

Spring 5-11-2016

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

Jiayi Zhang

*Genzyme*, [jiayi.zhang@genzyme.com](mailto:jiayi.zhang@genzyme.com)

Ryan Cassidy

*Genzyme*

Mark Emanuele

*Genzyme*

Gonzalo Milet

*Genzyme*

Lada Laenen

*Genzyme*

Follow this and additional works at: [http://dc.engconfintl.org/cellculture\\_xv](http://dc.engconfintl.org/cellculture_xv)



Part of the [Biomedical Engineering and Bioengineering Commons](#)

---

## Recommended Citation

Jiayi Zhang, Ryan Cassidy, Mark Emanuele, Gonzalo Milet, and Lada Laenen, "Preferentially selecting cellular metabolism and improving productivity by controlling do and Pco2" in "Cell Culture Engineering XV", Robert Kiss, Genentech Sarah Harcum, Clemson University Jeff Chalmers, Ohio State University Eds, ECI Symposium Series, (2016). [http://dc.engconfintl.org/cellculture\\_xv/148](http://dc.engconfintl.org/cellculture_xv/148)

This Abstract is brought to you for free and open access by the Proceedings at ECI Digital Archives. It has been accepted for inclusion in Cell Culture Engineering XV by an authorized administrator of ECI Digital Archives. For more information, please contact [franco@bepress.com](mailto:franco@bepress.com).

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

Jiayi Zhang, Genzyme – A Sanofi Company

[Jiayi.Zhang@genzyme.com](mailto: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, pCO<sub>2</sub>, 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 pCO<sub>2</sub>, and productivity was increased as a result. The DO and pCO<sub>2</sub> controlling strategy was implemented in at-scale bioreactors and yielded the expected metabolic and productivity outcome.