



DFG Graduiertenkolleg/ Research Training Group 1947

Biochemical, Biophysical, and Biomedical Effects of Reactive
Oxygen and Nitrogen Species on Biological Membranes

Freitag, den 04.08.2017, 14:00 Uhr c.t.
SR D213, Institut für Biochemie

Dr. Carsten Berndt

Department of Neurology, Medical Faculty
Heinrich-Heine Universität Düsseldorf

“Redox-regulated brain development”

Glutaredoxins are small oxidoreductases of the thioredoxin family regulating the protein thiol redox state.

We investigated the impact of glutaredoxin 2, a vertebrate-specific protein, on migration, proliferation, differentiation, and survival of neural cells in cell lines and primary cells, organotypic slice cultures, as well as zebrafish.

Whereas proliferation was not affected, we identified two specific pathways - Wnt and Semaphorin signaling - regulating migration and differentiation of both neuronal and oligodendrocyte progenitor cells in a redox-dependent manner. Since several embryonic pathways are reactivated during regeneration, we tested the influence of glutaredoxin 2 on onset and regeneration in models of neuroinflammation/multiple sclerosis.

Interestingly, in this context the unique coordination of its iron-sulfur cluster is essential for the protective mechanism mediated by glutaredoxin 2. In summary, our data underline the importance of glutaredoxin 2 in the developing, but also the adult brain.

Further reading:

Lepka K., Volbracht K., Bill E., Schneider R., Rios N., Hildebrandt T., Ingwersen J., Prozorovski T., Lillig C.H., van Horssen J., Steinman L., Hartung H.P., Radi R., Holmgren A., Aktas O., Berndt C. Iron-sulfur glutaredoxin 2 protects oligodendrocytes against damage induced by nitric oxide release from activated microglia, *Glia* Jun 2017. doi: 10.1002/glia.23178. [Epub ahead of print]. PMID: 28618115

All interested are cordially invited!



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