Superior Performance in
Naturopathic Microscopy

NeoGenesis Systems
MICROSCOPES DESIGNED FOR LIVE BLOOD ANALYSIS

# THE GOLD STANDARD IN BRIGHTFIELD & DARKFIELD MICROSCOPES FOR LIVE & DRY BLOOD ANALYSIS

## The Universal NGS-2020 Microscope Range

# NOT ALL MICROSCOPES ARE CREATED EQUALLY

Not all darkfield microscopes are suitable for analysing live blood in darkfield. To ensure that you are able to see all the anomalies potentially visible in live blood, choose the system developed by the global leaders in naturopathic microscopy. With more than 20 years of experience in the field, we know exactly what specifications are needed in a live blood system. Standard commercially available microscope systems do not have the necessary features. This is why our microscope systems are manufactured in Japan according to our own set of unique specifications to ensure optimal performance in naturopathic microscopy.

## POWERFUL ILLUMINATION SYSTEM

- 9W LED illumination: Equivalent to 100W halogen. Ideal for detailed darkfield analysis. Available on all LED models.
- 50W halogen illumination: Available on all 50W models.

## WIDE MAGNIFICATION RANGE

- Industry-leading wide optical magnification range, unique to the Neogenesis range of micoscopes: 40X - 4000X.
- Eyepieces: 40X - 1000X
- On-Screen: 160X - 4000X

## HIGH GRADE OPTICS

- All optical components are of the highest quality to ensure flawless imaging at high magnification.
- Objectives: 5 high-end plan-achromatic objectives, including a 100X oil immersion objective with built-in iris diaphragm (essential for darkfield).

## VERSATILE DIGITAL IMAGING

- Both camera options are compatible with major operating systems (Windows & MAC OS).
- Featuring a high video frame rate at high resolution to ensure smooth live blood viewing.
- High sensitivity to accommodate darkfield analysis.

## DURABLE, RUGGED DESIGN

- Constructed from high quality, durable materials, ensuring a high degree of reliability and a minimum amount of downtime.
- No compromise on quality with inferior materials that are prone to accelerated wear and tear.
- Backed by a 2-year warranty (not offered by other manufacturers).

## CARDIOID DARKFIELD CONDENSER

- Featuring a high-end cardioid oil immersion darkfield condenser to ensure sharp and flawless darkfield images, where the full spectrum of darkfield anomalies are clearly visible.
- Low illumination systems can not use cardioid darkfield condensers, resulting in inferior darkfield images with insufficient contrast.

# BUILT FOR THE NATUROPATHIC MICROSCOPIST

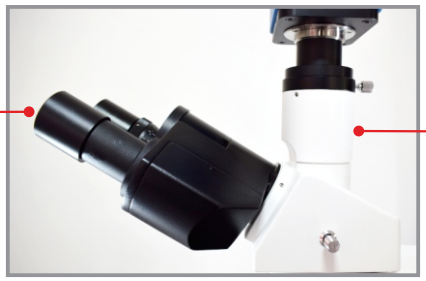
A live blood system in a busy practice must be reliable and user friendly. It should allow the microscopist to concentrate on the client, and to not be distracted by cumbersome microscope adjustments and settings. The Universal NGS-2020 range of microscopes have been developed with the needs of the naturopathic microscopist in mind, delivering superior performance in naturopathic microscopy.

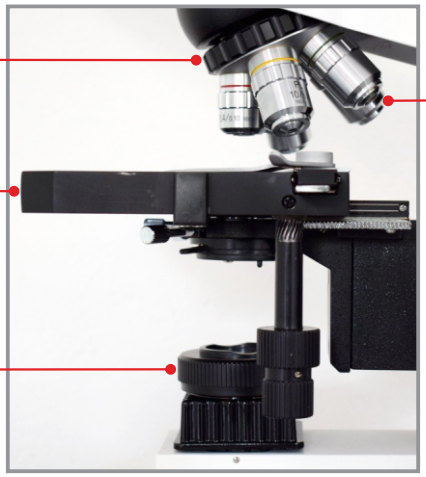
## EYEPIECES

- Wide Field 10X (20X optional)

## MICROSCOPE BASE ASSEMBLY

- Manufactured from durable, high-quality materials.
- Designed for optimal user comfort.
- Quintuple, inward-facing nosepiece for 5 objectives
- Large, integrated stage (movement range: 76x50mm; stage size: 160x140mm) with low position co-axial controls
- Focus stage lock and limit control with tension adjuster
- Co-axial coarse and fine focus with durable brass gear assembly
- Field iris diaphragm





## INTERCHANGEABLE CONDENSERS

- Two interchangeable condensers for brightfield and darkfield evaluation.
- Brightfield condenser: Achromatic compound Abbe brightfield condenser with integrated iris diaphragm and frosted filter.
- Darkfield cardioid oil immersion condenser. This type of darkfield condenser is essential for darkfield analysis as other universal / turret-style condensers don't produce the required level of contrast.


## MICROSCOPE TRINOCULAR HEAD

- Siedentof trinocular head with integrated 40X optical magnification system for additional on-screen magnification.
- Optical zoom in the microscope head ensures high-quality images that are not prone to the pixelation seen in digitally zoomed images.
- The additional on-screen magnification allows the user to achieve a higher degree of magnification on the screen with a normal dry 40X objective (1600X) than what is achieved with a 100X oil objective (1000X) in other standard systems.
- A total magnification of 4000X is possible with the 100X oil objective, for advanced darkfield analysis.

## HIGH-END PLAN ACHROMATIC OBJECTIVES

- Plan achromatic objectives for a perfectly focussed image with optimal correction of chromatic and spherical aberration.

- 4X (2.5X optional)
- 10X
- 20X
- 40X (spring)
- 100X (spring): Oil immersion objective with built-in iris diaphragm to reduce the amount of light passing through the objective. This feature is essential for darkfield as standard 100X objectives allow through too much light, making darkfield analysis impossible at high magnifications.

# UNIVERSAL NGS-2020 MICROSCOPE MODELS

The following 5 systems are available. They are all suitable for analysing live blood in brightfield and darkfield, and for dry blood analysis (performed in brightfield). The systems offer choices between the type of illumination (LED or halogen) and the type of camera (Full HD high resolution or standard definition).

## 1. HDMI-LED + AOL System

- The top of the range blood analysis system featuring LED illumination, a full-HD high definition HDMI-USB cameram and an adjustable optical zoom lens camera adaptor.
- 9W LED illumination, adjustable (equivalent to 100W halogen).
- Full-HD HDMI-USB camera (1920 x 1080) with dual video output via USB and HDMI ports.
- Adjustable optical zoom lens for optimal dry blood viewing.

## 2. HDMI-LED System

- The LED illumination system with a full-HD high definition HDMI-USB camera.
- 9W LED illumination, adjustable (equivalent to 100W halogen).
- Full-HD HDMI-USB camera (1920 x 1080) with dual video output via USB and HDMI ports.

## 3. SD-LED System

- The LED illumination system with a standard definition USB camera.
- 9W LED illumination, adjustable (equivalent to 100W halogen).
- Standard definition USB camera (1280 x 960).

## 4. HDMI-50W System

- The 50W halogen illumination system with a full-HD high definition HDMI-USB camera.
- 50W halogen illumination, adjustable.
- Full-HD HDMI-USB camera (1920 x 1080) with dual video output via USB and HDMI ports.

## 5. SD-50W System

- The 50W halogen illumination system with a standard definition USB camera.
- 50W halogen illumination, adjustable.
- Standard definition USB camera (1280 x 960).

## LED ILLUMINATION vs HALOGEN ILLUMINATION

### LED ILLUMINATION

- Long lifespan of up to 25 years
- Maintenance-free
- No heat
- Pure white light
- Energy efficient
- Brighter than halogen illumination
- Not sensitive to movement, more durable
- Colour and intensity remains constant during the lamp's life

### 50W HALOGEN ILLUMINATION

- Halogen lamps require regular replacement
- Requires maintenance (replacement of lamps and fuses)
- Halogen lamps produce much heat
- Not 100% pure white light
- Not energy efficient
- Not as bright as 9W LED system
- Sensitive to movement, which leads to a shorter lifespan
- Colour moves towards the red end of the spectrum as the lamp ages (referred to as colour drift) and the level of brightness reduces with age.

## HDMI-USB CAMERA vs SD-USB CAMERA

**High Definition HDMI-USB Camera:**
The camera of choice where high definition imaging is required. Ideal for use on modern HD display monitors, this camera represents the latest in digital imaging technology, specifically developed for microscopy. The video signal is transferred via two separate video outputs: one via USB to the user's computer, and the other via HDMI to a separate monitor. The HDMI-USB camera is ideally suited to live and dry blood analysis imaging, as its unique auto-exposure function and ultra-fine colour engine ensures perfect colour reproduction, without requiring the user to manually adjust settings.
Resolution: Full HD (1920 X 1080) at 30 Frames Per Second

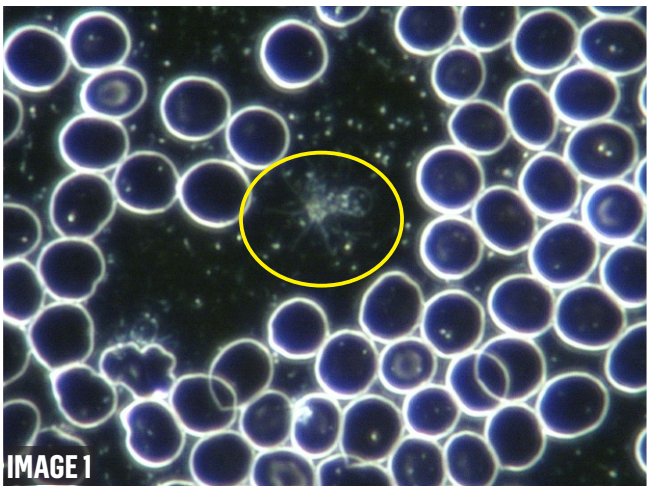
**Standard Definition SD-USB Camera:**
Not all microscope cameras are suitable for darkfield. The standard definition SD-USB digital camera utilises the latest Sony Exmor sensor, which has high sensitivity and low noise, ensuring optimal performance in fluorescence, darkfield, as well as brightfield microscopy applications. The video signal is transferred to the user's computer or laptop via USB. The exposure settings have to be manually adjusted by the user in darkfield and brightfield to ensure optimal performance and image quality.
Resolution: 1280 x 960 (at 30 Frames Per Second)

# DON'T COMPROMISE ON QUALITY

Although most microscopes essentially work on similar principles, there is a great degree of variation in optical configurations, illumination and ultimately image quality. Live blood analysis in darkfield is a highly specialised technique, requiring a very particular set of specifications. A suitable optical and illumination assembly must be in place to ensure the best results in viewing live blood in darkfield. Any compromise in the setup of the system will result in an inferior image and the user not being able to detect all the important darkfield anomalies. This will lead to inaccurate and incomplete analysis results, and ultimately poor results in practice. Below we have compared the images produced by the NGS-2020 range of microscopes with other systems to clearly illustrate the difference in quality.

## NGS-2020 SYSTEM vs 20W LABORATORY MICROSCOPE

NGS-2020 LIVE BLOOD ANALYSIS SYSTEM




20W HALOGEN / 3W LED LABORATORY MICROSCOPE

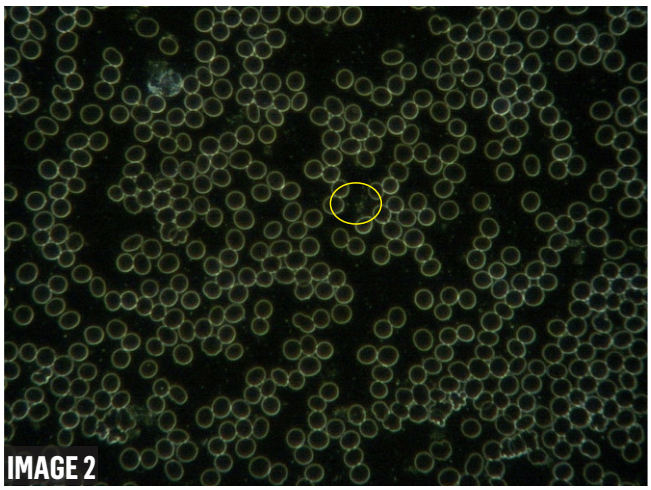



**Image 1 (above left):**
Darkfield image taken with the HDMI-LED NGS-2020 microscope system, using the 40X objective (1600X magnification). The thrombocytes with emerging chondrits and fermentation is clearly visible (within the yellow circle). This is due to the strong light source (9W LED) and the additional on-screen magnification.

**Image 2 (above right):**
Darkfield image of the same live blood sample, using a standard laboratory microscope with a 20W halogen lamp, 40X objective and no additional on-screen magnification (400X magnification). A dry darkfield condenser has also been used. This is the typical setup with a standard laboratory microscope, often sold as a 'darkfield system'. The anomalies within the yellow circle are not visible at all.

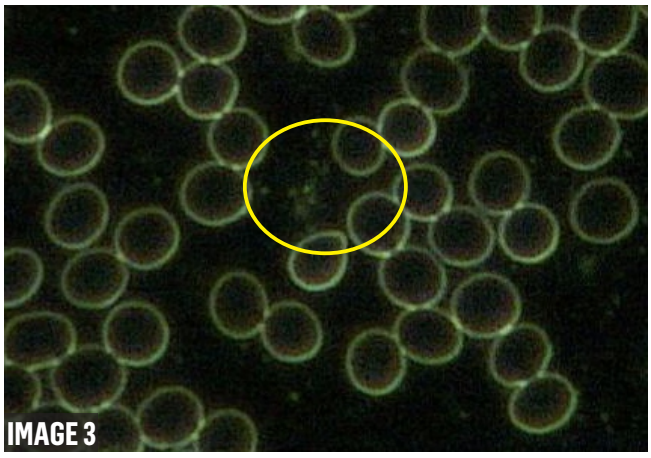



**Image 3 (middle right):**
The area within the yellow circle has been digitally zoomed to attempt to show the anomalies seen in image 1. As is obvious, the anomalies are not visible at all.

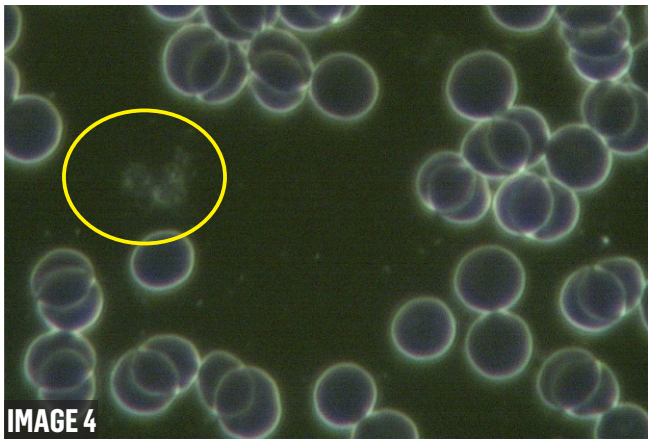



**Image 4 (bottom right):**
The area within the yellow circle has been optically zoomed to achieve 1600X on-screen magnification. Due to the weak 20W light source and the dry darkfield condenser the anomalies are still not visible at all.

## 100X OBJECTIVE WITH BUILT-IN IRIS DIAPHRAGM vs STANDARD 100X OBJECTIVE

100X OBJECTIVE WITH BUILT-IN IRIS DIAPHRAGM

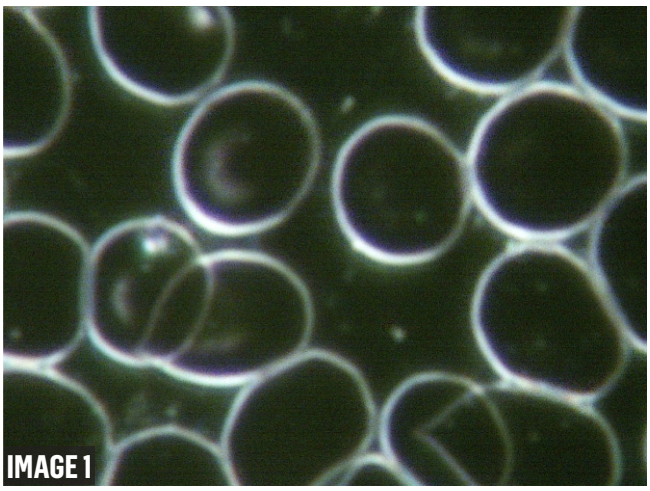



**Image 1:**
Darkfield image taken with the HDMI-LED NGS-2020 microscope system, using the 100X oil objective (4000X magnification). The integrated iris diaphragm allows the user to reduce the amount of light transmitted through the objective to achieve a clear darkfield image at this high level of magnification.

STANDARD 100X OBJECTIVE

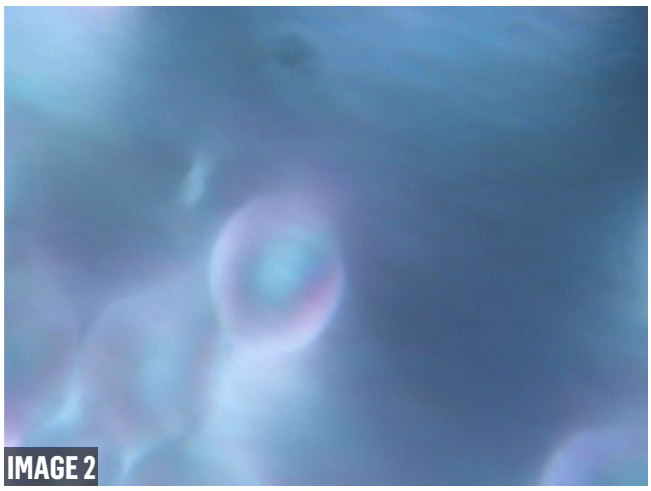



**Image 2:**
Darkfield image of the same live blood sample, using a standard 100X oil objective (without an integrated iris diaphragm). It is obvious that this objective allows through too much light, resulting in an unclear image completely unsuitable for darkfield analysis.

## CARDIOID OIL IMMERSION DARKFIELD CONDENSER vs STANDARD DRY DARKFIELD CONDENSER

CARDIOID OIL IMMERSION DARKFIELD CONDENSER

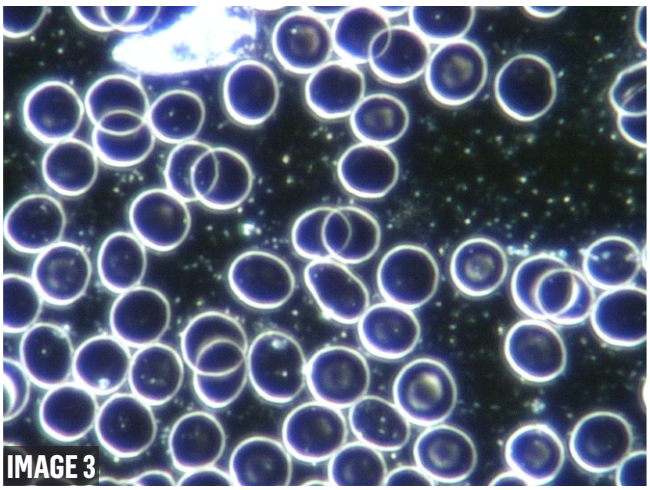



**Image 3:**
Darkfield image taken with the HDMI-LED NGS-2020 microscope system, using the 40X objective (1600X magnification), with the cardioid oil immersion darkfield condenser. Note the small white dots (chylomicrons) visible between the cells, as well as the cells with white discs within them (target cells).

STANDARD DRY DARKFIELD CONDENSER

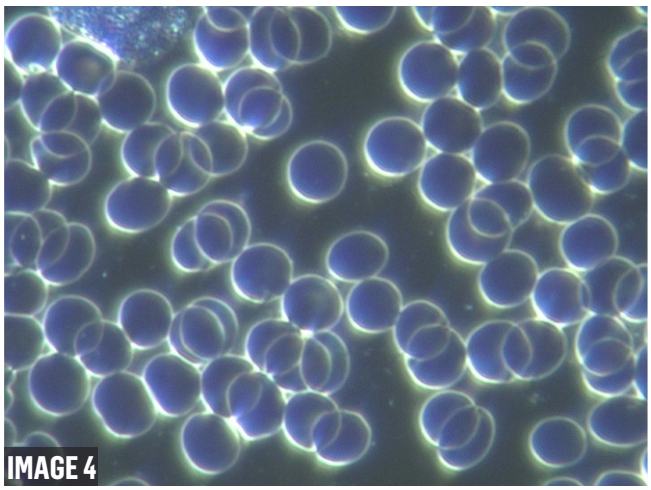



**Image 4:**
Darkfield image of the same live blood sample, using the 40X objective (1600X magnification), with a standard dry darkfield condenser. Note the chylomicrons and the target cells in image 3 are not at all visible here. None of the anomalies between the cells will be visible with a dry darkfield condenser.

**THE NGS-2020 RANGE OF MICROSCOPES OFFER THE BEST COMBINATION OF FEATURES FOR LIVE AND DRY BLOOD ANALYSIS, ALLOWING THE USER TO OBSERVE AND CAPTURE ALL THE ANOMALIES COVERED IN THE COMPREHENSIVE NEOGENESIS LIVE & DRY BLOOD ANALYSIS TRAINING COURSE.**

# UNIVERSAL NGS-2020 SERIES SPECIFICATIONS

| MICROSCOPE MODEL | | HDMI-LED | SD-LED | HDMI-50W | SD-50W |
|---|---|---|---|---|---|
| SPECIFICATIONS DEPENDANT ON MODEL: | | | | | |
| Illumination: | 9W LED (intensity adjustable) | X | X | | |
| | 50W Halogen (intensity adjustable) | | | X | X |
| Camera: | Full-HD HDMI-USB Digital C-mount Camera | X | | X | |
| | Standard Resolution USB Digital Camera | | X | | X |
| | | | | | |
| SPECIFICATIONS STANDARD ON ALL MODELS: | | | | | |
| Trinocular Compound Research Brightfield & Darkfield Microscope | | | | | |
| Microscope Body: | Hard-wearing solid metal structure, more durable than many other brands | | | | |
| Magnification Range: | Eyepieces: 40X 1000X<br>On-Screen: 160X 4000X | | | | |
| | | | | | |
| Eyepieces: | Wide-Field 10X (20X optional) | | | | |
| Objectives: | Plan achromatic objectives<br>4X (2.5X optional)<br>10X<br>25X<br>40X spring<br>100X spring (oil w/ iris) | | | | |
| Stage: | Ergonomic mechanical stage with low position co-axial controls<br>Movement Range: 76 x 50 mm<br>Size: 160 x 140 mm | | | | |
| Focussing System: | Co-axial coarse and fine focus, with adjustable tension and stopper | | | | |
| Field Diaphragm Diameter: | 2 - 35 mm | | | | |
| Microscope Head: | Siedentof Trinocular Head with built-in optical magnification system (40X) | | | | |
| Condensers: | Interchangeable brightfield and darkfield condensers<br>Brightfield condenser: Abbe condenser with frosted filter NA=1.25<br>Darkfield condenser: Oil immersion cardioid darkfield condenser | | | | |

| CAMERA SPECIFICATIONS: | | | |
|---|---|---|---|
| CAMERA MODEL | | HDMI-USB | SD-USB |
| Full-HD high definition HDMI-USB Digital C-mount Camera | | X | |
| Dual Video Output by USB and HDMI | | X | |
| Resolution: | | 1920 x 1080 | 1280 x 960 |
| Frame Rate: | | 30 fps (USB); 25 fps (HDMI) | 30 fps |
| Pixel Size: | | 2.9 x 2.9 | 2.8 x 2.8 |
| Shutter Mode: | | Rolling | Rolling |
| Effective Area: | | 5.6mm x 3.1 mm | 5.4mm - 3.0mm |
| Recording System: | | Still Picture and Movie | Still Picture and Movie |
| Operating System: | Microsoft Windows XP /Vista /7 /8 /10 /11 | X | X |
| | OS X (Mac OS X) | X | X |

NeoGenesis Systems

MICROSCOPES DESIGNED FOR LIVE BLOOD ANALYSIS

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