Application Note

Cell Migration/ Wound Healing Assay with Lumascope Cell Imager

The cell migration assay is a common assay that is typically used to evaluate metastasis or angiogenesis. One popular method uses a pipet tip to create a wound in adherent cells on the culture dish or microplate surface and thus it is called a "Wound-Healing Assay". This Application Note will describe how to combine the Lumascope 500 and Image J plugin software into a Wound Healing Assay. One advantage of this solution is that the user does not need to remove the culture dish or microplate out of the incubator and take it to the microscope many times. That process also makes it difficult to see the same cells every time. Instead the Lumascope microscope fits inside the incubator so the same field of cells is imaged every time. Using the Lumascope makes monitoring the Wound Healing Assay easy and simple!

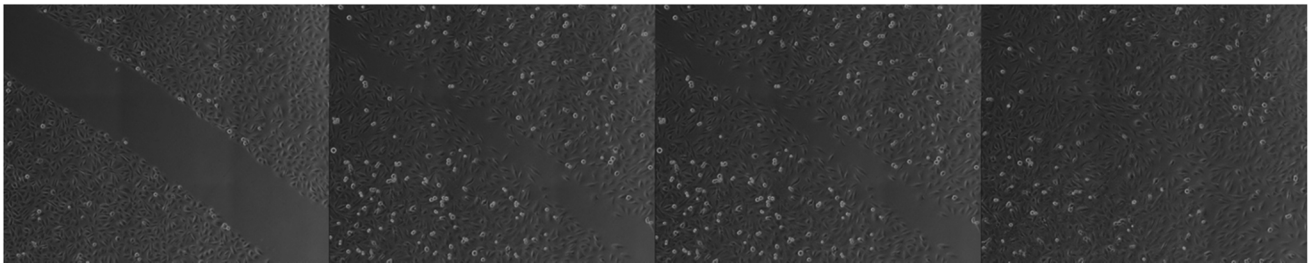
Materials

- Cells, culture vessel and culture media
- CO2 incubator
- Lumascope 500 and computer
- Image J software with Wound Healing Assay Tools plugin

Methods

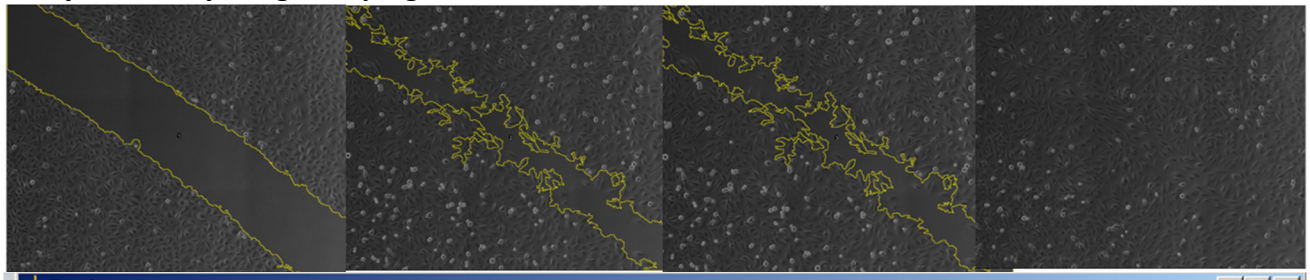
- Prepare cell cultures according to standard protocol.
- Using 75% alcohol, wide down Lumascope 500 and all accessories including USB cable.
- Put Lumascope 500 (containing 10x or 20x objective) into CO2 incubator and connect it to computer outside incubator with Lumaview 500/400 software already downloaded.
- Launch Lumaview 500/400.
- Put culture vessel on Lumascope 500 stage.
- Focus the cells using the Live Image window and Lumaview.
- Let Lumascope equilibrate for 30 minutes and focus again. If focus is stable (no change in focus was needed), you are ready to initiate time-lapse.
- Set time-lapse parameters in Lumaview so that the white LED is automatically turned on and off and the camera captures the images at the correct times. In this type of assay, the user needs to decide on the time intervals, and 20-30 minutes is suggested. Make sure to save the settings entered.
- Start the program (user does not need to stand by the incubator).
- Stop the program and use Image J to analyze the cell migration.

Time lapse images, 40 min/ run



Application Note

Analysis date by Image J & plugin software



Results

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	Area	Mean	XM	YM	Perim.	IntDen	%Area	RawIntDen	Slice
1	2926281	250.673172	1732.219643	1415.563897	12164.739459	733540140	98.303205	733540140	1
2	1579281	229.656800	1834.519493	1490.637741	31040.526317	362692620	90.061490	362692620	2
3	1579281	229.656800	1834.519493	1490.637741	31040.526317	362692620	90.061490	362692620	3

Conclusions

The small and compact Lumascope 500 microscope is a smart choice for live cell studies. Using the Lumascope makes it easy to capture images at each timepoint. The Lumascope 500 combined with Image J software and the Wound Healing plugin makes the analysis easy. This combination is also good economically compared to upgrading a standard microscope.

Notes

Lumascope is a trademark of Etaluma, Inc.
Image J is software provided by NIH in the U.S. at http://rsbweb.nih.gov/ij.