



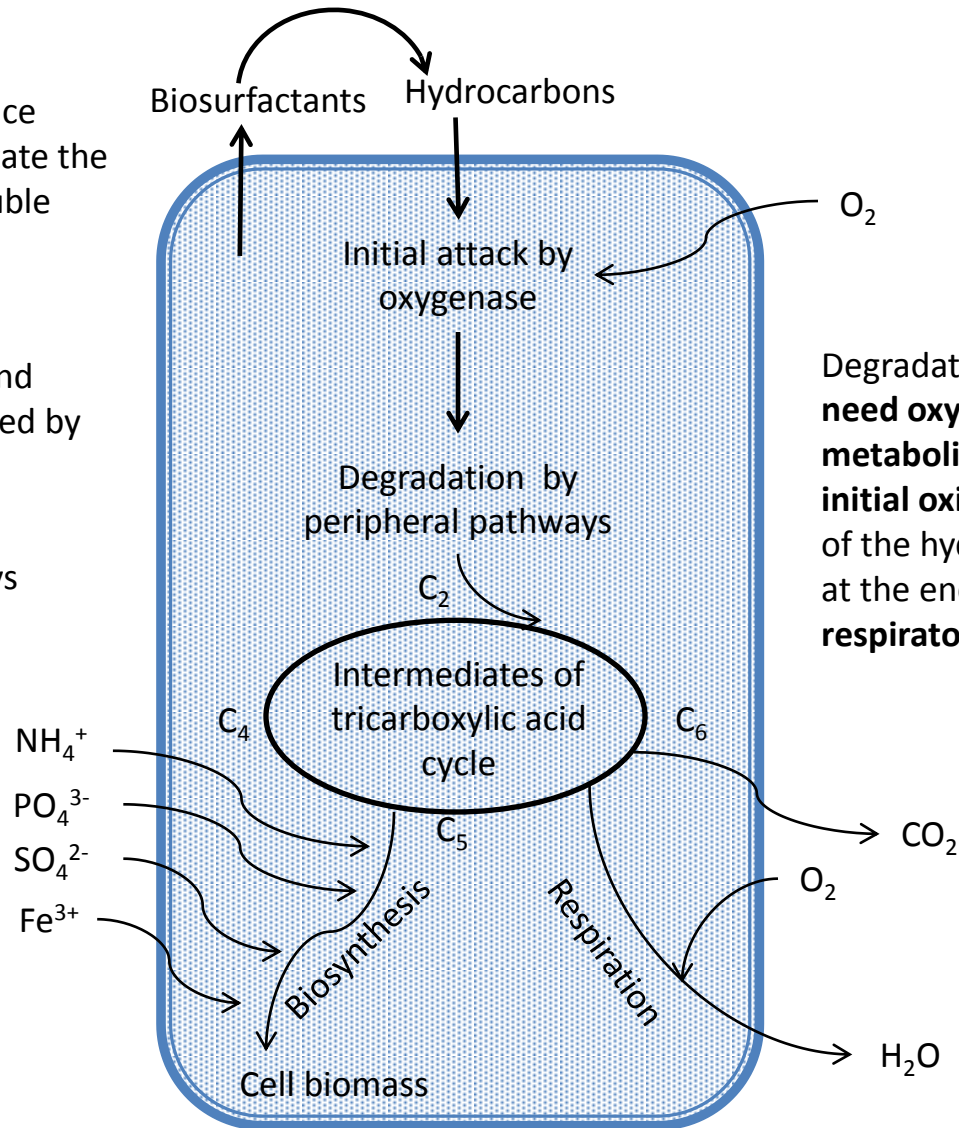
Cellular Diagram of Petroleum Metabolism

Cells within the oil-water interface produce **biosurfactants** to facilitate the uptake of relatively water-insoluble hydrocarbons.

The initial step in intracellular degradation is the activation and incorporation of oxygen catalyzed by **oxygenases** and **peroxidases**.

Peripheral degradation pathways convert the hydrocarbon into intermediates of the central metabolic pathway, e.g. the **tricarboxylic acid cycle**.

Cell biomass is synthesized from central precursor metabolites with micronutrients.



Degradative organisms **need oxygen at two metabolic sites**, at the **initial oxidation attack** of the hydrocarbon and at the end of the **respiratory chain**.

Reference: Fritsche, W. and Hofrichter, M. (2008) *Aerobic Degradation by Microorganisms*, in *Biotechnology Set*, Second Edition (eds H.-J. Rehm and G. Reed), Wiley-VCH Verlag GmbH, Weinheim, Germany.