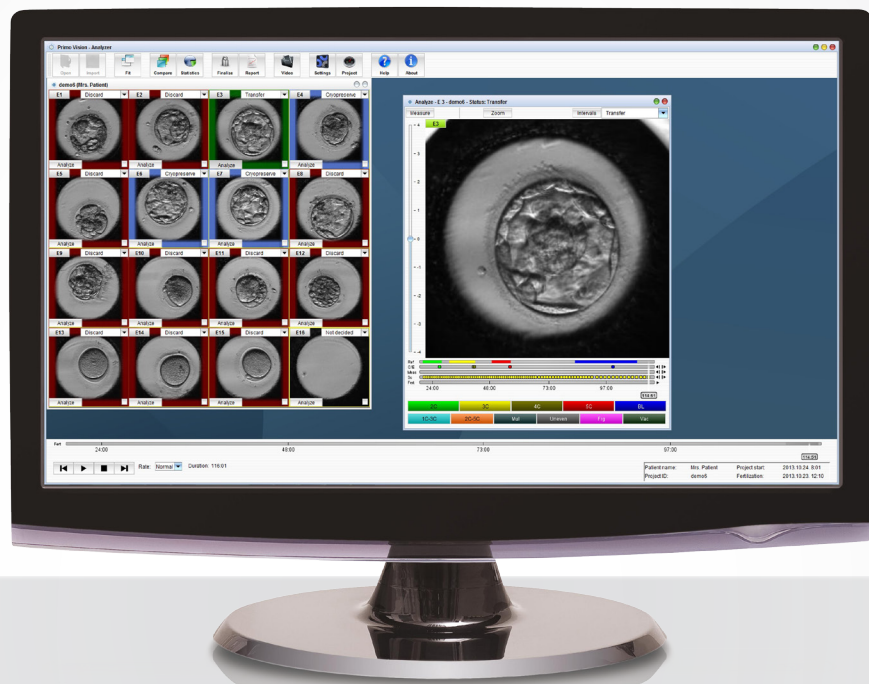


PRIMO VISION

Undisturbed time-lapse culture for better embryo selection.



TIME-LAPSE AND THE WINDOWS OF OPPORTUNITY

Primo Vision allows you to follow the whole sequence of embryo development in an undisturbed and ideal environment. With increased information based on detailed analysis, it enables you to confidently select the best embryos for transfer.

New possibilities

Time-lapse technology has the potential to raise your clinic's success rate. With high-quality images you can follow embryo development in detail to perform the most accurate evaluations. In minutes a sequence can reveal events that are rarely seen with conventional microscopy, such as abnormal cleavage or altering morphological events.

Solving the observation dilemma

The desire to regularly observe embryos in order to make accurate assessments and the need to minimise disturbance to avoid stressing them has been a long-standing dilemma. Time-lapse technology solves this problem by giving you continuous observation in undisturbed culture with strict environmental control.



Selection and deselection

Almost 20% of embryos divide incorrectly or exhibit abnormal cleavage¹. With time-lapse imaging techniques it is possible to make timely selection of not only morphologically good blastocysts but also to observe morphokinetics in a way that is impossible with conventional microscopes. All rare events are recorded without disturbing the embryos.

Increased flexibility saves time

Primo Vision offers flexibility in the lab. With time-lapse technology it is easy to check embryos without strict time frames that require inconvenient scheduling for weekends and free time.

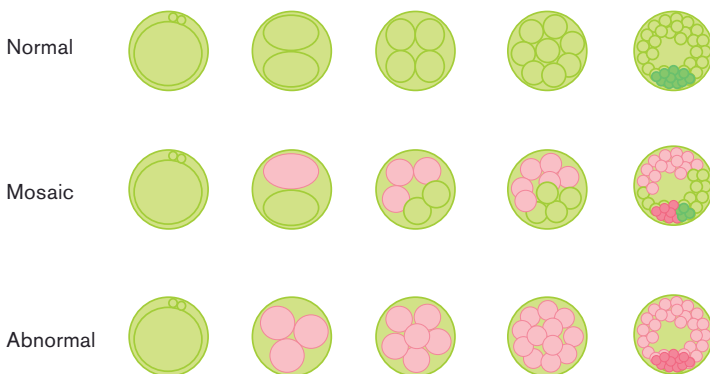
Fulfilling patient expectations

Transferring more embryos to maximise the chance of pregnancy frequently results in multiple births, which is a risk for both mother and child. With time-lapse monitoring the chance for successful single-embryo transfer is greatly improved: minimal stress during culture and the effective selection of a viable embryo result in high implantation potential.



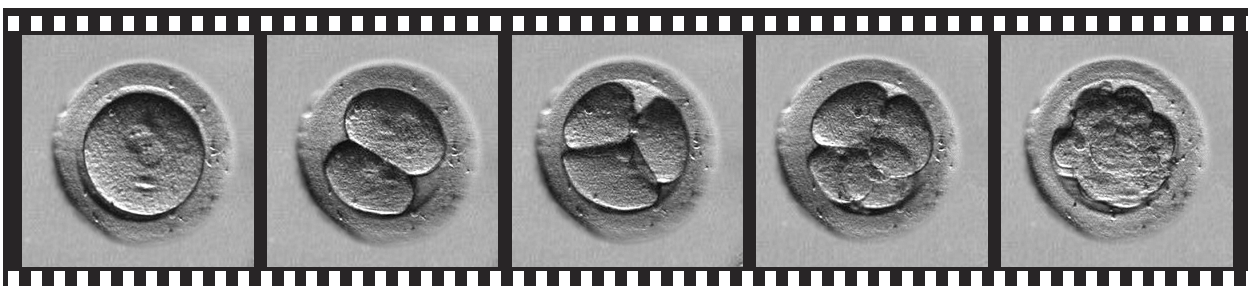
Primo Vision and the first time-lapse baby

In May 2010 Primo Vision passed an important milestone when Dr. Matyas and Dr. Kovacs from Kaáli Institute in Hungary reported the birth of the world's first baby born using time-lapse observations and criteria.²



Without the information provided by time-lapse imagery it is almost impossible to distinguish between normal and abnormal patterns of embryo morphology.

A time-lapse sequence showing normal embryo development



IMPROVED EMBRYO SELECTION WITH MINIMISED STRESS

Primo Vision gives a detailed view of embryo development for advanced selection and improved success rates. The flexible system minimises stress by allowing embryos to grow in disturbance-free conditions. By using existing incubators, you maintain your clinic's trusted culture environment.

All the morphological and kinetic information, presented in the way you need

The Primo Vision system uses inverted microscopy with Hoffman contrast imagery to provide high-quality time-lapse images. The system allows you to follow morphological changes in detail to make the most accurate evaluation.

Undisturbed and minimum stress embryo culture

Primo Vision avoids the need to move embryos or unnecessarily expose them to light from conventional examination. Throughout development they remain safe and undisturbed inside the incubator. Moreover, the EVO microscope only receives electricity during imaging and remains electromagnetically silent at all other times.

Primo Vision
Analyzer software

Primo Vision
EVO
Microscope
USB-connected



Primo Vision Embryo
Culture Dish
9-16 wells for group
culture



Special dish for group culture gives improved results

Group culture of embryos has been found to enhance embryo development²⁻⁶. Therefore a specially designed group culture dish is part of the Primo Vision system. Each Primo Vision embryo culture dish combines the benefits of culturing up to 9 or 16 embryos in group culture while keeping them in place for individual monitoring. Primo Vision embryo culture dishes are CE-certified and MEA-tested.

Keep your trusted incubator

Primo Vision records embryo development inside your own incubator. This ensures continuity of your laboratory conditions with safety and minimal disruption to your routines.

A robust and reliable system

The Primo Vision microscopes have no moving parts that can affect embryo development. All electrical currents are cut between image acquisitions. The robust and modular design means that maintenance can be done without affecting the whole system.

Maximum safety inside



Minimal light The total light load in a 5-day project with a 10-minute imaging interval is less than the light exposure in a one-time routine microscopic investigation.



No EMF Electricity is controlled outside of the incubator, through the controlling unit. All electrical currents are cut between image acquisitions.



No moving parts Reduces the risk of exposing embryos to shear stresses. Primo Vision's wide field of view allows images to be taken of all the embryos at same time, which eliminates the need to move embryos in the incubation area.



No VOCs Atmospheric conditions in the incubator are clear of volatile organic compounds such as lubricants needed for moving parts.



Customised computer hardware



3D mouse (optional)



The EVO microscopes can be fitted in your existing incubator. Throughout the whole development cycle the embryos remain totally undisturbed.

FAST AND SIMPLE INTEGRATION TO YOUR LAB

Keep your routines

Primo Vision is easy to install and use without disturbing the daily routine in your lab. The system integrates quickly into most clinics by utilising the existing equipment and maintaining culture conditions. The software comes with pre-set reference values that simplify system operation, but also allow modification according to your preferences.

Easy-to-use software

The user-friendly interface provides an easy and reliable way to compare and analyse the development of embryos. It allows identification of morphological events such as: PN formation, ploidy, multinucleation, fragmentation and blastocoel dynamics.

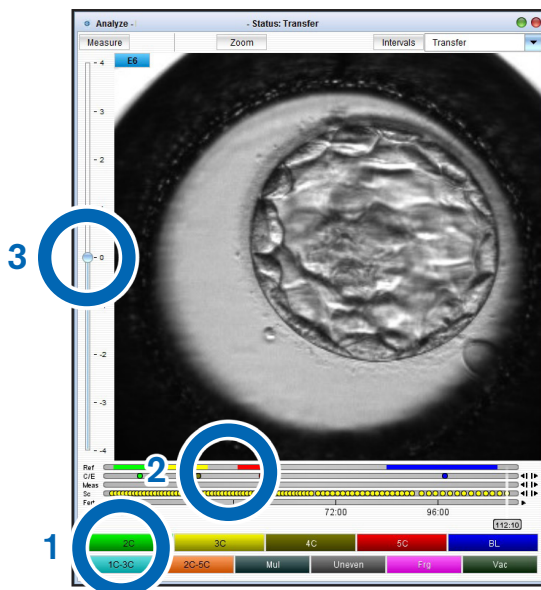
Easy-to-use dish

The arrangement of the microwells in the dishes allows simple adjustment, tracking and identification of embryos with the benefits of group culture. The dishes are available with microwells for up to 9 or 16 embryos. All dishes include an alphanumeric marking to help you with the placement and identification of embryos.



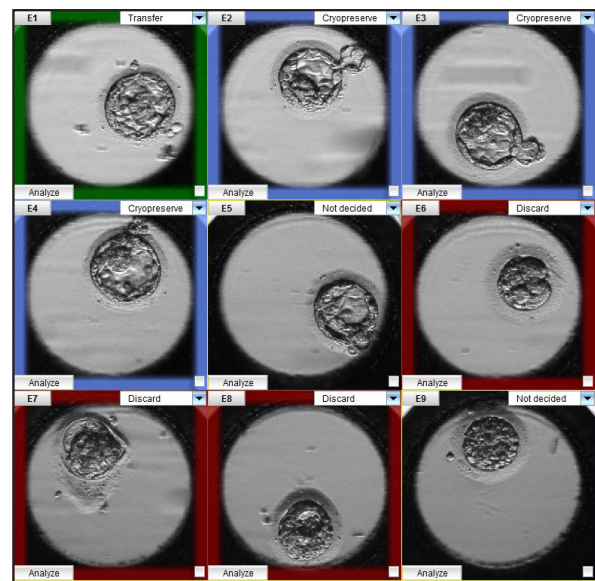
Scan the QR code to watch an instruction movie on how to load the dish.

Analyse in minutes



1. Clear status buttons for quick and easy marking of cleavage times and events.
2. Visible reference values, for immediate comparison with annotated cleavage times.
3. Scan strip for images taken in different focal planes.

Colour-coded decision marking



Time-lapse sequences of embryos can be colour-coded according to your assessment. In this example, green is for transfer, blue is for cryopreservation and red means discard.

START SMALL OR GO BIG

Jump the investment hurdle and grow with your needs.

Starting with time-lapse is easy

Primo Vision has a modular structure that significantly lowers the investment hurdle. The number of microscopes to start with is a flexible choice. After that, it is easy to plan ahead for new modules as you grow. At all times the system can be adjusted to your clinic's routine.

Flexibility – just plug, play and grow

The flexible software lets you monitor event and cleavage timings, morphology and cleavage patterns. The flexible hardware allows you to install additional microscopes at any time; one controlling unit can handle up to six microscopes. With a USB connection between the controlling unit and the microscope, integration could not be faster or simpler.

WORK WHERE YOU WANT SHARE WHEN YOU WANT

Involve your colleagues

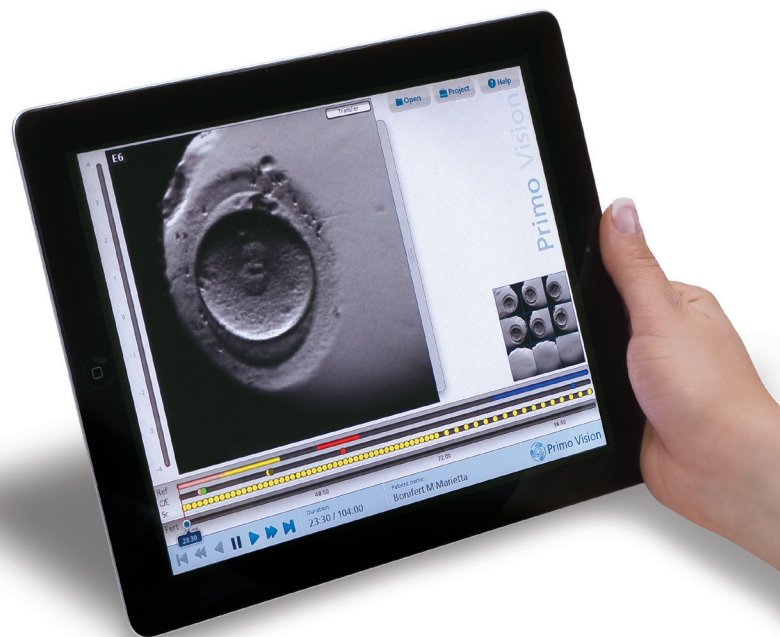
The system allows new and flexible working methods and has an enormous value for teaching, training and research. The remote access option gives access to closed or running projects at different locations in the clinic for monitoring or consultation with colleagues.

Keeping parents in the loop

Time-lapse films are a wonderful way to involve parents in the process of embryo development. Depending on your clinic's policy, you can share the pictures of their baby's development from the very beginning.

Time saving efficiency

With Primo Vision your lab can benefit from fewer time-dependent routines with 24-hour observation over weekends and holidays. The assessment of embryos is more flexible than traditional evaluation methods, as they remain undisturbed inside the incubator for this procedure.



THE PRIMO VISION EMBRYO CULTURE DISH

The Primo Vision Embryo Culture Dish is specially designed for the Primo Vision Time-lapse Embryo Monitoring System.

Facilitates group culture

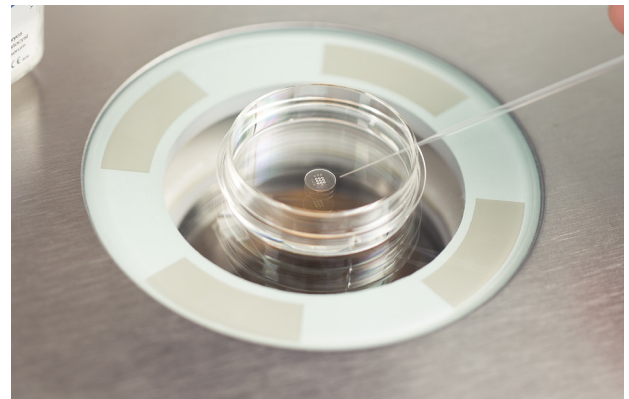
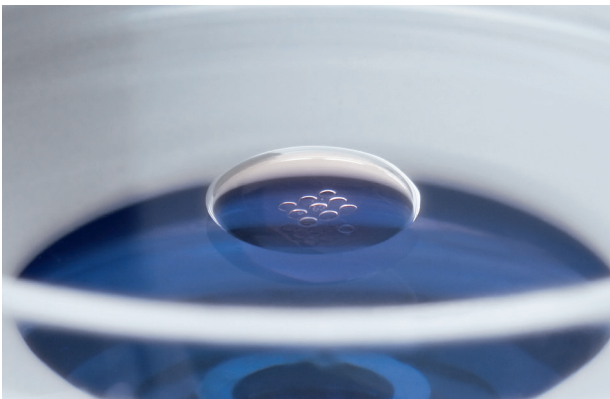
The dishes come in two types with 9 or 16 microwells. They are designed to keep embryos in the microscope's field of view, facilitating individual identification and monitoring. During embryo culture, all microwells are covered by one droplet of culture media to ensure an optimal group culture environment, while the separate microwells allow the embryos to create their own stable microenvironment.

The dishes are individually packed, sterile, CE-marked and MEA-tested.

The benefits of group culture

Group culture is a widely used culture method, which has a beneficial effect on embryo development via autocrine and paracrine factors. A study comparing culture in the Primo Vision embryo culture dish to culture in a conventional dish showed the following results for the Primo Vision dish⁷:

- Significantly higher fertilisation rate
- Improved embryo quality
- Significantly higher number of embryos available for cryopreservation
- 12% higher clinical pregnancy rate compared to the conventional dish



TRAINING AND SUPPORT INCLUDED

Get all the help you need to get started and stay up to date.

Installation and training

As a standard we provide on-site installation and in-depth training. Installation of the hardware takes less than an hour. Thereafter you will be given detailed training on the microscope and how to set and handle the software.

Extensive support

Vitrolife provides extensive support. Our technicians are available to provide personal telephone and remote support. We provide online support with webinars and instructional films to keep you up to date

on the latest developments. When special issues and questions arise our technical support staff will assist you. Instructional movies can be found on our website and we also hold regular customer experience meetings.

Easy-to-use software

Primo Vision Capture & Analyzer software is designed to provide an easy and reliable way to compare, analyse and report the development of embryos. For iPad users, Primo Vision Viewer software is available free of charge from App Store.



A PROVEN SYSTEM

“Primo Vision supports embryo selection.”

Dr. Atsumi Yoshida
Founder & President, Kiba Park Clinic
Tokyo, Japan

By looking at cleavage patterns, we can identify viable embryos. We perform single embryo transfer for most of our patients. It is really important that we can identify and transfer the most viable embryo. I strongly believe that time-lapse technology will help us to improve embryo selection even more.

We currently use Primo Vision for patients with many oocytes or for repeated failure patients. In the future we see the benefits of using Primo Vision for all patients. We feel that we are just in the start of what we can achieve using Primo Vision.



Kiba Park is a private clinic in Tokyo, Japan. The clinic performs around 1300 fresh cycles annually and around 1000 frozen. The clinic performs clinical studies regularly, and Dr. Yoshida feels that time-lapse will help them to document and analyse these studies.

“I think Primo Vision is positive for the patients because they really get to see what goes on inside the IVF lab. It helps them to understand what happens and any innovation which helps the success rates is, of course, a bonus.”

Giles Palmer, Senior Embryologist and Director of Assisted Conception Unit Mitera Hospital, Athens, Greece

Giles has used the Primo Vision time-lapse system for more than three years. He thinks one of the most important advantages is the possibility to deselect embryos that do not divide



optimally, thereby increasing the chance for high implantation rates. Moreover, Primo Vision does not disturb embryos and gives patients a chance to see what is going on in the IVF lab.

DATA

Embryos cultured in Primo Vision dish gave significantly higher fertilisation rate

The following text shows the results from an intermediate analysis in a prospective randomised study comparing group culture of human embryos in the Primo Vision culture dish with conventional single-embryo culture¹.

Human embryos are frequently cultured individually in microdrops to allow assessment and quality scoring of individual embryos. However, numerous studies^{1,2,3} have shown the beneficial effects of culturing embryos in groups. A specially designed dish is included in the Primo Vision time-lapse system combining the benefits of group culture and individual scoring.

The aim of this study is to compare embryo development and pregnancy rate between group culture in the Primo Vision embryo culture dish with individual culture on day 3 of development.

Methods

Embryos from 119 IVF cycles were randomised to be cultured either in the Primo Vision dish or in a conventional embryo culture dish (control). In the Primo Vision dish, up to 10 embryos were placed in individual wells with 25 µl of culture medium while the embryos in the control group were cultured separately in 25 µl drops. The oocytes were fertilised by ICSI and placed in the dishes immediately after injection.

Conclusion

Group culture of embryos in the Primo Vision embryo culture dish results in significantly higher fertilisation rate and improved embryo quality and significantly higher number of embryos available for cryopreservation. The clinical pregnancy

rate is 12% higher after culture in the Primo Vision dish compared to the conventional dish but the difference is not statistically significant due to the limited case numbers. A larger study is currently ongoing.

REFERENCES

1. P. Fancsoviets et al. Hum. Reprod. (2013) 28 (suppl 1): i149-i206.
2. Contramaestre AP et al, Zygote, 2008, 16(4)
3. Ebner et al, RBM Online 2010, Dec 21(6)
4. Vutyavanich T et al, Fertil Steril, 2011, 15(4)

Time-lapse monitoring of embryos facilitates elective single embryo transfer

The following text is an abbreviation from a presentation¹ given at ASRM 2013, showing preliminary results of a multicenter, prospective, randomised clinical trial.

Traditional morphological scoring of embryos and blastocysts for transfer has a very limited predictive value. Introducing a time-lapse embryo monitoring system as an additional tool for embryo selection gives the opportunity to improve the selection of embryos with the highest implantation potential.

One aim of this ongoing study is to investigate whether time-lapse monitoring combined with morphological scoring is superior to traditional embryo assessments for single blastocyst transfer.

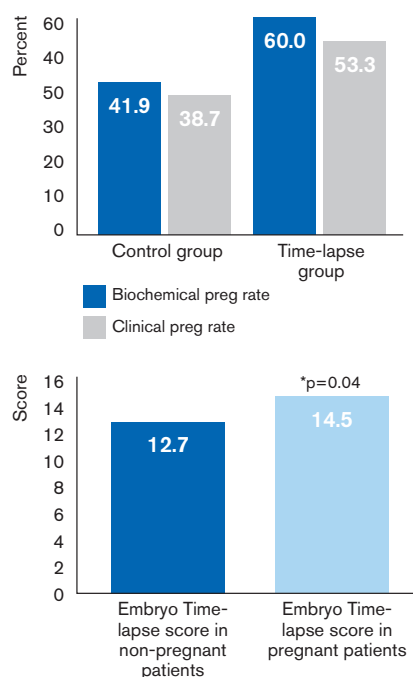
Method

The trial includes only good prognosis patients with > 3 good quality embryos available for culture to the blastocyst stage on day 3. As quality markers, the embryos in the time-lapse group were given a composite score based on five kinetic markers plus morphology during five days of development; with a maximum score of 17 points. The embryos in the control

group are assessed for fragmentation and given a blastocyst score according to Gardner and Schoolcraft². There are no differences in number of oocytes, fertilised oocytes, good quality embryos or number of blastocysts on day 5, between the two groups. 30 patients in the time-lapse group and 31 patients in the control group have completed the trial as of September 2013.

In the time-lapse group, the difference in composite score is compared between pregnant and non-pregnant patients.

Results



Conclusion

The data shows a tendency of increase in pregnancy rate for the time-lapse group compared to the control group, demonstrating that time-lapse embryo monitoring assists embryo selection and facilitates elective single blastocyst transfer.

In the time-lapse group, pregnant patients had a significantly higher composite score compared to those patients who did not become pregnant, indicating that the scoring system may be useful as an additional tool to select the optimal embryo for transfer.

REFERENCES

1. Kovacs P et al. Fertil Steril Supplement 2013 100(3). ASRM oral presentation
2. Gardner DK and Schoolcraft WB (1999) In-vitro culture of human blastocysts. In Towards Reproductive Certainty: Infertility and Genetics Beyond 1999

Fig 1.

	Control group	Primo Vision dish	p-value
No of patients	62	57	
No of embryos	581	535	
Fertilisation rate (%)	66.7	74.5	0.022
Degree of fragmentation day 2 (%)	15.0 ± 11.8	12.7 ± 8.4	0.005
No of blastomeres day 2	6.5 ± 2.1	7.0 ± 2.0	0.002
Degree of fragmentation day 3 (%)	15.5 ± 12.8	13.5 ± 10.6	0.045
Embryo available for cryopreservation (%)	32.9	41.3	0.024
Clinical pregnancy rate (%)	38.7	50.9	0.182

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REFERENCES 1. Rubio et al. Fertil Steril. 2012 Dec;98(6):1458-63 2. Pribenszky C, et al. Reprod Biomed Online. 2010 Oct;21(4):533-6 3. Vatja G, et al. MolReprod Dev. 2000 Mar;55(3):256-64 4. Vatja G, et al. Reprod Biomed Online. 2008 Jul;17(1):73-81 5. Pribenszky C, et al. Reprod Biomed Online. 2010 Mar;20(3):371-9 6. Dai SJ, et al. Journal of Assisted Reproduction and Genetics. July 2012, Volume 29, Issue 7, pp 617-623. 7. P. Fancsovits et al. Hum. Reprod. (2013) 28 (suppl 1): i149-i206.

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