Electronic Supplementary Material (ESI) for Metallomics.

TABLE S1 ICP-MS analysis of bacterial growth media.

Metal	BSK II (μM)[1]	TSB (μM)[2]
Mg	848 ± 98.3	151 ± 2.69
Ca	1903 ± 245	1950 ± 45.67
Mn	0.135 ± 0.0136	0.173 ± 0.0181
Fe	9.0 ± 0.273	2.70 ± 0.258
Co	0.0640± 0.00439	0.054 ± 0.0230
Ni	0.0902 ± 0.00648	0.274 ± 0.0756
Cu	3.9 ± 0.403	0.161 ± 0.0169
Zn	3.0 ± 0.190	4.96 ± 0.298

[1]Metal levels representing 80% BSK II based media were calculated as described in *Experimental*. Results represent averages of 6 samples over two experimental trials; concentrations are shown with standard error.

[2]Metal levels in Tryptic Soy Broth (TSB) based media consisting of 38% TSB medium/62% buffer (20 mM Tris pH 7.5, 100 mM NaCl,5 mM BME, 3 mM $CaCl_2$). Data obtained from Nakashige et al[1]. Concentration shown with standard error.

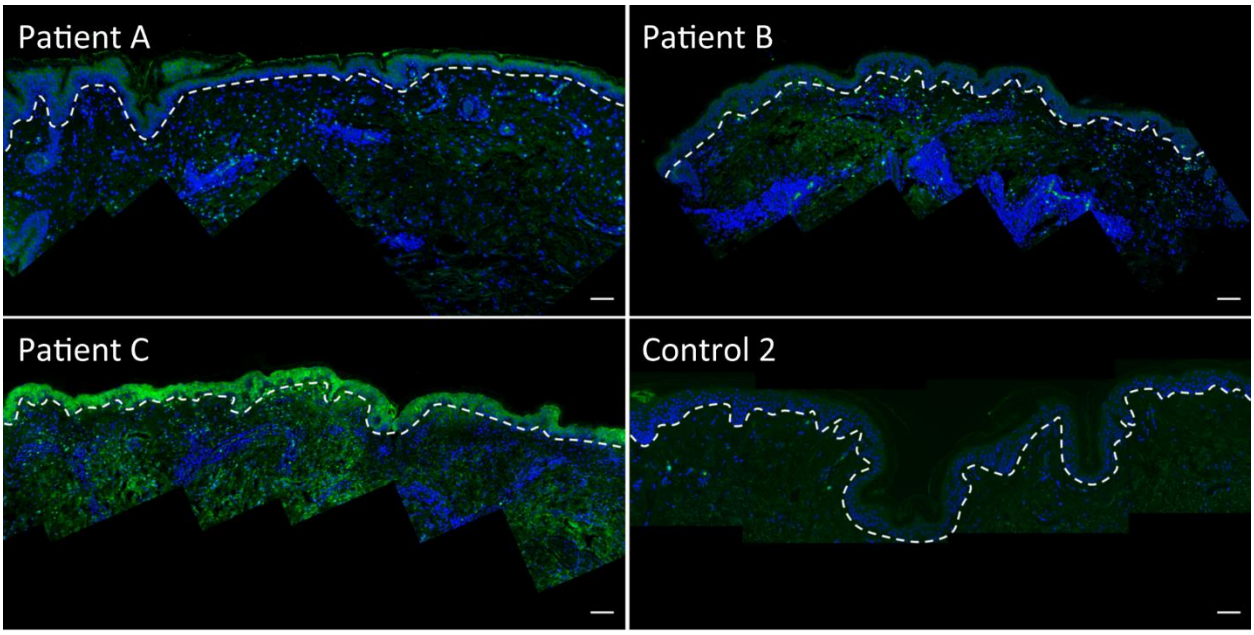

FIG S1 Immunofluorescence microscopy imaging of S100A8 expression in the skin of LD patients and controls. Skin tissue sections from the EM rash site of three individual LD patients and one control (Control 2) were subjected to immunostaining for S100A8 (green) and nuclei staining with DAPI (blue) before being subjected to fluorescence microscopy at 10X magnification as described in *Materials and Methods*. Dotted lines separate the epidermis from the dermis and bar represents 100 µm.

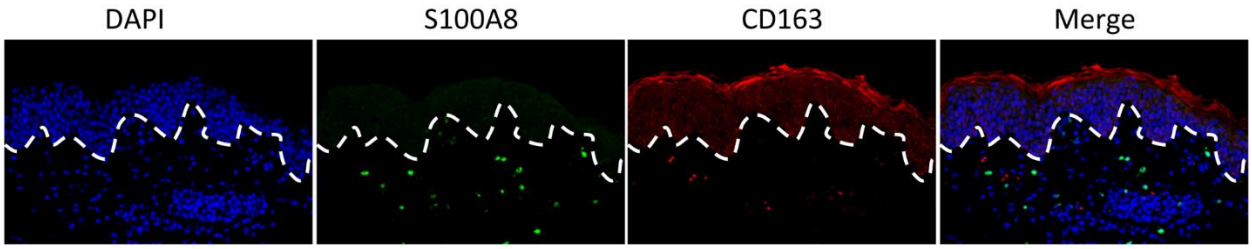

FIG S2 Immunofluorescence microscopy imaging of S100A8 and CD163 expression in the dermis. Skin tissue sections from the EM rash site of patient B were subjected to immunostaining for S100 A8 (green), CD163 (red) and nuclei staining with DAPI (blue) before being subjected to fluorescence microscopy at 20X magnification as in Fig. 1. No colocalization was observed between S100A8 and CD163. Results are representative of three images spanning one tissue section each from the three LD patients and three controls (patients 2,3,4).

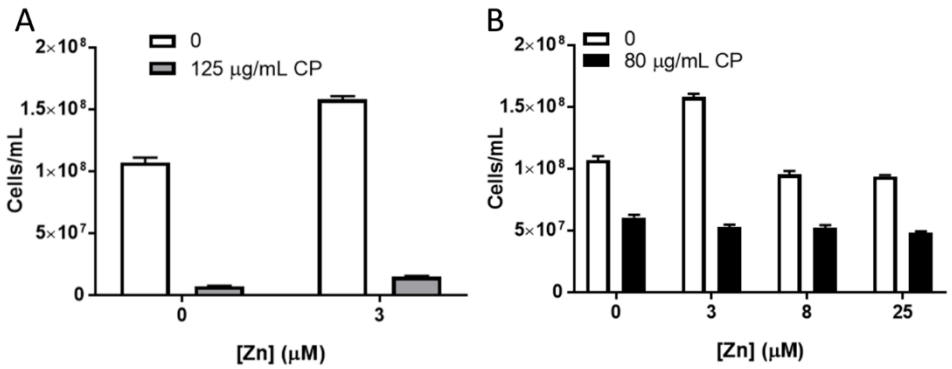

FIG S3 Zn does not reverse CP Mediated Growth Inhibition. *Bb* growth was monitored as in Fig. 5A in the presence or absence of the designated concentrations of WT CP and the indicated concentrations of $ZnSO_4$. Results are averages of (A) three biological replicates representative of 3 experimental trials, or (B) at least six biological replicates; error bar is standard error. Growth in the presence of 80 µg/mLCP was 56% (±2.4), 33% (±1.5), 55% (± 2.7) and 51% (±1.7) that of the no CP control in cells supplemented with zero, 3.0 µM, 8 µM and 25 µM $ZnSO_4$ respectively. 3 µM $ZnSO_4$ typically improves growth of *Bb* cultures in BSK II.

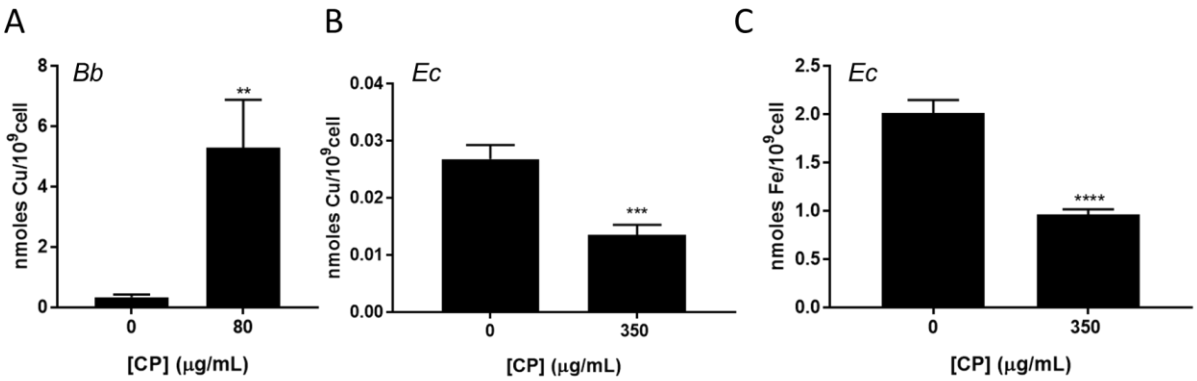

FIG S4 Shown are total Cu (A,B) and Fe (C) levels in whole cell samples of *Bb* incubated with 80 µg/mL CP (A) or *E. coli* incubated with 350 µg/mL CP (B,C). Metals levels were measured by ICP-MS. Results are averages of eleven replicates over five independent experiments (A) or ten (0 µg/mL) and seven (350 µg/mL) replicates over four independent experiments (B,C). **p=0.0053; ***p=0.0003; ****p<0.0001. Fe levels in *Bb* with or without CP treatment were below limits of detection.

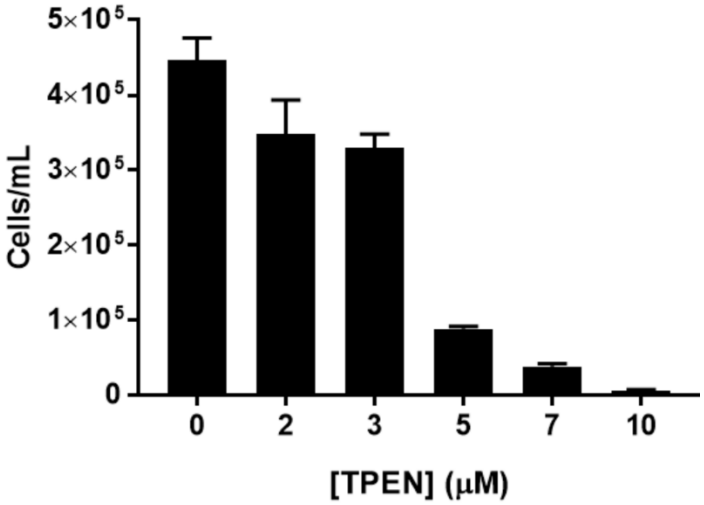

FIG S5 Growth of Bb in the presence of TPEN. *Bb* growth was monitored as in Fig. 5A in the presence of increasing concentrations of the metal chelator TPEN. Results are averages of 3 biological replicates; error bar is standard error.

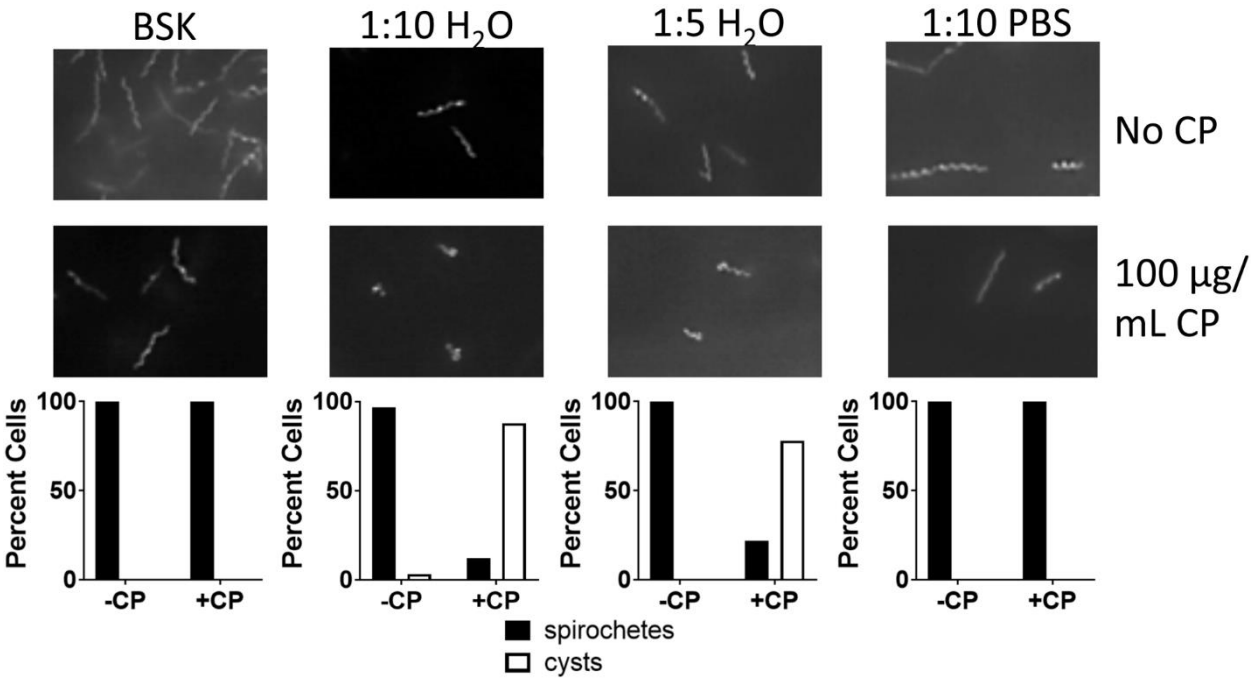

FIG S6 *Bb* Cell Morphology**.** *Bb* cells grown with or without 100 µg/mL CP were photographed under dark field microscopy either directly from BSK II medium, or immediately following dilution in H_2O or PBS as indicated. Bottom – quantification of cell morphology as was done in Fig. 11B.

REFERENCES

1. T. G. Nakashige, B. Zhang, C. Krebs and E. M. Nolan, Human calprotectin is an iron-sequestering host-defense protein, *Nat. Chem. Biol.*, 2015, **11**, 765-771.