



*LemnaTec High content screening*

FEASIBILITY OF TESTS TO EVALUATE NEURITE GROWTH BY LEMNATEC SYSTEMS

LemnaTec GmbH  
Matthias Eberius  
Schumanstr. 18  
52146 Würselen  
02405 / 4126-0  
matthias.eberius@lemnatec.de  
[www.lemnatec.de](http://www.lemnatec.de)

## **General conditions and image material**

The following paper is a short first feasibility study on possibilities to quantify neurite growth. For this first evaluation only a low number of highly compressed images were available.

The following evaluation shows how neurite growth could be evaluated by LemnaTec HTS systems.

## **Image acquisition and resolution**

### ***Illumination***

Neurites will grow in multi-well like structures on solid medium. LemnaTec systems include a wide range of different illumination capabilities from backlight and top-light to cloudy-day top-light, dark-field or specific fluorescence imaging. Thus illumination of the neurites is possible within LemnaTec HTS systems.

### **Resolution**

The images provided show that neurite diameter is in the range of several  $\mu\text{m}$ . Based on this first estimate LemnaTec optics with Macro-zoom optics can provide appropriate resolution with reasonable depth of field. The latter aspect is of especially high importance to perform tests under high throughput conditions.

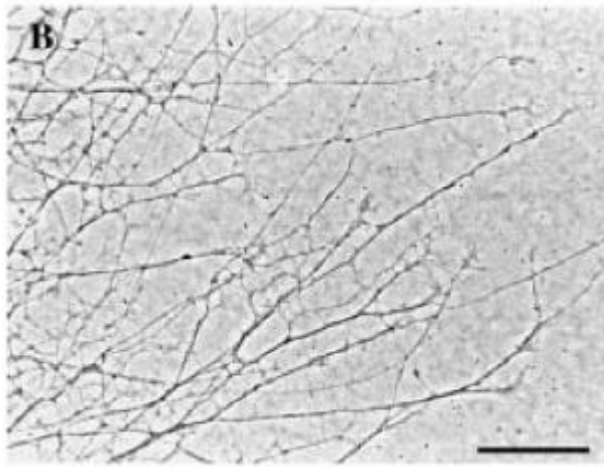
## **Results**

The following images show an analysis based on the images provided. Due to extreme compression of images any more detailed analysis based on non-compressing images will significantly rise the quality of the results. Nevertheless the results show the high capability of the LemnaTec software to provide image processing results.

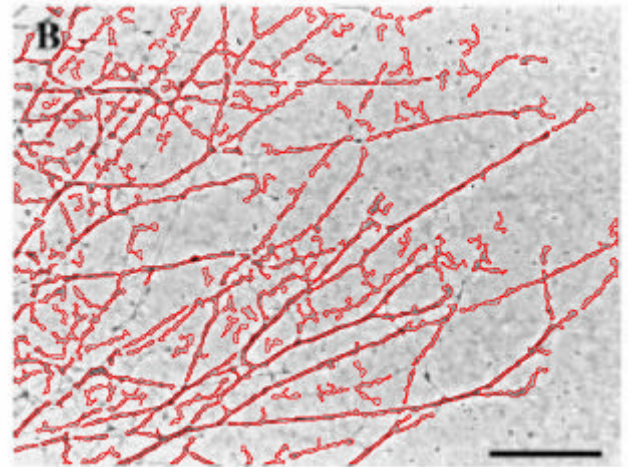
Based on these imaging results further data on

1. neurite length
2. neurite area
3. neurite branching
4. neurite orientation
5. neurite density
6. neurite growth/density as a function of distance from a starting line

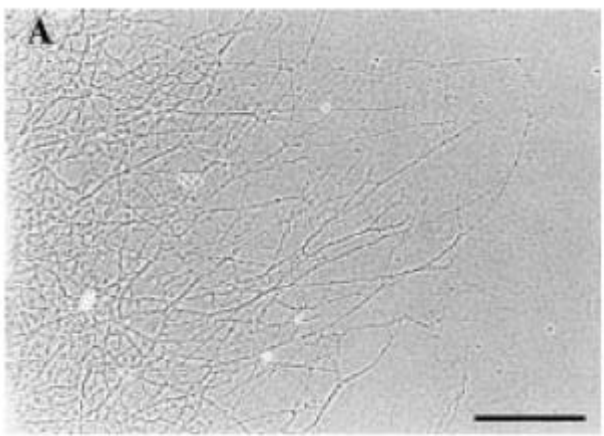
Further customer specific parameters can be implemented based on user demand. Analysis was performed with specific LemnaTec Bonit software for assessment of root-like structures.



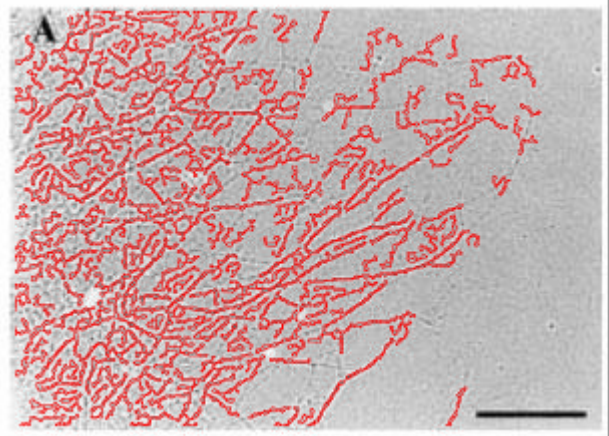
Original image, bar represents 50 µm



LemnaTec analysed image, bar represents 50 µm



Original image, bar represents 100 µm



LemnaTec analysed image, bar represents 100 µm

## **Conclusion**

LemnaTec can provide successful first positive assessment of feasibility for neurite growth analysis based on LemnaTec image analysis. The imaging conditions needed suggest high feasibility to achieve this within LemnaTec HTS systems.

For any further question please do not hesitate to contact Matthias Eberius, LemnaTec.