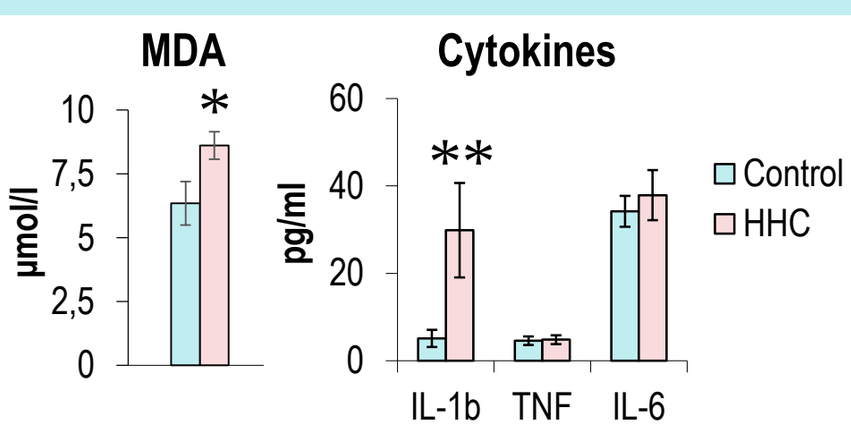
# Gestational hyperhomocysteinemia affects development of the nervous system in rat fetuses and offspring

Shcherbitskaia A.[1,2], Vasilev D.[1], Milyutina Yu.[2], Tumanova N.[1], Zalozniaia I.[2], Nalivaeva N.[1], Arutjunyan A.[2], Zhuravin I.[1]

[1]I.M. Sechenov Institute of Evolutionary Physiology and Biochemistry Russian Academy of Sciences, [2]D.O. Ott Institute of Obstetrics, Gynecology, and Reproductology, Saint Petersburg, Russia. nastusiq@gmail.com

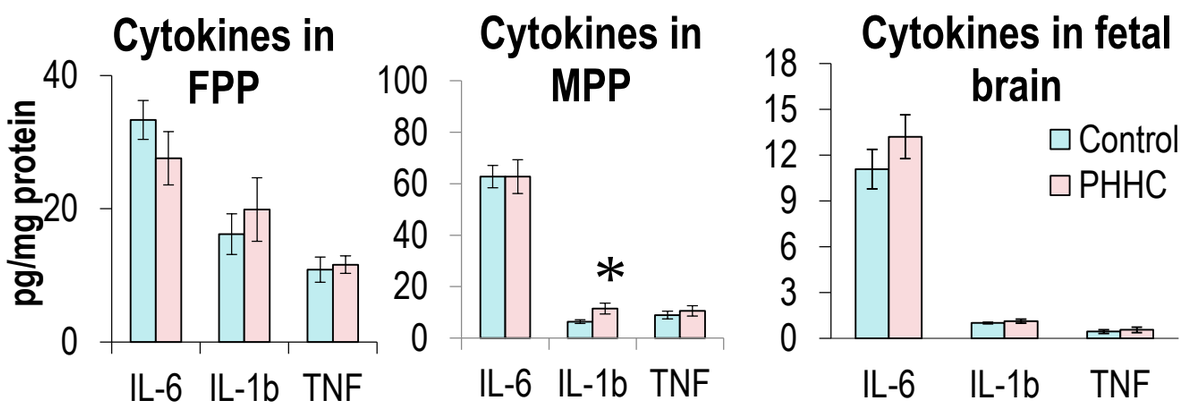
Prenatal hyperhomocysteinemia (PHHC) is one of the common complications of pregnancy that causes cognitive deficits in the offspring during postnatal development. We aimed at identification of some markers of fetal CNS developmental disorders in the «mother-placenta-fetus» system and studying the effects of PHHC on rat nervous tissue during postnatal ontogenesis.

## Mothers blood

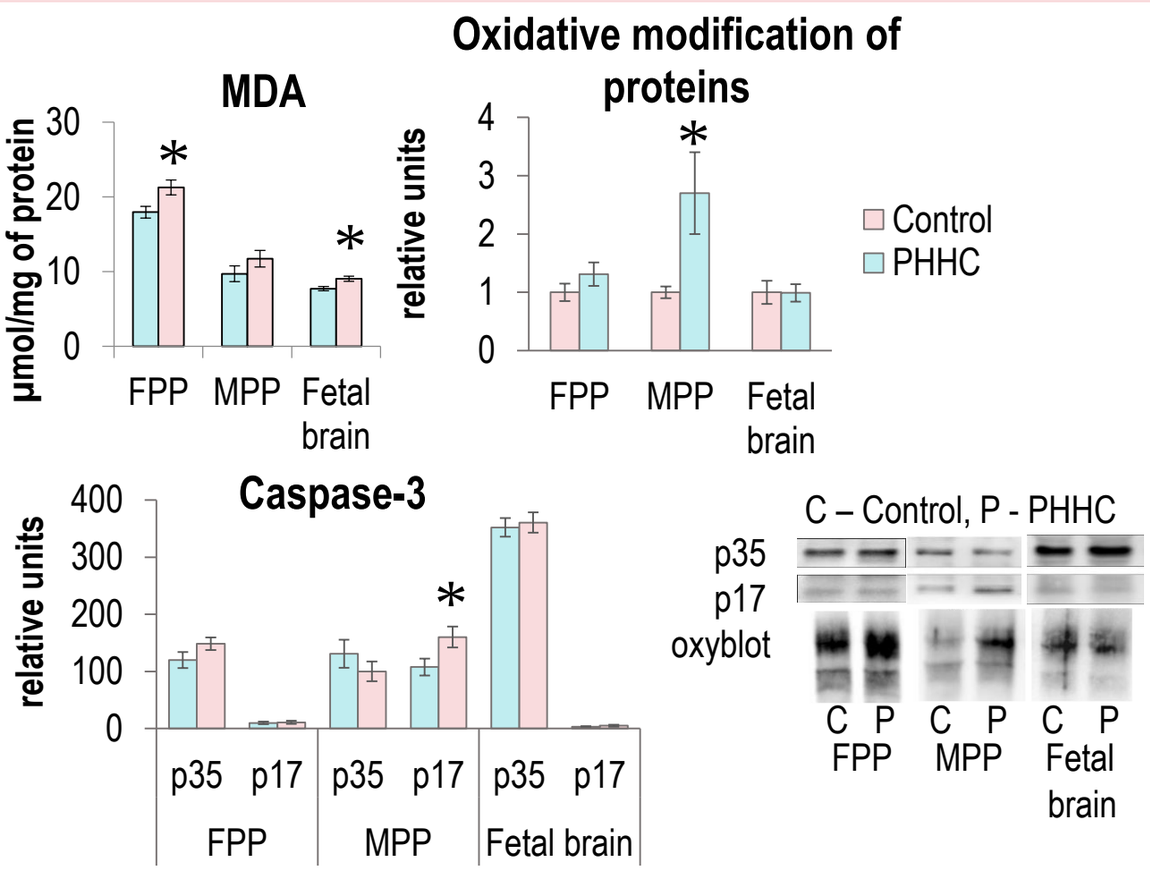



## Placenta and fetal brain

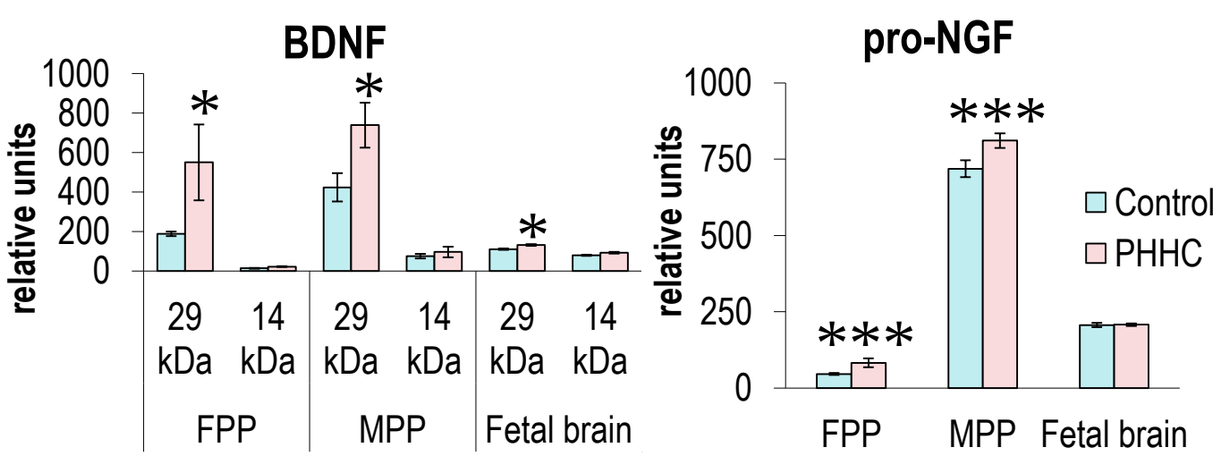
### Proinflammatory cytokines




### Oxidative stress and apoptosis

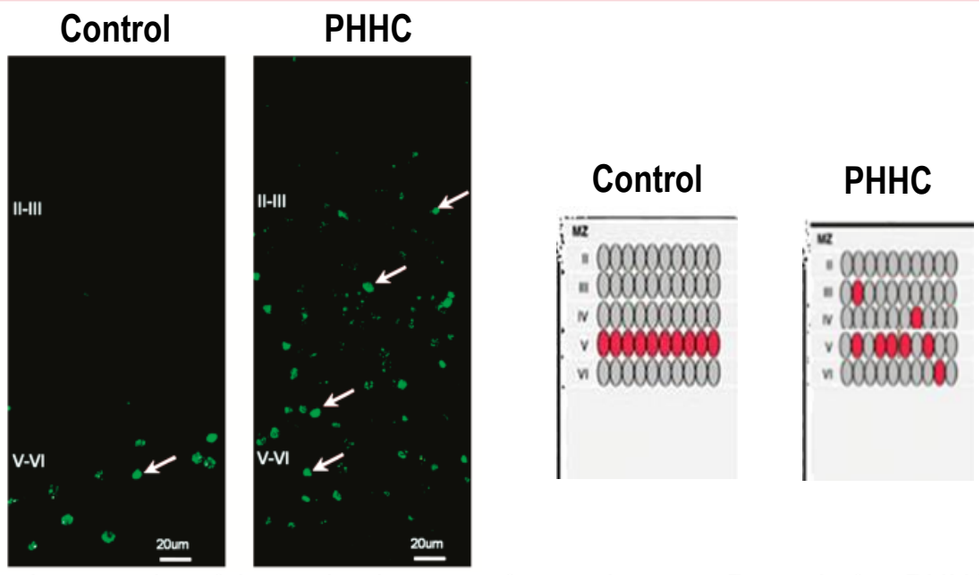



### Neurotrophic factors



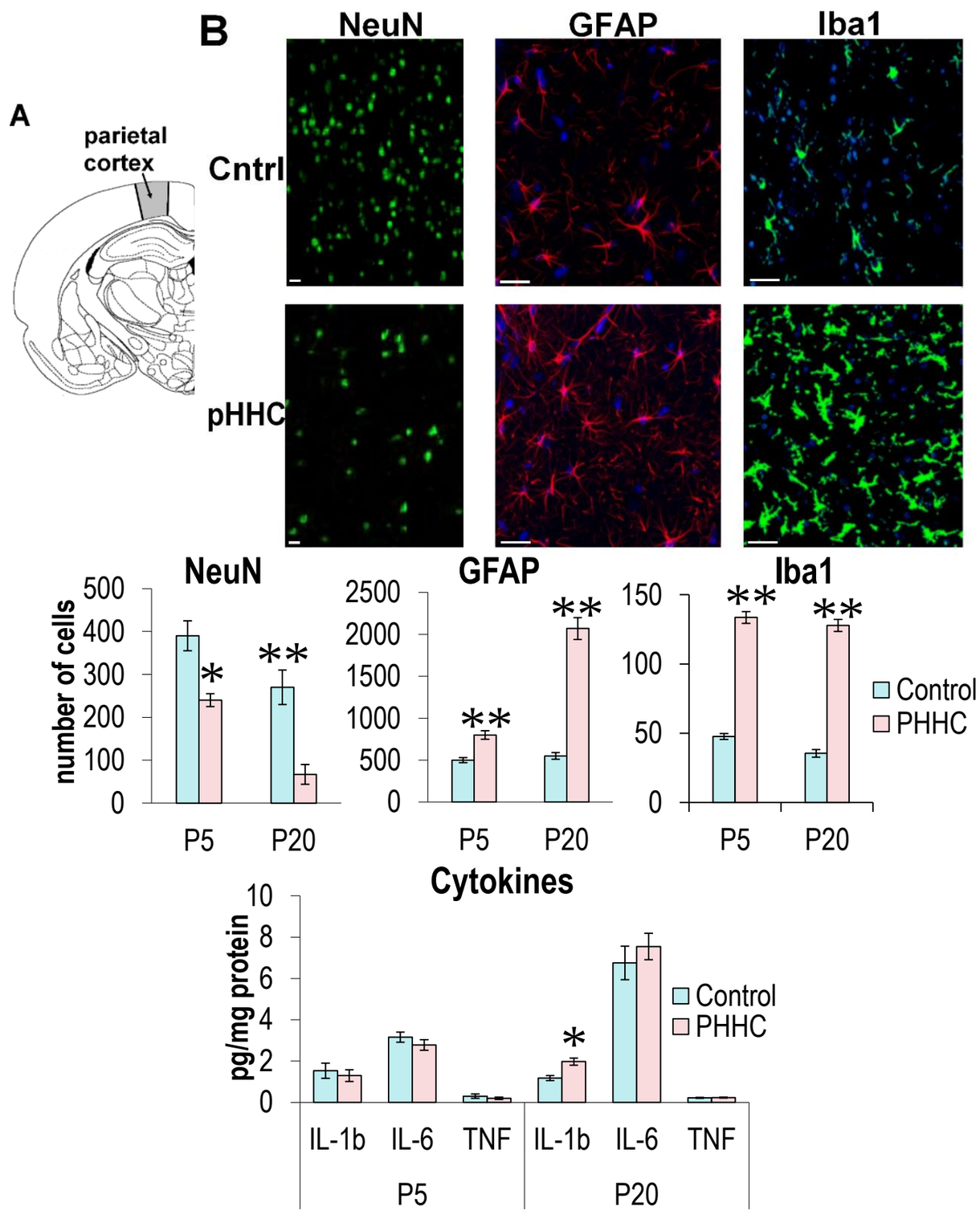

## Offspring cortex

### Neuroblast migration




Microphotographs of the parietal cortex of control rats on P5 and after PHHC. EdU-labeling was performed on the 14th day of embryonic development

### Cortex cellular composition and cytokines




## Conclusions

The data obtained indicate that maternal hyperhomocysteinemia affects in the placental content of IL-1β, neurotrophic factors, oxidative stress markers, which might underlie the changes in brain development and maturation through impaired cell migration and increased apoptosis, as well as induce neuroinflammation in the offspring postnatal period.

Values are expressed as M±SEM. * - $p \le 0.05$, ** - $p \le 0.01$, *** - $p \le 0.001$. FPP – fetal part of placenta, MPP – maternal part of placenta

## Acknowledgments

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