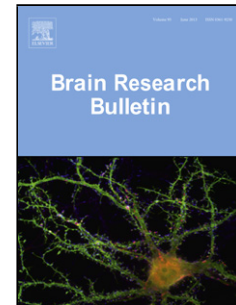


Accepted Manuscript

Title: Glutamine/Glutamate (Glx) concentration in prefrontal cortex predicts reversal learning performance in the marmoset

Authors: Agnès Lacreuse, Constance M. Moore, Matthew LaClair, Laurelee Payne, Jean A. King



PII: S0166-4328(17)31746-1
DOI: <https://doi.org/10.1016/j.bbr.2018.01.025>
Reference: BBR 11266

To appear in: *Behavioural Brain Research*

Received date: 24-10-2017
Revised date: 8-1-2018
Accepted date: 21-1-2018

Please cite this article as: Lacreuse A, Moore CM, LaClair M, Payne L, King JA, Glutamine/Glutamate (Glx) concentration in prefrontal cortex predicts reversal learning performance in the marmoset, *Behavioural Brain Research* (2018), <https://doi.org/10.1016/j.bbr.2018.01.025>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Glutamine/Glutamate (Glx) concentration in prefrontal cortex predicts reversal learning performance in the marmoset

Agnès Lacreuse ^{1,2*}, Constance M. Moore ³, Matthew LaClair ², Laurelee Payne ³ and Jean A. King ³

¹ Psychological and Brain Sciences, University of Massachusetts, Amherst, MA 01003

² Neuroscience and Behavior Program, University of Massachusetts, Amherst, MA 01003

³ Center for Comparative NeuroImaging, Department of Psychiatry, University of Massachusetts Medical School, Worcester, MA 01604

* Corresponding author

Agnès Lacreuse, Ph.D.
Department of Psychological and Brain Sciences
Tobin Hall, 135 Hicks Way
University of Massachusetts
Amherst, MA 01003, USA

Phone: 413-545-2183

Email: alacreuse@psych.umass.edu

ABSTRACT

This study used Magnetic Resonance Spectroscopy (MRS) to identify potential neurometabolic markers of cognitive performance in male (n=7) and female (n=8) middle-aged (~ 5 years old) common marmosets (*Callithrix jacchus*). Anesthetized marmosets were scanned with a 4.7 T/40cm horizontal magnet equipped with 450 mT/m magnetic field gradients and a 20-G/cm magnetic field gradient insert, within 3 months of completing the CANTAB serial Reversal Learning task. Neurometabolite concentrations of N-Acetyl Aspartate, Myo-Inositol, Choline, Phosphocreatine+creatine, Glutamate and Glutamine were acquired from a 3 mm³ voxel positioned in the Prefrontal Cortex (PFC). Males acquired the reversals (but not simple discriminations) faster than the females. Higher PFC Glx (glutamate + glutamine) concentration was associated with faster acquisition of the reversals. Interestingly, the correlation between cognitive performance and Glx was significant in males, but not in females. These results suggest that MRS is a useful tool to identify biochemical markers of cognitive performance in the healthy

Download English Version:

<https://daneshyari.com/en/article/8837842>

Download Persian Version:

<https://daneshyari.com/article/8837842>

[Daneshyari.com](https://daneshyari.com)