110. MATRIX METALLOPROTEINASE-2 (MMP-2) IN MURINE UTERINE TISSUE DURING EARLY EMBRYO IMPLANTATION

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While the exact factors regulating attachment and invasion of a blastocyst into the maternal endometrium are yet to be determined, it is known that the invasion process involves the secretion of proteases, including matrix metalloproteinases (MMPs), from both the endometrium and the trophoblast. The development of a new mating protocol, which allows the detection of the specific time of implantation (99–101 h post insemination) has permitted further investigation into the expression and function of MMPs. Previous studies have involved the collection of uterine flushes and tissue extracts at hourly intervals around the time of implantation (45, 95–104 h post insemination), from QS mice mated using the new protocol. Gelatin zymography has shown that MMP-2 increases just prior to implantation in uterine flushes. Immunohistochemistry completed on implantation sites have shown that the MMP-2 can be localised to the endometrial epithelia and the trophoblast cells of the blastocyst. Blastocysts were also collected and cultured on fibronectin to look at the expression of MMP-2 from the trophoblast i*n vitro*. Culture media analysed using gelatin zymography showed no expression of MMP-2 under any of these conditions. In order to clarify the relationship between the peak in MMP-2 and the presence of a blastocyst, MMP-2 presence was analysed in pseudopregnant mice. These analyses showed no peak in expression of MMP-2. These experiments suggest that the MMP-2 expressed in the lumen just prior to invasion may require the interaction of the blastocyst with endometrial tissues. Further investigation into the role of the MMP-2 expression is currently being completed. These experiments include the culture of blastocysts on epithelial monolayers, the injection of MMP inhibitors into pregnant uterine lumens and the completion of *in situ* zymography on implantation sites. It is anticipated that these data in conjunction with the data presented within will offer further clarification into the presence and function of MMP-2 present in the uterine lumen during the apposition phase of embryo implantation.