# OVARIAN PATHOLOGY IN MICE FOLLOWING IMMUNISATION WITH RECOMBINANT MURINE CYTOMEGALOVIRUS EXPRESSING MURINE ZONA PELLUCIDA 3

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Immunocontraception is a promising biological control for wild mice in Australia, having the potential to reduce the socioeconomic cost of plagues with minimal environmental impact. Inoculation of BALB/c mice with recombinant murine cytomegalovirus encoding murine zona pellucida antigen (mCMV-ZP3) confers total infertility characterised by depletion in ovarian tertiary follicles by Day 21 post inoculation followed by a progressive depletion in primordial follicles (1). The mechanisms underlying ovarian pathology are largely unknown but are likely to involve antibody mediated and cell mediated immune responses. The immune pathology may also be facilitated by acute responses involving antibody binding to ZP in growing follicles resulting in recruitment of inflammatory cells and oocyte destruction. The aim of this study was to investigate the effect of mCMV–ZP3 infection on leukocyte infiltration and expression of oocyte-derived signalling molecules in ovarian tissue. Fifteen BALB/c female mice were randomly allocated into three groups of 5 animals. Group one received an injection of PBS, group two and three received intraperitoneal inoculations of $2 \times 10^4$ p.f.u. of mCMV and mCMV-ZP3 respectively. Ovaries were retrieved at Day 7 post inoculation and one ovary from each mouse was sectioned for immunohistochemical analysis of resident leukocytes using mAb CD45 reactive with all leukocyte lineages. The other ovary was processed for real time quantitative RT-PCR analysis of growth and differentiation factor 9 (GDF-9) and connexin 43 (Cx43) expression. mCMV-ZP3 inoculation increased the abundance of ovarian leukocytes ($P = 0.08$), significantly increased expression of Cx43 mRNA ($p<0.05$), but did not alter GDF-9 mRNA expression. These results suggest that changes in expression of ovarian regulators due to ZP3 immunisation begins early after recombinant MCMV infection in mice, and implicates leukocyte infiltration in the mechanism leading to permanent ovarian failure. Further experiments are underway to investigate the dynamics of leukocyte trafficking and expression of oocyte-derived signals as the course of infection progresses. *This study is funded by the Cooperative Research Centre for Pest Animal Control.*

(1) Lloyd, M. L., *et al.* (2003). Biology of Reproduction 68(6): 2024-32.

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