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Nathan W Hall* (nhall@whalls.com), 909 22nd St Apt 8, Bellingham, WA 98225, and **Daisy L Phillips, Laina Mercer** and **Amy D Anderson**. *A simulation study comparing methods of estimating inbreeding coefficients.*

An inbreeding coefficient is the probability an individual with two identical alleles received both alleles from one ancestor, and can be estimated for a population through analysis of genotype data. We developed a method using maximum likelihood estimators and an expectation maximization algorithm to estimate inbreeding coefficients using known allele frequencies. The method was evaluated using simulated data and data collected on wild mice (*Mus musculus*) in Arizona. Our results were compared with those obtained using several other commonly used methods, specifically Ritland's (1996) method, a Simple ad hoc method which has been used by several researchers, and modified versions of these. Our results with the mouse data confirm the results of other studies: mice in the wild are significantly inbred. The MLE and Simple methods agreed well, while Ritland's estimators displayed some disagreement with both. Overall, each method was successful with minor strengths and weaknesses depending on the amount of genotype data available and distribution of allele frequencies. Our MLE method worked virtually as well or better than the other methods in most cases. (Received September 15, 2008)