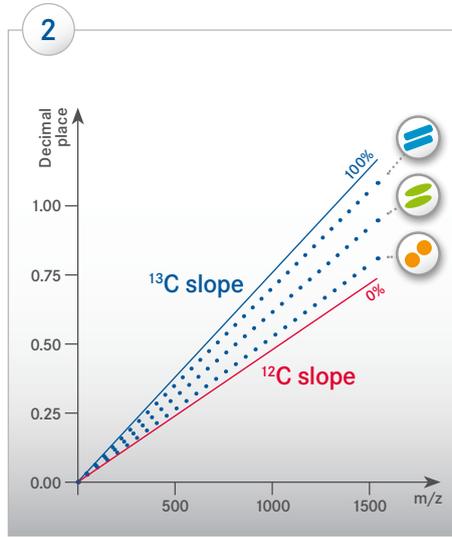


Differential ^{13}C incorporation by assimilation

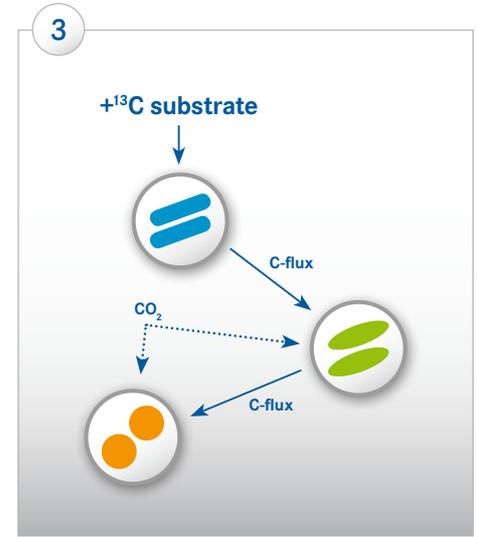
Assimilation of heavy stable isotopes into the biomass of various species depends on the turnover and the metabolic activity of the species. The incorporation of stable ^{13}C isotopes from a substrate can be used to pinpoint the metabolically active species within a consortium. The different incorporation levels are indicated by the intensity of blue staining.



Reference curves enable quantification

After cell harvesting and protein extraction, samples were typically digested and analyzed by Mass spectrometry. The isotopologues shifted to a higher mass range due to their incorporation of heavily labeled carbon into the proteins. A higher level of incorporation proves a higher metabolisation and thereby a primary role in the usage of the labelled substrate within the food web.

The incorporation of heavy stable isotopes into peptides/proteins can be estimated using the half decimal place rule.



Interdependencies in food web analysed by carbon flux

Peptides can be used to obtain phylogenetic information, for structural analysis of the consortium, and for physiological information about the actual state of the microbial cells.

Based on this information, C-fluxes and food web structures can be elucidated and may further help to reconstruct the interactions within microbial communities.