

Finding the most well-fitted objective function of yeast according to the external conditions

정동휘, 이종민*, 김정훈, 류현철
서울대학교
(jongmin@snu.ac.kr*)

An organism responses to the external environments by changing their internal metabolism. Flux(reaction rate) balance analysis is a method for searching the internal metabolism distribution of the organism. To use this technique we should suppose the objective function of the organism according to the external conditions because we can not solve this problem by simple linear algebra like matrix inverse. In other words, due to the fact that the degree of freedom of this problem is greater than zero, by supposing the objective function like maximization of biomass production rate or minimization of glucose consumption, we can know the simulated internal metabolism distribution of the organism. If we suppose different objective function, we may achieve different solutions according to the objective functions. So it is important to find the most well-fitted objective function according to the external conditions. Because there are experimental information of relative internal reaction rates of yeast according to oxidative and non-oxidative conditions, the most well-fitted objective functions are matched by the least square method.