

MICRONUCLEUS ASSAY

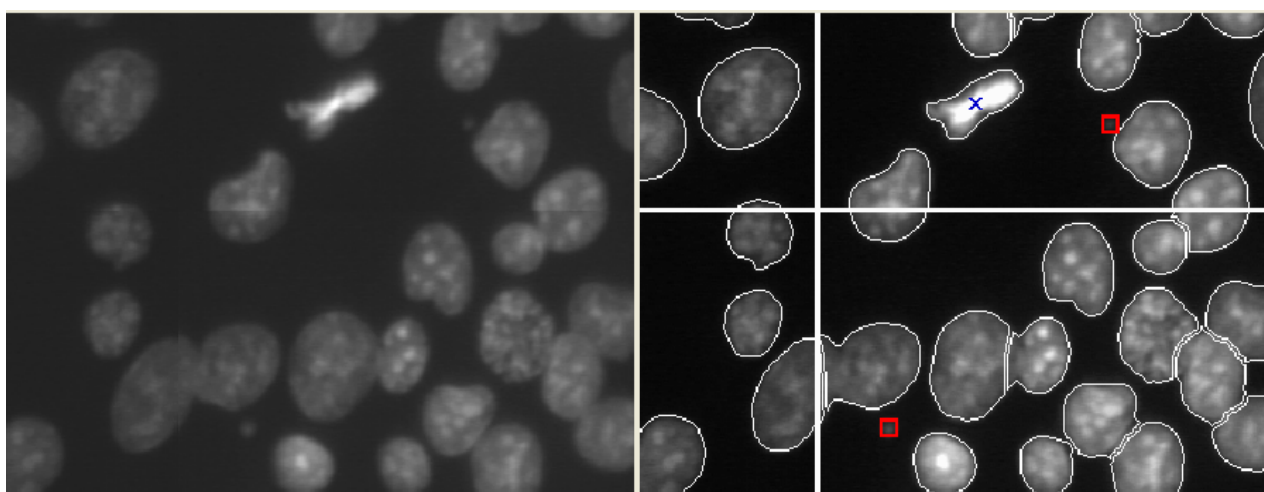
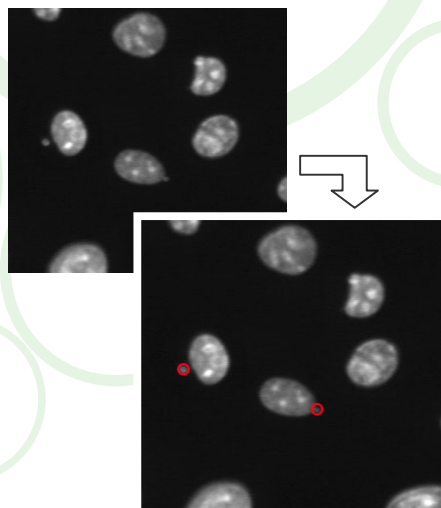
FAST AND SENSITIVE AUTOMATED DETECTION OF MICRONUCLEI

DOMAIN: TOXICOLOGY

The Micronucleus Assay is used for the automated detection of micronuclei in cell lines, smears or primary cell cultures. A micronucleus is the erratic (third) nucleus that is formed during the anaphase of mitosis or meiosis. The MN- test is used in toxicological screening for potential (genotoxic) compounds that cause chromosomal damage. The assay is recognized as one of the most successful and reliable assays for genotoxic carcinogens.

The automated analysis of DCILABS is extremely **fast** (ca. 1 image/second) and **extremely accurate**; not only the separated micronuclei are detected but also the more biologically important micronuclei that are partly attached to the parent nucleus. The standard output features feature set includes micronuclei features (number, size, etc.) and features relating to the parent nuclei (size, **cell cycle information**).

Results may be easily verified in the viewer module and the algorithm parameters can be easily adapted to assure correct analysis for a wide range of samples. The **image importer tool** allows using images from various scanning stations. You can also upload your samples to our service lab for analysis.



Analysis of a (stitched) image of a cell line stained with DAPI. Left: original image, right: output image. White lines indicate the individual image tiles. Red squares indicate the positions of the micronuclei.

MICRNUCLEUS TEST (MNU)

Usage	used for	Automated detection of micronuclei in cell lines, smears or primary cell cultures
	application domain	Toxicology
	key-words	Micronucleus, genotoxic screening
Image and system requirements	image input	Images of 2D cell cultures, cell smears, ...
	image importers	Image importers are available for TIFF files, MAIA Scientific, Incell, Nikon and Andor microscopes. Specific importers can be developed on request.
	minimum System Requirements	A PC running Windows XP/Vista/7 (32- or 64-bit), 2GB RAM recommended. A large monitor with a minimum resolution of 1280x1024.
Sample requirements	sample types	The assay can be performed on different cell types relevant for human biomonitoring: lymphocytes, fibroblasts, exfoliated epithelial cells, ...
	staining	Fixed cells with nucleus stain (e.g. DAPI)
Output	Features	Total number of detected cells in the image.
		Number of micronuclei detected in the image.
		Number of dividing cells found among the cells.
		Percentage of Micronuclei