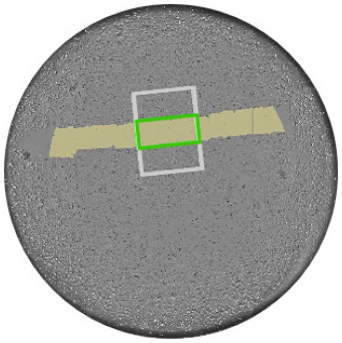
Wound Healing

GENERAL PURPOSE

A convenient method to analyze cell migration is a wound healing assay, in which an artificial cell-free gap (wound) is created on a confluent monolayer of cells. Closure of the wound is monitored over time by microscopy. SYNENTEC developed a wound healing assay in a high-throughput format using their automated microscopes NYONE® and CELLAVISTA® and image processing of the YT®-Software. The *Wound Healing* image analysis has two phases, the first to detect cell-free area in a confluence monolayer and a second to measure and analyze the wound over time.



RESULT TABLE PHASE 1: WOUND-HEALING ROI FINDER

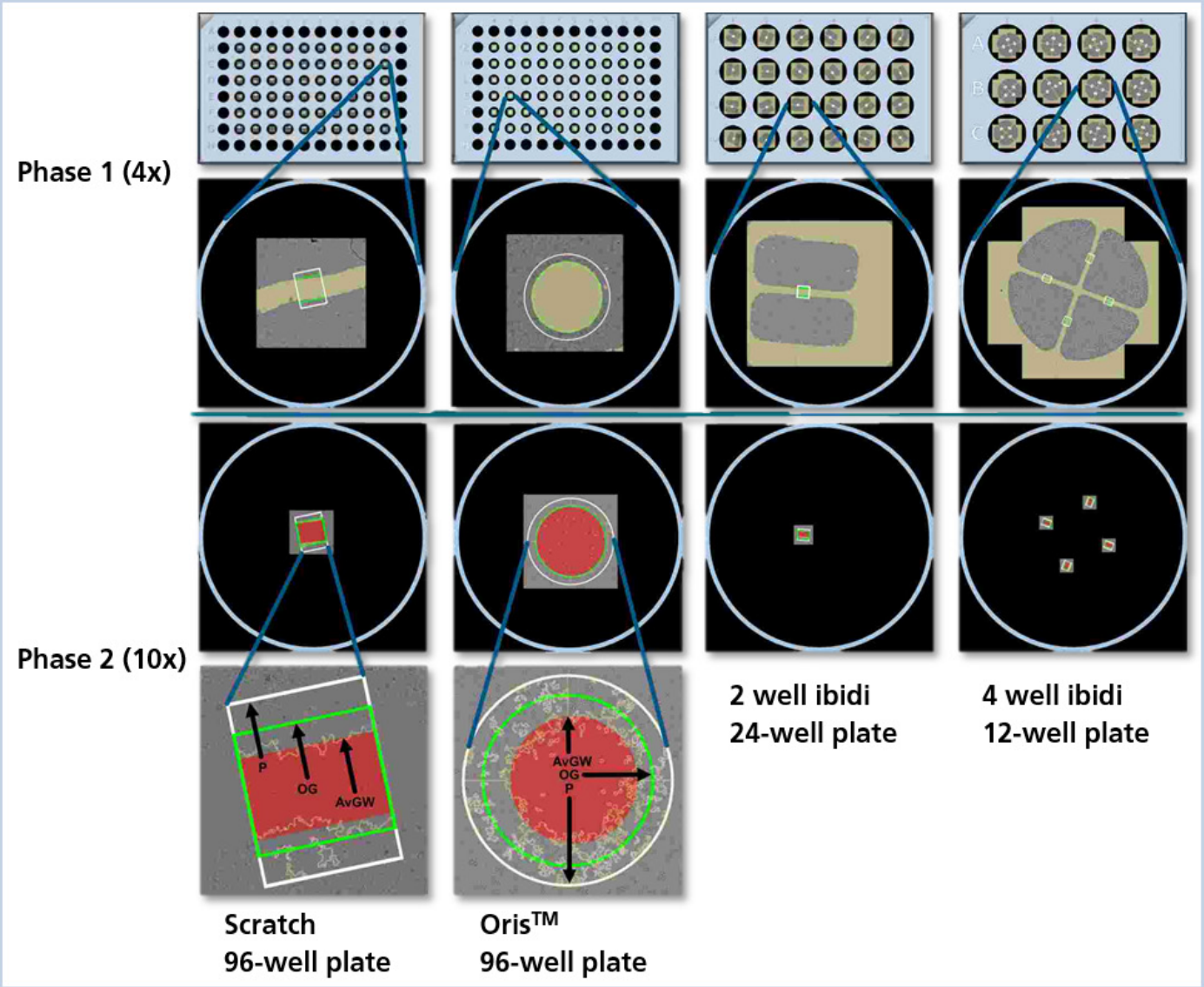
Gap ROI	Number of ROI (Region of Interest) with wound gap

RESULT TABLE PHASE 2: WOUND HEALING

Evaluated Area	Area that is evaluated by the image processing settings in mm^2 (corresponds to the area of the white periphery box)
Cell Area on Gap	Area covered by cells within the gap recognized in Phase 1 in mm^2 (green box)
Cell Area on Gap Periphery	Area covered by cells within the cell periphery as defined in Phase 1 (white box) minus the Cell Area on Gap in mm^2
Gap Area_t0	Area of the original gap as defined in Phase 1 in mm^2 (green box)
Gap Periphery Area_t0	Evaluated Area (white box) minus Gap Area_t0 (green box) as defined in Phase 1 in mm^2
Avg Gap Width	Average distance between the migrating/invading edges of the wound (width of red box) in µm
Confl on Gap	Cell confluence in the original gap as defined in Phase 1 i.e. percentage of the gap area that is covered by cells (Cell Area on Gap/Gap Area_t0 · 100)
Confl on Periphery	Cell confluence in the cell periphery i.e. percentage of the periphery area that is covered by cells (Cell Area on Gap Periphery/Gap Periphery Area_t0 · 100)

EXAMPLE

The example shows different formats and methods of wound generation and their detection with SYNENTEC's 2-phase *Wound Healing* image analysis.



The image processing operator of the first phase automatically analyzes the cell-free area and creates ROIs, the operator of the second phase analyzes the confluence in the original gap (OG, **green box**) and the periphery (P, **white box**) and determines the average gap width (AvGW, **red box**). The cell-free area is marked **yellow**.

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