Plastid evolution in dinoflagellates and beyond

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Dinoflagellates, an extremely diverse, widespread and abundant lineage of microbial eukaryotes, represent an ideal group to study evolution of plastid endosymbiosis due to their highly complex plastid evolution. Their dynamic plastid evolution has led to several instances of plastid replacement with either stably integrated new plastids or transient plastids stolen from their prey (kleptoplasts), regular losses of photosynthesis and once even the rare complete loss of the plastid. In this seminar I will present our work on a dinoflagellate with long-term kleptoplasts that has provided valuable insights into the order of events during plastid establishment. I will also talk about a newly-described plastid-bearing relative of a lineage that has lost its plastid completely, results from that work suggesting quick loss of plastidial traces in the nuclear genome. I will discuss the implications of the findings of both projects in the context of plastid evolution in eukaryotes in general.