Microtubular Nucleating Centre Dynamics in Assisted Reproduction

(sheep model)

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ABSTRACT

The scope of this thesis is to investigate abnormal sperm centriole function during the early stages of Intra Cytoplasmic Sperm Injection (ICSI) embryo development using sheep as an animal model. The main focus was on evaluating the timing and dynamics of the sperm microtubular aster nucleation and organization as a possible factor that undermines early embryonic development following ICSI. The main finding was that ICSI derived embryos using freeze-dried spermatozoa displayed a delay in their aster nucleation and a noticeable hampered embryo development. We also noticed that ICSI-derived embryos failed to undergo subsequent development and were blocked at the pronuclear stage. In this work, we demonstrated that embryo development failure following ICSI in sheep is not actually related to a centriole dysfunction; rather, the major problem recorded is the lack of syngamy. Thus, besides our objective data ruling out centriole dysfunction as a cause of developmental failure in sheep/ruminant embryos, we have opened a worth theme to investigation, that is the perfecting of artificial protocols in sheep oocytes fertilized by ICSI.