Traditionally, assessment of embryo selection in IVF is limited to brief “snap-shot” glimpses at defined time-points in order to minimise disturbances to culture conditions. However, embryo development is a dynamic process and a wealth of information about embryo development history remains untapped.

**EMBRYOSCOPE™ TIME-LAPSE SYSTEM**

Improved IVF treatment through:

- Time-lapse enabled assessment: Improved basis for embryo selection
- Continuous surveillance of all embryos: Undisturbed culture in a stable environment
- Flexible work routines: Do it when you want, never miss anything
- Digitised documentation: Quality assurance and treatment traceability
- Retrospective data analysis: Knowledge building for improved embryo selection
**Embryoscope™**

**Time-lapse incubator**

**Undisturbed stable incubation**

- Tri-gas incubator allows fast and accurate regulation of CO₂ and O₂ concentrations with minimal gas consumption
- Unique temperature control by direct heat transfer to individual media-filled wells. Temperature is virtually unchanged by opening chamber (<0.2°C) when adding or removing patient samples
- Recovery of CO₂ concentration in less than 5 minutes and O₂ in less than 15 minutes after closing chamber
- Continuous circulation and purification of air supply with residence time of less than 20 minutes
- Air purified by active carbon and HEPA filter. Removes VOCs and retains 99.97% of particles larger than 0.3 µm
- Simplifies compliance with EU Directive 2004/23/EC by automatic logging of running conditions such as temperature, CO₂ and O₂ concentration to patient data files
- Dry incubation without water pans eliminates problems with water condensation and fungal growth on surfaces in high humidity

**Time-lapse monitoring**

- Fully automated detection and focusing of up to 72 embryos (6 patient culture dishes with 12 embryos in each dish)
- Image acquisition in multiple focal planes of all embryos
- High-quality Hoffman modulation contrast optics allows observation of key morphological features
- Special Leica optics designed for red light at 635 nm to eliminate high energy light exposure

**Embryo selection**

Use both morphological and morphokinetic observations to select the best embryo:

- Fertilisation events
- Exact timings of cleavages
- Exact timing of morula and blastocyst stages
- Synchrony of divisions
- Occurrence and type of multinucleation
- Fragmentation history
With the EmbryoViewer software, you can review, annotate and compare development of selected embryos from data acquired by the EmbryoScope time-lapse incubator. Instrument running conditions are automatically stored with the patient data and can be observed on the EmbryoViewer software for quality assurance.

**Flexible work routines**

- Observe and assess patient embryos from your office via the ES server
- Instantly access current patient data for assessment
- Facilitates consultation with patients and colleagues
- Technical, laboratory and patient reports are easily generated by the EmbryoViewer software

**Quality assurance**

View data from ongoing or finished treatments to access embryo development videos, patient data and instrument performance.
Improved basis for embryo selection

View and compare all patient embryos from an EmbryoSlide culture dish at the same time. Select a single embryo for annotation or use View slide to perform a side-by-side comparison of all embryos in a culture dish. Export video and images of interest for presentations and discussions.

Delivered with a jog wheel for ease of video replay
Intuitive annotation tools

Manual annotation of cell division events is displayed in the table providing an easy overview of observations in developmental stages.

A. Automatically calculated cellular activity indicating cell division events (patented)
B. Select different focal planes to refocus and to observe details of interest
C. All annotations and notes are saved for future reference
D. High quality Hoffmann modulation contrast images allows observation of key morphological events
E. Elapsed time from insemination
F. Select a button to indicate which embryo to ✓ transfer, ❌ freeze or ❌ discard.

[Images showing a computer interface with annotations and time-lapse comparisons]
Assisted embryo selection

Set up one or more models according to clinic specific criteria and rank embryos accordingly using the Compare & Select view.

Designing a model

A Create customised models to reflect difference between clinics (conditions, day of transfer etc.)

Set up selection, deselection or information criteria to define a model

B Set up custom expressions to define model variables

Applying a model

Using Compare & Select embryos are easily ranked according to a specific model.

C Choose model from drop-down list

D Calculated model score

E View the embryo ranking
**KIDScore™ D3 Basic decision support tool**

KIDScore D3 Basic is a model based on the morphokinetic traits associated with the implantation potential of embryos transferred on day 3. The model is designed to help clinics avoid transferring embryos with low implantation potential.

KIDScore D3 Basic is robust, safe and easy to use and will provide the immediate benefit of using time-lapse for embryo evaluation. The model has been validated for day 3 transfers in a wide range of clinics.

**Key benefits**

- Does not require Known Implantation Data (KID) to start enjoying benefits of time-lapse for embryo evaluation
- Robust model, which can be safely used by a wide range of clinics
- Easy to use model with only a few variables to annotate

**Principles of KIDScore D3 Basic**

KIDScore D3 Basic is based on morphokinetic information from more than 3300 embryos with known implantation status after a day 3 transfer.

This large dataset makes it possible to distinguish broad statistical patterns that are generally applicable. KIDScore D3 Basic is designed as an Avoidance model. This means that embryos ranked low by the model have a statistically low chance of implanting. In comparison, embryos ranked high by the model have a statistically higher chance of implanting. As KIDScore D3 Basic is based solely on morphokinetic information, morphology should always be taken into consideration.

**Practical usage**

The use of KIDScore D3 Basic is based on a few simple annotations performed on the EmbryoViewer software.

**Applying KIDScore D3 Basic**

Select an active EmbryoSlide culture dish and go to the Compare & Select page of the EmbryoViewer software.

1. From the Model drop-down menu at the top of the page, select “KIDScore D3 Basic.”
2. Each embryo will be assigned a score from 0 to 5 based on the annotations and the avoidance criteria of the model.
EMBRYOSLIDE® CULTURE DISH

Unique identification of each embryo
Micro-numerals next to well bottom visible in dissection microscope during embryo handling (patent pending)

Safe and easy handling
- Embryo settles at the bottom of the well. Conical sides of the well automatically place the embryo in a central depression with a diameter of 0.2 mm for direct thermal contact with a heated tray holder
- Vertical "tail-fin" ensures a firm grip and safe handling
- Separate lid with small fins for easy detachment
- Facilitates sampling of spent media for subsequent analysis of proteome or secretome (patented)
- Compatible with standard microscopy

- Standard slide format (25 x 75 mm)
- Optical grade polymer optimised for microscopy
- 4 small wells designed for flushing of the embryos (this feature is currently not available in the US)

Safe, non-humidified environment
Water impermeable polymer slide and cover of immersion oil prevent dehydration during handling in low humidity laboratory air and in dry incubators
ES SERVER

Expand your possibilities

ES server provides the storage and infrastructure hub to run various applications associated with the EmbryoScope time-lapse system.

The server is designed to support a range of new applications including the EmbryoScope Counseling App and a patient barcode labeling system. New features and applications will use the capabilities provided by the ES server – the main building block of your network.

The ES server is a powerful platform which enables access to your data. Time-lapse data is stored on the ES server from all connected EmbryoScope time-lapse incubators and accessed from multiple EmbryoViewer workstations. Authorised users can even access the data stored on the server from another clinic or another remote location using a secure connection. This enables users to view, annotate and select embryos with geographical flexibility, thereby enhancing productivity.

Europe: CE-marked class I medical device
Currently not available in the US
Main capabilities

Flexible workflow
- Single database for analysis
- Connect from two or more EmbryoViewer workstations
- Access from remote locations through a secure connection (min. 100mbit)

Multiple users can annotate simultaneously

Remote office features
- View and review embryo development
- Embryo annotation
- Embryo selection
- Data export
- Video export

Typical storage capacity: 2500 treatments (upgradable)

Add-on features

- Inform patients about their IVF treatment and development of their embryos with the EmbryoScope Counseling App
- Annotate embryos from multiple EmbryoViewer workstations
EMBRYOSCOPE™
COUNSELING APP

Improve your patient communication

The EmbryoScope Counseling App offers the capability of educating your patients about embryo development and the ability to show patients the videos of how their own embryos developed in the EmbryoScope time-lapse incubator.

- An ideal tool for patient consultation
- Guide patients through the EmbryoScope time-lapse system treatment benefits versus standard incubation
- Show examples of a patient’s developing embryos
- Show examples of good and poor developing embryos
- Log in to show patients how their own embryos have developed

The capability of showing patients their own embryos requires an annual ES server connection license for each device used.

Find the "EmbryoScope Counseling App" on the App Store on your iPad and get free access to the app’s main features.
# TECHNICAL SPECIFICATIONS

## EmbryoScope™ time-lapse incubator

### Instrument

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>Six disposable EmbryoSlide® culture dishes holding 12 embryos each</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>Individual culture dishes may be inserted and removed independently</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>$W \times D \times H$ (60.3 x 56.0 x 43.5) cm / (23.7 x 22 x 17.2) in</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>60 kg / 121 lbs</td>
</tr>
<tr>
<td><strong>Input voltage</strong></td>
<td>110-240 V AC</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>120 W</td>
</tr>
<tr>
<td><strong>Operating range</strong></td>
<td>20 °C – 30 °C</td>
</tr>
<tr>
<td><strong>Alarm system</strong></td>
<td>Continuous internal system integrity check for separate subsystems of the instrument. Monitoring of incubation conditions and subsystem integrity; audible and visible alerts when incubation conditions out of range.</td>
</tr>
</tbody>
</table>

### Image acquisition

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focal planes</strong></td>
<td>Select up to 17 focal points at each time point in user defined vertical increments Allowed number of focal planes depend on selected cycle time</td>
</tr>
<tr>
<td><strong>Built-in microscope</strong></td>
<td>Leica 20x, 0.40 LWD Hoffman modulation contrast objective specialised for 635 nm illumination</td>
</tr>
<tr>
<td><strong>Camera resolution</strong></td>
<td>1280 × 1024 pixels, 3 pixels per µm, monochrome, 8-bit</td>
</tr>
<tr>
<td><strong>Embryo illumination</strong></td>
<td>≤ 0.032s per image using single red LED (635nm) gives 34µW cm⁻² for image acquisition</td>
</tr>
<tr>
<td><strong>Time between acquisitions</strong></td>
<td>10 min. cycle time for 7 focal planes, 2 min cycle time with single focal plane</td>
</tr>
</tbody>
</table>

### Tri-gas incubator

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
<td>30 °C to 45 °C ± 0.2 °C*</td>
</tr>
<tr>
<td><strong>Oxygen</strong></td>
<td>5 % to 20 % ± 0.3 %</td>
</tr>
<tr>
<td><strong>CO₂</strong></td>
<td>2 % to 10 % ± 0.2 %</td>
</tr>
<tr>
<td><strong>Active air circulation</strong></td>
<td>Full purification of gas volume every 20 minutes</td>
</tr>
<tr>
<td><strong>Volatile organic compounds</strong></td>
<td>Removed by active carbon filter</td>
</tr>
<tr>
<td><strong>Particles</strong></td>
<td>Removed by HEPA filter which retains 99.97 % particles &gt;0.3 µm</td>
</tr>
</tbody>
</table>

### Data acquisition

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network</strong></td>
<td>100 Mb Ethernet</td>
</tr>
<tr>
<td><strong>Operating system</strong></td>
<td>Microsoft Windows®</td>
</tr>
<tr>
<td><strong>Data exchange</strong></td>
<td>Ethernet</td>
</tr>
<tr>
<td><strong>Data format for images</strong></td>
<td>JPEG</td>
</tr>
<tr>
<td><strong>Monitor</strong></td>
<td>12.1” embedded touch screen</td>
</tr>
</tbody>
</table>

Europe: CE-marked class IIa medical device  USA: FDA 510(k) clearance
### EmbryoViewer® software

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PC</strong></td>
<td>Powerful small form factor PC</td>
</tr>
<tr>
<td><strong>PC dimensions</strong></td>
<td>W x D x H (3.5 x 18.0 x 18.0) cm / (1.4 x 7.1 x 7.1) in</td>
</tr>
<tr>
<td><strong>Display dimensions</strong></td>
<td>W x D x H (58.0 x 21.0 x 42.0) cm / (22.8 x 8.3 x 16.5) in</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>1.3 kg / 2.8 lbs</td>
</tr>
<tr>
<td><strong>Input voltage</strong></td>
<td>110-240 V AC</td>
</tr>
<tr>
<td><strong>Jog wheel</strong></td>
<td>Delivered with for ease of video replay</td>
</tr>
<tr>
<td><strong>Data export</strong></td>
<td>Patient and annotation data can be exported to Excel format for further data processing</td>
</tr>
<tr>
<td><strong>Image export format</strong></td>
<td>JPEG</td>
</tr>
<tr>
<td><strong>Video export format</strong></td>
<td>AVI</td>
</tr>
</tbody>
</table>

Europe: CE-marked class I medical device  USA: FDA 510(k) clearance

### ES server

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td>W x D x H (17.5 x 47.52 x 36.82) cm / (6.9 x 18.7 x 14.5) in</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>18.96 kg / 41.79 lbs</td>
</tr>
<tr>
<td><strong>Input voltage</strong></td>
<td>AC 120/230 V (50/60 Hz)</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>Typically 2500 treatments (upgradable). Depends on image acquisition settings.</td>
</tr>
</tbody>
</table>

Europe: CE-marked class I medical device

### EmbryoSlide® culture dish (design protected)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mirco well culture</strong></td>
<td>12 numbered wells for incubation of individual embryos in droplets with 25 µl media</td>
</tr>
<tr>
<td></td>
<td>4 wells for flushing of embryos</td>
</tr>
<tr>
<td></td>
<td>Separate compartments for embryo with media, under a common oil reservoir</td>
</tr>
<tr>
<td></td>
<td>No need for humidified environment</td>
</tr>
<tr>
<td><strong>Microscopy</strong></td>
<td>Fully compatible with standard and inverted microscopes</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>Standard slide format (25 × 75 mm)</td>
</tr>
<tr>
<td><strong>Packaging</strong></td>
<td>Dust free packing pouches</td>
</tr>
<tr>
<td></td>
<td>2D barcode for batch specification</td>
</tr>
<tr>
<td><strong>Sterilisation method</strong></td>
<td>E-beam sterilised according to ISO 11137 with SAL 10-6</td>
</tr>
<tr>
<td></td>
<td>Single use, sterile</td>
</tr>
<tr>
<td><strong>Toxicity test</strong></td>
<td>Embryotoxicity tested with 1-cell mouse embryos – minimum</td>
</tr>
<tr>
<td></td>
<td>80% expanded blastocysts after 96 hrs</td>
</tr>
<tr>
<td></td>
<td>Cytotoxicity test according to ISO 10993-5</td>
</tr>
<tr>
<td></td>
<td>Non-pyrogenic</td>
</tr>
<tr>
<td><strong>Labeling</strong></td>
<td>Barcode labels for easy tracking</td>
</tr>
<tr>
<td></td>
<td>(Optimal add-on, ES server required)</td>
</tr>
</tbody>
</table>

Europe: CE-marked class IIa medical device  USA: FDA 510(k) clearance
ORDERS & CUSTOMER SUPPORT
Contact your local sales representative for prices and availability. Orders can be placed through our website at www.vitrolife.com/fertility, where you also can chat with us. You can also contact us by email and phone on the following numbers:

**Sweden office**
Phone: +46 31 721 81 00
Email: order.fertility@vitrolife.com

**US office**
Phone: +1 866 848 7687
Email: order.us@vitrolife.com

**Australia office**
Phone: +61 03 9329 1212
Email: order.au@vitrolife.com

**Japan office**
Phone: +81 03 6721 7240
Email: japan@vitrolife.com

**China office**
Phone: +86 10 6593 9890
Email: order.asia@vitrolife.com.cn

**Denmark office**
Phone: +45 8944 9500
Email: order@vitrolife.com

**TECHNICAL SUPPORT**
Chat with us at www.vitrolife.com/fertility, or contact us at the following:

**Global tech support**
support@vitrolife.com
support.embryoscope@vitrolife.com

**Tech support**
Americas: support.us@vitrolife.com
Asia: support@vitrolife.com.cn

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