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Rebecca S Patterson (becky.patterson@louisville.edu) and **Larry Wayne Lewis*** (llewis@spalding.edu). *Testing the effects of predictors data generated by non-identity link functions of the single-index model: a Monte Carlo approach.*

Regression analysis is a statistical procedure that identifies the relationship between two or more quantitative variables; namely, a response (dependent) variable whose value is to be predicted and one or more explanatory (predictor) variables, about which information is available. The critical step in regression analysis is the construction of the explanatory model. Single-index models are a generalized regression models by having unknown link functions. A simple methodology to test effects of predictors in single-index models is presented under mild conditions. Since the proposed method does not require preliminary specification of link functions, it can be considered as model-free predictor tests. Simulations were tested to validate the proposed method. The method was applied to predict the gene transcription rates by histone acetylation levels in the presence of transcription factor binding motifs in *Saccharomyces cerevisia* (Yuan et al., 2006). (Received September 12, 2008)