

AAO Foundation Award Final Report

Principal Investigator	Lexie Shannon Holliday
Co-Investigator	
Secondary Investigators	
Award Type	Biomedical Research Award
Project Title	Phosphatidylinositol 3-kinase regulation of osteoclasts
Project Year	2002
Institution	University of Florida
Summary/Abstract	<p>The AAOF funded studies have confirmed that inhibition of PI 3-kinase activity in activated osteoclasts leads to disruption of the actin ring and ruffled membrane and rapid increased binding of V-ATPase to microfilaments. This work was published: Chen SH, Bubb MR, Yarmola EG, Zuo J, Jiang J, Lee BS, Lu M, Gluck SL, Hurst IR, Holliday LS. J Biol Chem. 2004 Feb 27;279(9):7988-98. Epub 2003 Dec 8. Prior to publication, it was the topic of a number of abstracts at National Meetings</p> <p>This work showed that a mechanism by which phosphatidylinositol 3-kinase regulates osteoclast activity is through controlling interactions between vacuolar H⁺-ATPase and microfilaments. Studies are now ongoing to identify the molecular mechanisms of this control. One set of questions involves identifying the specific PI 3-kinase involved. My junior collaborator, Jin Jiang, D.M.D., Ph. D. (who recently moved to the University of Connecticut Health Science Center) received an NIH R03 award to pursue this question. My graduate student, I Rita Hurst, D.M.D., also received a K08 award from NIH that was in part based on the AAOF funded studies. Our continued work in this area is funded by an NIH R01 award AR-47959 on which I am PI. The Biomedical Research Award allowed me to perform experiments that link the PI 3-kinase story to my NIH funded research. These experiments would not have been possible without AAOF support. Our studies suggest new strategies for clinically manipulating osteoclast activity that may prove relevant to Orthodontist.</p>