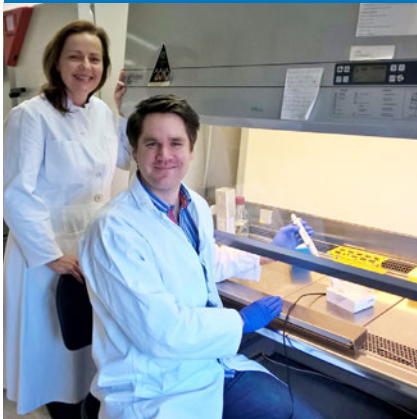


## CytoSMART™ Lab for Undirected Migration



Trutz Fischer and Prof. Heike Kielstein  
Martin Luther University of Halle-Wittenberg  
Medical Faculty, Department of Anatomy and  
Cell Biology

### 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]<sup>1</sup> and do have a higher recurrence- and death-probability compared to lean patients.<sup>2</sup> 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.<sup>3</sup>

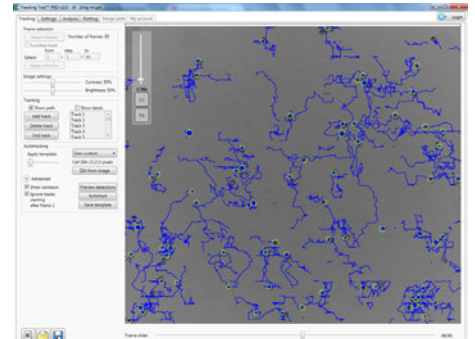
It has also been shown that leptin affects the remodeling of the structural protein actin.<sup>4</sup> As actin is one of the main proteins involved in active cell migration, we hypothesized that higher concentrations of leptin might affect the migration speed of NK cells as well.

#### 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](http://www.lonza.com/cytosmart).



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



Visit [www.lonza.com/cytosmart](http://www.lonza.com/cytosmart) to watch the CytoSMART™ Videos.

## 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

1. Bhaskaran K, Douglas I, Forbes H, dos-Santos-Silva I, Leon DA, Smeeth L (2014) Lancet 384:755–765.
2. Parekh N, Chandran U, Bandera EV (2012) Annu. Rev. Nutr. 32:311–342.
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.
4. Harvey J, Hardy SC, Irving AJ, Ashford MLJ (2000) J. Physiol 527:95–107.

## Interested in becoming a CytoSMART™ Lab as well?

Then visit our website at [www.lonza.com/cytosmart](http://www.lonza.com/cytosmart) and apply online.

You will receive a CytoSMART™ System on loan for 4 weeks and your project will be featured on the Lonza website.

## Contact Information

### North America

Customer Service: +1 800 638 8174 (toll free)  
[order.us@lonza.com](mailto:order.us@lonza.com)  
Scientific Support: +1 800 521 0390 (toll free)  
[scientific.support@lonza.com](mailto:scientific.support@lonza.com)

### Europe

Customer Service: +32 87 321 611  
[order.europe@lonza.com](mailto:order.europe@lonza.com)  
Scientific Support: +32 87 321 611  
[scientific.support.eu@lonza.com](mailto:scientific.support.eu@lonza.com)

### International

Contact your local Lonza distributor  
Customer Service: +1 301 898 7025  
Fax: +1 301 845 8291  
[scientific.support@lonza.com](mailto:scientific.support@lonza.com)

### International Offices

Australia	+61 3 9550 0883
Belgium	+32 87 321 611
Brazil	+55 11 2069 8800
France	0800 91 19 81 (toll free)
Germany	0800 182 52 87 (toll free)
India	+91 22 4342 4000
Japan	+81 3 6264 0660
Luxemburg	+32 87 321 611
Singapore	+65 6521 4379
The Netherlands	0800 022 4525 (toll free)
United Kingdom	0808 234 97 88 (toll free)

---

Lonza Cologne GmbH – 50829 Cologne Germany

For research use only. Not for use in diagnostic procedures.  
All trademarks belong to Lonza or its affiliates or to their respective third party owners. The information contained herein is believed to be correct and corresponds to the latest state of scientific and technical knowledge. However, no warranty is made, either expressed or implied, regarding its accuracy or the results to be obtained from the use of such information and no warranty is expressed or implied concerning the use of these products. The buyer assumes all risks of use and/or handling. Any user must make his own determination and satisfy himself that the products supplied by Lonza Group Ltd or its affiliates and the information and recommendations given by Lonza Group Ltd or its affiliates are (i) suitable for intended process or purpose, (ii) in compliance with environmental, health and safety regulations, and (iii) will not infringe any third party's intellectual property rights.