

## Cell Culture Engineering XV

An ECI Conference Series

May 8-13, 2016  
Greater Palm Springs Area, California, USA

---

### 2016 Cell Culture Engineering Award Winner

#### Konstantin B. Konstantinov

Konstantin Konstantinov has served the cell culture community for over two decades with pioneering contributions to the field and through his leadership and vision for the future. He was instrumental in the development of perfusion cultivation processing which has been incorporated into current commercial processes, and his vision for integrated continuous bioprocessing has profoundly altered the landscape and future of cell culture bioprocessing and biopharmaceutical manufacturing. Konstantin has been involved in the process development and commercial support of many biotherapeutics including Kogenate®, Kogenate-FS®, Myozyme®, Cerezyme®, Fabrazyme®, Thyrogen®, Campath/Lemtrada, BAY 81-8973, and BAY 94-9027. While his impact to the industry has been transformational, Konstantin has also been an important contributor to the cell culture literature as well with over 50 peer-reviewed publications. He has given over 150 conference presentations, reflecting his openness in sharing advances with the larger community. He has also chaired the Cell Culture Engineering conference, together with James Piret, and was the visionary and one of the founders of the highly successful ECI series on Integrated Continuous Biomanufacturing. He has continued to make sustained contributions to the cell culture community by co-chairing sessions and serving as an active member of the CCE steering committee. Among his most significant contributions community are:



- **Advanced Process Control of Perfusion Processes:** Konstantin recognized that next-generation manufacturing processes could be substantially more sophisticated and he formulated a long-term vision which began with rigorous process monitoring and the evaluation of novel on-line sensors followed by early laboratory-scale proof of concept demonstrations. The latest iteration of the control system Konstantin pioneered is currently in use at Bayer both in process development labs and for GMP manufacturing of clinical material.
- **Perfusion Process Development:** No other individual in the cell culture community has influenced perfusion process development more than Konstantin. His group was the first to successfully demonstrate large-volume cryobag preservation of cells, considerably shortening seed-train expansion. Konstantin's group came up with an ingenious buffering system which reduced bioreactor pCO<sub>2</sub> by ~70%. Additionally, Konstantin was central to the advancement of Bayer's cell retention technology, recognized by the ACS Industrial Biotechnology Award in 2004.
- **Integrated Continuous Biomanufacturing:** Konstantin has pioneered the concept of extending continuous manufacturing to downstream processing and ultimately all the way to drug product manufacturing. For instance, his group demonstrated volumetric productivities about 10 times higher than current commercially licensed fed-batch processes. Higher productivities can considerably reduce the footprint of a manufacturing facility and capital costs.
- **Mentorship:** Attracting and nurturing talent has been another defining attribute of Konstantin's career. This is perhaps best exemplified by the success of former members of his cell culture group at Bayer whose success makes Konstantin's contribution unique in the cell culture field.

This prestigious award recognizes outstanding contributions to the field of Cell Culture and is given bi-annually at the ECI Cell Culture Engineering conference. Former recipients are Wei-Shou Hu (2002), Eleftherios T. Papoutsakis (2004), W. Robert Arathoon (2006), Martin Fussenegger (2008), Michael J. Betenbaugh (2010), James M. Piret (2012), and Jeffrey J. Chalmers (2014).