

1 **Supplementary Figure legends**

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3 **Fig. S1. TREM2 was not co-localized with CTSK in *Trem2-cKO* mice.** (A) mIF  
4 staining by anti-TREM2 and anti-CTSK of mandible samples of *Trem2<sup>flox/flox</sup>* and  
5 *Trem2-cKO* mice with periodontitis. Scale bar, 100  $\mu$ m. *n*=6. (B) The magnified areas  
6 of S1A with the osteoclasts are indicated by white arrows. Scale bar, 20  $\mu$ m.

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8 **Fig. S2. No significant differences in alveolar bone resorption between *Trem2-KO***  
9 **and WT mice with periodontitis.** (A) Representative micro-CT images of mice  
10 mandibles with periodontitis in a general view (top), sagittal view (middle), and  
11 coronal view (bottom). Resorption in the areas of RF and AS observed in the sagittal  
12 plane (middle), indicated by the yellow arrows. The coronal planes (bottom), cut in the  
13 center of the mesial root of the first molar and RF, respectively, shown as the  
14 indications of line a and b in the general view, with white triangles, stars, and arrows  
15 (bottom) indicating the buccal, lingual bone plates, and RF area, respectively. Scale bar,  
16 1 mm (*n*=6). (B) Bone histomorphometric analysis of BMD, BV/TV (top) of the  
17 alveolar bones from *Trem2-KO* and WT mice (top). Measurements of bone resorption  
18 levels in the bone plates of buccal and lingual sides and in the area of RF (bottom) (*n*=6).  
19 (C) H&E staining (top and middle) and TRAP staining (bottom) of mandibles of WT  
20 and *Trem2-KO* mice with periodontitis; the general view (top) and enlarged views of  
21 RF and AS indicated by yellow square (top). The outline of alveolar bone depicted by  
22 yellow lines (middle) (*n*=6). Scale bar, 250  $\mu$ m (top), 100  $\mu$ m (middle and bottom).  
23 (D) Bone resorption parameters of alveolar bones in areas of RF and AS subjected to  
24 periodontitis. Values from the *Trem2-KO* group were normalized against data of WT  
25 mice, which were set at 1 (*n*=6). Values represent mean  $\pm$  SEM: N.S., not significant by  
26 unpaired two-tailed Student's t-test.

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28 **Fig. S3. Increased bone volumes of femurs in both *Trem2-KO* and *Trem2-cKO***  
29 **mice.** (A) Representative micro-CT images showing the midshaft architecture of  
30 femurs from WT, *Trem2-KO*, and *Trem2-cKO* mice (*n*=6). Scale bar, 1 mm. (B) Bone  
31 histomorphometric analysis of BMD and BV/TV, along with the measurements of  
32 cortical bone thickness from WT, *Trem2-KO*, and *Trem2-cKO* mice (*n*=6). Values  
33 present mean  $\pm$  SEM: N.S., not significant; \**P*<0.05, \*\**P*<0.01, and \*\*\**P*<0.001 by  
34 unpaired two-tailed Student's t-test.

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36 **Fig. S4. No significant differences in alveolar bone resorption between *APP<sup>+/-</sup>* and**  
37 ***APP<sup>+/-</sup>, Trem2-KO* mice with periodontitis.** (A) Representative micro-CT images of  
38 mice mandibles with periodontitis in a general view (top), sagittal view (middle), and

39 coronal view (bottom). Resorption in the areas of RF and AS observed in the sagittal  
40 plane (middle), indicated by yellow arrows. The coronal planes (bottom), cut in the  
41 center of the mesial root of the first molar and RF, respectively, shown as the  
42 indications of line a and b in the general view, with white triangles, stars, and arrows  
43 (bottom) indicating the buccal, lingual bone plates, and RF area, respectively. Scale bar,  
44 1 mm. *n*=6. **(B)** Bone histomorphometric analysis of BMD, BV/TV (top) in the alveolar  
45 bones from *APP<sup>+/-</sup>* and *APP<sup>+/-</sup>, Trem2-KO* mice (top). Measurements of bone  
46 resorption levels in the bone plates of buccal and lingual sides and in the area of RF  
47 (bottom) (*n*=6). **(C)** H&E staining (top and middle) and TRAP staining (bottom) of  
48 mandibles of *APP<sup>+/-</sup>* and *APP<sup>+/-</sup>, Trem2-KO* mice with periodontitis, with the general  
49 view (top) and enlarged views of RF and AS indicated by yellow square (top). The  
50 outline of alveolar bone depicted by yellow lines (middle) (*n*=6). Scale bar, 250  
51  $\mu\text{m}$  (top), 100  $\mu\text{m}$  (middle and bottom). **(D)** Resorption parameters of alveolar bones in  
52 areas of RF and AS subjected to periodontitis. Values from the *APP<sup>+/-</sup>, Trem2-KO*  
53 group were normalized against data of *APP<sup>+/-</sup>* mice, which were set at 1 (*n*=6). Values  
54 present mean  $\pm$  SEM: N.S., not significant by unpaired two-tailed Student's t-test.