

# **The effect of biosynthetic pathways on the stable isotopic composition of lipids in algae, bacteria and archaea**

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The natural isotopic composition of lipids in aquatic micro-organisms are determined by a multitude of factors, most importantly the carbon acquisition pathway (in case of  $^{13}\text{C}$ ) and biosynthetic pathways of lipids. Since the development of tools for rapid compound specific carbon isotope analysis in the early 90's a number of studies have been performed to constrain these effects though most have been on an empirical level while fundamental studies such as the pioneering studies of Monson and Hayes in the late 60's have been lacking. In this presentation I would like to summarize the results a number of these empirical studies done in our research group, specifically focusing on the stable carbon isotopic compositions of autotrophic Rubisco-using algae and archaea and bacteria using non-Rubisco acquisition pathways. These results will be used to interpret the stable isotopic composition of fossilized lipids derived from this micro-organisms.