Reviewer's report

Title: Automated Recognition of Cell Phenotypes in Histology Images based on Membrane- and Nuclei-Targeting Biomarkers

Version: 1 Date: 3 March 2007

Reviewer: Klaus Werner Kayser

Reviewer's report:

General
The article describes a automated color segmentation and quantification system that is applicable to images of cells obtained from tissue culture. Specifically the authors deal with biomarkers attached to cell membranes and nuclei. It is certainly of clinical and experimental value and should be published provided the following suggestions have been fulfilled.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
- The authors assume that the applied markers only react with antigens etc. located in the cell membrane or nuclei (which is true for the majority, but not for all cases). As they only consider pixel in their clustering matrices, some remarks should be given how to detect stainings not associated with membranes etc.
- There are some "open accessible" measuring systems in the internet available that provide automated measurements of immuno-stained histological images (EAMUS.de), and which have been described in detail recently (Kayser et al. Diagnostic Pathology, 2006). The authors should discuss the pros and cons of their pixel-addressed system to those that are "object-addressed".
- The authors should mention that their system addresses to segmentation of pixels "related to a specific color". The question arises whether it is able to quantify the color intensity, as this has not been mentioned and described in the article.
- I assume that the system measures images of PAP-stained slides (brown color). The authors should mention this in their chapter Material and Methods.
- The authors should give the corresponding image/microscope magnifications in all their included figures.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of Interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.