Guided Annotation™ tool
Quick guide

CE

MD

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1 Introduction

This quick guide provides information on how to use the Guided Annotation tool, which is designed to provide a simplified annotation workflow. The tool is an add-on to the EmbryoViewer software. This quick guide should therefore be used in conjunction with the complete user manual for the EmbryoViewer software. See also the more detailed guidelines for the Guided Annotation tool (English only).

NOTE
• If the Guided Annotation tool is installed, this quick guide replaces the description of the **Annotate** page as provided in the user manual for the EmbryoViewer software.

1.1   Important warnings

The following warnings will ensure the correct use of the Guided Annotation tool by qualified clinic personnel. Users must be qualified to operate the tool and qualified to perform procedures associated with tool use in accordance with local qualification standards.

All users of the tool must agree to read and understand this quick guide and read the following warnings.

Users should contact Vitrolife immediately to report any incident and/or injury to a patient, operator or maintenance employee that occurred as a direct or indirect result of operating the tool and associated hardware. Any serious incident that has occurred in relation to the tool should be reported to the competent authority of the Member State in which the user is established.

WARNING
• For variables with a confidence estimate below the user-defined threshold, users must manually verify the estimates.

WARNING
• For non-timing variables, the time points suggested by the Guided Annotation tool should ONLY be used as a starting point. Embryo developments and characteristics are often dynamic, and their final annotation should therefore be based on a period rather than a single point in time.

Please also refer to the user manual for the EmbryoViewer software for a complete list of the restrictions that apply when the software is used.

1.2 General cyber security recommendations

Users are advised and expected to take the following measures to reduce cyber security risk in order to ensure that the device will work as designed in the intended user environment:

- Ensure that personnel are properly trained in cyber security awareness

- Prevent physical access to the equipment by unauthorised users

- Use strong passwords (at least eight characters including both uppercase and lowercase letters, numbers and at least one special character).

Users must inform Vitrolife A/S without any undue delay upon becoming aware of a cyber security vulnerability incident or any suspected security events.

For details about how to reduce cyber security risk, please refer to the separate guide on this subject provided by Vitrolife.

1.3 Intended users

Embryologists, other laboratory personnel and clinic staff at IVF clinics trained by Vitrolife A/S-certified instructors.

1.4 Clinical benefit

As an accessory to a medical device, the EmbryoViewer incl. Guided Annotation software provides the indirect clinical benefit of efficient evaluation and improved selection of embryos incubated in the incubator(s) connected to the system, thereby supporting:

- Improved implantation/pregnancy rate

- Reduced pregnancy loss rate.

1.5 Requirements for using the Guided Annotation tool

To be able to use the Guided Annotation tool, you need to have installed:

- EmbryoViewer software with the **Compare & Select** feature included, version 7.9 or later

- ES server with a valid licence file installed, version 7.9 or later.

NOTE
• The Guided Annotation tool cannot function without an annotation strategy. Annotation strategies are defined on the **Settings** page of the EmbryoViewer software. • Only users with administrator rights can create, edit, delete and activate/inactivate annotation strategies.

2 Annotations tab

Below is an overview of the various parts of the **Annotations** tab on the **Settings** page:

1. Annotation strategies
2. Description of the annotation strategy
3. Order of annotation variables
4. Logical groups of variables
5. Annotation variables included in the selected group

6. Set the confidence level (between 50% and 100%)
7. Switch on/off automatic confirmation of estimates
8. Add or remove variables
9. Description of the variable
10. Add or delete comments

1. List of available annotation strategies with indication of which ones are active.

2. Name and description of the annotation strategy.

3. **Annotation order**: variables included in this annotation strategy.

4. **Variable groups**: logical groups of variables, e.g. timing variables or stage-specific variables.

5. **Variables** box: overview of annotation variables included in the selected variable group.

6. Set the desired confidence level for automatic annotation estimates (applies to all strategies).

7. Switch on/off automatic confirmation of annotation estimates that are on or above the confidence threshold (applied on the **Annotate** page).

8. Buttons to add/remove variables or to change their order.

9. Description of the variable currently selected in the **Variables** box.

10. Add or delete user-defined comments. Can be used on the **Annotate** page.

2.1   Pre-defined annotation strategies

The Guided Annotation tool is delivered with two pre-defined annotation strategies:

- KIDScore D3 Annotation
- KIDScore D5 v3 Annotation (not available in the US).

3 Performing annotations

If the Guided Annotation tool is installed, this section replaces the description of the **Annotate** page as provided in the user manual for the EmbryoViewer software.

On the **Annotate** page, the Guided Annotation tool guides you through the process of annotating the variables that are part of the selected annotation strategy.

The **Annotate** page integrates an automatic image analysis feature. The feature automatically detects cell division and morphological events and inserts estimates of division timings and morphological parameters (PN, ICM and TE). The automatic image analysis will estimate cell division timings and morphological parameters with varying degrees of certainty (confidence levels). When setting up your annotation strategies, you can specify which confidence level you require for annotation estimates that can be automatically confirmed. If you set a high confidence threshold, the estimated timings and morphological parameters will most often be correct. However, you have to check more estimates manually. If you set a low confidence threshold, the estimates will more often be less precise, but you will have fewer estimates to check. The threshold should be based on the clinic's own tolerance.

Each button on the **Annotate** page has a keyboard shortcut, which is displayed directly on the button. You can use the keyboard shortcuts to speed up the annotation process:
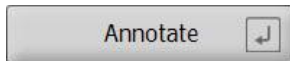
All estimates and annotations can be confirmed with the Enter key.

Recommended workflow to annotate variables for embryos:

1. On the **View Running** page, select a running culture dish.

2. Go to the **Annotate** page.

   The page lists all culture dishes that are part of the selected treatment. The number of available wells for each dish depends on the incubator used. The automatic image analysis will be active. Thus, for most variables, the page will display estimates of timing and morphological parameters.

   The estimates may have different confidence levels in relation to the confidence threshold defined on the **Settings** page. The confidence level of each estimate is displayed as follows:

   The estimate is *below the confidence threshold* (i.e. less confident than the entered level):
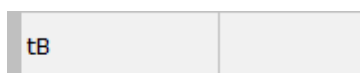
    (italics without boldface)

   The estimate is *on or above the confidence threshold* (i.e. as confident as or more confident than the entered level):

    (italics in boldface)
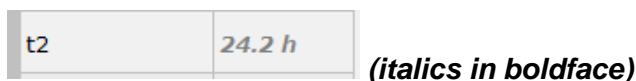
   Estimates for one or more variables may not be displayed for a number of reasons, e.g.:

   - The variables have not yet occurred.
   - The Guided Annotation tool is not set to estimate the variables.
   - The Guided Annotation tool is unable to automatically estimate the variables.

When you open the **Annotate** page, the division chart is based on estimated timings for embryo development stages. Once the annotations have been confirmed, the division chart also becomes available on the **View Slide** page and the **Compare & Select** page.

Confirm Estimates button to confirm all automatic estimates that are on or above the confidence threshold.

Automatic estimated timing for t2 on or above the confidence threshold.

Prev and **Next** buttons to jump to the previous or next embryo in the selected culture dish.

3.   From the **Strategy** field, select the desired annotation strategy:

Select an annotation strategy

|	NOTE
•	Only the strategies that are marked as **Active** on the **Annotations** tab of the **Settings** page are available.

4.   On day 1, select **Step by Well**.

5. Then annotate PN for all wells in the treatment. Mark all embryos that are *not* 2PN to be avoided: [×].

6. On the day of transfer/cryopreservation, go to the **View Slide** page and mark all embryos that have not developed as desired to be avoided: [×].

7. Go to the **Annotate** page and select **Step by Variable**.

> Step by
> ⦿ Variable   ○ Well
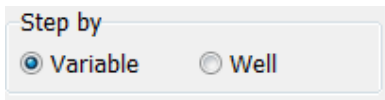
If the **Auto Forward** check box has been selected on the **Settings** page, the automatic workflow will not stop at variables on or above the confidence threshold. You still need to confirm these estimates when the workflow is complete.

> **Automatic Annotation Estimates**
> Confidence Threshold (%)
> 90 [⇅]   ☐ Auto Forward
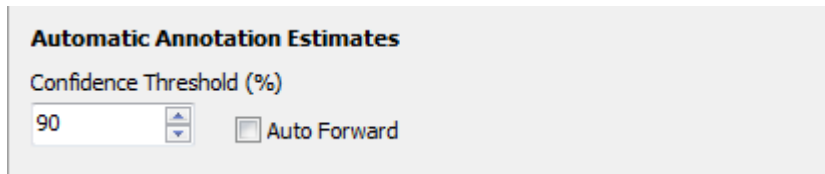
We recommend that you do not select the **Auto Forward** check box until you have gained some experience of working with the automatic image analysis.

8. Annotate all remaining unconfirmed variables in the annotation strategy for one well at a time.

   The Guided Annotation tool automatically activates the first well where the annotation is missing or has not been confirmed. Confirmed annotations appear in boldface:

> t2   **26.8 h**
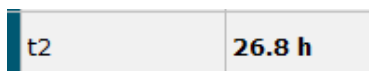
9. Confirm the estimates or, if required, adjust the automatically estimated value for each variable. Check whether the estimates are correct by forwarding and rewinding the time-lapse video and by changing the focal plane up and down.
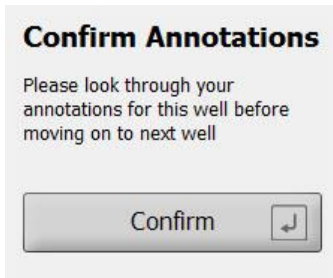
WARNING
• For variables with a confidence estimate below the user-defined threshold, users must manually verify the estimates.

10. Use the relevant buttons or keyboard shortcuts to perform the annotations, or enter a numerical value if you are prompted to do so. For timing variables, you can press the Enter key to insert the timing represented by the current image.

<table>
<tr><td colspan="1">WARNING</td></tr>
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WARNING
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11. Click the **Confirm** button when you have evaluated the annotations performed for the current embryo:

Confirm Annotations

Please look through your annotations for this well before moving on to next well

Confirm ⏎

The Guided Annotation tool now automatically proceeds to the next non-annotated well and forwards the video to the estimated timing of the first variable in the annotation strategy.

12. Continue annotating all wells. The progress is displayed next to each well:

Well	Dec.	Progress
AA-1		100 %
AA-2		25 %
AA-3		12 %
AA-4		12 %
AA-5		12 %
AA-6	✕	–
AA-7		
AA-8		
AA-9		
AA-10		
AA-11		
AA-12		
AA-13		
AA-14		
AA-15		
AA-16		

All annotations have been completed for well AA-1

12% of the annotations have been completed for wells AA-3 – AA-5

Well AA-6 is marked to be avoided for transfer

Empty wells

13. *Optional step:*

If one of the variables included in the annotation strategy is irrelevant to a specific embryo or you are unable to annotate the variable, click the **Not Applicable** button:

Not Applicable /
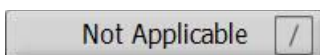
14. *Optional step:*

    a. Press * on the keyboard to go to the **Comments** field and add a comment to an image.

    b. If the comment has already been created as a user-defined comment, click the text and press Enter to insert it.


The comment will be displayed together with the associated image when you click the comments icon in the top right corner of the image:

Comments icon. Activated when you have entered a comment on the image. Click to display the comment.


Comment indicator   Open comment

All comments are represented by a red indicator on the division chart. When you select a comment in the **Comments and Events** box, the video will automatically jump to the time point in question.

When you have opened the comment, it will not automatically close. To close the comment box, click the close icon in the top right corner:

Close comment
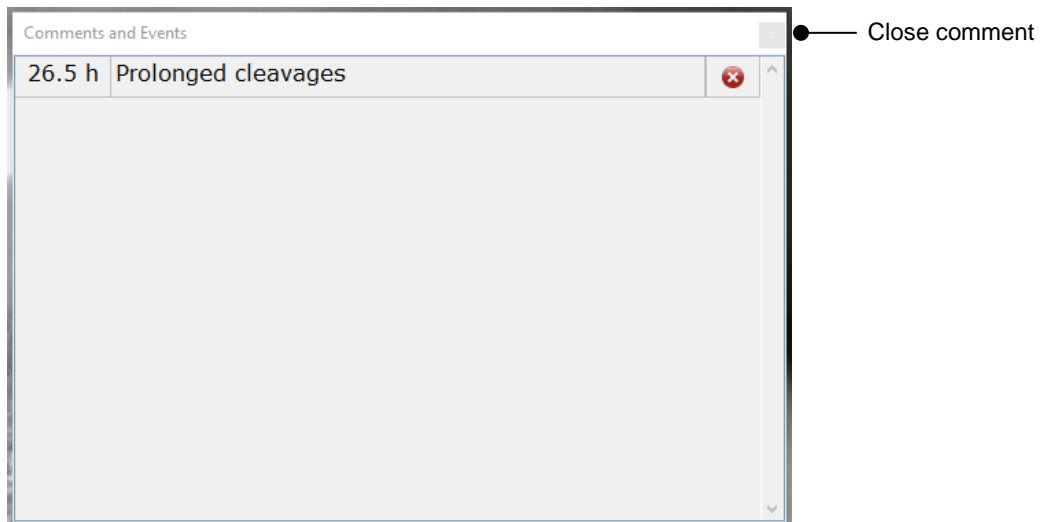
15.   *Optional step:*

Delete a comment by clicking the delete icon next to the selected comment:

Delete comment
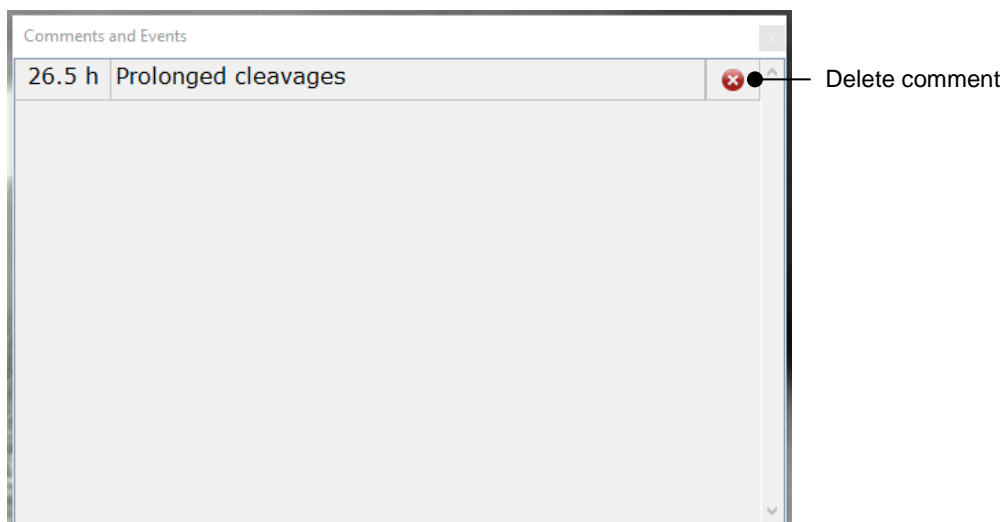
16.   *Optional step:*

Go to the **Compare & Select** page and apply the desired model to the annotated embryos in order to score the embryos and decide which ones to freeze and transfer:

17.   Click **Save**.

4 Symbols and labels

Label	Description	Note
CE	Declaration by the manufacturer that the device meets all of the applicable requirements in the Medical Device Regulation (EU) 2017/745	-
MD	Medical device	-
UDI	Unique device identifier	-
▲▲	Manufacturer name and address	See section 6.

5 Disposal of waste

In order to minimise the waste of electrical and electronic equipment, waste must be disposed in accordance with the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) as amended by Directive (EU) 2018/849. This includes: PCBs (lead-free HASL), switches, PC batteries, printed circuit boards and external electrical cables. All components are in accordance with the RoHS 2 Directive 2011/65/EU, which states that new electrical and electronic components do not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers.

6 Contact information

Urgently need help? Call our service hotline for support:

+45 7023 0500

(available 24 hours a day, 7 days a week)

E-mail support: support.embryoscope@vitrolife.com

(response within 2 working days)

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