Spring 5-11-2016

Preferentially selecting cellular metabolism and improving productivity by controlling do and Pco2

Jiayi Zhang
Genzyme, jiayi.zhang@genzyme.com

Ryan Cassidy
Genzyme

Mark Emanuele
Genzyme

Gonzalo Milet
Genzyme

Lada Laenen
Genzyme

PREFERENTIALLY SELECTING CELLULAR METABOLISM AND IMPROVING PRODUCTIVITY BY CONTROLLING DO AND PCO2

Jiayi Zhang, Genzyme – A Sanofi Company
Jiayi.Zhang@genzyme.com
Ryan Cassidy, Genzyme – A Sanofi Company
Mark Emanuele, – A Sanofi Company
Gonzalo Milet, – A Sanofi Company
Lada Laenen, Genzyme – A Sanofi Company

Key Words: glucose, metabolic pathways, pCO2, productivity, bioreactors

Cells utilize glucose as their main resource for deriving energy through ATP production. The quantity of ATP generated depends on the metabolic pathways that are employed, aerobic glucose metabolism or anaerobic glucose metabolism. Using our bench top bioreactor model, we have shown these two metabolic pathways can be preferentially selected by controlling the desired cell culture DO and pCO2, and productivity was increased as a result. The DO and pCO2 controlling strategy was implemented in at-scale bioreactors and yielded the expected metabolic and productivity outcome.