

# BIOREACTOR ENGINEERING

## Chapter 7

# Stoichiometry of Microbial Growth and Product Formation

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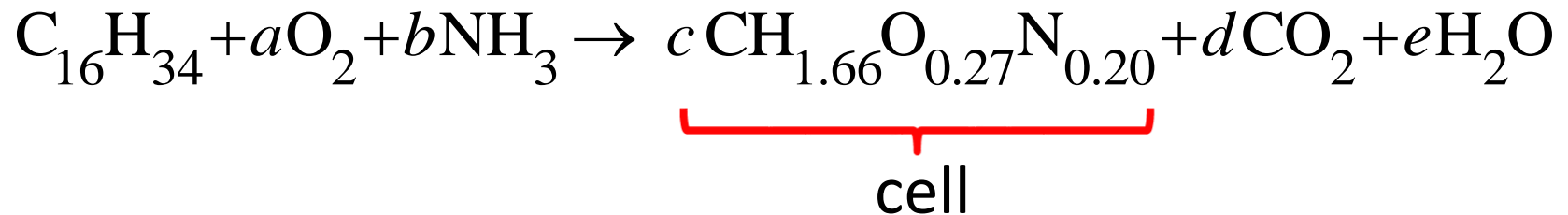
# Exercise 1

Cells from a fermentation were analysed and had an average composition of 47% carbon, 6.5% hydrogen, 31% oxygen, 10% nitrogen (on a weight basis) and the rest is ash. Determine the molecular formula of the cell ( $\text{CH}_\alpha\text{O}_\beta\text{N}_\delta$ )



## Exercise 2

Develop a stoichiometric equation for growth of a single-cell protein from hexadecane ( $C_{16}H_{34}$ ) with an RQ value of 0.43.



## Exercise 3

Suppose we want to produce 10 g of cell using hexadecane ( $C_{16}H_{34}$ ) as a carbon source. Determine the minimum amount of hexadecane that would be needed.

