Cloning and Characterization of Porcine Uroplakini Gene

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Mammalian urothelium undergoes unique membrane specialization during terminal differentiation making numerous rigid-looking membrane plaques that cover the apical cell surface, as the name asymmetric unit membrane. The AUM contains several major integral membrane proteins, including uroplakins IA, IB, II and III. Among of these uroplakins, bovine, human and mouse UP cDNA were partially or cloned completely, but not porcine. In this study, we have characterized and cloned a porcine UPII genomic gene. The partial cDNA was amplified using degenerated RT-PCR from total RNA of porcine bladder. The primer for PCR were 5-GATCCTGATTCTGCTGGCTB-3 5-ATGGTGGTCATCACRGTGCT-3. We screened full porcine genomic UPII gene using Lambda Genomic library (Stratagene, #097001b) with the partial cDNA as a probe and sequenced by the dideoxynucleotide termination method. Also, we have detected UPII expression by northern blotting and immunohistochemistry. In conclusion, we have cloned a porcine UPII cDNA and genomic DNA, which codes for the putative full open reading frame for the UPII protein. The deduced pig UPII 184 amino acid sequence has 93% and 90% homology in comparison with bovine UPII and human UPII proteins, respectively. These results suggested that uroplakin protein is highly conserved during mammalian evolution.

Northern and immunohistochemistry analysis showed that the pig UPII gene is highly expressed in porcine urothelium and that the protein was specifically localized in urothelial superficial cells. Taken together, our results suggest that bladder can be used as an alternative

bioreactor replaced with mammary gland.

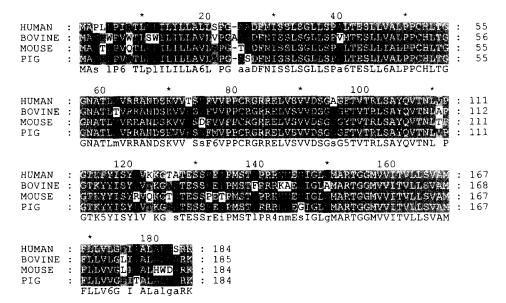


FIG. 1. Comparision of UPII amino acid sequence.