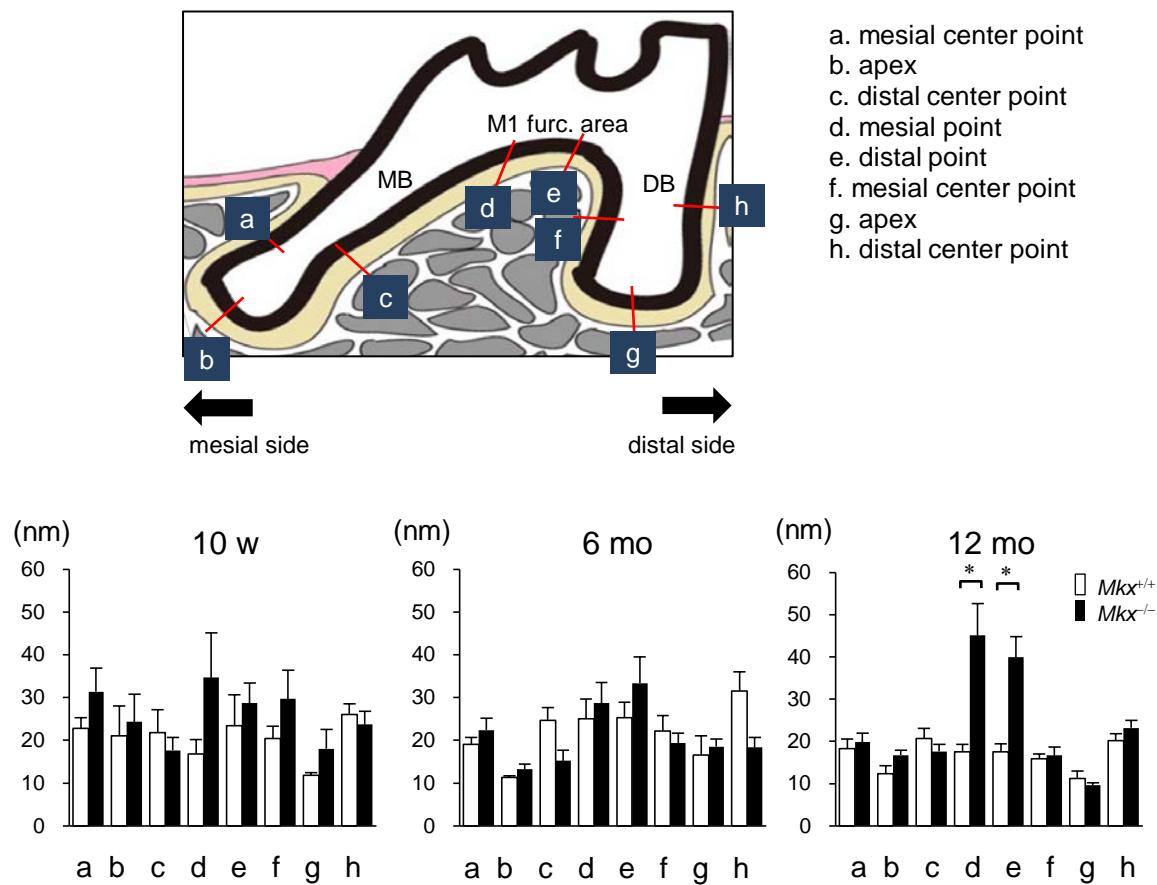


Fig. S1.

Arrow heads indicate the positions where the PDL space width in the M1 furcation area was measured.

**Fig. S2.**

Schematic representation of measurement points of M1 PDL space and the measurements at each point. a, mesial center point of MB; b, MB root apex; c, distal center point of MB; d, mesial point of M1 furcation area; e, distal point of M1 furcation area; f, mesial center point of DB; g, DB root apex; h, distal center point of DB. Point d and e were the same point as shown in Fig. S1. (n = 5, 6, and 6 for 10-week-, 6-month- and 12-month-old *Mkkx*^{+/+}, and n = 3, 6, and 10 for 10-week-, 6-month- and 12-month-old *Mkkx*^{-/-} mice, respectively; mean \pm s.e.m., *p < 0.05)

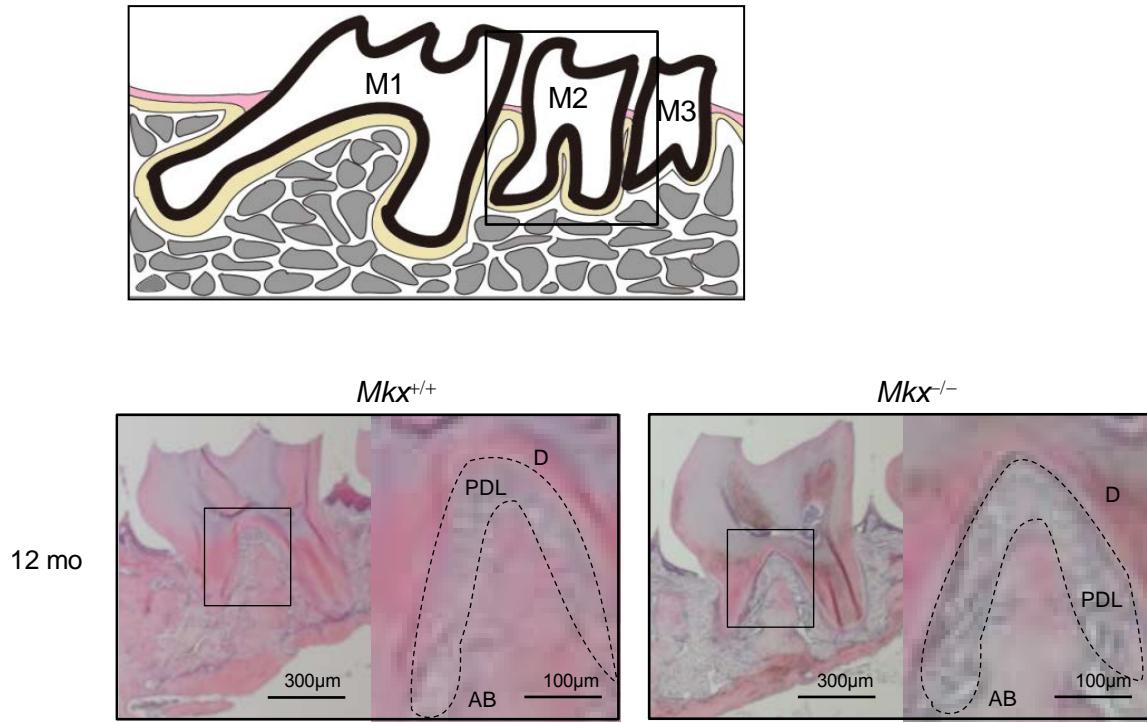


Fig. S3.

Schematic representation of maxillary molars and H&E staining of the M2 region in 12-month-old *Mkkx^{+/+}* or *Mkkx^{-/-}* mice. Scale bars indicate 300 μm and 100 μm, respectively.

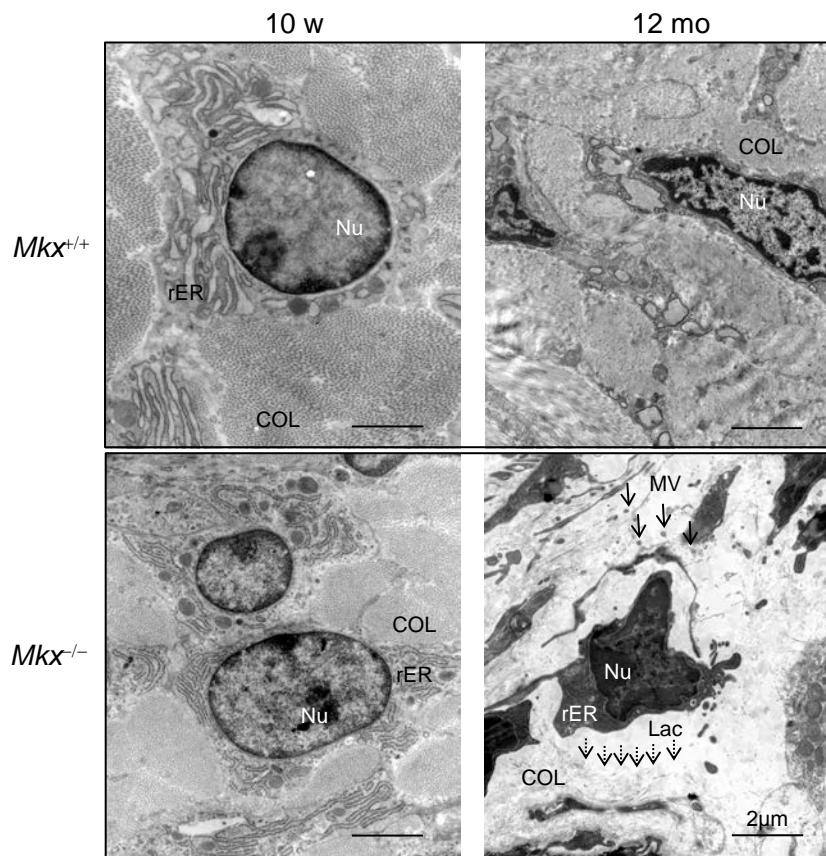


Fig. S4.

TEM analysis of the morphology of cells in the PDL (M1 furcation area) in 10-week- and 12-month-old *Mkkx^{+/+}* or *Mkkx^{-/-}* mice. (Nu, nucleus; rER, rough-endoplasmic reticulum; COL, collagen; MV, matrix vesicles indicated by black arrows; Lac, lacuna boundary indicated by black dot arrows.)

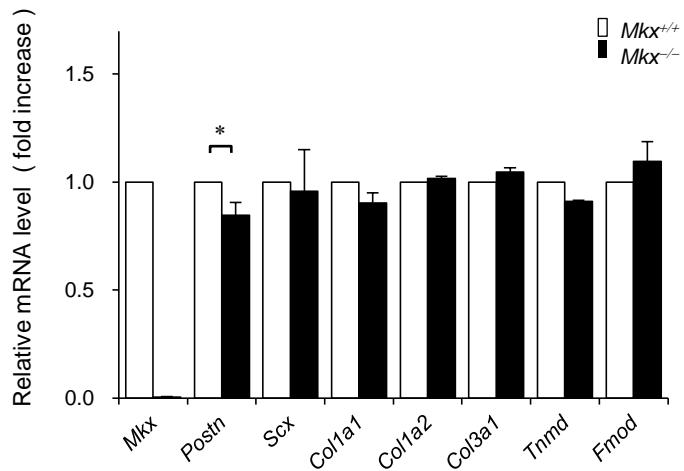


Fig. S5.

Expression of PDL-related genes in PDL of 10-week-old *Mkkx*^{+/+} or *Mkkx*^{-/-} mice (n = 10 each, mean ± s.e.m., *p < 0.05).

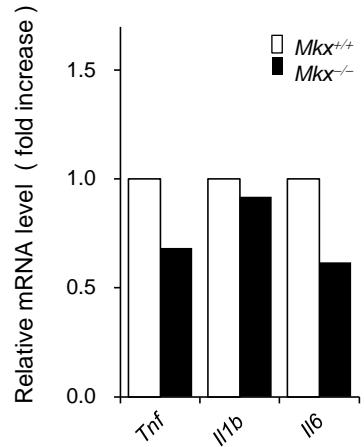


Fig. S6.

Expression of inflammatory cytokines determined by microarray analysis of the PDL from 10-week-old *Mkk^{+/+}* or *Mkk^{-/-}* mice (n = 1 each).

Table S1. Primer sequences for qPCR

genes	Forward 5'→3'	Reverse 5'→3'
mouse		
<i>Gapdh</i>	TTGTGGAAGGGCTCATGACC	TCTTCTGGGTGGCAGTGATG
<i>Mkx</i>	CGGACGTTCACTGGTTCCCTG	GCTTATGCCTTACCTTCCCTCC
<i>Postn</i>	CATTCAAGGCAGTCAGCAGCC	TGTCACCCTTCGCCTTCTT
<i>Scx</i>	CCTTCTGCCTCAGCAACCAG	GGTCAAAGTGGGGCTCTCCGTGACT
<i>Col1a1</i>	GAGCGGAGAGTACTGGATCG	GCTTCTTTCCCTGGGGTTC
<i>Col1a2</i>	CCAGCGAAGAACTCATACAGC	GGACACCCCTCTACGTTGT
<i>Runx2</i>	GGTCCCCGGGAACCAA	GGCGATCAGAGAACAAACTAGGTTT
<i>Atf4</i>	GTATTAGAGGCAGCAGTGCCTG	GCTGCTGGATTCGTGAAGAGC
<i>Alpl</i>	CATGACATCCCAGAAAGAC	GTTGTGAGCGTAATCTACC
<i>Sp7</i>	CCAGCCTCTGGCTATGCAA	AGGAAATGAGTGAGGGAAAGGGT
<i>Bglap</i>	GCCTTCATGTCCAAGCAGGA	GCGCCGGAGTCTGTTCACTA
human		
<i>GAPDH</i>	ATGCCTCCTGCACCACCAAC	GCCATCCACAGTCTCTGGG
<i>MKX</i>	TCAAGGACAACCTCGGCCTG	ACGGGTTGTCACGGTGCTTG
<i>POSTN</i>	CCCAAATGTCTGTGCCCTC	GGGCAGCCTTCATTCCCTC
<i>SCX</i>	AGAACACCCAGCCAAACAG	GGCCACCTCCTAACTGCGAAC
<i>COL1A1</i>	TCTGCGACAACGGCAAGGTG	TTTCTTGGTCGGTGGGTGAC
<i>COL1A2</i>	AAGGTCTCCTGGTCCCAGTG	ATGACGCCAGCTCTGCCATC
<i>SP7</i>	TCTGCGGGACTCAACAACTCT	AGCATCCCCATGGTTTGGA
<i>RUNX2</i>	TACAGTAGATGGACCTCGGG	CACCTACTCTCATACTGGGA
<i>ATF4</i>	GTGGATGGTTGGTCAGT	AACAGGGCATCCAAGTCGAA
<i>ALPL</i>	AAGACCCCAAGTACTGGCGA	CGTCACTGTGGAGACACCCAT