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# An Adapted Method for Measuring Gas Exchange Across Avian Eggshells

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Oral Presentation O3.4

**AN ADAPTED METHOD FOR MEASURING GAS EXCHANGE  
ACROSS AVIAN EGGSHELLS**

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Gas exchange through the pores of bird eggshells is necessary for normal embryonic development. Differences in eggshell porosity are known to influence rates of development and incubation periods. Eggshell porosity may vary among different eggshell regions within and among species. Portugal et al. (2010) glued eggshell fragments from domestic fowl to small tubes that contained water. These were placed in a dessicator and gas flow through the eggshells was measured as a decrease in tube weight. I tested this method to determine if it could be used to measure gas exchange through songbird eggshells. My findings indicated that the results reported by Portugal et al. (2010) were inaccurate and that gas loss may have been the result of an error in experimental technique (i.e., gas likely leaked around the seal of the eggshell). I have modified and tested this protocol to increase the accuracy and precision of the estimated rates of gas exchange through eggshell pores.