

МАТЕРИАЛЫ КОНФЕРЕНЦИИ  
И ШКОЛЫ

**DISTURBANCES IN EXPLORATORY BEHAVIOR IN DOPAMINE TRANSPORTER  
KNOCKOUT RATS DURING LEARNING COGNITIVE TASKS**

© 2020 г. А. В. Volnova<sup>1,2,\*</sup>, N. P. Kurzina<sup>2</sup>, and R. R. Gainetdinov<sup>2,3</sup>

<sup>1</sup> Saint Petersburg State University, Saint Petersburg, Russia

<sup>2</sup> Institute for Translational Biomedicine, Saint Petersburg State University, Saint Petersburg, Russia

<sup>3</sup> Saint Petersburg State University Hospital, Saint Petersburg, Russia

\*e-mail: a.volnova@spbu.ru

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Orienting – exploratory behavior is an attribute of the animal adaptation to a new environment which occurs during learning new behavioral tasks. Rearing is a type of exploration activity, which provides for obtaining additional information about spatial environment organization. It is known that in dopamine transporter knockout rats (DAT-KO rats) the reaction to environment changing is low expressed. In this study the behavior of DAT-KO rats was investigated in the three behavioral tasks: the 8-arm radial maze, Hebb–Williams maze and object recognition task. During exploration in the 8-arm radial maze, DAT-KO rats were found to demonstrate a significantly ( $p < 0.01$ ) smaller number of rearings made, whose frequency was also significantly ( $p < 0.0001$ ) lower than in controls. In the radial maze, wild-type rats showed rearings made at the key points of the maze followed by a correct choice. On the contrary, DAT-KO rats' rearings were chaotic, unassociated with

a correct choice of the direction to run. In the Hebb – Williams maze, DAT-KO rats also showed significantly ( $p < 0.01$ ) fewer rearings made mainly in the start box. Behavioral strategy of DAT-KO rats differed drastically from that of the controls. Thus, the knockout rats did not run directly to the finish, but made repeated perseverative runs to the start box. In the object recognition task, where spatial features are not the key, both DAT-KOs and controls showed very few rearings and successfully performed the behavioral task. In DAT-KO rats, a lower number of rearings made at the points which appear unessential for a correct behavioral task performance might be indicative of a dysfunction of dopaminergic system effects on the adaptation capacity and disruption in forming the cognitive maps.

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