

## **Lipidomic analysis of the secondary endosymbiosis-derived plastid of the flagellate *Euglena gracilis*.**

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*Euglena gracilis* is a photosynthetic flagellate. It possesses plastids derived from secondary endosymbiosis with a prasinophyte green alga closely related to *Pyramimonas parkeae*. Secondary endosymbiosis-derived plastids are in the most cases bounded by four membranes descending from two membranes of primary plastid, the plasma membrane of the symbiont, and the membrane of the host phagosome. *E. gracilis* plastids, however, are surrounded by only three membranes suggesting that one of the membranes, must have been lost. Currently, the knowledge about *E. gracilis* plastid membranes composition is limited. Thus, we investigated the composition of structural lipids in *E. gracilis* plastids. We isolated the plastids of *E. gracilis* with differential and rate zonal centrifugation method on Percoll gradient and determined lipids by HPLC/ESI-MS/MS method. The lipid composition of plastids was compared to the lipid composition of the whole cells and to purified *E. gracilis* mitochondria, potential contaminants of the plastid fraction. The whole cells of *E. gracilis* contain six classes of glycerolipids mainly represented by phosphatidylglycerols (PGs), digalactosyl diacylglycerols (DGDGs), monogalactosyl diacylglycerols (MGDGs), and sulfoquinovosyl diacylglycerols (SQDGs). Approximately 30 % of detected lipids remained undetermined. DGDGs, MGDGs and SQDGs are lipids specific to primary endosymbiosis-derived plastids and are also abundant in *E. gracilis* plastid membranes. The next step in our study will be a determination of lipid composition of each of the three *E. gracilis* plastid membranes using enzymatic treatment of isolated plastids.