

POSTER PRESENTATION

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Decision tree for selection of suitable cultivation parameters for mammalian cell culture processes

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Background

Development of bioprocesses for mammalian cells has to deal with different bioreactor types and scales. Bio-reactors might be intended for seed train and production, research, process development, validation or transfer purposes. During these activities, not only the problem of up- and downscaling might lead to failure of repro-ducibility, but also the use of different bioreactor geometries and operation conditions. In such cases, the criteria for bioreactor design and process transfer should be re-evaluated in order to avoid an erroneous transfer of cultivation parameters.

Concept

For selection of process conditions several questions can be asked:

- Type and scale of the intended cultivation system
- Which data are required (cell specific parameters, specific data for the cultivation system)?
- Are appropriate data e.g. for cell growth, substrate uptake, medium composition available?
- For which cultivation systems have these data been determined?
- Are data on power input, mixing time, oxygen transfer etc. available?
- Which methods can be used to determine or estimate the above mentioned parameters?

For selection and evaluation of suitable cultivation parameters a decision tree (Figure 1) has been formulated to provide a guideline for design of mammalian cell culture processes. References for process transfer

strategies are given for the following cases:

- Scale similar and power input similar: [1-3]
- Scale similar and power input similar: [4-6]
- Scale up and power input similar: [7,8]
- Scale up and power input similar: [4,9,10]

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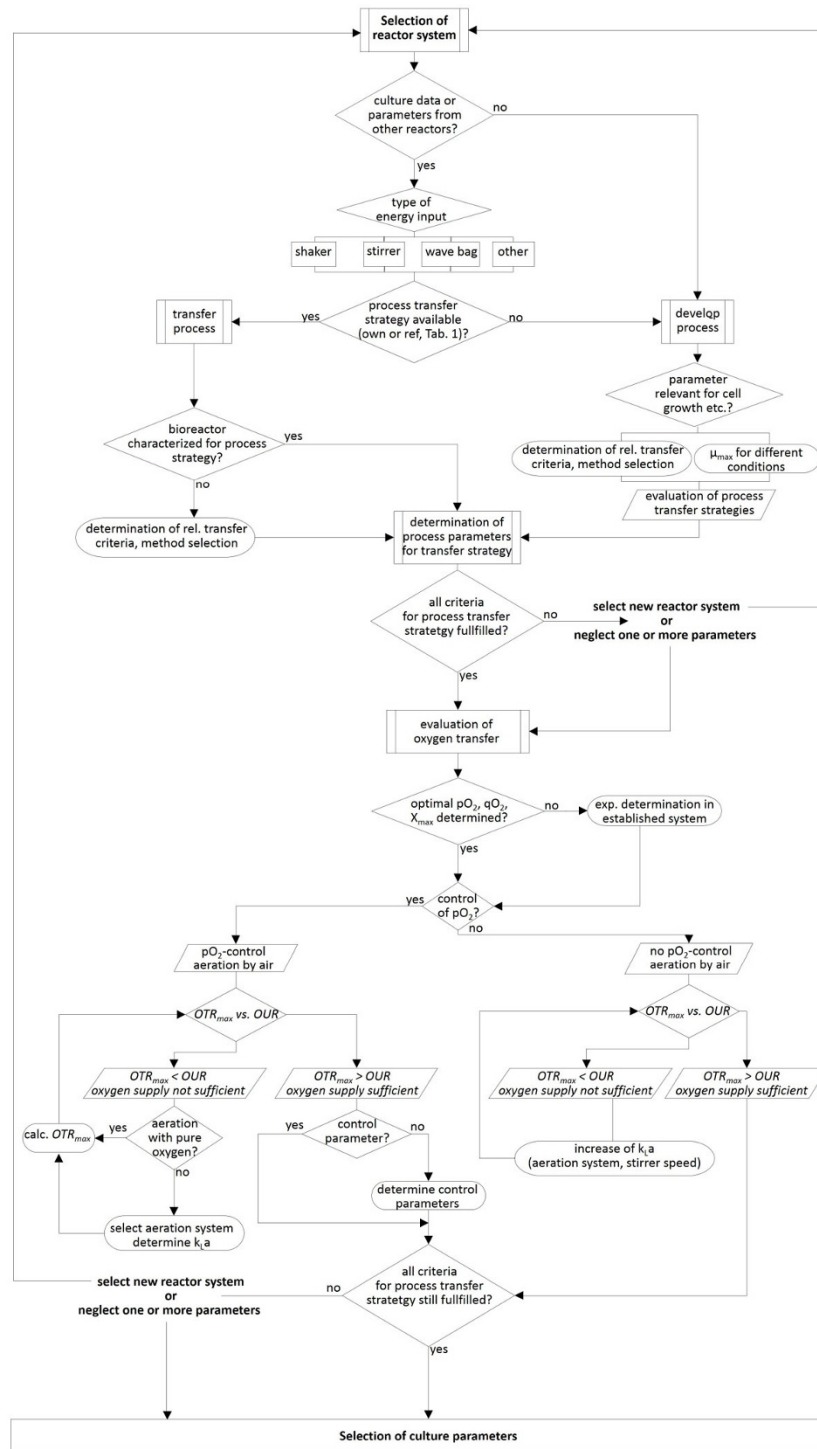


Figure 1 Decision tree for selection of suitable cultivation parameters μ - growth rate, OTR - oxygen transfer rate, OUR - oxygen uptake rate, k_a - volume specific mass transfer coefficient.

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