

August 31, 2013

To Matthew Kramer and the Editors of the *Journal of Visualized Experiments*

We are pleased to submit this manuscript titled “Combined *in vivo* optical and  $\mu$ CT imaging to monitor infection, inflammation and bone anatomy in an orthopaedic implant infection in mice” to the *Journal of Visualized Experiments*.

Multimodality imaging, especially combining *in vivo* optical and  $\mu$ CT imaging, has emerged as a common technological approach used in both preclinical and clinical research. Here, we present a detailed protocol using state-of-the-art *in vivo* optical and  $\mu$ CT imaging to study an orthopaedic implant infection in mice. We demonstrate that these imaging modalities can be combined to noninvasively and longitudinally monitor the dynamics of the bacterial infection, inflammatory response and anatomical changes in the bone. The protocols for the multimodality *in vivo* imaging in this manuscript can be expanded beyond infectious diseases and used across disciplines, including orthopaedics, rheumatology and oncology, to investigate other conditions that impact the musculoskeletal system, such as skeletal cancer, metastatic disease, fractures and arthritis. Thus, we believe this work will be an excellent addition to JoVE’s unique multimedia format.

The authors have all made significant contributions to the manuscript: bacterial preparation (Y.W., J.H.S.), mouse surgical procedures (N.M.B., J.A.N., Y.W., J.H.S.), *in vivo* optical imaging (J.A.M., K.P.F. and L.S.M.), *in vivo*  $\mu$ CT imaging (J.A.M., K.P.F. and L.S.M.). N.M.B., J.A.M., K.P.F., and L.S.M. designed experiments and helped write the manuscript.

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Sincerely,



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