

Abstract:

Ferritins are complex protein structures for iron storage and detoxification. They are typically found in the cytoplasm of the cell; however, they were also identified in mitochondria and chloroplasts. They are distributed among all living organisms but uncommon in non-photosynthetic protists. Surprisingly, a ferritin gene was found in the genome of free-living amoeba *Naegleria gruberi*. Bioinformatic analysis confirms that it belongs to a group of eukaryotic ferritins. Upon creating antibodies in a laboratory rat, we localized the protein in mitochondria of *N. gruberi*. The native recombinant protein without the mitochondrial presequence was used for further *in vitro* experiments. Using growth experiments, we established that the expression of ferritin is dependent on a concentration of iron in cultivation media; however, we were not able to directly prove its ability to bind iron *in vitro*. We concluded that the function of the ferritin of *N. gruberi* is most likely related to metabolism of iron. Side experiments were focused on a different protein from the ferritin family – Dps protein in *Acanthamoeba castellanii*. Despite of a successful creation of antibodies, we were not able to detect the expression of protein neither in total cell lysates nor in subcellular fractions of acanthamoebas under regular or stress conditions.