

iDAScore

Empower your decisions.
Intelligent Data Analysis
for embryo evaluation.



Vitrolife 

AUTOMATED ANALYSIS AT YOUR FINGERTIPS

The advent of time-lapse technology in IVF has provided a platform that supports improved embryo culture and selection, as well as increasing knowledge about embryo development. Advances in artificial intelligence (AI) methods for image analysis allow us to take embryo evaluation to the next level.

iDAScore makes use of deep learning to provide fully automated analyses of time-lapse sequences. Now you can get an objective ranking based on the likelihood of implantation of each of a patient's embryos at once - at the touch of a button. The future of embryo evaluation begins here.

Improved evaluation

Traditional embryo evaluation methods are prone to subjectivity and external factors. Experience level, time constraints and lab staffing may all affect evaluation of embryos. It has been shown that an embryologist may score the same blastocyst differently on separate occasions.^{1,2} iDAScore objectively "compares" a given embryo with other embryos that have similar development patterns, and generates a score correlating with the likelihood of implantation.



"iDAScore provides an impressive ranking of embryos. We see that the correlation with implantation, shows the same positive trend as with KIDScore."

This could be a game changer in the future of embryo evaluation, as we gain more trust in using AI for embryo evaluation."

*Tony Price, Embryology Manager
Wessex Fertility, UK*

AI scoring is not affected by



Workload



Fatigue



Emotions



Illness



Human error



**Experience
level**

iDAScore: EMPOWER YOUR DECISIONS

The iDAScore algorithm analyses each of the patient's embryos and provides a score correlating with the likelihood of implantation. Output scores are automatically generated for all embryos in a consistent and objective manner.



Consistent

Consistent approach to embryo evaluation. Day to day differences in staffing, or introduction of new embryologists will not affect the way embryos are scored.



Objective

Objectively analyses the full embryo development sequence, without inherent human bias.



Fully automated

Analyses time-lapse sequences continuously, without the need for manual processing of data or videos.



Reliable

Provides a reliable ranking of a patient's cohort of embryos. Embryos can be evaluated adjunctively with EmbryoViewer software or other well established scoring schemes.



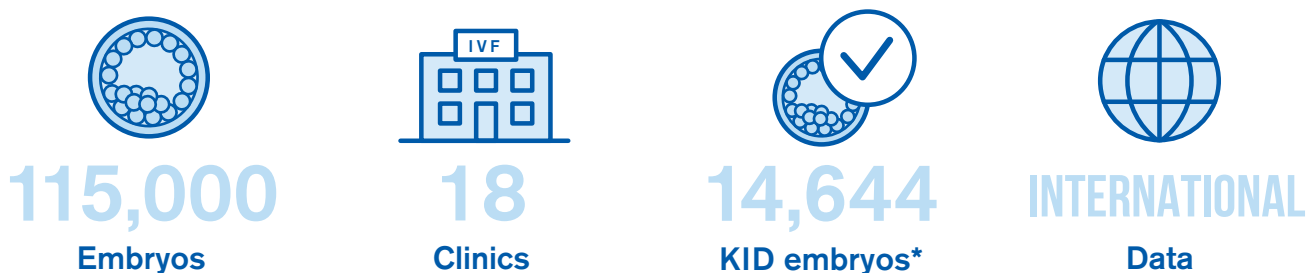
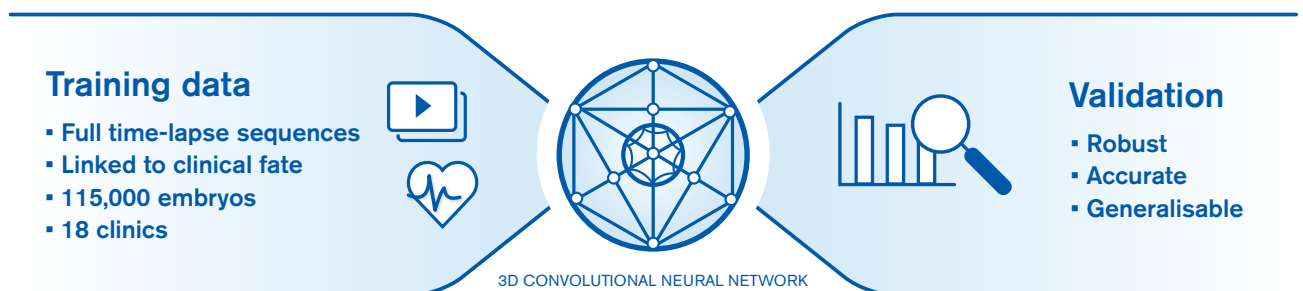
"With just a touch of a button, it provides us with scores instantly. It is impressive and this helps us improve our workflow and efficiency dramatically as there will be no need for annotations. It is a great tool for improving consistency in our evaluations as well."

*Hana Watanabe,
Embryologist
Hiroshima HART Clinic,
Japan*



BUILDING ON THE POWER OF AI

The iDAScore algorithm was developed by our own AI team and trained on full time-lapse sequences of developing embryos with known clinical fate.



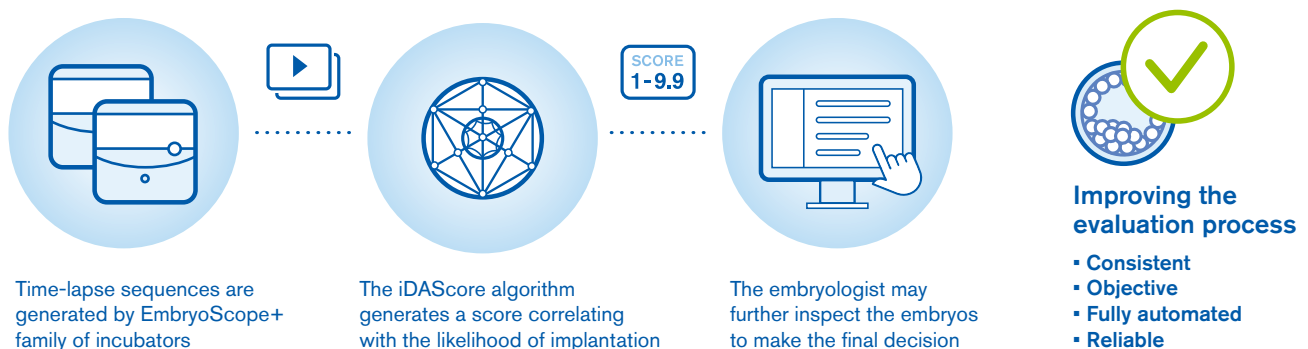
Deep Neural Network

iDAScore is based on a 3D convolutional neural network developed using deep learning. Deep learning thrives on big data; performance improves as data input is increased. iDAScore was trained to identify features associated with poor or high implantation potential, using more than 115,000 time-lapse sequences of embryos.

Diversity in data

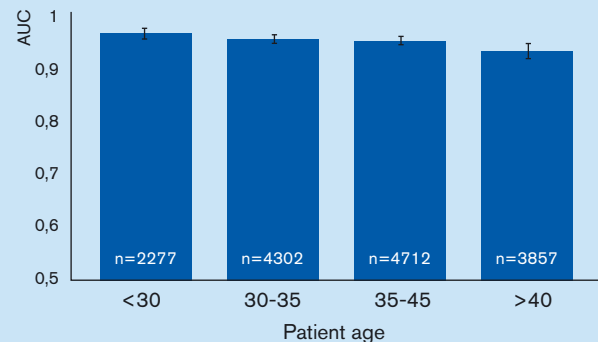
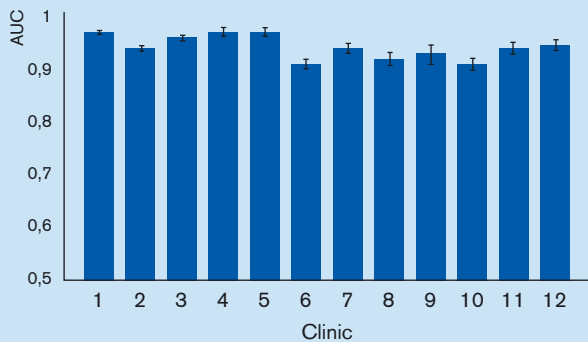
AI may learn from all the properties present in the data. It cannot learn from what is not there, and therefore lack of diversity can lead to poor AI performance for specific subgroups of data, resulting in unwanted bias. iDAScore was trained on an international dataset that includes many different clinical practices to ensure diversity.

How iDAScore works



A robust algorithm

iDAScore was trained and validated on a large and diverse dataset, resulting in a robust AI model that generalises well to clinics whose data was not included in the training process. Automatic embryo scoring by AI shows convincing results for all provided subgroups of data and can be expected to generalise well to all clinics.

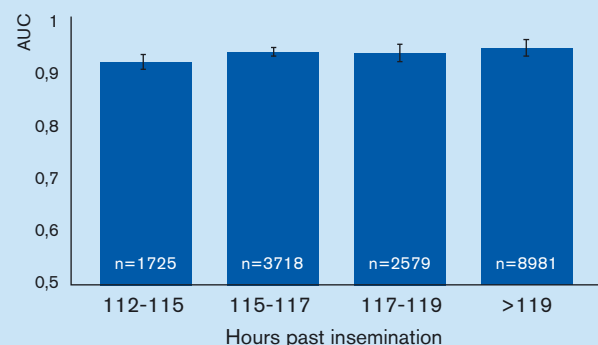
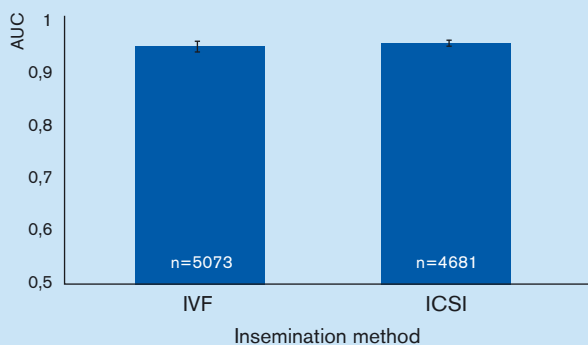


Generalises across clinics³

To test how well the model generalises, a clinic hold out test was performed. Data from 18 clinics was used, where data from 1 clinic was excluded from training and the AUC for the hold out clinic was calculated. Data from the 12 clinics contributing the most data is shown. AUC when considering all embryos exceeded 0.9 for the hold out clinics.

Performance not affected by patient age³

The algorithm was tested on data across age groups. We see that iDAScore performs equally well at ranking all embryos in all of the age groups tested. AUC in the 40+ category is slightly lower, likely due to patient factors.



Works equally well in IVF or ICSI³

Different clinics may have different distributions of the proportion of IVF or ICSI insemination. In this study, all data with associated labelling of insemination type was analysed. This shows equal performance regardless of insemination method.

Culture period independent³

Time of culture was also shown to provide similar results. Data was subdivided into 4 subgroups, <115 hpi, 115-117 hpi, 117-119 hpi and >119 hpi to get a more detailed view. This confirms that clinics have a flexible time window to perform analysis.

AUC: AUC is a measure of the ability of the algorithm to sort embryos based on their likelihood of implantation. An AUC of 1 means that the prediction is always correct whereas an AUC of 0.5 corresponds to random predictions.

Hold out test: A hold out test is a method to assure that the model is based on general and not case-specific patterns. In a hold out test the data set is split into a training set and a validation set to be able to validate the model on independent data. This is done repeatedly until all subsets of data have been used for validation.

SIMPLICITY IN ACTION

It is simple and intuitive, with no manual export or import of images or videos required.

Accessed from your EmbryoViewer workstation

iDAScore is an optional new module which can be accessed from a new interface - the Vitrolife Technology Hub - on your EmbryoViewer workstation.

Scores for the entire cohort

The iDAScore algorithm automatically generates a score (from 1 to 9.9) for each embryo in the entire cohort of any individual patient. The higher the score, the higher the likelihood of implantation. Low priority embryos, including those with abnormal PN status, are automatically identified.

Column with scores for each embryo

Decision buttons

Click the eye to see the last image taken

Click the arrow to play the entire video, or to make annotations and comments

Non-2PN highlighted with warning

Embryo	Score	Fresh	All
AC-12	9.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AC-2	9.2	<input type="checkbox"/>	<input type="checkbox"/>
AC-6	9.0	<input type="checkbox"/>	<input type="checkbox"/>
AC-4	8.2	<input type="checkbox"/>	<input type="checkbox"/>
AC-5	8.0	<input type="checkbox"/>	<input type="checkbox"/>
AC-1	8.0	<input type="checkbox"/>	<input type="checkbox"/>

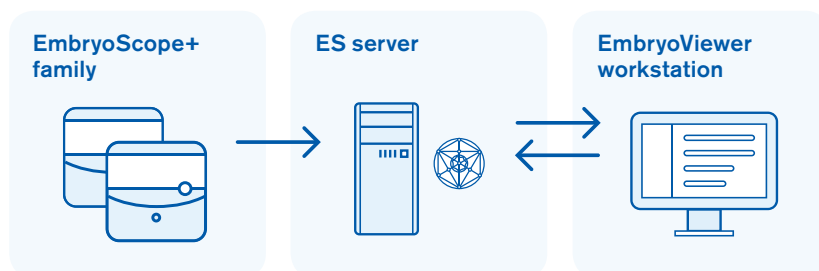
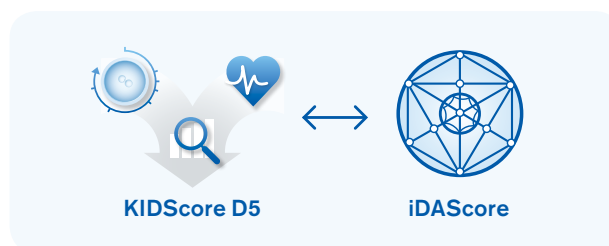
0 PN !

The final decision is yours

iDAScore provides a score for each embryo and provides a reliable way of ranking embryos to support your evaluation process. Embryos can be further evaluated from the iDAScore interface, or by switching to the EmbryoViewer software.

Reliable decision support tools

KIDScore D5 decision support tool has been proven to be a reliable tool for ranking embryos according to likelihood of implantation.^{4,5,6,7} iDAScore performs as well as or slightly better than KIDScore D5⁸, but without the need to perform manual annotations.



iDAScore is suitable for use with all EmbryoScope+ family of instruments.
iDAScore works for embryos cultured to day 5.

Installing iDAScore

iDAScore can be installed on your ES server and is accessed as a module on our new Vitrolife Technology Hub. iDAScore is the first module to be offered via the Vitrolife Technology Hub.



“With a clear easy to use interface iDAScore makes choosing between multiple blastocysts an easier job. The score matches well with the decisions of experienced

embryologists, and KIDScore D5. We think that in time, iDAScore will become an invaluable tool in helping to make our day to day clinical decisions. In addition, we are hoping to use it to assess already frozen embryos which were cultured in the EmbryoScope+.”

*Alan Birks, Senior Clinical Embryologist
Manchester fertility clinic, UK*



“iDAScore is an ideal tool for providing a fast prioritization of embryos for further examination. This is especially useful for guiding new embryologists

and helping them to evaluate embryos in a way that is more consistent with evaluation by senior staff with many years of experience.”

*Kirsten Simonson, Clinical embryologist
Maigaard fertility, Denmark*



A total solution at your service

Vitrolife has everything your clinic needs to maximise time-lapse culture and evaluation, including time-lapse monitoring systems and a specially formulated culture medium. Whether you want to implement and enjoy the benefits of an integrated time-lapse system for 8, 15 or 24 patients or complement your current set-up with a high capacity culture incubator, you can feel confident partnering with us.

TOGETHER. ALL THE WAY™

ORDERS & CUSTOMER SUPPORT

Contact your local sales representative for prices and availability.
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