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Image Analysis and Platform Development for Automated Phenotyping in Cytomics

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Stellingen behorende bij het proefschrift

“Image Analysis and Platform Development for Automated Phenotyping in Cytomics”

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door

Kuan Yan

1. Segmentation algorithms relying on the training of a global threshold are unsuitable as solutions for image segmentation in high-content screen studies. (Ch. 2)
2. The performance of object tracking can be improved by increasing temporal resolution of the time-resolved microscopy. However, the temporal resolution is currently limited by mechanical barriers rather than experimental protocols. (Ch. 3)
3. The collection of features discussed in this thesis is capable of capturing changes in cell behavior. Adding more features does not provide additional value to the image-derived data analysis. (Ch. 4)
4. Numerical modeling of adhesion-to-migration correlation paves the way for the further understanding of the molecular mechanism behind the regulation of cell migration. (Ch. 5)
5. In drug discovery, a combined solution of image and image-derived data analysis is the best way to provide an objective understanding of drug-induced responses. (Ch.4 and Ch. 5)
6. The use of a laboratory information management system can significantly reduce user-generated errors during the image and image-derived data analysis of high-content screening. (Ch. 6)
7. For a research group in bioinformatics it is natural to start a symbiotic relationship with groups from other research fields such as biology, computer science, mathematics and etc.
8. Bioinformatics is the research field of analyzing large biological data set using computational solutions. It is therefore surprising that, in the Dutch Bioinformatics community, high-content screen analysis is not recognized as a bioinformatics research field.
9. It is easier to publish a bioinformatics paper in a life sciences journal than in a computer science journal.
10. A cutting on the education budget is the most unwise decision a government can ever make.
11. A term of mandatory participation in physical exercises should be included in the PhD contract.