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7 **SUPPLEMENTARY MATERIAL**
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10 **Supplementary Fig. 1. Secretion of *P. acnes* CAMP factor *in vivo*.** The
11 secretion of CAMP factor in mouse ear was detected 24 hr after bacterial
12 injection. Ears of ICR mice were injected intradermally with PBS (25 μ l; left ear)
13 or *P. acnes* (1×10^7 CFU/ in 25 μ l PBS; right ear) for 24 hr. Ear tissues of a
14 punched 8 mm biopsy were homogenized and centrifuged in PBS. The
15 supernatant from homogenized ears (1 μ g) and purified CAMP factors (10 μ g)
16 as a positive control were subjected to western blotting. CAMP factor was
17 detected by mouse anti-CAMP factor serum [45]. An arrow indicates CAMP
18 factor appearing at a molecular weight of 29 kDa.
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7 **Supplementary Fig. 2. Hemolytic effect of CAMP factors on erythrocytes.**
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10 After centrifugation at $800 \times g$ for 10 min, erythrocytes were washed three
11 times and resuspended (1:1 dilution) in PBS. The resuspended erythrocytes
12 (200 μ l) were incubated with purified GFP or CAMP factors at 25 μ g, with 2%
13 TritonX-100 (Sigma-Aldrich, St. Louis, MO; as an indicator of complete
14 hemolysis), and without treatment as control by rotation at 37°C for 3 h.
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17 Afterward, cells were centrifuged at $800 \times g$ for 10 min, and the supernatant
18 was taken for estimation of hemolysis using a microplate reader at OD₅₄₀ nm.
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21 The absorbance of hemoglobin release was measured at 540 nm and is
22 expressed as % of TritonX-100 induced-hemolysis. The percentage of
23 hemolytic effect was calculated by the following formula: [(OD₅₄₀ for the
24 sample with hemolysin - OD₅₄₀ for the control without hemolysin)/(OD₅₄₀ for
25 the complete lysis caused by TritonX-100)] \times 100. Error bars represent mean \pm
26 SE of four mice (***p*<0.0005, by Student's *t*-test).
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7 **Supplementary Fig. 3. Inflammation caused by injection of live *P. acnes*. (A)**
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10 live *P. acnes* (1×10^7 CFU) was injected into ears of mice in the absence (right
11 ears) or presence (left ears) of anti-GUS (a) or anti-CAMP factor (b) serum.
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13 Ears redness (arrows) of mice was visualized 3 days after injection. Bar = 1 cm.
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16 Reduced ear redness was visualized in left ear of mice injected with
17 anti-CAMP factor serum (b) but not in that of mice injected with anti-GUS
18 serum (a) (B) Relative left ear inflammation of mice injected with *P. acnes* ($1 \times$
19 10^7 CFU) in the presence of anti-GUS serum (open bar) or anti-CAMP factor
20 serum (solid bar). (C) Relative right ear inflammation of mice injected with live
21 *P. acnes* (1×10^7 CFU) alone. The ear redness was quantified by ImageJ
22 software (National Institutes of Health, Bethesda, MD). Error bars represent
23 mean \pm SE of four mice (***) $p < 0.0005$, by Student's *t*-test).
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7 **Supplementary Fig. 4. Vaccination with CAMP factor conferred protective**
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10 **effect on *P. acnes*-induced ear swelling.** Seven weeks after vaccinated with
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12 GUS- (open bar) and CAMP factor- (solid bar) capsulated whole leaves, mice
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14 were challenged intradermally with an amount of 25 μ l aliquots of live *P. acnes*
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17 (1 x 10⁷ CFU) suspended in PBS overnight to right ears. As a control, 25 μ l of
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20 PBS was injected into the left ear of the same mice. The increase in ear
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23 thickness was measured using a micro caliper after the bacterial challenge.
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30 The increase in ear thickness of *P. acnes* challenged ear was calculated as %
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Fig. S1.

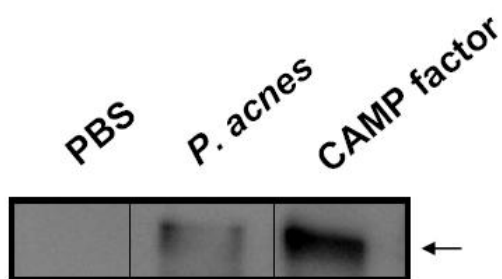


Fig. S2.

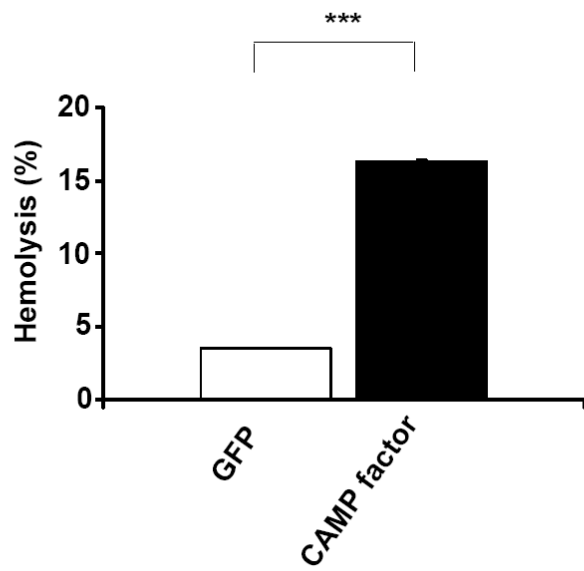
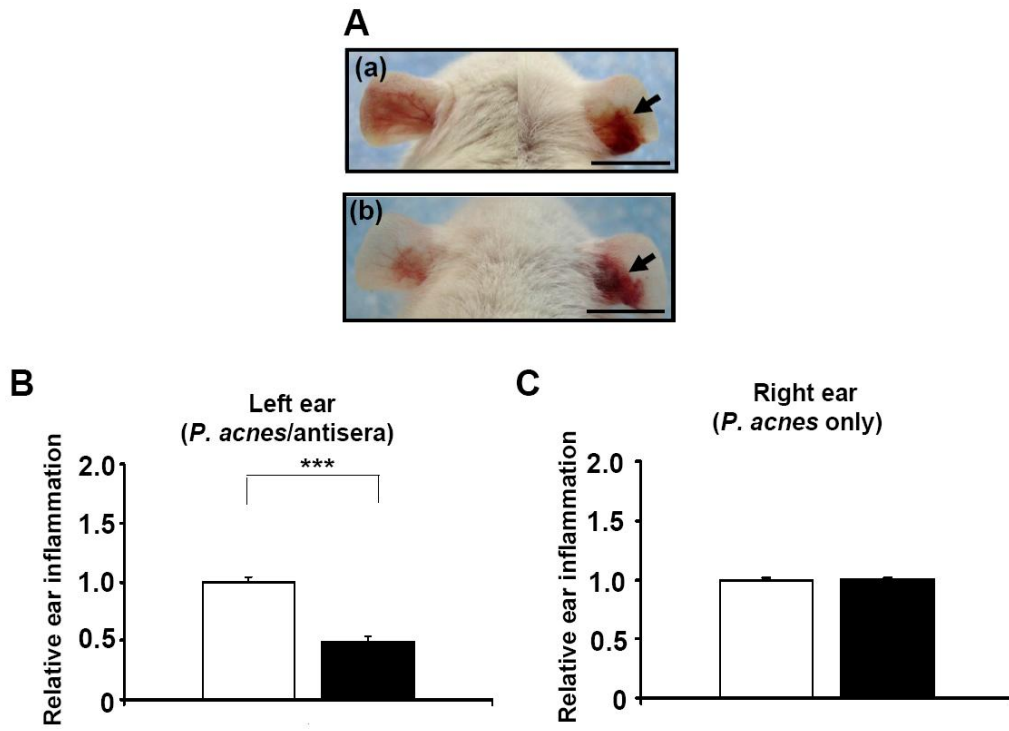
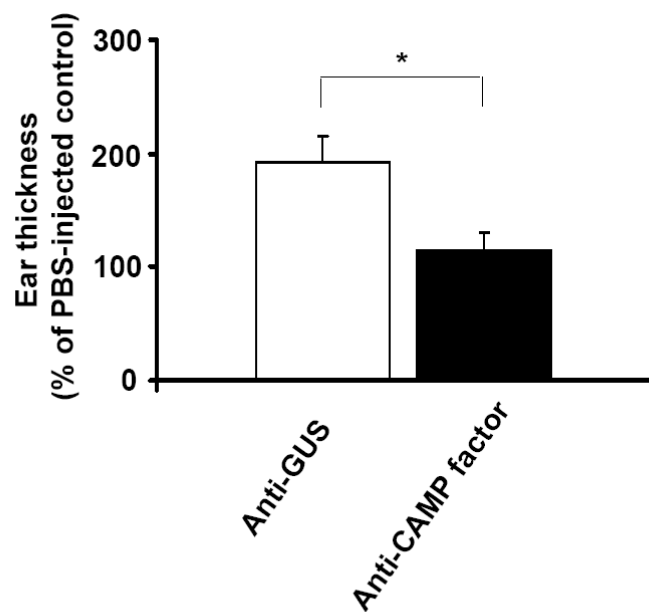


Fig. S3.



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Fig. S4.



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