

## Previous mother's experience and early life stress: impact on aggression and cognition in adult mice

V.V. Reshetnikov<sup>1\*</sup>, Yu.A. Ryabushkina<sup>1,2</sup>, N.P. Bondar<sup>1,2</sup>

<sup>1</sup> *Institute of Cytology and Genetics SB RAS, Novosibirsk, Russia*

<sup>2</sup> *Novosibirsk State University, Novosibirsk, Russia*

\* *e-mail: vasilyreshetnikov@bionet.nsc.ru*

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*Motivation and Aim:* The early postnatal period is important for nervous system development and programming future behaviors. Both a decreased level of maternal care as well as stress in early life are risk factors for various psychiatric disorders. Here, we hypothesized that early life stress can lead to a change in the level of maternal care in adult female offspring. Thus, the objective this study is estimation effects of previous mother stress, early life stress or both on behavior in adult mice

*Methods and Algorithms:* The mothers of the mice in the current study were either allowed to raise their pups without exposure to stress (normal rearing condition, NC) or with maternal separation (3h/day, maternal separation, MS) on lactation days 2–14. Adult female F0 with a history in early life stress (mother's stress experience, ME) and undisturbed females (UM) were used for creating F1 offspring. We evaluated anxiety-like behavior, levels of exploratory, locomotor activity (open field test), aggression (resident-intruder test) and cognition (Morris water maze) in 4 groups of adult males F1 offspring (UM+NC, UM+MS, ME+NC, ME+MS).

*Results:* We found that males ME+MS group were more aggressive to compare other groups. Moreover, winner males ME+MS group demonstrated tendency to improve the memory. In contrast, winner males ME+NC group demonstrated learning impairment. We did not find any significant differences in the parameters of anxiety-like behavior, levels of exploratory and locomotor activity.

*Conclusion:* We found that the previous mother's stress experience in early life can have a pronounced contribution to adult offspring behavior than their own stress in early life. However, a combination of these conditions can even lead to some advantages, at least in some situations.

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