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Description of *de novo* fatty acid biosynthesis of apicomplexan cousins *Chromera velia* and *Vitrella brassicaformis*

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Chromera velia and *Vitrella brassicaformis* are photoautotrophic alveolates recently found in Australian corals and shown to be the closest known photosynthetic relatives of apicomplexans. Parasites from the phylum Apicomplexa, such as Plasmodium causes malaria and other deadly diseases in humans and animals. *Chromera velia* and *V. brassicaformis* present extraordinary model organisms to study the evolution of parasitism in apicomplexans. Fatty acid biosynthesis is one of the most important biosynthetic pathways and provides building blocks for membranes. Combined genomic studies and analytical biochemistry techniques represent powerful tools that allows for detailed study of *de novo* synthesis of fatty acids. Both algae utilize type II fatty acid biosynthesis localized in the plastid to produce myristic, palmitic, and stearic acid. Subsequent modifications of saturated fatty acids are performed by elongases and desaturases localized in the lumen or membrane of the endoplasmic reticulum. Moreover, extensive lipidomic studies of fast growing *C. velia* revealed a surprisingly high ability to produce and accumulate fatty acids in the form of triacylglycerols. This feature of an apicomplexan photosynthetic cousin opens up the possibility of biotechnological applications.

Biography

Ales Tomcala has completed his PhD from University of South Bohemia. He has done his Post-doctoral studies from Institute of Organic Chemistry and Biochemistry of CAS and Institute of Parasitology of CAS. Currently, he is an Assistant Scientist in the Laboratory of Evolutionary Protistology dealing with Mass Spectrometry of Lipids and Metabolomics. He has published more than 25 papers in reputed journals.

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