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Article

Effects of opening the incubator on morphokinetics in mouse embryos

Quyen Nguyen¹, Sophia Sommer¹, Brandon Greene², Christine Wrenzycki³, Uwe Wagner¹, Volker Ziller^{1*}

¹ Dep. Gyn. Endocrinology and Reproductive Medicine, University Hospital Giessen and Marburg, Germany

² Institute of Medical Biometry and Epidemiology, Philipps University Marburg, Germany

³ Clinic for Veterinary Obstetrics, Gynecology and Andrology, Chair for Molecular Reproductive Medicine, Justus-Liebig-University Giessen, Germany

Abstract

Objective

To evaluate the effects of incubator door openings by the sensitive measurement of morphokinetics using time-lapse imaging.

Study design

To mimic lab practice and to evaluate minimal changes in culture conditions a randomized parallel group study with mouse embryos was designed. 249 murine zygotes derived from 31 mice were randomly distributed into two groups. Embryos of the control group were non-invasively monitored with a Primovision time-lapse system (Vitrolife) in the incubator that was completely closed for 5 days, while the conditions for the embryos in the treatment group were interrupted by two door openings per day of 10 seconds each.

Results

Door opening twice per day did not lead to significant differences in blastocyst formation rate ($p=0.820$), however significantly more embryos hatched in a shorter duration ($p=0.011$), and the embryos transitioned more quickly from 2C to 3C, from 3C to 4C, from 2C to 5C and from 5C to blastocyst stage ($p<0.001$ in cc2, $p=0.037$ in cc3,

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