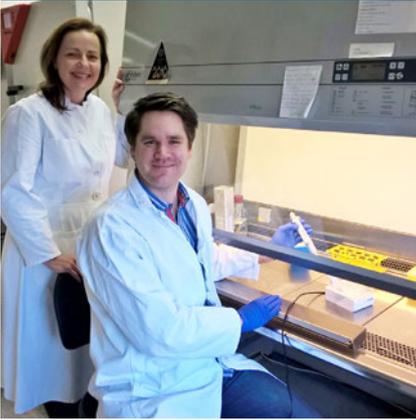


CytoSMART™ Lab for Undirected Migration



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Speed-analysis of Undirected Migration of NK-92 Cells under the Influence of the Adipokine Leptin

Research Interest

Our workgroup at Prof. Kielstein's lab investigates the link between obesity, the adipokine leptin and the influence of leptin on natural killer (NK) cells. Obese individuals have a higher likelihood to get various types of cancer [e.g. postmenopausal breast cancer, hepatic- and colon cancer]¹ and do have a higher recurrence- and death-probability compared to lean patients.² One of the possible reasons has been demonstrated by our workgroup – we could show that the cytotoxicity of NK cells is impaired under the influence of elevated leptin concentrations in obese individuals.³

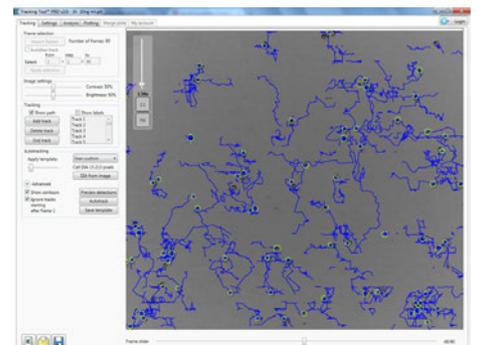
It has also been shown that leptin affects the remodeling of the structural protein actin.⁴ As actin is one of the main proteins involved in active cell migration, we hypothesized that higher concentrations of leptin might affect the migration speed of NK cells as well.

The Experiment

We used the CytoSMART™ System as an affordable and easy-to-use system to create time lapse recordings of the undirected migration of NK cells under the influence of physiological and pathophysiological (equal to normal weight and obese individuals) concentrations of leptin. The recorded videos have been analyzed by the Tracking Tool™ PRO cell tracking software (Gradientech, Sweden) regarding the average migration speed of the cells.



The video of undirected migration of NK-92 recorded with the CytoSMART™ Lux 10X Device (Snapshot interval: 1 minute) can be watched online at www.lonza.com/cytosmart.



Analysis of CytoSMART™ Video by the Tracking Tool™ PRO cell tracking software (Gradientech).

 Visit www.lonza.com/cytosmart to watch the CytoSMART™ Videos.

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Conclusion

The CytoSMART™ System completely fulfills our needs and is an adequate option for all cell-tracking tasks where a high resolution or fluorescence is not required. The big advantage in comparison to “traditional” live cell imaging systems certainly is the small size and the possibility to use the device in your already existing incubator, with no need for further investments.

References

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3. Jahn J, Spielau M, Brandsch C, Stangl G, Delank K, Bahr I, Berreis T, Wrann CD, Kielstein H (2015) Obesity (Silver Spring, Md.) 23:2233–2241.
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