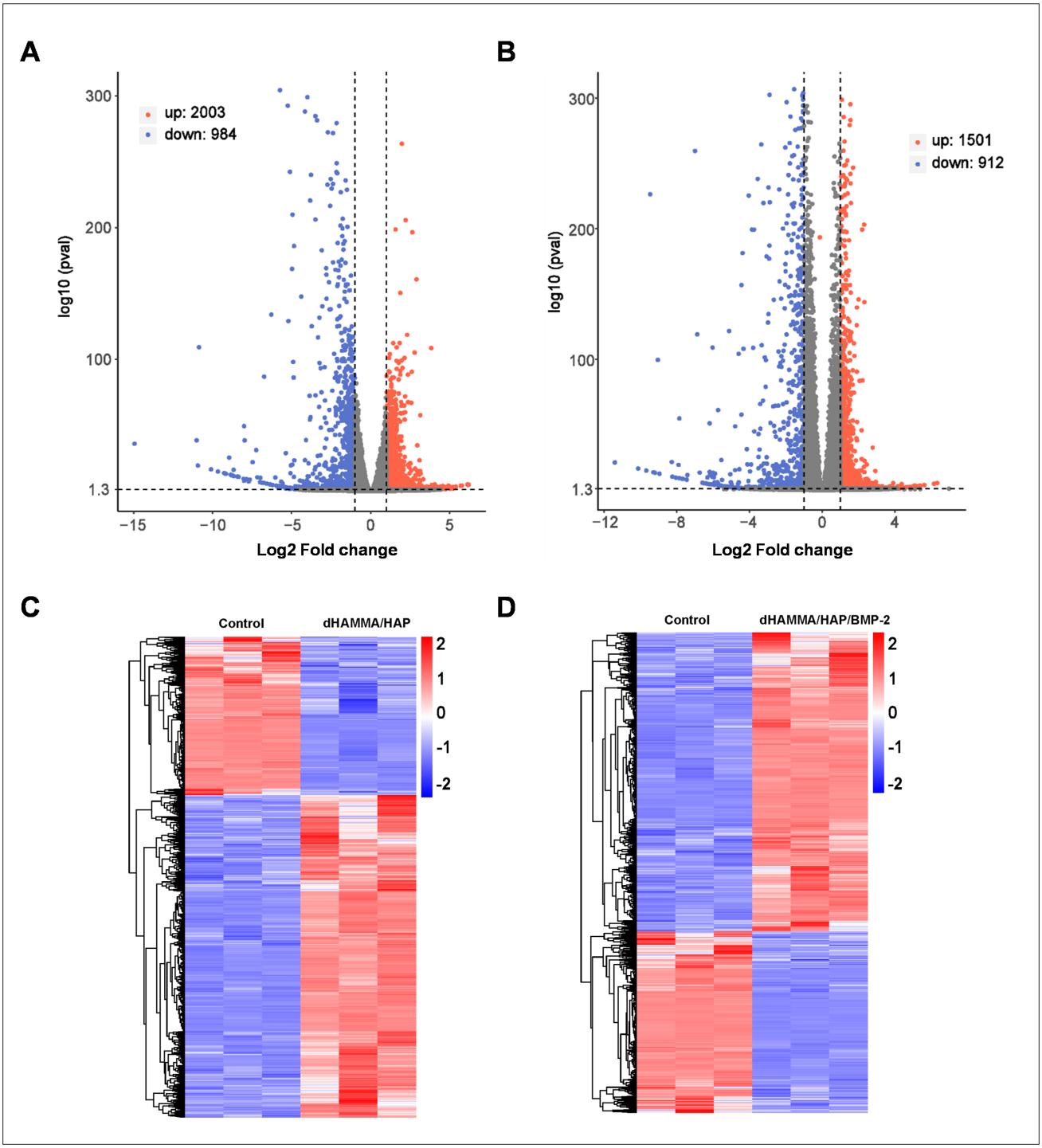

Figure S1. Transcriptome quantitative analysis of the osteogenesis mechanism. Volcano plot of DEGs between the control and (A) HAMMA/HAP group or (B) HAMMA/HAP/BMP-2 group. Heatmap of DEGs between the control and (C) HAMMA/HAP group or (D) HAMMA/HAP/BMP-2 group. Abbreviations: BMP-2, bone morphogenetic protein 2; HAMMA, methacrylate-functionalized human acellular amniotic membrane matrix; HAP, hydroxyapatite.

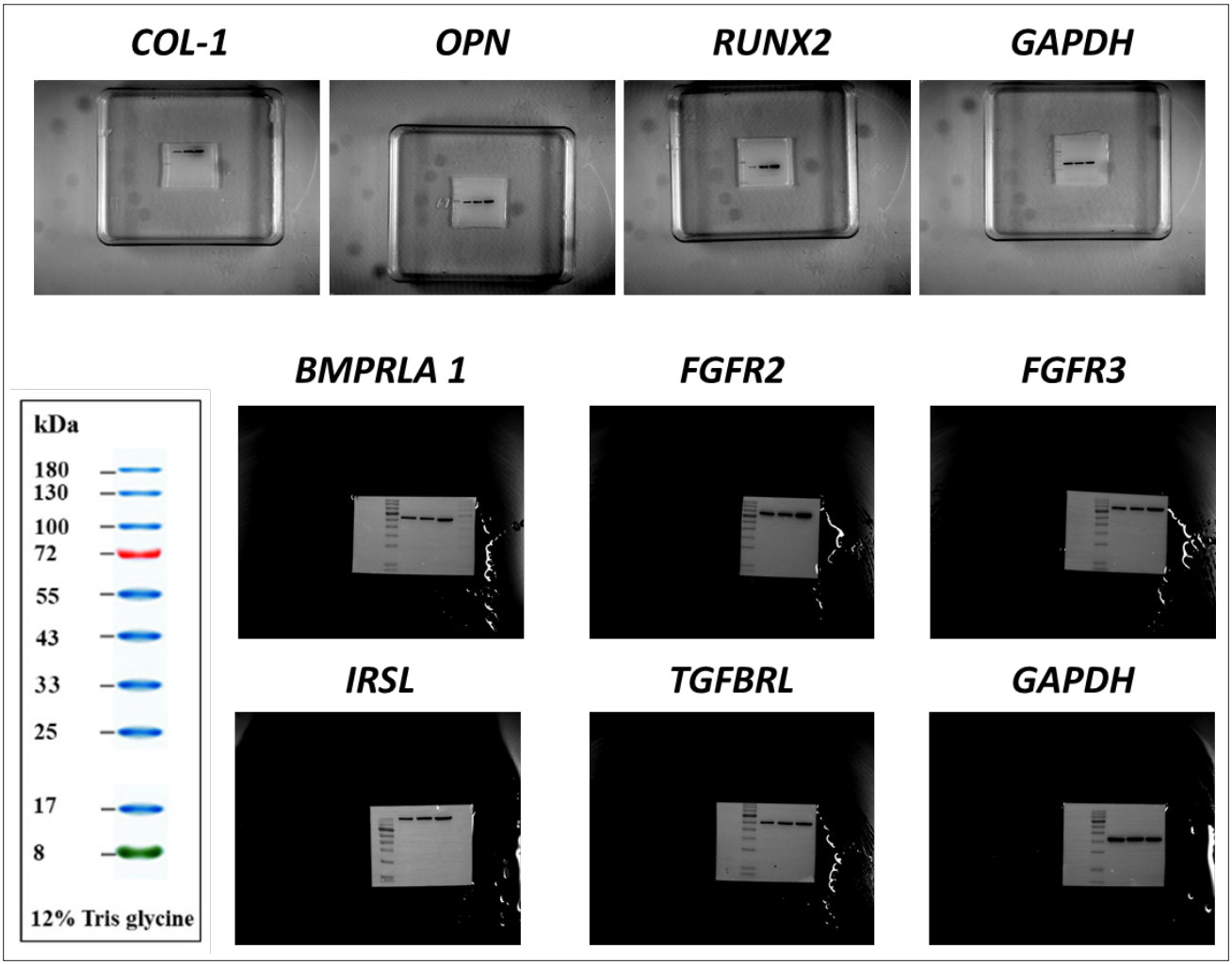

Figure S2. The raw data of Western blot of OPN, RUNX2, collagen type I (Coll-1), BMPRLA1, FGFR2, FGFR3, IRS1, TGFBR1, and GAPDH in **Figures 3 and 5**. Abbreviations: BMPR1A, bone morphogenetic protein receptor type 1A; FGFR2/3, fibroblast growth factor receptor 2/3; GAPDH, glyceraldehyde-3-phosphate dehydrogenase; IRS1, insulin receptor substrate 1; OPN, osteopontin; TGFBR1, transforming growth factor beta receptor type 1.

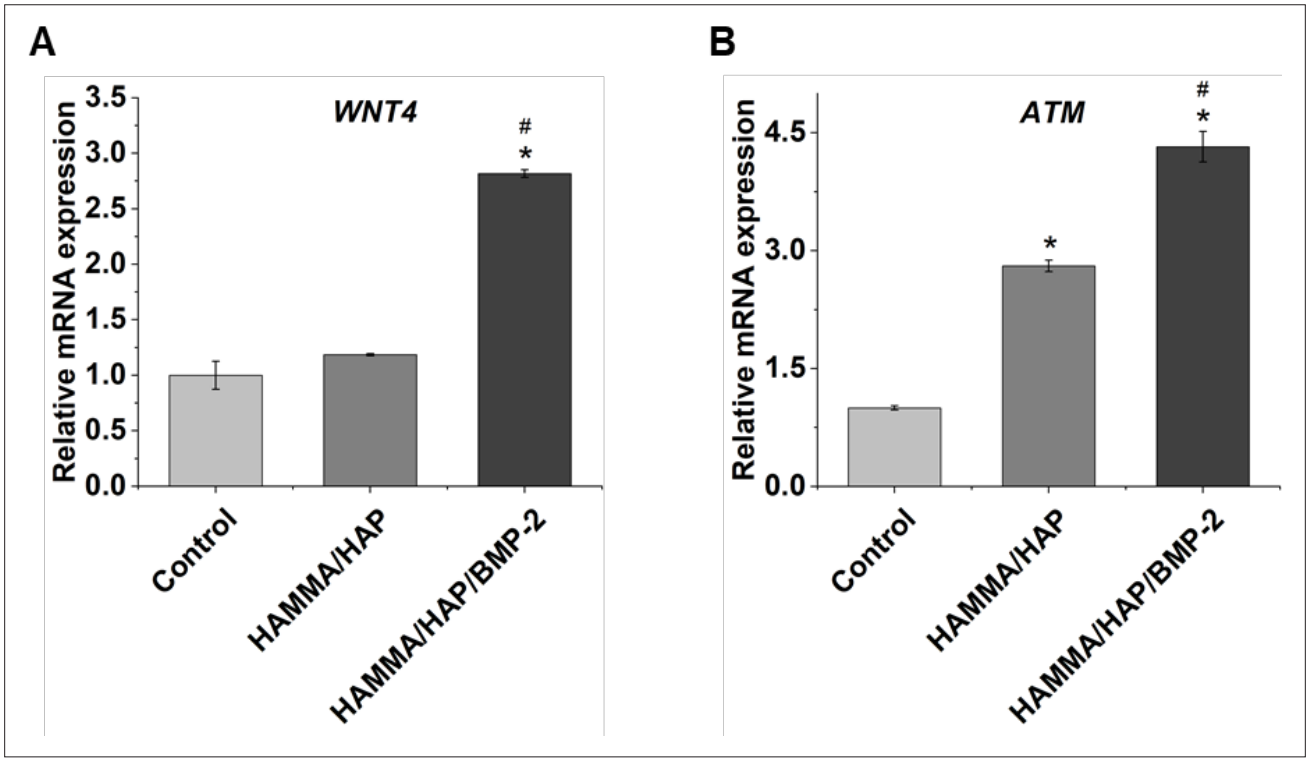

Figure S3. Real-time quantitative polymerase chain reaction analysis to assess the expression of differentially expressed genes (A) *Wnt4* and (B) *Atm*. Notes: n=3; *$p < 0.05$ compared to control; #$p < 0.05$ compared to HAMMA/HAP. Abbreviations: BMP-2, bone morphogenetic protein 2; HAMMA, methacrylate-functionalized human acellular amniotic membrane matrix; HAP, hydroxyapatite.

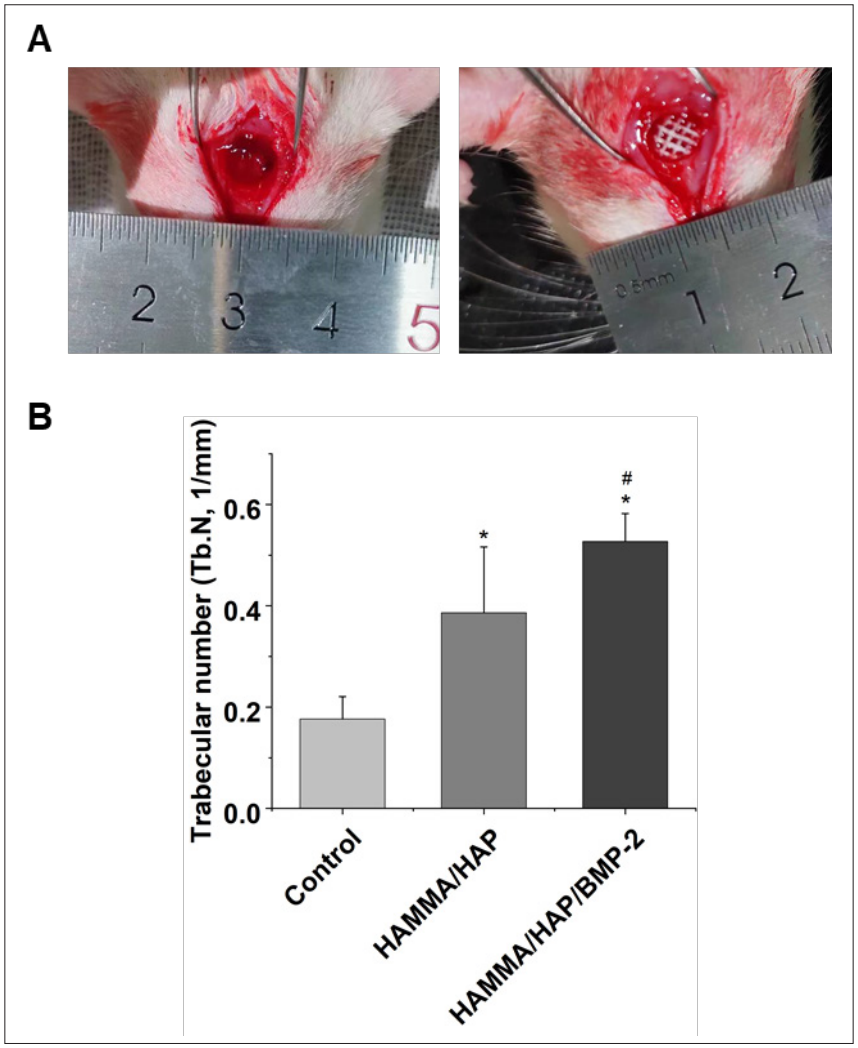

Figure S4. Enhanced boner egeneration by HAMMA/HAP scaffolds in a rat calvarial defect. (A) The rat calvarial defect and implantation of scaffolds. (B) Micro-computed tomography quantification of the calvarial defects. Abbreviations: BMP-2, bone morphogenetic protein 2; HAMMA, methacrylate-functionalized human acellular amniotic membrane matrix; HAP, hydroxyapatite.

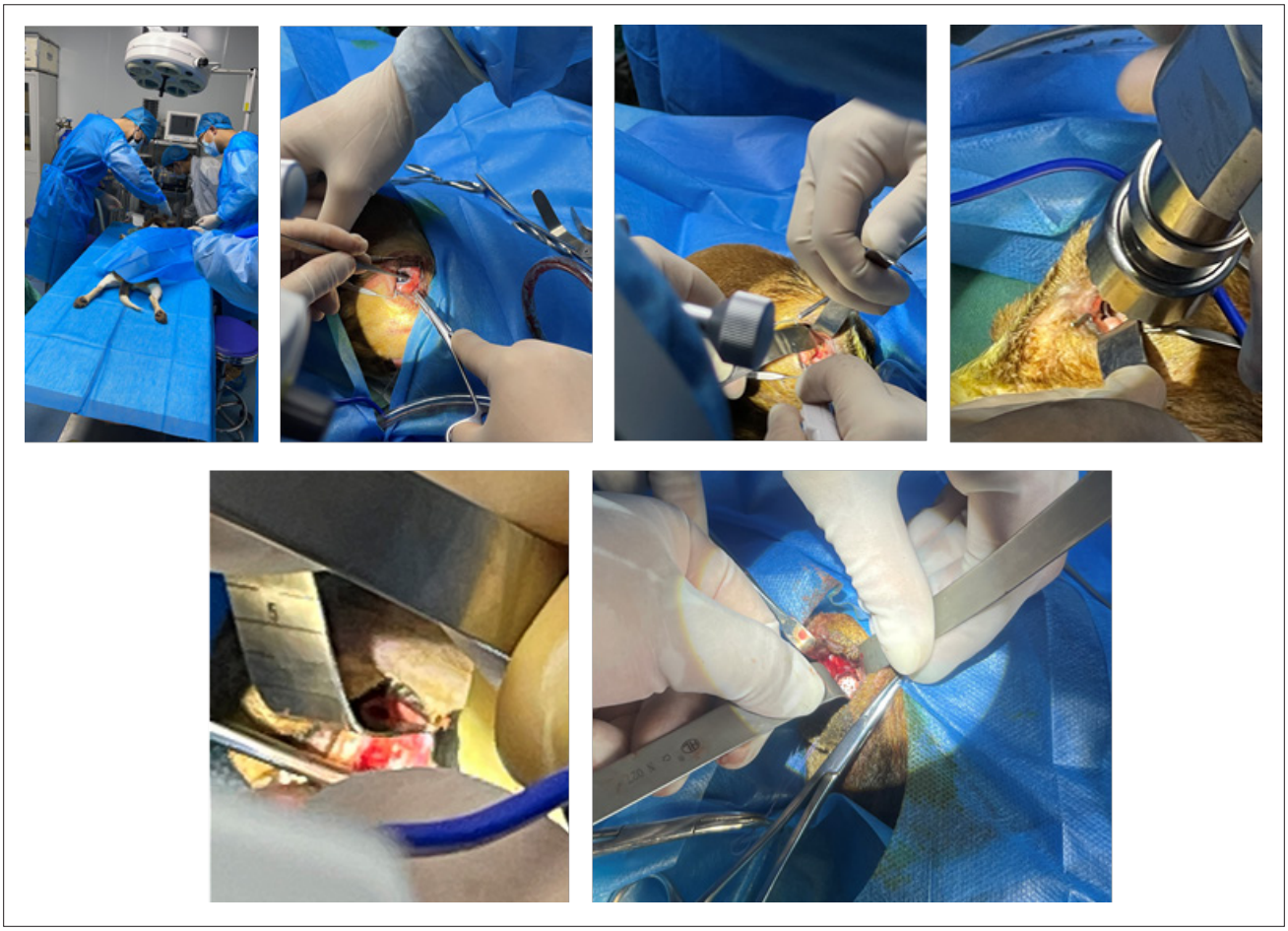

Figure S5. Establishment of orbital bone defects and implantation of scaffolds.

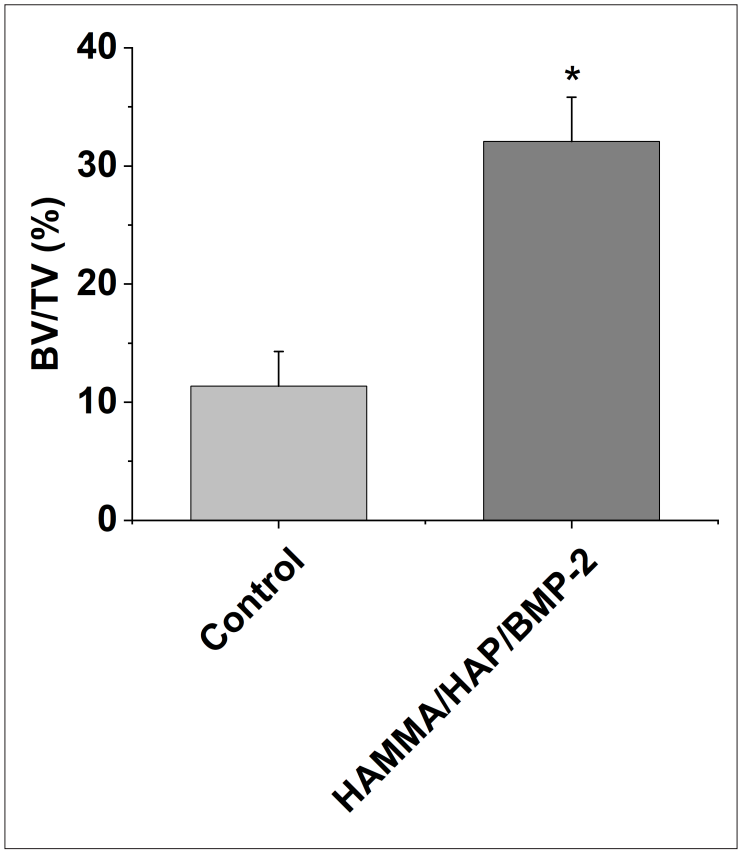

Figure S6. Micro-computed tomography quantification of the orbital bone defects. Notes: n=3; *$p < 0.05$ compared to control. Abbreviations: BMP-2, bone morphogenetic protein 2; BV/TV, bone volume/total volume; HAMMA, methacrylate-functionalized human acellular amniotic membrane matrix; HAP, hydroxyapatite.