

“Family Values: Statistical Tests of Maternal-Offspring Genetic Effects”

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Abstract:

Biological mechanisms involving a combination of genetic and environmental factors have been hypothesized to explain susceptibility to complex familial disease. There is compelling evidence that one environmental factor, which acts prenatally to increase susceptibility, arises from an interaction between mother's and child's genes (a maternal-fetal genotype incompatibility). The prototypical example of maternal-fetal genotype incompatibility is Rhesus D induced hemolytic disease of the newborn (HDN). Most existing gene mapping methodologies, however, are neither optimal, nor even appropriate for identifying genes that act through maternal-fetal genotype incompatibility. We recently developed statistical models that can be used to test candidate genes for maternal-fetal genotype incompatibility. I will describe these models and demonstrate their use in testing for maternal-fetal genotype incompatibilities as risk factors in schizophrenia and rheumatoid arthritis.