

# MORPHOLOGIC AND HISTOLOGIC COMPARISONS BETWEEN *IN VIVO* AND NUCLEAR TRANSFER DERIVED PORCINE EMBRYOS

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## ABSTRACT

Nuclear transfer (NT) is an inefficient but invaluable tool. This study examines abnormalities associated with NT porcine embryos at days 10, 12, and 14. *Methods:* 4 experimental groups were examined: non-pregnant, *in vivo* pregnant, NT recipients, and manipulation control (MC) recipients. Maternal blood samples were collected and assayed for insulin-like growth factor-1 (IGF-1). Embryos were evaluated for embryonic disc diameter, morphology, nucleoli density and mitotic figure index. *Results:* NT day 12 ( $P \leq 0.03$ ) and day 14 ( $P \leq 0.01$ ) embryos had increased nucleoli when compared to *in vivo* produced and MC embryos. NT day 14 embryos had an increased ( $P \leq 0.03$ ) mitotic index when compared to *in vivo* produced day 14 embryos. *In vivo* produced day 12 embryos had greater ( $P \leq 0.03$ ) embryonic disk diameters compared to NT and MC embryos; however *in vivo* produced day 14 embryos had increased ( $P \leq 0.01$ ) embryonic disk diameters only when compared to NT day 14 embryos. *In vivo* produced day 14 embryos were morphologically more advanced ( $P \leq 0.01$ ) than NT and MC day 14 embryos. There were no significant differences between IGF-1 levels. *Conclusions:* Nuclear transfer embryos develop at a slower rate than *in vivo* embryos with abnormalities potentially affecting the cell cycle. The techniques used during nuclear transfer also appear to compromise embryo development.