

Supervisor's review of Luděk Kořený PhD

Luděk had worked in my lab for so long time, that it almost touches the borders of my infirm memories. He had started with his bachelor (since 2001), and consequently continued in master (since 2004) and PhD (since 2006) in my lab. Although I usually criticize such sustainable students, in this particular case I can be only happy (and definitely I am) that Luděk survived in my lab for 10 years. He has started with a bit unrelated topic working on the molecular phylogeny of chameleons, which was done in the frame of cooperation with David Modrý group in Brno. In that time my lab partially worked as a kind of molecular phylogenetic service for green labs with no experience with molecular studies. When the focus of the lab changed I offered him a topic for PhD concerning the evolution of tetrapyrrole synthesis in eukaryotes. I must say that Luděk has yielded this theme in an excellent and comprehensive way. He has identified all the genes of interest in *Euglena gracilis* and obtained those that were missing by RACEs. He proved that *E. gracilis* uses two separated pathways to synthesize tetrapyrroles and that such state was obviously present in the evolution of all complex plastids. Luděk greatly summarized the evolution of heme synthesis in kinetoplastid flagellates and complemented his sophisticated thoughts with phylogenetic analyses in a Current Opinion article published in IJP. His excellent work done on the evolution of the tetrapyrrole pathway in *Chromera velia*, the closest known photosynthetic relative to Apicomplexa, showed that it is already an ancestral phototroph that synthesize δ -aminolevulinate in mitochondrion, analogously to apicomplexan parasites. Consequently, *C. velia* appears to be the only known organism on Earth synthesizing chlorophyll from glycine and not from glutamate as done by other phototrophs. Last but definitely not least, Luděk discovered a metabolic curiosity specific for the plant parasitic kinetoplastid flagellate *Phytomonas serpens*, which appears to grow independently on the availability of heme, the most needed tetrapyrrole product in living systems.

Luděk is modest and discreet student with an open mind. I have never seen him annoyed, he is always having smile on his face, always willing to help anybody in the lab. I am pretty convinced that Luděk is already regular scientist and I am sure we will hear much about him in the future. I cordially recommend his outstanding PhD thesis for defense.

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Miroslav Oborník

Department of Molecular Biology
Faculty of Science
University of South Bohemia
Branišovská 31
37005 České Budějovice