

Spring 5-12-2016

Genomics based methodology of cell-culturemedia formulation for improved biotherapeutic productivity and quality consistency

Hemlata Bhatia

University of Massachusetts at Lowell

Seongkyu Yoon

University of Massachusetts at Lowell

Follow this and additional works at: http://dc.engconfintl.org/cellculture_xv



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

Recommended Citation

Hemlata Bhatia and Seongkyu Yoon, "Genomics based methodology of cell-culturemedia formulation for improved biotherapeutic productivity and quality consistency" 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/178

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.

**Genomics based methodology of cell-culture
media formulation for improved bio-therapeutic productivity and quality consistency**

Hemlata Bhatia and Seongkyu Yoon

Department of Biomendical Engineering and Biotechnology, University of Massachusetts,
Lowell, MA, USA.

Biosimilar drugs are emerging very fast as the patents of innovator's drugs are expiring. Media formulation development has to be carried out for each biosimilar, which takes up a significant amount of time and generally, a random approach is taken to meet comparability requirement and improve the product titer. A targeted approach with genome information of host cell as a function of media composition can provide useful information to explain the product titer variability and comparability. A 2-step correlation model explaining relationship between cell-culture productivity and quality, and media compositions taking gene expression as intermediate attributes can provide a precise and robust platform. Experimental design was conducted for different media compositions having different productivity enhancer components to get a wide range of product titer. Gene expression data obtained from the above cell culture samples shows significant differences among these samples. This is an on-going work. Expected outcome of this work is the development of a novel mechanistic model based on gene expression data, which will potentially decrease the time for media formulation and is expected to be applicable to different types of cell clones.