Classification of cell populations in CTC enriched samples by advanced image analysis

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Abstract

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Automated CTC Classification

Quantification of nucleated cells by gating for various parameters using CellSearch images.

CellSearch® cartridge for CTC enrichment

Improving Cell Classification

CellSearch populations are improved by adding CD166-PerCP to the immuno-staining and using a LED light source, instead of a mercury arc lamp.

Deep Learning

For segmentation of fluorescent signal:
Is there any signal present?

For classification of cell populations:
Is this cell a CTC or not?

Conclusion

By using advanced image analysis of fluorescent images obtained from EpCAM enriched blood samples, the complete cellular composition of the sample can be obtained.

Operator variability in classification of objects is eliminated as well as the time spend by the operators to review the images.

Cell Populations

Classification and visualization of various cell populations by gating for several parameters in ACCEPT.

CTC Scoring Consensus

A total of 100 cells were scored by an Expert Panel, 15 Reviewers and by Deep Learning

Accept

www.github.com/LeonieZ/ACCEPT