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**Influence of the recipient mare on character traits of adult offspring
in a Warmblood embryo transfer program – preliminary results**

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The influence of recipient mares in commercial embryo transfer (ET) programs on behavior of the ET foals is a matter of great interest and controversial discussion. Presently, no interdisciplinary ethological and reproductive studies on this topic exist. However, empirical experience suggests that behavioral traits of the recipient mare do not influence those of the foal, thus implying a predominantly genetic origin of a horse's basic character. Aim: The aim of the present study was to investigate the influence of recipient mares on behavioural traits of their ET products.

Materials and Methods: Based on records of the embryo transfer program in Warmblood horses since 1990 at the Swiss National Stud, questionnaires concerning behavior, stereotypies and mother-foal-relationship were designed and completed by telephone interview: 18 scientifically assessed questions provided the basis for a linear description (Equine Personality Assessment Questionnaire, Lloyd *et al.*, 2007). They were grouped in a) emotivity, b) social motivation, c) general level of activity, d) stress behavior, e) learning capacity and f) reactions towards humans. Questionnaires were designed for the owners of the ET offspring (minimum of three years of age), the sires, donor mares and the recipient mares. Out of 200 questionnaires, 25 complete ET families have emerged so far and were analysed. All genetic parents were Warmblood horses, as were 23 of the recipient mares, the other two were Franches-Montagnes horses.

Results: Comparing the mean values of the four groups (genetic dam and sire, recipient mare and ET product), significant differences were found for the parameters emotivity (sires lower, $p < 0.001$), learning behaviour (recipient mares lower, $p < 0.05$) and activity (recipient mares lower, $p < 0.05$). With only one exception, the multiple variable regression analysis found no significant influence of the recipient mare on the ET product. The only significant effect observed, was that of the social motivation of the recipient mare on the learning capacity of the ET offspring ($r_2 = -0.421$, $p < 0.05$). In contrast, numerous significant effects of behavioural traits of the genetic dams and sires on their ET offspring (10 and 8, respectively) were observed.

Conclusions: These preliminary results confirm field observations that the influence of the recipient mare does not play an important role in character development of the ET offspring. However, the investigated parameters indicate that the behavioural traits of the genetic parents appear to have a strong influence on the offspring's behaviour. This study model promises new achievements in the evaluation of genetic and environmental effects on the behavior of a horse.

References

Lloyd, AS, Martin, JE, Bornett-Gauci, HLI, Wilkinson, RG (2007). Evaluation of a novel method of horse personality assessment: Rater-agreement and links to behaviour. *Appl. Anim. Behav. Sci.*, 105, 205-222
