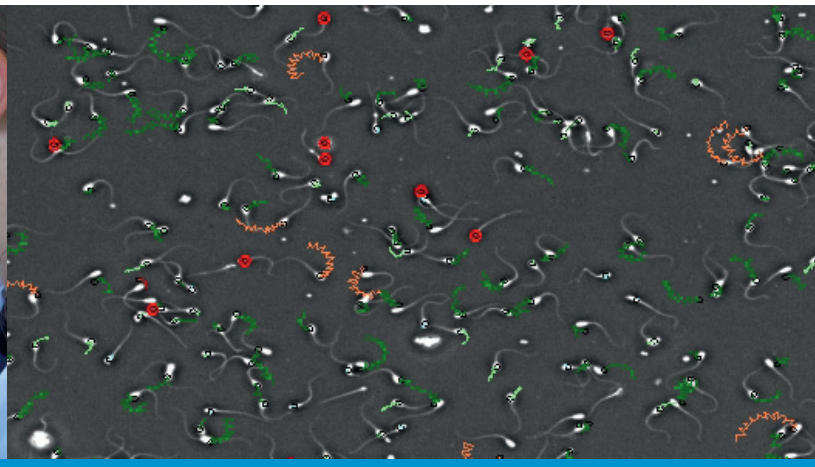
AndroVision®

More than CASA



Highly precise automated semen analysis within only a few clicks

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Computerized semen analysis

AndroVision® is a highly precise CASA* system for standardized, interactive semen analysis. AndroVision® not only provides classical analyses of motility, concentration, and morphology, but also various fluorescence based assessments of sperm functionality. The basic system with PC and accessories is complemented by optional software modules.

*CASA= Computer Assisted Sperm Analysis

Basic system

AndroVision® software
with PC and accessories — REF.: 12500/0000

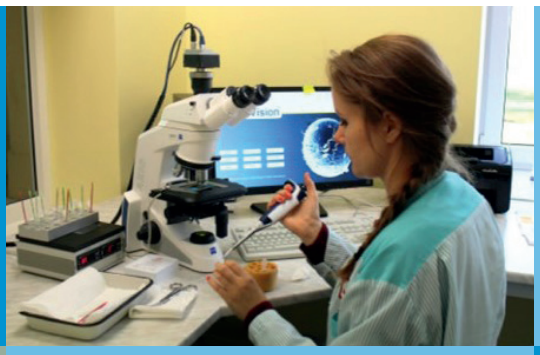
AndroVision® color camera
high speed and high resolution — REF.: 12500/4400

Product features

- Very easy to use: only 3 mouse clicks from start to result
- Real time analysis of live images and video files
- Very high sperm count per field possible
- Analysis of up to 4 fields in 20 seconds
- Highly efficient particle filter for accurate sperm differentiation
- Lightmeter for illumination control
- Analysis profiles for many species
- Flexible display of results
- Adjustable analysis parameters and user created profiles
- Fluorescence based analysis of sperm functionality (optional)
- Data base with analysis results, including AVI video files
- Data export to MS Excel and other programs
- Individually designed analysis reports with photos
- Languages: English, German, Spanish, Chinese, Portuguese, Russian, French
- Network compatible
- Possibility to integrate AndroVision® in the lab management software Prism10

"I rely on AndroVision daily for our stallion semen evaluations for both our commercial and research programmes at EquiBreed NZ. Our breeders and vets love the reports!"

Dr. Lee Morris, EquiBreed NZ Ltd, New Zealand



"The AndroVision® system is like a good German car: fast, reliable, and professional."

Jaroslav Pokorádi, Ph.D., Animal Reproduction Centre A.R.C. in Bratislava, Slovakia

"We like the AndroVision® CASA system very much because of the quick and precise motility assessment and the accuracy of sperm detection."

Inita Bedrite, Sales Manager, JSC Siguldas artificial insemination station, Lettland

"The Minitube CASA system guarantees an accurate sperm cell analysis. It is easy to use and helps to speed up the workflow process and to improve our product quality."

Zen-Noh Livestock, East Japan Breeding Farm & AI Center, Japan

Microscopes

AndroVision® can be combined with a series of microscopes, preferably:

- Zeiss AxioLab and AxioScope
- Olympus CX43 and BX Series

Each microscope requires a negative phase contrast objective and a heated stage. The software modules Viability, Acrosome Integrity, Mitochondria Activity and DNA Integrity require fluorescence equipment.

Microscope with fluorescence equipment

Portable AndroVision®

The portable hardware configuration for AndroVision® consists of a laptop with accessories and transport cases for the microscope and related accessories.

AndroVision® CASA system
with laptop and accessories REF.: 12500/0010

Transport case for accessories REF.: 12500/9100

Transport case for microscope REF.: 12007/0312

Portable AndroVision®

Touchscreen and barcode scanner

This optional hardware configuration for AndroVision® consists of a touchscreen and barcode scanner. Since this system needs neither keyboard nor mouse, AndroVision® becomes even more efficient to use. This hardware configuration prevents errors through a barcode-based donor choice for production and quality control.

AndroVision® CASA system
with touchscreen and barcode scanner REF.: 12500/0001

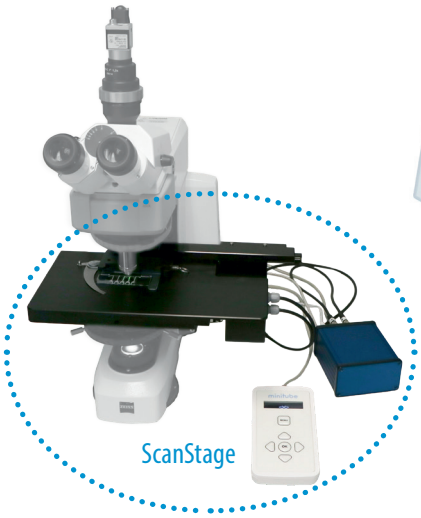
AndroVision® with touchscreen and barcode scanner

ScanStage

The automated microscope stage has an integrated heating system and can be connected to a variety of microscopes. Analysis points within a counting chamber are automatically approached always using the same path of the microscope stage. This shortens the analysis time and reduces the variability of measurements. The ScanStage can also be used with slide and cover glass.

ScanStage with heating system and keypad REF.: 12048/0031

Controller HTi 200 REF.: 12057/0200



ScanStage

HTi 200

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Software modules

AutoMorph

Module for the automated recognition of proximal and distal plasma droplets as well as bent tails of porcine and bovine semen. AutoMorph is integrated in the analysis of motility and concentration and is measured at the same time. The semen sample should be diluted in clear extender.

Plasma droplets are symptoms of a defective maturation of sperm which can be attributed to various causes such as stress or disease.

Module AutoMorph REF.: 12500/1000

Dose Calculation

Automatic calculation of the number of doses which can be prepared from an ejaculate and of the volume of extender to add to the ejaculate.

Module Dose Calculation REF.: 12500/1100

Lab Software Link

Link of AndroVision® with lab software (e.g., Prism10).

Module Lab Software Link REF.: 12500/1910

Quality Control

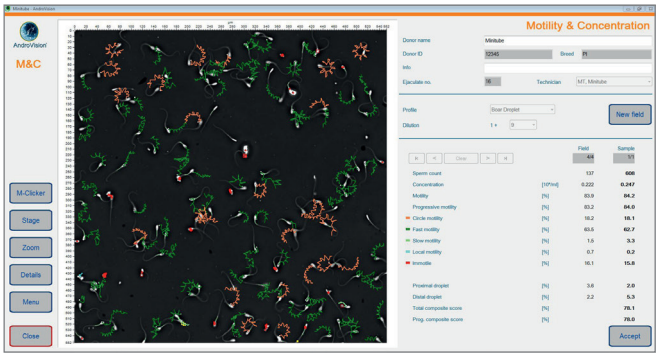
Analysis of samples post thaw and in holding. Link to native ejaculate analysis. Possibility to analyze samples during production: samples of one ejaculate can be analyzed more than once and can be compared with the native ejaculate values.

Module Quality Control REF.: 12500/1200

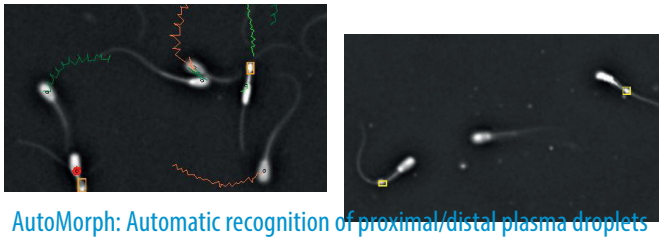
Morphology and Morphometry

Interactive system for analysis of sperm morphology and morphometry. Identifies sperm of stained and fixed samples and measures length and width of the sperm head, head shape and midpiece asymmetry of each single sperm cell (acc. to Kruger). Results can be classified into a large range of morphologic abnormalities.

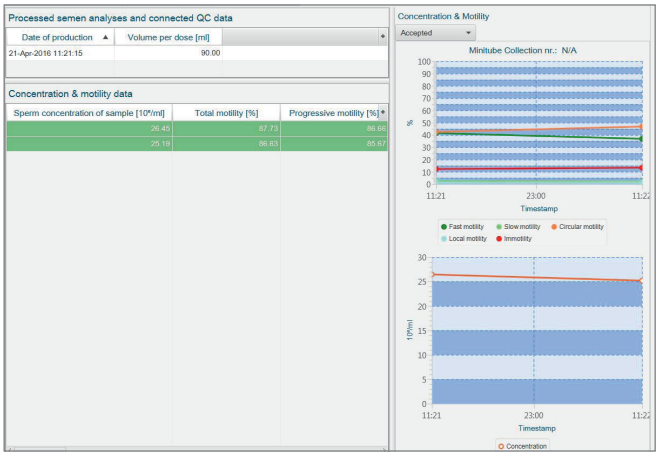
Module Morphology & Morphometry REF.: 12500/1300



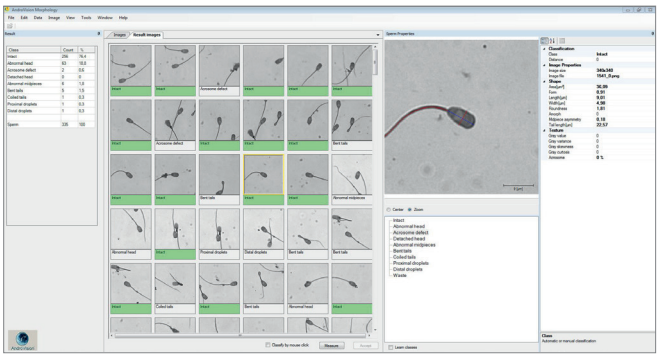
Proximal droplet	[%]	6.5	**5.6**
Distal droplet	[%]	2.8	**2.5**
Bent tail	[%]	6.5	**5.0**
Total Automorph defects	[%]	15.8	**13.1**



AutoMorph: Automatic recognition of proximal/distal plasma droplets and bent tails



Quality Control: Regular quality analyses during sperm processing



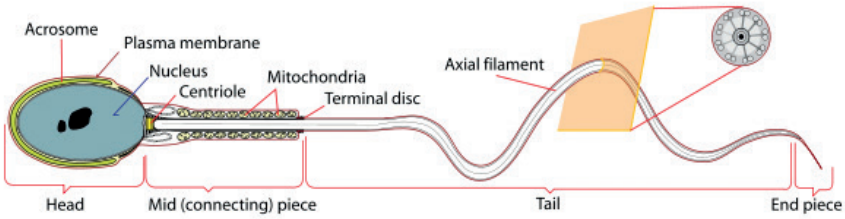
Morphology and Morphometry

Fluorescence analyses

How do fluorescence analyses work?

Fluorescent stains dye specific structures of the sperm, depending on the integrity and the functional status of these structures. These specific stains are activated by the light of an individual wavelength. The dyed parts of the sperm then emit light of a definite wavelength /color.

These different colors are detected and evaluated by the AndroVision® software. Due to the high speed of analysis, several hundred sperm can be analyzed in a very short time.



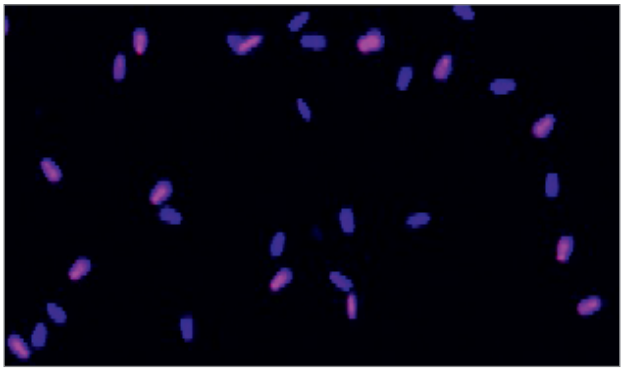
Viability

For the assay of the plasma membrane integrity, a double fluorescence stain with Hoechst 33342/PI or SYBR14/PI is used.

The stain Hoechst 33342 permeates cell membranes and binds specifically to the DNA. All sperm are marked blue. The PI stain (Propidium Iodide) only permeates damaged membranes.

It overrides the blue Hoechst stain. Sperm with damaged membranes are marked red/violet. On this basis, AndroVision® determines the percentage of sperm with damaged and intact membranes.

When the dye SYBR14/PI is used, all sperm cells with intact membranes are marked green. Sperm with damaged membranes are marked red by the permeating PI dye, which overrides the green color.



Automatic detection of sperm with damaged plasma membrane (marked red/violet) by means of a double fluorescence staining: H33342/PI

Viability: Why analyze?

The plasma membrane encases the sperm completely. One of its main functions is the delineation towards outside and the selection of molecules to pass from outside to inside. A defect in the plasma membrane can easily lead to the death of the sperm.

The viability analysis is mainly used for the quality control of holding samples of fresh semen or thawed samples of frozen semen.

The viability test can help to detect fertility problems of individual donor animals or to detect ejaculates of poor quality before the semen delivery, rather than to be faced with fertility deficiency later.

Module Viability

Automatic count of the percentage of membrane intact sperm, based on a double fluorescence assay.

Module Viability REF.: 12500/1400

Stain-kit

Hoechst 33342/PI Membrane Integrity (Viability)
for up to 100 assays REF.: 15407/0009

SYBR14/PI Membrane Integrity (Viability)
for up to 100 assays REF.: 15407/0001

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Acrosome Integrity

For the assay of the acrosome integrity, a double fluorescence staining with H33342/FITC-PNA is used. All sperm are marked blue (H33342). Damaged acrosomes of these cells are marked green (FITC-PNA). On this basis, AndroVision® determines the percentage of sperm with damaged and intact acrosomes.

Module Acrosome Integrity

Automated count of percentage of sperm with damaged acrosome, based on a double stain fluorescence assay.

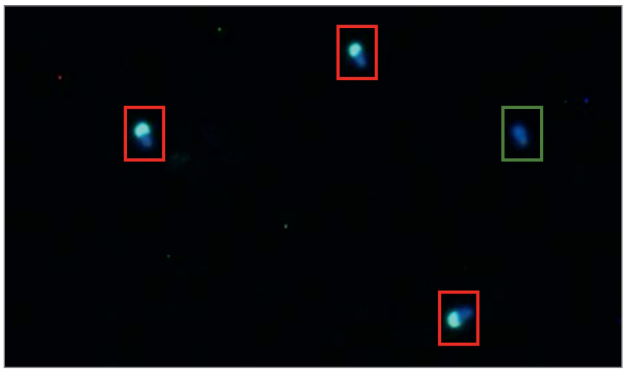
Module Acrosome Integrity REF.: 12500/1600

Stain-kit

Hoechst 33342/FITC-PNA Acrosome Integrity
for up to 100 assays REF.: 15407/0011

Acrosome Integrity: Why analyze?

The acrosome reaction is a key step for a successful insemination. It enables the sperm to penetrate the ovum. Prerequisite: an intact plasma and acrosome membrane. Various stressors during semen processing can cause damage to the acrosome membrane or can provoke a premature acrosome reaction. A successful insemination is then no longer possible.



Automatic detection of sperm with defective acrosome (outlined in red) by means of double fluorescence staining: H33342/FITC-PNA

DNA Integrity

To investigate the integrity of DNA, a halo-technique in combination with a fluorescence stain, is employed. The halo-technique distinguishes intact from defective sperm cells.

If the DNA of a sperm cell is defective, an aura of light, or halo, will form around the head of the sperm cell. In contrast, all sperm cells that do not exhibit a halo have intact DNA. The halo effect is visible when the sample has been stained with Fluored® and exposed to fluorescent light. The percentage of sperm cells with fragmented DNA in a given ejaculate or sample can thus be determined.

Module DNA Integrity

Automated count of the percentage of sperm with defective DNA based on the halo-technique combined with fluorescent staining.

Module DNA Integrity REF.: 12500/1800

Stain-kit

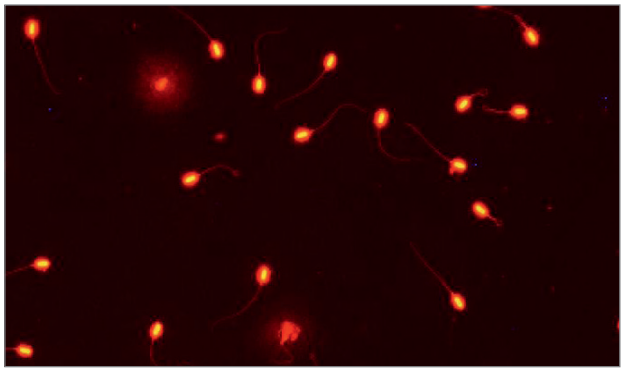
AndroVision® DNA Integrity Test-kit, for up to 40 assays,
for bovine semen REF.: 15407/0013
for porcine semen REF.: 15407/0014
for camel semen REF.: 15407/0016
for horse semen REF.: 15407/0017

Fluorescent stain for DNA Integrity Test-kit REF.: 15407/0015

DNA Integrity: Why analyze?

The success of insemination and embryo development is highly dependent on the integrity of the DNA in the sperm.

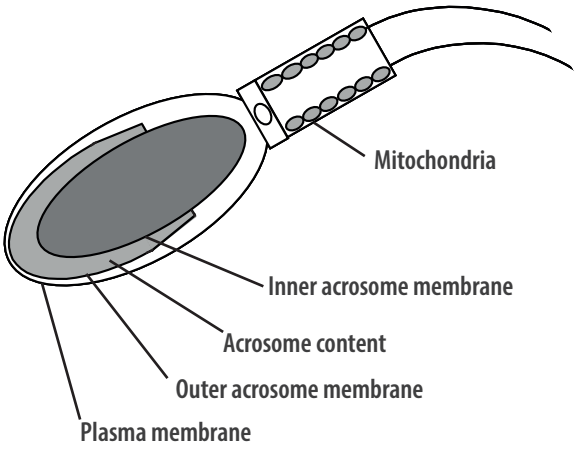
Consequently, the DNA structure can be used to indicate the fertility potential, or to explain sub-fertility rates, of a certain breeding animal. DNA integrity testing therefore offers a new approach to the clarification of lower fertility rates.



Sperm with fragmented DNA exhibiting halo-effect

Mitochondrial Activity

For the evaluation of the mitochondrial activity, a double fluorescence staining with H33342/Rhodamin123 is used. All sperm are marked blue (H33342). In addition, the midpiece of the sperm with active mitochondria is marked green (Rhodamin123). On this basis, AndroVision® determines the percentage of sperm with high mitochondrial activity.



Mitochondrial Activity: Why analyze?

The analysis of the mitochondrial activity is a test for the assessment of the energy metabolism of the sperm.

The mitochondrial activity is among other things necessary for:

- Maintenance of the motility
- Capacitation ability of the sperm
- Maintenance of the basic cell functions

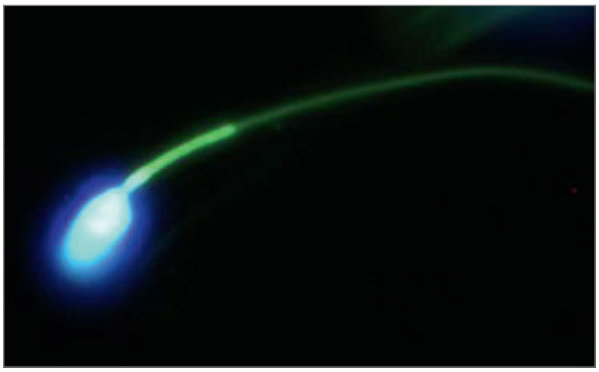
Mitochondrial Activity

Automated count of percentage of sperm with active Mitochondria, based on a double stain fluorescence assay.

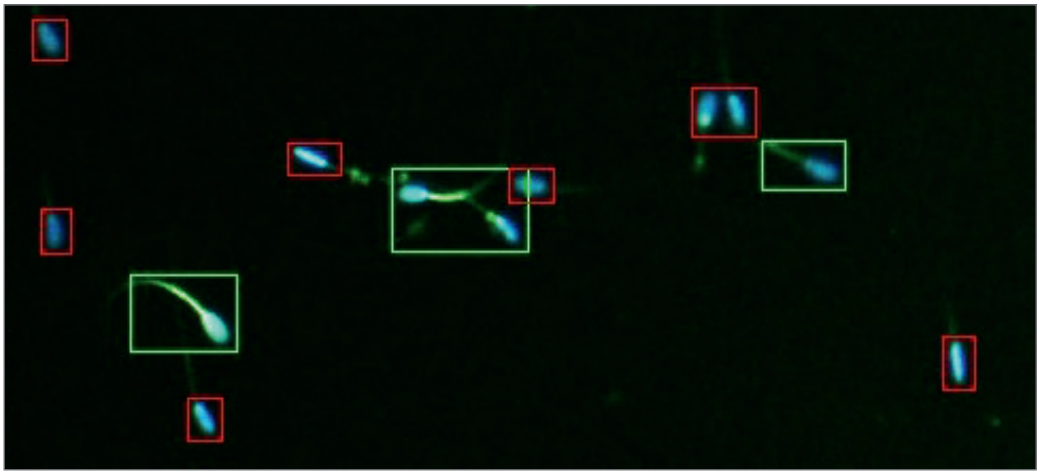
REF.: 12500/1700

Stain-kit

Hoechst 33342/Rhodamin 123 Mitochondria Activity for up to 100 assays REF.: 15407/0012



Sperm with high mitochondrial activity



Automatic detection of sperm with active mitochondria (light green coloring) by means of a double fluorescence staining: H33342/Rhodamin123

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AndroVision®: Your benefits

Accuracy of sperm detection

A very accurate particle filter distinguishes sperm from debris and egg yolk. Agglutinated cells are excluded from evaluation. Concentration measurement has a high repeatability and is very accurate.

Precise motility assessment

Different sub-classes of mobility like progressive motility are assessed. Sperm cells moving in circles are correctly identified. AndroVision® provides the standard CASA motility parameters and WHO classification. Freely defined classification levels are available.

Quick analysis

AndroVision® allows for an accurate motility and concentration and AutoMorph assessment at production line speed. Approx. 30 ejaculates can be analyzed per hour, including sample preparation.

Precision control

The combination of AndroVision® with an optimal high-end microscope makes sure that the operator stays in full control. The microscope can be used for any lab purposes as well.

Flexibility

AndroVision® can analyze recorded videos as well as live sperm samples. Analyzing recorded videos provides great flexibility of semen assessment, both in time and location. AndroVision® can be used with a range of different counting chambers, providing the operator with flexibility in his choice of product.

Advanced analyses

AndroVision® offers advanced analyses based on extremely sensitive indicators such as Membrane and Acrosome Integrity, Mitochondrial Activity and DNA Integrity. As part of quality control in the laboratory, these analyses not only allow continuous fertility screening of the animals but also give the possibility for early identification of premium and standard breeding animals.

Creating meaningful certificates in seconds with AndroVision®

Custom made reports

AndroVision® can generate reports of all analysis results as prints or MS Excel files. Production units and analysis service labs can provide clients with a full quality report of the semen doses. Reports can easily be edited by the user.

Consistency

The objective AndroVision® evaluation criteria guarantee the application of identical standards. This makes it possible to compare data of technicians, labs and production days. Clearly defined threshold values allow detection of poor quality semen and prevent processing, freezing or shipping of substandard product.

Network compatibility

AndroVision® offers the possibility to integrate a Network Attached Storage system (NAS). This system provides you a central database and file management connected to more than one AndroVision®. The data security is high, and the backup-functions are more flexible. Additionally, analysis results and videos are available 24 hours a day, independent of the AndroVision® system.

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