An intracellular *Staphylococcus aureus* infection model using mature mouse osteocytes.

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**DISCUSSION**
Osteomyelitis is a debilitating infection of the bone characterized by inflammation and bone loss with over 80% of the cases being post-operative (implant-associated) and post-traumatic. [1,2] *Staphylococcus aureus*, the predominant causative organism, is known to colonize the implant and peri-implant tissue, eventually resulting in deep bone infection [3]. During infection, *S. aureus* has been shown to penetrate deep into the bone and infiltrate bone cells, particularly terminally differentiated osteocytes, to persist as an intracellular infection [3]. Despite the knowledge of intracellular infection, there are currently no robust pre-clinical models to aid in designing effective strategies to eradicate a persisting intracellular pathogen. Here we aim to develop and characterize a stable *S. aureus* intracellular infection model using osteocytes as a tool to test the efficacy of local drug delivery applications.

**METHODS:**

**Group 1.**

**Osteomyelitis**

**Group 2.**

**Osteomyelitis**

**Group 3.**

**Osteomyelitis**

**REFERENCES:**


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**Fig 1:** Relative DMP-1 gene expression of differentiated OCY454 cells plotted as log fold change over time. The error bars represent the standard deviation (n=3)

**Fig 2:** Extracellular bacteria exposed to indicated concentrations for a period of 1 hour. The bacterial CFU/mL corresponding to real-time luminescence units plotted for each concentration tested. The dotted line denotes the limit of detection. Extracellular bacteria with no lysostaphin treatment served as a control.

**Fig 3:** Fluorescent micrographs of *S. aureus* infected mouse osteocytes. White arrows indicate *S. aureus* localization (scale bar =10µm) DAPI stained cell nuclei; Phallloidin stained actin; Cy5-stained *S. aureus*.