

IDENTIFICATION OF POTENTIAL ZONA PELLUCIDA-BINDING SPERM PROTEINS USING HEAT SHOCK PROTEIN 60

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Sperm transit through the female tract is correlated with a number of biochemical and physical changes, termed capacitation, which culminate in acquisition of the ability to fertilise an egg. One of the important correlates of capacitation is an increase in tyrosine phosphorylation of multiple sperm proteins. Recent studies of the sperm surface proteome have demonstrated that, following capacitation, a number of tyrosine-phosphorylated proteins become expressed on the sperm surface. Analysing these proteins, we have identified at least three members of the chaperone family including heat shock protein 60 (HSP60), heat shock protein 90 (HSP90) and Endoplasmic reticulum protein 99 (ERP99). Although these proteins are not directly implicated in zona binding, we hypothesise that they are involved in the assembly of a multimeric zona receptor on the sperm surface. To investigate this hypothesis, we have initiated studies to purify sperm surface proteins which associate with these chaperones. This has involved the cross-linking of sperm surface proteins, using a membrane impermeable cross-linker, followed by extraction of the surface membrane proteins. Co-immunoprecipitation of these cross-linked surface proteins from capacitated sperm has yielded a number of proteins associated with the chaperone HSP60. The characterisation of these proteins is the focus of ongoing research.