HAMILTON THORNE

IVOS® II & CEROS™ II

Featuring Next Generation Software for Animal Sperm Motility

Proven & Trusted Sperm Analysis

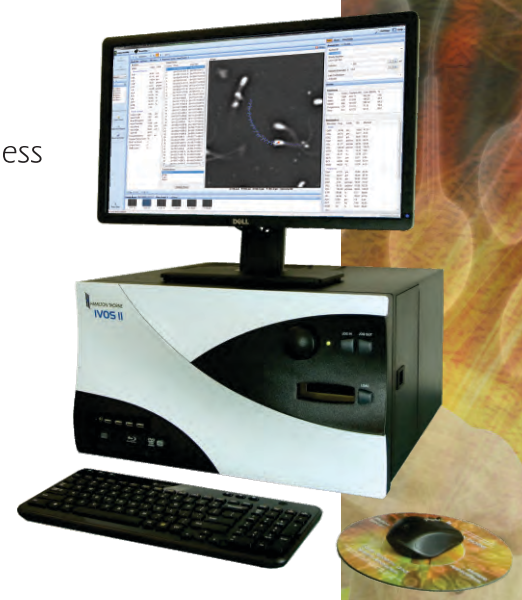
With the proven performance of our sperm analyzers and our respected standing in the industry, you can **trust in both your sperm analysis results and our dedication to your success**. To meet your specific needs, we offer two analyzer models, the IVOS® II and the CEROS™ II, for animal sperm studies in university, zoological and commercial laboratories.

Our sperm analyzers provide:

- Accurate, objective and repeatable results
- Intuitive software interface for ease of operation
- Rapid analysis with automatic adjustment of minimum tail brightness for consistency across all analysis fields
- Compatibility with reusable and disposable analysis chambers
- Real-time quality control through interactive illumination settings
- Labor savings

Detailed analysis results include:

- Counts & Concentrations
- Motility and Progressive Motility
- Velocities and Kinematic Measures



IVOS® II

IVOS® II

- Automation for speed, increased precision and decreased technical variation
- Computer controlled auto-illumination standardizes analysis setup across all users
- Auto-selection of fields for fastest analysis
- All optics components combined into one integrated unit - the microscope is inside!
- Strobe illumination provides sharpest imaging
- Automated stage for precise temperature control and sample positioning
- IDENT fluorescence capability (optional)

CEROS™ II

- External negative phase contrast microscope (included)
- Choice of desktop computer with widescreen HD monitor or full HD laptop computer
- Familiar, standard microscope illumination
- Portable MiniTherm Stage Warmer (optional) maintains samples at 37°C
- X-Y stage movement increases number of fields available for motility analyses

CEROS™ II

ALL NEW Animal Motility II software for multi-species sperm analysis in research settings

What is New?

- Completely redesigned graphical user interface based on standard Windows® conventions
- Language localization - available in English, Russian, Chinese, French and Spanish (with more language translations to follow)
- Color-coded, interactive illumination setting for best accuracy in sperm head and tail identification plus auto-illumination setting in IVOS II
- Tail recognition software filter eliminates false positive identification of debris as sperm
- Thumbnail image gallery of all fields analyzed, with ability to view video playback of every field analyzed and to remove selected fields from the analysis
- Additional kinematic outputs: Distance of Average Path (DAP), Straight Line Distance (DSL), Curvilinear Distance (DCL) and Wobble (WOB)
- View summary, field and individual cell results alongside the analyzed image
- Tabbed data input and results panels
- Ability to turn on/off results display and color-coded graphic overlays on Field Playback screen and average cell path overlay on Zoomed Cell Playback screen
- Built-in database with easy-to-use Report Designer to create customized reports
- Unlimited storage of pre-defined analysis setups

IVOS® II Hardware Enhancements

- Smoother, faster integrated stage featuring acceleration and deceleration. Thanks to a new stage drive motor, the IVOS II stage now can move from maximum speed down to start speed in the blink of an eye.
- High speed digital camera provides excellent image quality and allows seamless image capture and playback
- A rearrangement of user controls and the addition of inputs on the IVOS II front panel make for a better user experience:
  - On / Off switch added to the front panel and stage LOAD button separated from the JOG buttons to avoid inadvertent stage loading/unloading.
  - Four high speed USB 2.0 ports for easy data transfer and connection to external devices

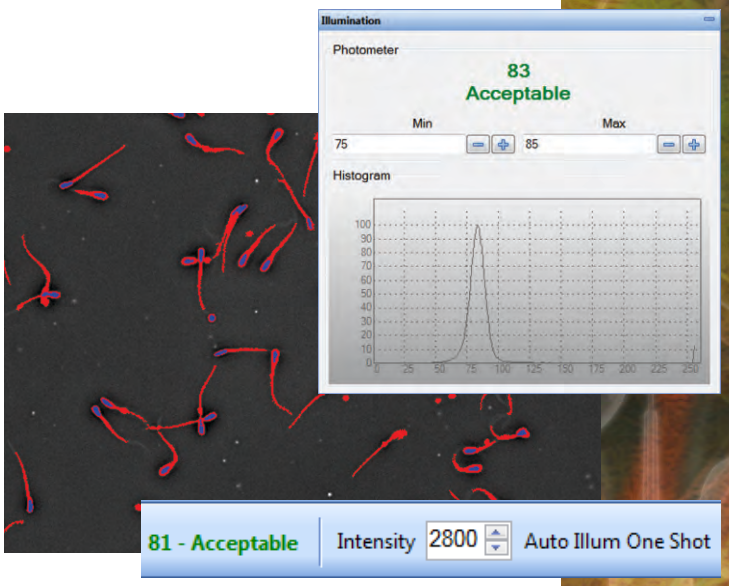
CEROS™ II Hardware Enhancements

- High speed digital camera provides excellent image quality and allows seamless image capture and playback
- Choice of Olympus Cx41 or Zeiss Axio Lab.A1microscope with10x negative phase contrast objective (optional objectives available)
- High definition, 24", 1920 x 1200 LED backlit widescreen monitor

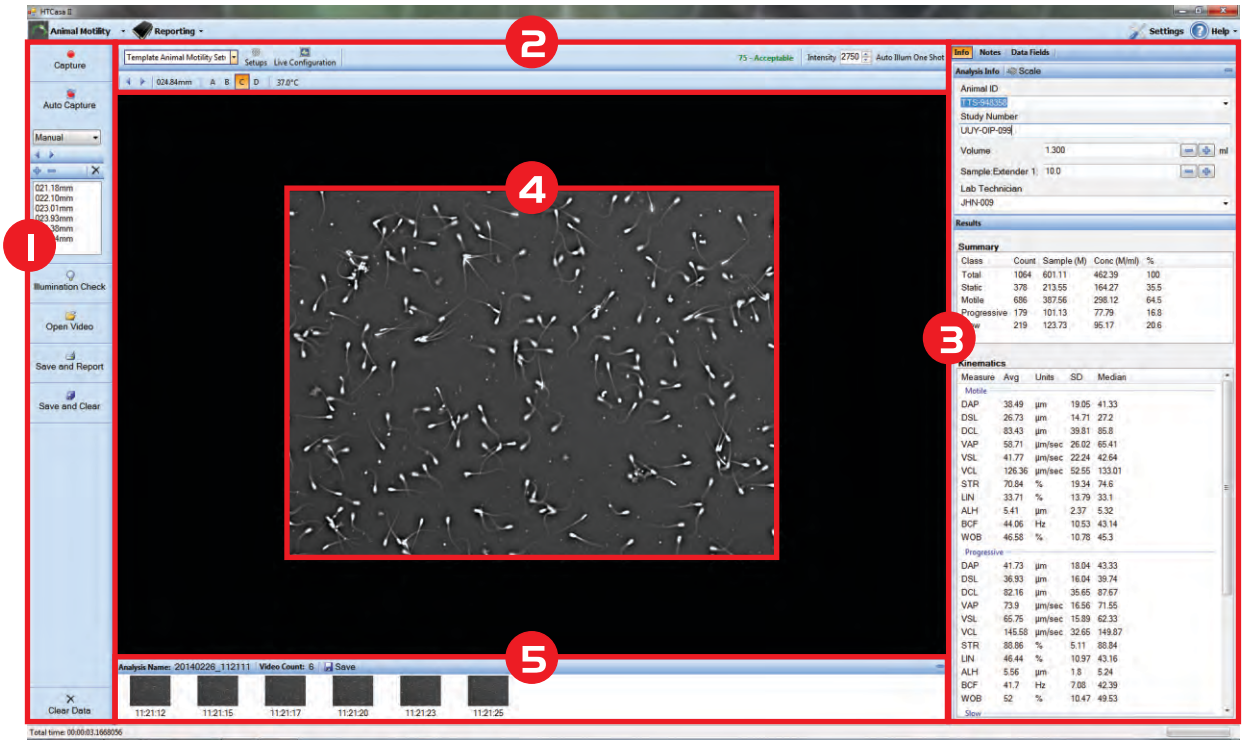
Software Overview

Interactive Illumination Check

Animal Motility II sperm analysis software features the unique color-coded Illumination Check to optimize identification of the sperm head and sperm tail. This feature removes any guess work in setting the illumination and promotes consistency between all users, especially when used in tandem with the auto-illumination feature (IVOS II only). When the illumination is set correctly, the sperm heads will be colored blue and tails will be colored red.



Screen Layout



1. Controls for initiating analysis, checking illumination, saving, printing and clearing data, and opening saved video files.

2. Quick selection of analysis setup to be used and access to various system hardware and software settings.

3. Tabbed menu panels for input of Analysis Info, Notes and custom Data Fields, plus output of Summary and Kinematic Results, updated in real-time.

4. Live image area, display of Illumination Check, full screen playback images, and zoomed individual cell images.

5. Thumbnail gallery for storage of captured video images, which may be played back individually for quality control.

Analysis Results

Real-time Updating

Data in the Results panel on the right side of the screen reflect the entire population of cells analyzed. Analysis results are updated in real-time as each field is added to the analysis.

Full Field Playback

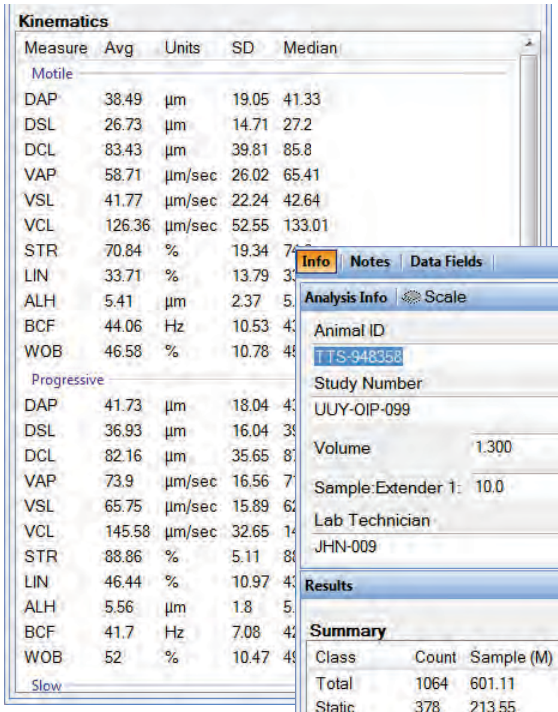
Selecting a thumbnail image from the gallery opens the captured video. The video may be replayed in full or you may scroll through frame by frame. The results along the left side of the image represent only the analysis data of selected field. The color overlays on the playback image and the field results may be turned on or off.

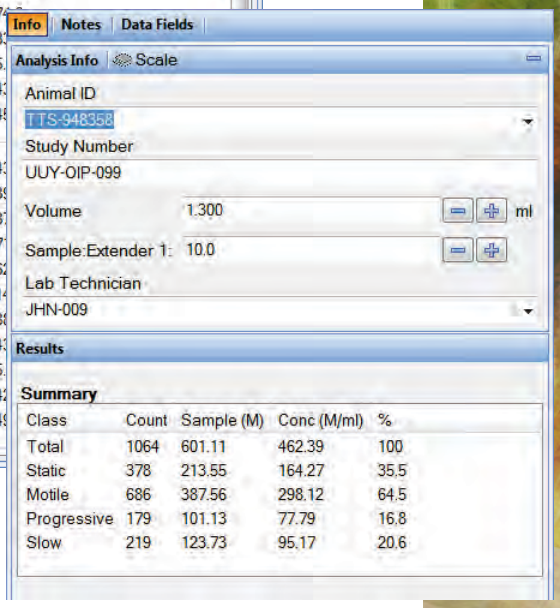
Zoom Cell Playback

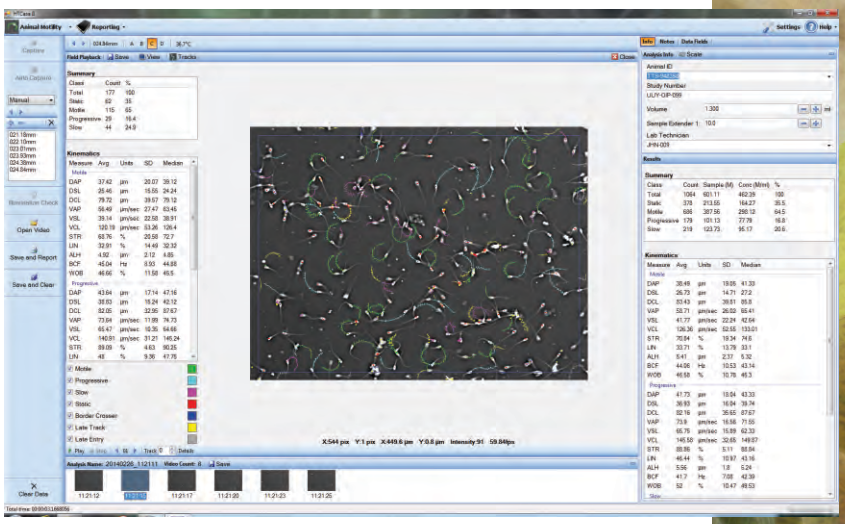
Selecting a track from the playback image opens up a zoomed image of the cell. The Kinematic Measures shown on the left are relative only to the selected track. The video focusing on the individual cell may be played or scrolled through frame by frame. You may jump to a specific frame by selecting a point on the track or the associated data points. Both motile and static cells may be selected.

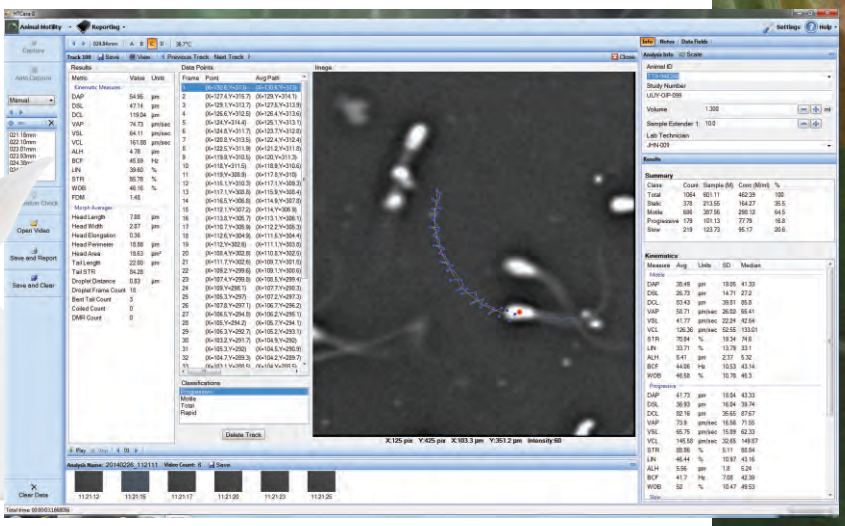
Saving & Recalling Video

For every analysis, you may choose to save the complete video image of each field analyzed. Each field is saved with all set up parameters and animal information. When opening saved videos, you may re-analyze with the saved settings or apply a new set of parameters.









Report Designer

The Report Designer lets you customize the pre-designed forms or create entirely new forms. The user-friendly, "drag and drop" designer gives you complete control over the look and content of the report. Any input or output data may be added to the report. Free-form fields also allow the inclusion of non-analysis data such as contact information or company logo.

CASA II Options

Sort

The optional Sort feature provides the ability to isolate a certain sub-population of cells (i.e. hyper-activated cells) for analysis.

Three independent Sort sets are available. For each analysis performed, the software applies the enabled Sort sets separately to the cell population. The fraction of cells passing the sort criteria are calculated and presented under Analysis Results.

Edit Tracks

The Edit Tracks option provides the opportunity to save individual track data to an ASCII file for detailed statistical analysis. Edit Tracks also allows removal of tracks or individual cells from the analysis (manual elimination of false positive debris).

CEROS™ II Option

Cooling Stage

Optional cooling stage for sperm motility studies on temperature sensitive marine specimens

IVOS® II Options

IDENT Fluorescence

- The only CASA system with **strobed fluorescence Illumination for sperm-safe motility**
- Choice of Xenon or new LED fluorescence illumination source
- Highest precision in sperm counting
- IDENT Stain permeates all sperm cells
- Analysis of both motile and static cells under fluorescence

VIADENT Software

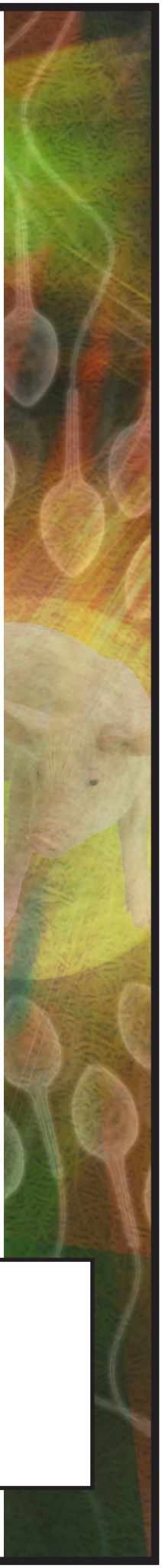
- Requires IDENT Fluorescence
- Performs motility and viability on the same LIVE sample
- VIADENT Stain permeates only non-viable cells
- Motility analysis performed under standard illumination and viability analysis under fluorescence

Analysis Output

Counts, Sample, Concentrations, Percentages::
Total, Static, Motile, Progressive, Slow

Kinematic Measures:
DAP, DSL, DCL, VAP, VSL, VCL, ALH, STR, LIN, BCF, WOB

Morph Averages:
Head Length, Head Width, Head Perimeter, Head Area



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Innovations to Rely On

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