TECHNOTE

![Vitrolife]

Guided Annotation: Setting up the tool

The Guided Annotation tool is designed to support the busy workdays in the IVF laboratory.
The tool guides you from one variable to the next in an annotation strategy and automatically forwards the embryo images to estimated timings of events.
The estimated timings of most commonly used morphokinetic variables are based on an image recognition algorithm. The algorithm has been developed by using state-of-the-art Artificial Intelligence technologies to accurately detect timings of development events. This way the tool supports consistent and efficient annotations. Your own validation completes the workflow.

Guided Annotation used in conjunction with KIDScore models provides the optimal support for your consistent embryo assessment process.

Main benefits

The Guided Annotation tool offers two main benefits:
- Faster annotation process
- Improved consistency of embryo assessment

These benefits are obtained by defining an annotation strategy and a desired level of automation.

Setting up Guided Annotation is an simple process that ensures the consistency and efficiency of your daily workflow.

Settings page – customising the annotation process

On the *Settings* page->*Annotations* tab you will find features for setting up one or more annotation strategies that are relevant in your clinic (Figure 1).
Here you can design, import and sort annotation strategies.

You may also import variables and add commonly used phrases to the list of pre-defined comments in the "User defined Comments" box (A).

The tab sheet contains logical groups of variables which you may include in your annotation strategy (B). When double-clicking a variable in the list, the variable is added to the strategy. The variable will appear on the "Annotation order" list (C). In this list you can also change the order of included variables by using the arrow buttons.

On the left side of the tab sheet you can import variables or strategies as well as activate strategies which have already been defined. All imported or designed strategies appear on the "Active items" list (D).

A very useful feature is the *Skip avoided embryos* check box in the centre of the page. Activating this checkbox will help streamline the annotation process by excluding all embryos marked with this button ❌ from the workflow.
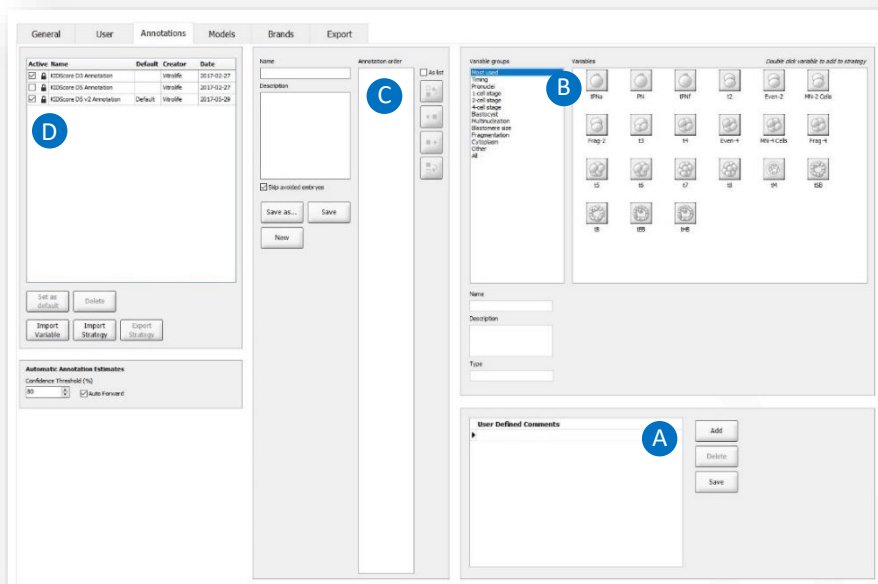

*Figure 1: The **Settings** -> **Annotations** tab sheet*

Considerations when setting up your annotation strategy

Setting up the strategy

When setting up an annotation strategy for clinical use, we recommend including only variables that are used for final embryo evaluation, e.g. by applying a model.
Only variables relevant to your decision on whether to transfer, freeze or avoid an embryo should be included in the strategy.

To obtain the most stringent consistency during the annotation process, we recommend defining your strategy to start by annotating PN, then proceed to all timing variables and finally all variables related to morphology. This will enable you to follow the uninterrupted development of each embryo up until the day of transfer.

Alternatively, if you perform annotations on a daily basis (e.g. if you decide daily whether to continue culturing the embryos) you may instead find it useful to list the variables in a temporal order, first listing the variables that you expect to see on the first day of culture followed by the variables that you expect to see on the second day of culture, etc.

Adjusting the accepted confidence level of morphokinetic estimates

The Guided Annotation tool estimates the timings of the most commonly used morphokinetic events and morphology values. These automatic estimates are based on image recognition algorithms which also evaluates the level of confidence for each estimate.
On the "Settings" page you can indicate the level of confidence that you will accept by entering the required level (1-100) in the "Confidence Threshold" box (Figure 2 (A)).
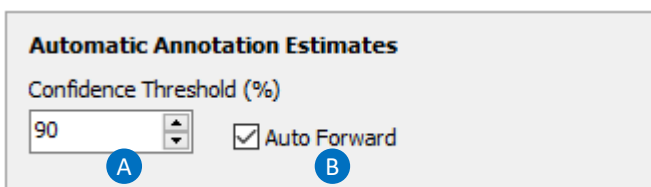
*Figure 2: You can adapt the workflow of the Guided Annotation tool by defining your Confidence Threshold (A) and enabling/disabling the **Automatic Forward** function (B). The function is applied to variables in the annotation strategy that are estimated with a confidence level on or above the threshold.*

The chosen level of confidence affects the annotation process, and the way timings are displayed: Timing estimates on or above the confidence threshold are displayed in **bold italics** (C) and those below the threshold are displayed in *non-bold italics* (D) (Figure 3).

*Figure 3: Morphokinetic variables as estimated by the Guided Annotation tool. Estimates on or above the confidence threshold are displayed in **bold italics** (C) and those below the threshold are displayed in italics (D)*

If you select the checkbox **Auto Forward** in the box **Automatic Annotation Estimates**, the automatic workflow will not stop at estimates which are on or above the confidence threshold during the annotation (Figure 2 (B)).

> **Tips & Tricks for setting up the Guided Annotation tool**
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> A new strategy may be created by using an existing strategy as a basis. Simply mark the existing strategy on the list, enter a name for the new strategy, and add/remove variables or change their order of appearance on the list. This also applies to imported strategies, including the strategies used for the KIDScore models. This will be useful if you want to include one or more additional variables used for embryo evaluation in your clinic.
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> If your clinical workflow involves daily decisions on whether to continue the cultivation you may benefit from creating daily models, each model reflecting the events expected to occur on that specific day.