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# Polymorphisms in *Paan-AG* promoter influences NF-{kappa}B binding and transcription activity in HEK293 cells

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## Abstract

HLA-G is a protein highly expressed at the human maternal-fetal interface during pregnancy. It is thought to be critical for the survival of the semi-allogenic fetus. The baboon (*Papio anubis*) expresses an HLA-G-like protein termed Paan-AG in the placenta, and may serve as a model for HLA-G studies. Paan-AG shares many characteristics with HLA-G, including alternative splicing of the mRNA and restricted tissue expression of the protein. Our hypothesis is that the two genes share similar regulatory mechanisms. The objective of the current study was to assess binding of the transcription factor NF-{kappa}B to *Paan-AG* {kappa}B elements and determine the effects of binding on *Paan-AG* promoter activity. We assessed two *Paan-AG* alleles each containing two {kappa}B elements, {kappa}B1 and {kappa}B2. NF-{kappa}B bound both {kappa}B1 and {kappa}B2 elements in the AG1 allele. In contrast, only {kappa}B1 of the AG-2 allele bound to NF-{kappa}B; {kappa}B2 did not bind. Mutagenesis studies showed that the difference in binding was due to two nucleotide differences in the 3' end of {kappa}B1. The functional activity of the two alleles also differed; AG2 consistently showed higher luciferase activity compared to AG1. Mutating the last two nucleotides in the 3' end of {kappa}B1 resulted in an increase of luciferase activity to levels comparable to that of AG2. Overall, these results suggest that variations in the proximal promoter may influence transcription rates of *Paan-AG* as reported recently for *HLA-G*, and provide further evidence of the potential

usefulness of the baboon as a model for in *vivo* HLA-G studies.

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