# Nuclei FL Area (1F)

General Purpose

Nuclei FL Area (1F) is a two channel fluorescence application which uses a nuclei staining (e.g. Hoechst or Dapi) to locate all cell nuclei and one additional fluorescence staining to detect the cell cytoplasm. The image analysis calculates, inter alia, the ratio of the detected cell area to the number of detected cell nuclei. It can be used to track cell shrinking as an indicator of toxicity, e.g. for investigating cancer immunotherapy. For healthy cells the ratio of the cell area to the number of cell nuclei would be bigger than for affected cells.

The fluorescence marker for the cytoplasm can be chosen according to your biological demands.
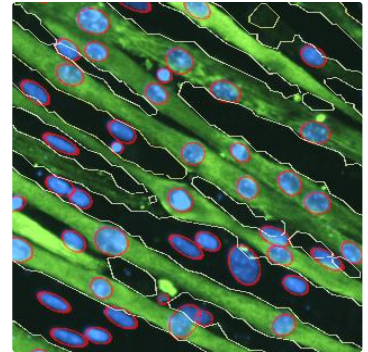
Result Table

• Nuclei Count [#]	Sum of all detected cell nuclei
• Sum of Nuclei Sizes [µm²]	Total area of all detected cell nuclei
• Cell Area Fluo 1 [mm²]	Detected cell area of the additional fluorescence channel (Fluo 1/CH1)
• Cell Area Count Fluo 1 [#]	Number of detected cell areas of the additional fluorescence channel
• Avg Nucleus Size [µm²]	Average size of a cell nucleus
• Avg Nucleus Fluorescence Intensity BC [Color]	Average fluorescence intensity of a nucleus over background level
• Cell Confluence Fluo 1 [%]	Percentage of the cell area of the additional fluorescence channel related to evaluated area
• Avg Fluo CH1 Intensity BC [Color]	Average fluorescence intensity of all detected cell areas
• FL Area 1F/#Nuclei [µm²]	Ratio of the detected cell area to the number of detected cell nuclei

SYNENTEC
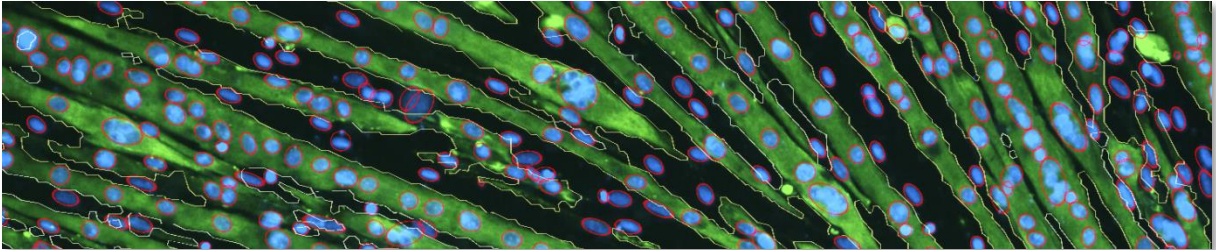
This example shows eGFP producing cells in a toxicity study. The cell nuclei are stained with DAPI and the GFP in the cytoplasm emits in green.

The heatmap on the right hand side shows an overview of an evaluated 384 well plate. The brighter the red color is the higher is the ratio of the fluorescent cytoplasm area to the number of nuclei (FL Area 1F/#Nuclei) and the healthier are the cells.
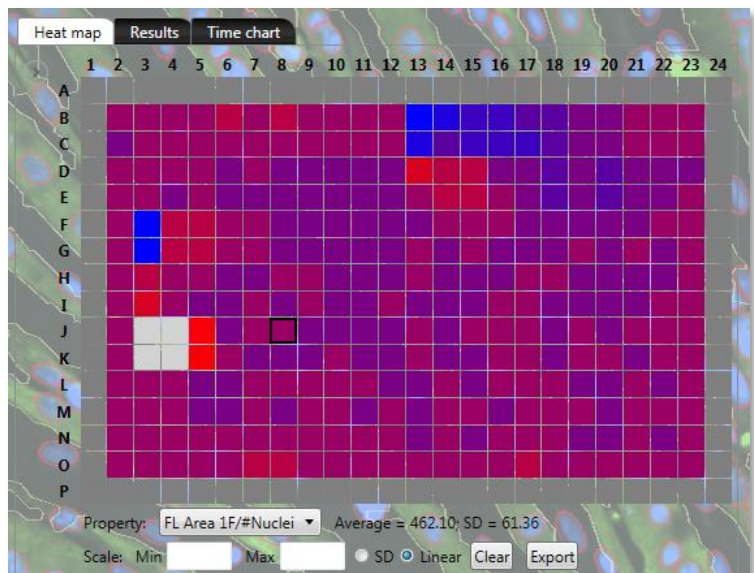
The first figure illustrates a result image:

Marked red   Detected nuclei
Marked yellow   Detected cell area