

Letter to the Editor

Confocal 3D DNA cytometry: Assessment of required coefficient of variation by computer simulation

To the Editor,

We appreciate the interesting and useful comments by Yuval Garini on our paper [3,7]. Dr. Garini states that new developments in imaging technique soon become available for clinical applications. Garini expects these developments to lead to an increase in throughput, i.e., the number of nuclei being measured per unit time will increase. To a great extent we agree and we look forward to apply the new technology to help us to solve one of the main problems we encounter with our measurements [1,6,7]. However, we would like to emphasize that interpretation of the images remains another time-consuming factor that can not be neglected, e.g. [2,4]. In our experience, more than 2 hours of the total time to complete a measurement is needed for segmentation, especially for manual corrections [8]. Besides faster imaging therefore a better image quality like those obtained with 4π microscopy [5] will further decrease the time needed for analysis.

Lennert S. Ploeger, André Huisman, Hub F.J. Dullens
and Paul J. van Diest
*Department of Pathology, University Medical Center
Utrecht, Utrecht, The Netherlands*

References

- [1] J.A. Belien, A.H. van Ginkel, P. Tekola, L.S. Ploeger, N.M. Poulin, J.P. Baak and P.J. van Diest, Confocal DNA cytometry: a contour-based segmentation algorithm for automated three-dimensional image segmentation, *Cytometry* **49** (2002), 12.
- [2] D. Chiu, M. Guillaud, D. Cox, M. Follen and C. Macaulay, Quality assurance system using statistical process control: an implementation for image cytometry, *Cell. Oncol.* **26** (2004), 101.
- [3] Y. Garini, Letter to the editor, *Cell. Oncol.* **28** (2006), 121.
- [4] M. Guillaud, D. Cox, A. Malpica, G. Staerkel, J. Maticic, D. Van Niekirk, K. Adler-Storthz, N. Poulin, M. Follen and C. Macaulay, Quantitative histopathological analysis of cervical intra-epithelial neoplasia sections: methodological issues, *Cell. Oncol.* **26** (2004), 31.
- [5] S.W. Hell, M. Schrader and H.T. van der Voort, Far-field fluorescence microscopy with three-dimensional resolution in the 100-nm range, *J. Microsc.* **187** (1997), 1.
- [6] A. Huisman, L.S. Ploeger, H.F. Dullens, N. Poulin, W.E. Grizzle and P.J. van Diest, Development of 3D chromatin texture analysis using confocal laser scanning microscopy, *Cell. Oncol.* **27** (2005), 335.
- [7] L.S. Ploeger, J.A. Belien, N.M. Poulin, W. Grizzle and P.J. van Diest, Confocal 3D DNA cytometry: assessment of required coefficient of variation by computer simulation, *Cell. Oncol.* **26** (2004), 93.
- [8] L.S. Ploeger, A. Huisman, J. van der Gugten, D.M. van der Giezen, J.A.M. Belien, A.Y. Abbaker, H.F. Dullens, W. Grizzle, N.M. Poulin, G.A. Meijer and P.J. van Diest, Implementation of accurate and fast DNA cytometry by confocal microscopy in 3D, *Cell. Oncol.* **27** (2005), 225.