

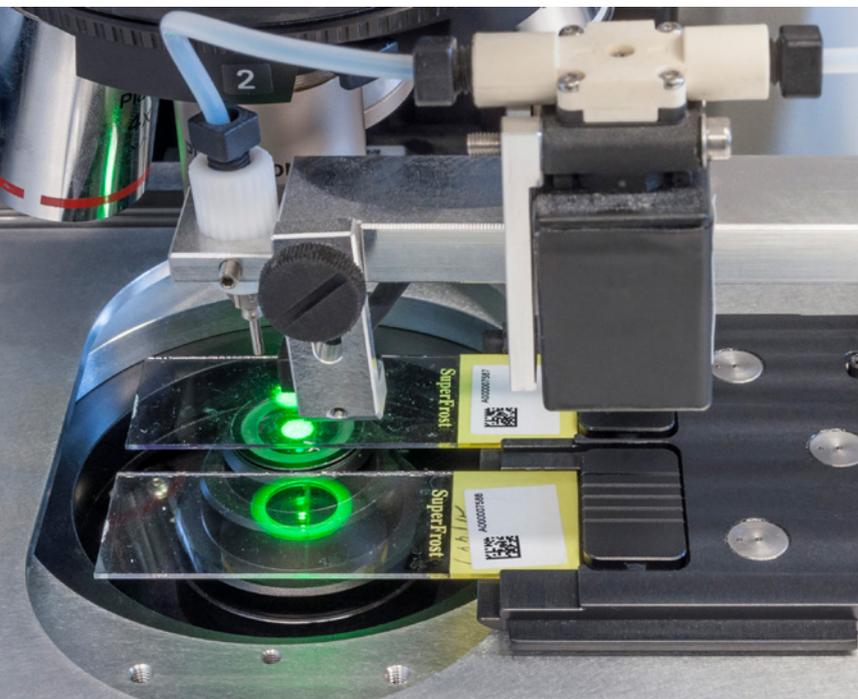


# Metaphase Finder

LUCIA Cytogenetics



[www.lucia.cz](http://www.lucia.cz)



Immersion oil dispenser attached to the microscope

## Comfort

- **Press one button**  
Once the system is adjusted by the administrator, the scanning process can be run by a single button.
- **Walk away**  
The slide loader capacity of 120 slides allows about 4 hours of unattended scanning at approximate speed under 2 minutes per full slide (~90mm<sup>2</sup> using 10x objective).
- **Check on the progress anytime**  
The scanning results are immediately accessible within the database.

## Performance

- The network-accessible database provides fast access to the metaphase galleries including the stage coordinates data.
- Metaphases can be located and reviewed on any workstation thanks to the automatic coordinates recalculation procedure.
- Metaphase images can be captured automatically using a high magnification (100x) oil immersion objective. The selection of metaphases to be scanned can be either automatic or manual.

## Reliability

The Metaphase Finder system consists of carefully selected top quality hardware components all produced by well-established manufacturers. In a very compact setup, you can find the following devices cooperating together:

- **Nikon Eclipse Ni-E microscope:** The computer controlled illumination ensures stable light conditions. The absolute coordinates focus control ensures reliable and fast auto focus.
- **QI825 camera:** A fast CCD camera with internal cooling.
- **Märzhäuser SCAN:** 8-position scanning stage developed especially for applications like Metaphase Finder which requires automatic, fast, and very exact precision.
- **Märzhäuser Slide Express:** Combination of the slide loader and an integrated scanning stage provides precision, speed and reliability of the scanning.
- **Lucia Immersion Oil Dispenser:** Allows automation of the high-magnification image acquisition phase, which would otherwise need human assistance.

## Flexibility

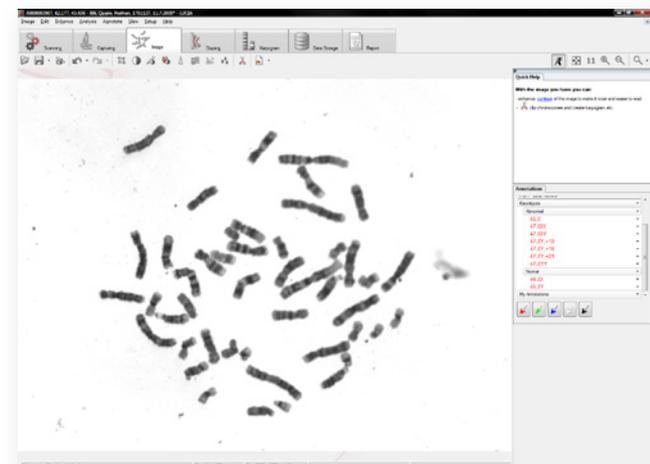
The loader with capacity of 120 slides\* together with an integrated bar code reader open ways to build a highly effective system.

\* Optionally, a basic 4-8 slides scanning stage can be used.

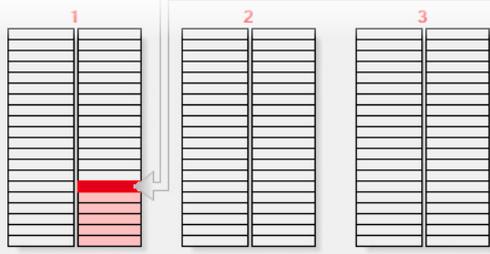
- The included metaphase classifier is fine-tuned to handle different sample types and preparation techniques.
- Thanks to the network-based database and full bar code support, the system is broadly extensible and can be adapted at any time to meet increasing demands.



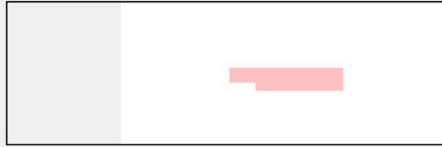
System comes with three magazine containing 60 clips holding up to 120 slides.



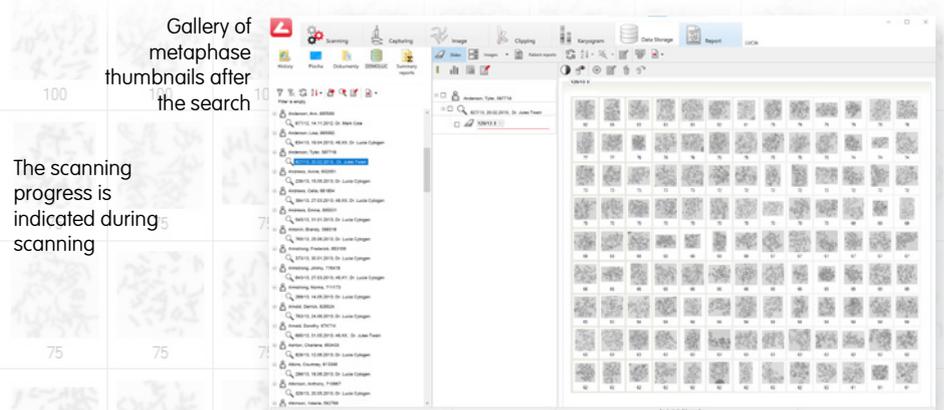
High magnification image ready for the analysis



Ready

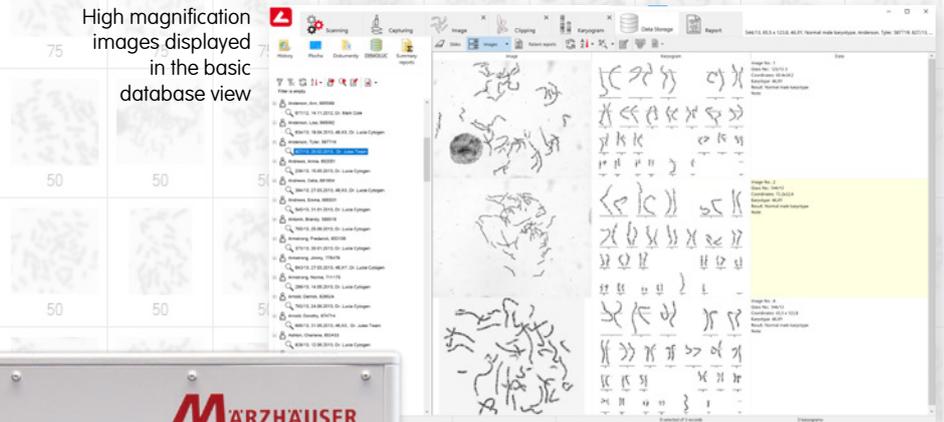


Gallery of metaphase thumbnails after the search



The scanning progress is indicated during scanning

High magnification images displayed in the basic database view



SlideExpress

MARZHAUSER WETZLAR



Märzhäuser Slide Express attached to Nikon Ni-E microscope

# Workflow

You can vary the system to fit the intended workflow. Options are numerous: a one-computer system or a network of workstations dedicated to single tasks:

**Slides Registration:** Registering new slides via a light-weight database client. Each slide gets a unique barcode associating it with a patient in the database. After the registration, the slides are placed into the loader cassettes. Patient data can be transferred to the database from a laboratory information system (LIMS).

**Automatic Metaphase Search:** Metaphase Finder scans the slides and acquires thumbnail images of the metaphases found. Each image is assigned to a patient based on the bar-code information. Everything is saved to the database.

**Scanning and Image Acquisition Speed:** System is able to scan microscopic slides by 10x magnification and capture 10 high resolution images in 5 minutes.

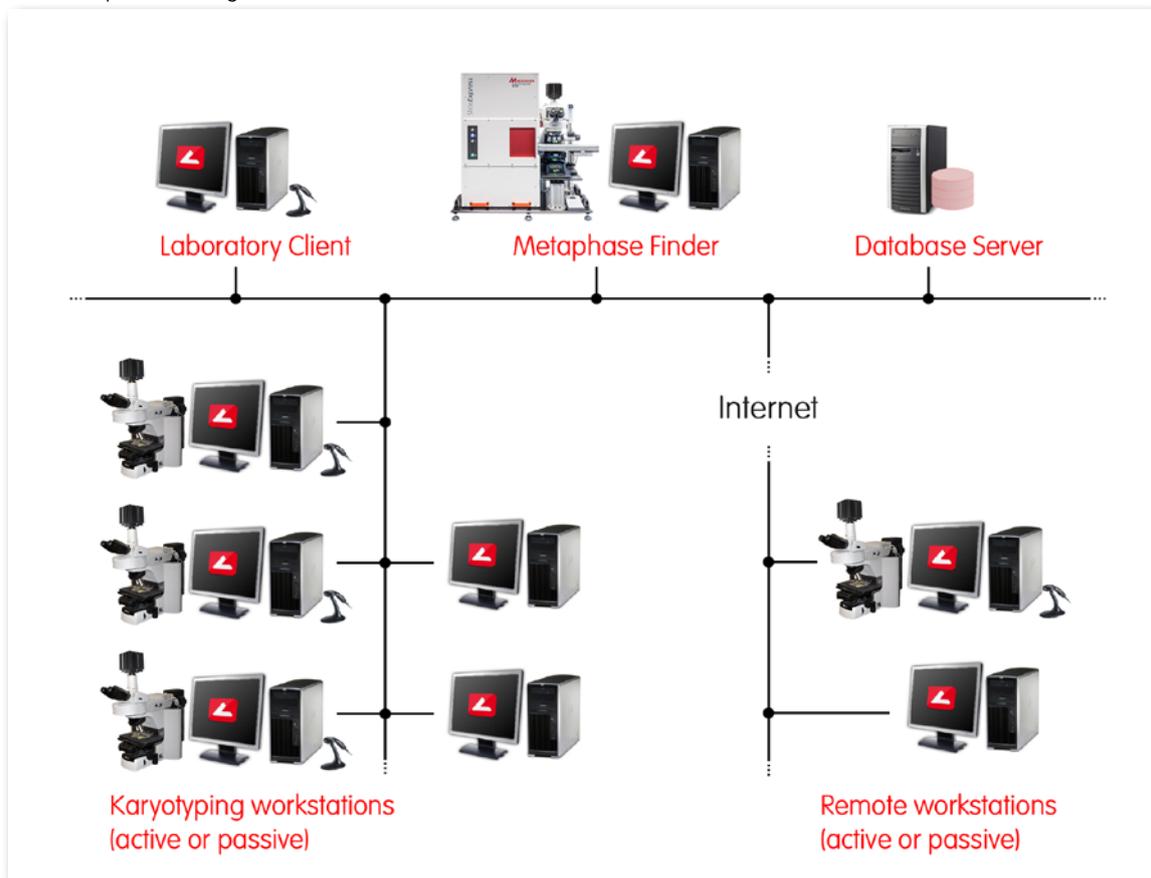
**Slides Distribution:** Slides which have been searched are either left in the Metaphase Finder for automatic image acquisition or passed to an active workstation for manual image acquisition and analysis.

**Image Acquisition:** A high magnification oil immersion objective is used to make a full-resolution image of the suitable metaphases. The image is saved into the database.

**Analysis:** Full-resolution images are analysed by software means of LUCIA Cytogenetics.

**Reseek Metaphases:** Coordinates of each metaphase and its quality indexes are saved into the database during the search. Combined with the barcode identification, the system can physically locate any metaphase on any slide anytime.

One of the possible configurations:



	Metaphase Finder	Active Workstation	Passive Workstation	Laboratory Client
Consists of: (Optional)	Microscope, Camera, Märzhäuser SE, Lucia	Microscope, Camera, Lucia	(Microscope), Lucia	Lucia LAB database client
Slides Registration	•	•	•	•
Automatic Metaphase Search	•	-	-	-
High Magnification Image Acquisition	•	•	-	-
Analysis	•	•	•	-
Reseek Selected Metaphase	•	•	(•)	-