"40 years of IVF: a brief look back at the clinical breakthroughs"

Nikos Christoforidis
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NEWSLETTER

QUARTERLY EDITION ABOUT THE NEWS AND ACTIVITIES OF EMBRYOLAB ACADEMY

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Spermogene: the new research program which begins from Greece and seeks answers to male infertility worldwide.

Male infertility is now seen as a fast becoming global plague which does not exempt Greece either. In the 40% of couples struggling to have children, the male fertility factor is involved. The majority of these couples is referred to assisted reproduction procedures, since the available means of treatment to restore male fertility are very restricted. The research project Spermogene is an inspiration of scientists from Embryolab and BIOZ (Laboratory of Genetics, Comparative and Evolutionary Biology)

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Spermogene: the innovative research program which begins from Greece and seeks answers to male infertility worldwide

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of the School of Biochemistry and Biotechnology, University of Thessaly, which has received gongs as part of the European program, 'Research, Create, Innovate' and has been approved by the independent Authority on Assisted Reproduction and the Rector's Office at the University of Thessaly.

Objectives of the research project:

Establishing the genetic basis of male infertility, meaning, which genes control the spermatogenesis mechanism.

The correlation of specific genetic locations and mutations with various sperm phenotypes: oligospermia, asthenospermia, and teratospermia which indicate male infertility.

The study of the interactive mechanisms of specific genes among them and with the environment.

The understanding of the way the genes which control spermatogenesis are inherited.

From the findings, a diagnostic genetic test will be designed which will be able to determine the fertility of a man just through a blood sample.

This ground-breaking research project is now underway, and the first stage will be completed once sperm and blood samples of a minimum of 1,000 volunteers (18-40) from the general population, is gathered. Each volunteer fills in a specially designed questionnaire and signs a consent form, while he can follow the course of the research project on the webpage, specially created for the project (www.spermogene.eu).

This study seeks to find answers to many questions regarding the cause of male infertility which have baffled scientists for years. It is our hope that science will help by providing solutions to some of these issues for the effective diagnosis and treatment of male infertility.

Embryolab means science.

The Scientific Team

The main project team consists of: Zisis Mamouris, Professor of Genetics and Rector of University of Thessaly, Aikaterini Moutou, Associate Professor, Theologia Sarafidou, Assistant Professor, Anna-Maria Psarra, Assistant Professor, Maria Markantoni, PhD candidate of the Genetic Laboratory of the Laboratory of Genetics of the School of Biochemistry & Biotechnology, University of Thessaly, and from the Embryolab Laboratory, Alexia Chatziparasidou, Sr. Clinical Embryologist and Director of Lab in Embryolab. Also participating in the research team all the members of Embryolab's Andrology Lab: Martha Moysidou, Sr. Clinical Embryologist, Chara Oraiopoulou, Biologist, Mary Karagianni, Biologist, Panagiota Valera, Biologist, Marianna Papadopoulou, Biologist, Athena Chatzianastasiou, Biologist, Eleni Taki, Biologist, Aimilia Vorniotaki, Lab Technician, Styliani Sgoura, Lab Technician.

Workshop

In September 2018, Embryolab carried out a workshop for the Laboratory team. Eleni Galliopoulou and Maria Markantoni, scientists at the BIOZ Genetic Laboratory, presented techniques for isolating genomic DNA using an isolation kit, a Polymer Chain Reaction technique to strengthen the genes of interest, and finally a technique for electrophoresis in dense agarose so as to visualize the results of PCR. At all stages, the lab team played a vital role in both the technical level and in exchanging expertise.

spermogene

Are you ready for a fertile conversation?

Fertility is a right. It is as important for a man as it is for a woman. It is not however always a given! 1 in 6 men experience fertility disorders.

The University of Thessaly and Embryolab have joined forces in an innovative research project, Spermogene, which aims to clarify and design effective means of diagnosing and treating male infertility!

Join in with the Spermogene project to help science succeed in an important cause! Take part in Spermogene and help men to address infertility! Take part in Spermogene and ensure you retain your own fertility!

Become one of the 1,000 volunteer Spermogeners, donate a blood and sperm sample for science and fertility, and be the beneficiary, free of charge, of:

- A spermogram
- Diagnostic blood tests (General Blood, sugar, urea, creatinine, cholestenone, HDL cholesterol, triglycerides, GT, calcium, magnesium, iron, CPK, testosterone, cortisol, transferrin, TIBC, the morphology of red blood cells,
- Fertility Counseling
- Certification for participating in the voluntary program

40 years of IVF: a brief overview of the clinical achievements

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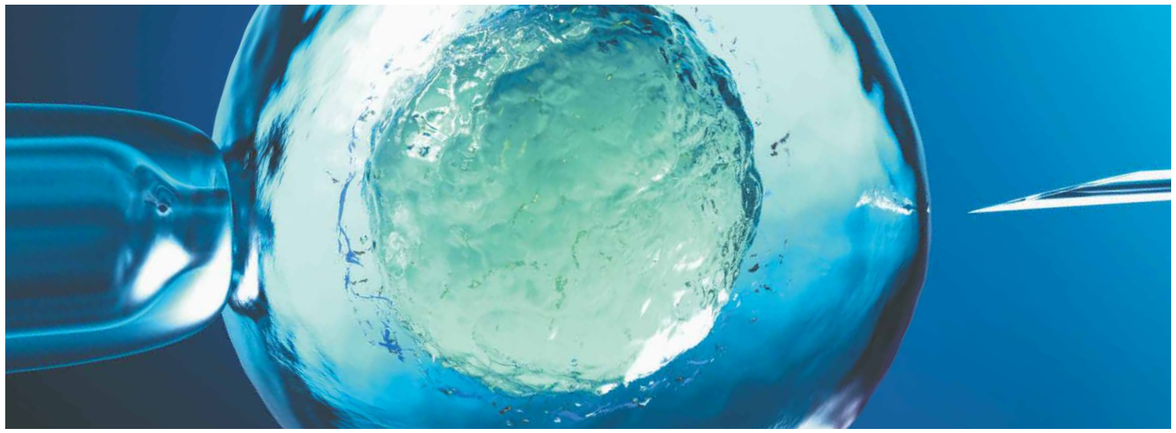

To mark the milestone of the 40th anniversary of the birth of Louise Brown, the first child to be born through IVF, it is timely to look back at the great strides made through research and infertility treatment, a complex and multi-faceted subject with multiple social, psych ological and economic implications. The progress recorded in many and diverse fields of science related to human reproduction is quite impressive, to say the least.

Initially, the success in both presenting and recording the problem of infertility as well as the precise expression of the size of the problem in numbers cannot be overstated. Based on the most recent developments in epidemiology, it is calculated that today 1 out of 6 couples struggle with infertility, while the number of people referred to medical services for resolving fertility issues in the EU is approximately 25 million. Furthermore, it is estimated that each year there is an increase of between 8-9% of these people in need of fertility treatments. To offset these gloomy figures, it is calculated that around 8 million children have been born through assisted reproduction treatments.

Another important fact that has been recorded relates to the causes of infertility and the frequency these are detected among sexes. Infertility affects men and women equally, while pathological causes in both partners have been traced very frequently.

The significance of the age factor for women and, more recently, for men also, has now been recognized, taking into consideration the correlation between age and the reduction in the ovarian reserve and poor oocyte quality. In contrast, the durability of the uterus and the endometrium over time has been established. As a result, there has been an increase in information and awareness from the part of health professionals, public and welfare organizations, as well as among women themselves, leading in turn to sensitizing women to start their efforts for pregnancy at younger reproductive ages.

Due to the growth of the internet and the propagation of information, we have familiarized ourselves to checking our fertility, so that today we can easily and rapidly refer to specialized teams. Through one-stop visits we can acquire a very clear picture of our ovarian reserve by employing a high-resolution ultrasound on the fallopian tubes, checking the anatomy of the uterus through the hysterosalpingofoam Sonography or HyFoSY, as well as by doing a simple spermogram. All these basic information enables us to gauge our fertility potential.

As far as diagnosis is concerned, the growth in basic research of the human reproduction sciences has provided a significant boost to endocrinology, pharmacology and to graphic methods, such as the ultrasound and the endoscopy (initially the laparoscopy and following the hysteroscopy). The characteristics of the diagnostic means we now have at our disposal are speed, during the procedure and accuracy in the results, in combination with the minimal possible intervention on women. Typical examples are hormonal blood tests, such as the Anti-Müllerian Hormone (AMH), transvaginal ultrasound and the diagnostic hysteroscopy.

In the area of treating infertility, the progress recorded over the last 40 years is astounding, both at a clinical level, but even more so, at an embryological and genetic level. In the clinical field, particular note should be taken of the individualization of the treatment protocol. Each couple, each woman, will undergo treatment based on the cause of her infertility, receiving a pharmaceutical protocol based on her medical history, age and hormonal back ground, in order for the treatment plan to be effective and so to minimize the risk of severe conditions such as the ovarian hyper stimulation syndrome. We have adopted on a global scale the principles of evidence-based practice and have realized the importance of detailed consultations in taking decisions and presenting all the alternative choices with their advantages and drawbacks.

In relation to how effective fertility treatments can be, we have come to understand the importance of the team approach, the scientific collaboration of assisted reproduction specialists, they being: doctors, embryologists, geneticists, nursing staff, psychologists or nutritionists. We have adopted new medication protocols easier on women, as they are of shorter duration and with fewer side effects and minimal complications. The contribution of embryology, cryobiology, and genetics have permitted us to proceed with implementing genetic screenings for chromosomal and monocyte disorders in embryos, as well as perform embryo transfers on a subsequent cycle from the oocyte retrieval, when it is deemed that conditions in the endometrium are not ideal.

Furthermore, the publication of the results of the Assisted Reproduction Units from many countries in the European Union allowed us to have a good sense of the success probabilities of all medically assisted reproduction methods implemented, while also of note, is the relevant effort which began in Greece under the supervision of the National Authority for Assisted Reproduction.

Finally, a brief comment concerning the safety of assisted reproduction. Throughout all the years of practicing reproductive medicine, we have been gathering a wealth of data on safety, both regarding medicines, as well as the assisted reproduction methods themselves. Today, we can once more confirm that the medication regimens are safe, provided that the proper application and choices are made based on the medical history of each woman, while side effects and complications which historically accompanied these methods (such as ovarian hyper stimulation syndrome and multiple gestations), have been significantly reduced today due both to progress in medication protocols, as well as to the continuing growth of cases transferring fewer embryos each time.

Innovation: HyFoSy or Hysterosalpingo-foam Sonography

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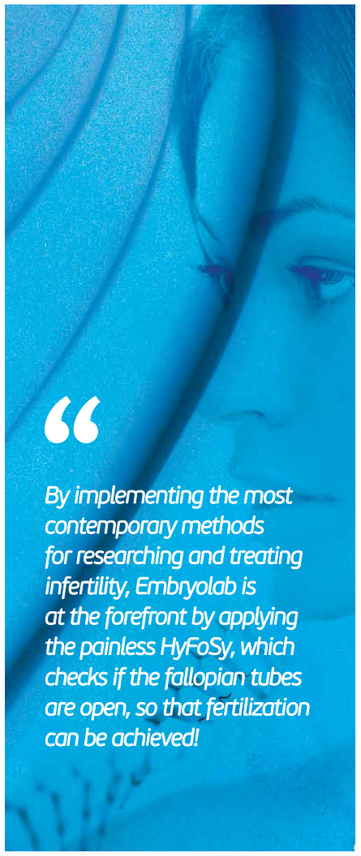
Nikos Christoforidis is a fellow of the Royal College of Obstetricians and Gynaecologists (FRCOG), a specialist physician in HyFoSy at the Wrightington Hospital, Wigan, UK.

Innovation: HyFoSy or Hysterosalpingo-foam Sonography

Pain-free, new generation salpingography, without radiation, with the use of contrast-medium foam (ExEm Foam).

A new method is now available for investigating fertility, which is both painless and radiation-free. HyFoSy checks if the fallopian tubes are open in order to allow fertilization to take place!



“By implementing the most contemporary methods for researching and treating infertility, Embryolab is at the forefront by applying the painless HyFoSy, which checks if the fallopian tubes are open, so that fertilization can be achieved!

What is it?

HyFoSy is a cutting-edge ultrasound test that is suitable for investigating infertility and is applied to check the patency of the fallopian tubes.

How is this done?

The test is performed by injecting contrast-medium foam with hypo allergic action into the cavity of the uterus. By injecting the contrast agent, together with the high-resolution sonography test, the flow of the contrast agent through the fallopian tubes is successfully monitored, thus immediately confirming tubal patency.

What information do they give us?

HyFoSy initially examines the uterine cavity for any problems in its morphology and thereafter checks if the fallopian tubes are open so that fertilization can take place.

Does the test require preparation?

It is recommended that HyFoSy is performed before ovulation to rule out the chance of an incipient pregnancy. Previously your doctor will have completed the necessary microbiological check for chlamydia infection or other microorganisms, or alternatively, precautionary antibiotics can be administered due to the injection of the contrast medium into the endometrium.

How long does the test take?

On average only about 10 minutes.

Advantages:

- Zero ionizing radiation (in classic hysterosalpingography, radiation exposure is roughly equivalent to eight chest x-rays)
- It is entirely pain-free
- Minimal to zero disturbance during the test
- Zero risks of an allergic reaction with the new generation contrast agent used containing cellulose and glycerin (ExEmFoam)
- HyFoSy combined with a vaginal ultrasound screening provides information on the condition of the uterus and ovaries, important for an overall evaluation of a woman’s fertility.
- The test is carried out in a gynaecological surgery with specialized personnel.
- Of short duration.

Benefits

It has been observed that in the first few months following the HyFoSy, the probability of a couple conceiving naturally increases because of the improved functioning of the fallopian tubes after the injection of the contrast agent.

Are there any side effects

It is reassuring to know that in more than 60,000 recorded cases to date, no side effects or allergies have been recorded. In rare cases, some abdominal discomfort has been experienced during the test.

Limitations

HyFoSy cannot provide information regarding the functionality of the fallopian tubes in cases where although they are open, they do not function properly. More rarely and in the case of fallopian spasms, due to the entrance of the contrast means, the fallopian tubes are not visible during the test, while in reality, they are open and normal.

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She asks – we answer. Frequent questions – important answers

Infertility is now demonstrated as one of the most serious problems couples of reproductive age are facing. A natural consequence is for them to seek help to achieve a pregnancy.

As technology and science have now made great strides, the majority of these couples will achieve their goal and complete their family. However, on occasion, the road seems rocky and various questions emerge which should not pass unanswered. Our everyday experience has shown that being properly informed is the best way to reach our goal.

The most common issue a couple usually faces when starting their effort is the need for medical intervention.

‘Do I need help?’
‘When should I visit an expert?’

The answer is usually straightforward. At least a year of trying should elapse before consulting a specialist. It is be expected that a couple, even without any reproductive problems, may face some difficulties at the beginning. It requires patience and dedication to their target.

Despite that, if no pregnancy occurs in the first year of efforts, it is a good idea to seek some help. Furthermore, if there is a history of infertility in one of the two partners or any period disorders in the woman or if the woman is over 35, it is advisable to visit a specialist even earlier, meaning, before completing the initial year.

Inevitably, if there is difficulty in conceiving, questions arise about the condition of our body.

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‘What triggers female infertility?’

‘Should I undergo tests?’

‘Will I eventually need IVF treatment?’

Infertility in women may be due to multiple factors and numerous conditions which may contribute simultaneously in failing to achieve a pregnancy despite the systematic effort. The most common causes relate either to problems with the fallopian tubes or hormonal disorders, such as in the case of polycystic ovary syndrome. Recently though, the principal issue is the woman’s age when she decides to become pregnant or even to investigate her fertility.

Certainly, the tests to establish the precise cause should always be undertaken with the guidance of a specialized assisted reproduction gynaecologist, who will also be recommending the suitable treatment.

In some cases, even the treatment itself might appear onerous and painful to the couple.

Finally, the fertility investigation for a couple over 35, who decide they want a child later on in their lives and not immediately, is not such a bad idea, in the context of maintaining their reproductive health.

‘What does the treatment entail?’

‘It sounds difficult. Is it safe? Is it painful?’

‘How will it impact on my daily life?’

‘Following treatment, what must I take care of and what should I avoid?’

An assisted reproduction treatment on average lasts between 12 and 18 days. It is performed with hormone injections. Our goal is the creation of embryos in the lab and their timely transfer into the uterus.

Extensive research has been undertaken over the last 40 years on the safety of IVF, and to date, no convincing evidence exists of long-term negative impacts on a woman’s health.

Also, one’s daily life is not affected during the time of treatment. Monitoring and injections can be fitted into a woman’s daily routine, while it is advisable to avoid intensive physical exercise and fatigue as well as a poor or unbalanced diet.

It is also important to be aware that after the treatment ends, the body will return to its initial condition and any weight gain resulting from fluid retention, disappears with the next period.

‘Am I at high risk because I became pregnant after IVF treatment?’

It helps to know that many women struggle to get pregnant, but the pregnancy itself is problem-free. IVF does not mean that the woman has automatically a high-risk pregnancy and indeed, most women do have a normal pregnancies after an IVF treatment. Only in cases when certain medical indications exist, is her monitoring by a specialized obstetrician necessary.

‘And what if the woman’s oocytes cannot produce a pregnancy?’

‘And what happens if the woman cannot achieve gestation?’

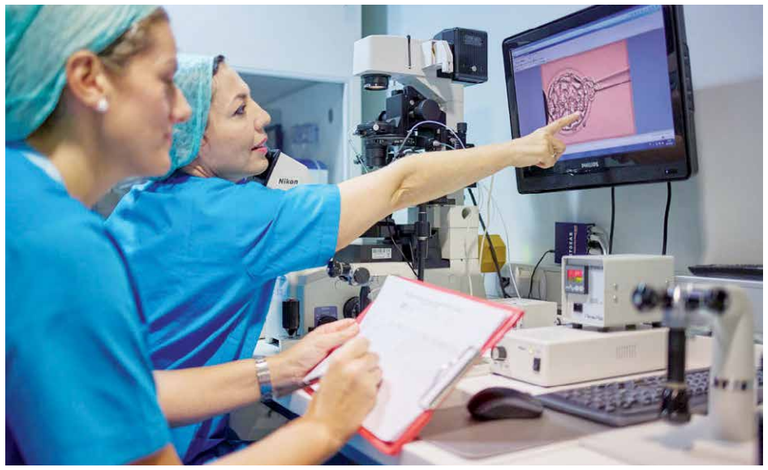
It is true that sometimes a woman’s oocytes are not viable, but the uterus is entirely healthy and capable of supporting a pregnancy. In such a case, technology and science permit motherhood through egg donation. Conversely, there are certain situations that render pregnancy impossible and hazardous, such as in the case of anatomical abnormalities, the absence of a uterus, as well as serious medical conditions.

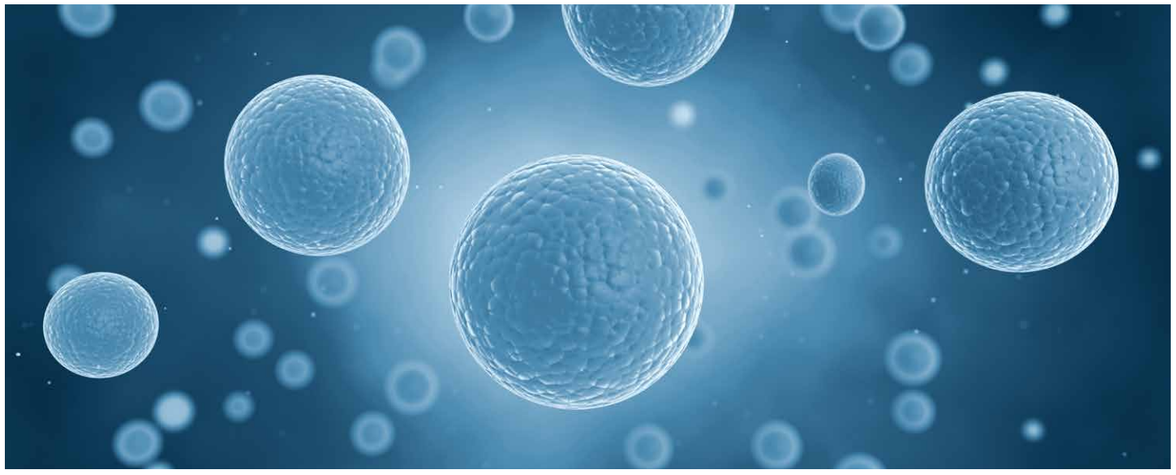
The solution once again is to be found in technology, science, and voluntary surrogacy. In this instance, another woman will carry the couple’s embryos and thus help them to create their family.

There is no question that the problem of infertility and low birth rate will increase over the next years, as society moves on. Difficulties faced by couples prompt questions that seem unanswerable, they disappoint and on occasion deter them from their goal of starting a family. The answers come only through being properly informed about contemporary IVF treatments.

That which seemed unachievable 40 years ago is now possible.

Embryolab’s long experience now permits us to help couples in their efforts to change their lives and create their families.





“Embryolab’s long experience now permits us to help couples in their efforts to change their lives in creating families.

The story of Orpheus

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Male fertility is a subject that has been very much under the microscope of the global scientific community as a man's contribution to a healthy pregnancy is all too important. Sperm cryopreservation ensures male fertility in many cases and statistics show that the number of men who may benefit from this practice, is on the rise.

Frequently, the scientific approach is somehow cold and faceless and most of us believe that it does not directly relate to us. The story of Orpheus, a person who lives amongst us and who could be one of us, presents the subject from a different perspective, more humane and perhaps more understandable.

As with lots of babies, Orpheus was born with cryptorchidism. He was, in other words, among the 3-4% of babies born with undescended testes. Experts stress that, with cryptorchidism, if the testes do not drop within **the first year of the child's life**, then the best option is to correct the problem through an operation, which is best done when baby is roughly 12 months.

If this is not carried out, then there is always the risk that testes will be irreparably damaged or even that cancer may later develop in the displaced testes, since cryptorchidism increases twenty to thirty times the likelihood of cancer developing in the cryptorchidic testicles. Orchiectomy is **necessary** after puberty when the testes are confirmed not to be functioning properly. Indeed, in some cases, orchiectomy is recommended **before** puberty, when it concerns microorchidism, that is, manifestly atrophic testicles.

Orpheus's parents had realized this situation early on and so the young boy underwent restorative surgery at the age of 1. The operation was a success, the testes were fully restored and young Orpheus reached manhood normally, just like all the other boys of his age.

At 22 it was discovered that there was a hardening of the testicle and so he consulted an urologist for more extensive screening. The tests were reassuring but due to his history and the fact that this testicle was atrophic, it was decided to be removed.

Orpheus went immediately to a specialized fertility center for advice, the necessary tests were done and he was informed about the legal framework in Greece. Unfortunately, it was not possible to predict to what extent Orpheus's fertility would be affected after the operation. Consequently, the fertility center and the urologist suggested that he should cryopreserve successive sperm samples and this is what he eventually did prior to the operation.

Some years passed, Orpheus grew up and met his other 'half'. They then decided to start their own family, though they were aware the road ahead might be rocky, due to his history. The couple consulted the same assisted reproduction center where he had his sperm cryopreserved and there, with the guidance of a coordinated team of specialized scientists, the couple began its efforts.

A new marathon had begun: supporting documents for the IVF board, prescriptions, medicines, tests, blood samples given. The road was going to be long, but thanks to the good coordination, good service and care they received, they managed in a short time to start their treatment and to complete it with their embryo transfer, having used Orpheus's cryopreserved sperm sample for the fertilization of the oocytes.

Orpheus's story is just one of those stories of thousands of men with infertility who fight daily to have a child and who, with the help of science, have succeed!

Which men are more likely candidates for sperm cryopreservation?

There are 2 basic categories:

Medical reasons

- **Men who are to undergo imminent cancer treatment** (chemotherapy, radiation). It is common knowledge that all treatments which are toxic for cells can also have serious consequences on spermatogenesis and therefore, on a man's future fertility.
- **Incipient operation on the testes.** Beyond the removal of one or both testes, as already mentioned, a man might undergo another kind of surgery in the area (varicocele, inguinal hernia, hydrocele, vasectomy, etc.). For these men, sperm cryopreservation is recommended if the urologist deems that the outcome of an operation may be unpredictable.
- **Testicular biopsy.** When the sperm test indicates azoospermia, meaning, the absence of spermatozoa in the seminal fluid, then the removal of a testicular tissue sample (done surgically), will show whether the testes produce spermatozoa and in what concentration. If the testes produce spermatozoa, cryopreservation of the testicular tissue from the cryobiology lab will enable these men to make use of their own sperm in any imminent IVF treatment.
- Men with serious **oligoasthenozoospermia or a progressive drop** in sperm parameters. Abuse (smoking, alcohol, sedentary lifestyle and obesity), as well as exposure to radiation, chemical or toxic factors at work or during a hobby, have been proven to affect sperm parameters. As long as the parameters remain useable, specialists recommend sperm cryopreservation.
- In recent years, we hear more and more about another sperm parameter, of a genetic nature, which appears to be affected by the factors related above. This concerns the **DNA Fragmentation** Index or **DFI** in the sperm. Research shows that when this factor is at non-physiological levels, it is associated with failed embryo implantations, as well as with miscarriages. The reassuring thing is that the DFI seems to be dynamic, meaning that when the conditions and a man's lifestyle improves, in many cases this factor also improves. And in these men, specialists recommend sperm cryopreservation as long as the DFI is within normal ranges.
- Last, but not least, is the category of men, who have **difficulty for psychological reasons** to give sperm. It is not uncommon for a man to feel uncomfortable over the procedure of giving sperm, and because of his or various ethical inhibitions, he cannot manage to give a sample on the day of treatment (oocyte collection or sperm injection). With these men and given that they will **notify promptly the attending doctors**, sperm cryopreservation for future use in incipient treatment is recommended.

Non-medical reasons

- Sperm cryopreservation is recommended also for non-medical reasons, such as for **spouses who need to be absent on the day of the treatment** (oocyte collection or sperm injection) for professional reasons. There are various categories of professions, which are associated with long-term absences, whether that is for days or months. They also can benefit from sperm cryopreservation (e.g. drivers, sailors or military personnel).

Another category is those men who have delayed fatherhood for later in life for various reasons, mainly professional. The need for preserving fertility in this category of men, has become all the more pressing since most recent research coming from Stanford Medical School also indicates that the **older the father, the greater the risk for the child to be born with disorders**.

In the lab, cryopreservation is a straightforward procedure, safe and of low cost. Sperm collection is performed by masturbation, which is followed by a microscopic checking of the sample. Following, the sample is prepared with the use of suitable materials, which aim to protect the spermatozoa during the freezing process. In rare instances,

sperm collection is performed with other intervention methods, especially when there is an inability or difficulty with ejaculation.

Once the sample is prepared appropriately, it is then transferred onto plates/disks or a small vial. Thereafter, its temperature is gradually and controllably reduced from room temperature down until -196°C and then placed in containers for long-term safekeeping.

In long-term safekeeping, the sperm may remain in cryopreservation conditions **theoretically indefinitely**, on condition that the cryobiology lab carries out continuous checks, to ensure the safeguarding of the samples in the right conditions.

Before the procedure of freezing the sperm or testicular tissue, an immunology check must take place for any infectious diseases of the interested party (for hepatitis B, C, the AIDS virus and syphilis).

The legal restrictions for retaining samples comes to 10 years in total. If there is a medical reason for keeping the sample for more years, then an application for an extension must be made to the National Authority of medically assisted reproduction by the interested parties.

Cryopreservation of sperm has been applied for decades now with success, with tens of thousands of successful births of healthy children. The literature makes reference to pregnancy and birth of children with frozen sperm that goes back 40 years. Also, most studies have shown that the percentage of children with chromosomal or other abnormalities from cryopreserved sperm **does not differ** from those deriving from fresh sperm.

Just like Orpheus in our story, many men will face infertility in various forms. In a large number of the above cases, cryobiology can retain and preserve their fertility for a number of years and provide healthy pregnancies.

Fertility preservation and fatherhood is a biological right of all men and safeguarding this should be an obligation towards the generations to come.

‘Women with breast cancer. We claim the right to fertility! We claim the right to life.’

Information announcement
for the general public

The Association of Women with Breast Cancer, Alma Zois of the Prefecture of Thessaloniki and Embryolab Fertility Clinic, raising for the first time in Greece the subject of breast cancer and fertility, organized a very successful public event, ‘Women with breast cancer. We claim the right to fertility! We claim the right to life!’, which was held on 26 September 2018 in Thessaloniki.

‘The response has given us great joy, while even greater has been our joy contributing in such a sensitive subject as the fertility of young women suffering from breast cancer. We hope that we have conveyed data and documentary proof for focusing on ‘tomorrow’ and the right of all women to become mothers. We would like to thank Embryolab for its support and collaboration in this direction’. Statement of the President of The Association of Women with Breast Cancer, Alma Zois, of the Prefecture of Thessaloniki, Ms. Kyriakoula Derekenari.

‘The information and awareness-raising of women together with the systematic prevention, as well as the increased effectiveness of the treatment regimens, have markedly changed the facts in the diagnosis and treatment of breast cancer. Most women who find themselves faced with this diagnosis can now hope for a complete cure and full recovery. They can continue to dream. One familiar side effect of modern treatment regimens is the reduction and perhaps loss of fertility. Survival at the price of motherhood? Science now comes to provide solutions’ were the remarks of Mrs. Alexia Chatziparasidou, B.Sc., M.Sc., Sr. Clinical Embryologist and Director of Embryolab, as she presented the solutions science offers today:

* Cryopreservation of oocytes. In 2005 preservation of oocytes was made possible for the first time. Women who need to undergo toxic for their fertility treatments, can now, prior to their treatment, store their eggs, so as to use them after they have restored their health. More than 85% of eggs survive and have the same chance leading to a pregnancy as fresh oocytes. The procedure is known as fertility preservation and more and more women are opting for this to protect their precious fertility and dream of motherhood.

* Embryo Cryopreservation. For women in stable relationships, embryo cryopreservation gives the opportunity to store embryos occurring from the fertilization of their oocytes with the sperm of their partner. In excess of 98% of embryos survive and provide the same chances of pregnancy as fresh embryos.

* Ovarian tissue cryopreservation. Science has also made great strides at this level and early data are very encouraging indeed. In the framework of this procedure, a part of or the whole ovary is removed in a simple operation. Afterwards, the ovarian tissue is cryopreserved to be used once the woman’s health is restored. The purpose of this approach is to restore the cycle and natural ovulation. Challenges and difficulties, however, remain, principally in relation to replacing the ovarian tissue into the woman’s body and the risk of a relapse.

* Preimplantation Genetic Diagnosis (PGD) for BRCA. Recently the specific gene mutations of BRCA have been found to have a correlation with breast and ovarian cancer. Women-carriers of the specific mutations have an increased chance of the condition manifesting itself compared to the general population. By determining the mutations, it is now possible to perform PGD. Men or women who are aware that they are carriers of mutations can opt through PGD to select the embryos which are mutation free and have a child without any risk of contracting the condition.

Nikos Christoforidis, MD, MRCOG, DFFP, Reproductive Gynaecologist, Director of Embryolab Fertility Clinic, spoke of the journey from diagnosis to motherhood, while Reproductive Gynaecologist, Christos Pappas, MD, Ph.D., MSc, BSCCP and Michalis Kyriakidis, MD, M.Sc. analyzed the Fertility Preservation procedure among oncological patients and the facts to date on its application.

The much-discussed subject of BRCA genes and their evaluation on the level of prevention was presented by Glykeria Samolada, BSc, MSc, Molecular Cytogenetics and Genetic Counselor.

The optimistic message that *‘A versatile and well-informed oncologist and a specialized gynaecologist will save fertility in the majority of women’*, was conveyed by Dr. Christos Emmanouilidis, Oncologist, Internist, Associate Professor, UCLA.

Klearchos Desiris, Gynaecologist-Surgeon, Specialist in breast conditions, explained to us how, under the appropriate supervision, pregnancy following a breast cancer diagnosis, traces a smooth path.

The psychological dimension of the subject, particularly for young women, was analyzed by Ms.Evi Kalouta, Psychologist.

The speech given by Anna Papaspanou, Member of ‘Alma Zois’ for the Prefecture of Thessaloniki, where she described how she herself lived through pregnancy after breast cancer, was inspiring.

Introducing the event, which was coordinated by Despoina Partsia, Social Worker, and Head of the Scientific Programs of the aforementioned Association, were Mrs. Kyriakoula Derekenari, President of The Association of Women with Breast Cancer, Alma Zois of the Prefecture of Thessaloniki and Mr. Dimitrios Nikolaidis, BA, M.Ed., Ph.D., General Director of Embryolab.

'Him and her. Together in fertility' We celebrate the birth of 8,000,000 people and honor the 3rd European Fertility Week

Open event for
Informing and Raising Awareness

The **Kyveli** Fertility Support Association and **Embryolab Fertility Clinic** held a very successful open event for Informing and Raising Awareness on the subject of **'Him & Her. Together in fertility'**, on Wednesday 7 November 2018 in Thessaloniki.

As the Director of Embryolab, Ms. Alexia Chatziparasidou, stated, *'We are extremely happy to have organized for the 3rd consecutive year this Fertility event for informing and raising awareness of the general public, together with the Kyveli Association. This year, we are celebrating 40 years of the science of Assisted Reproduction and have chosen the subject of 'Him and Her' so as to emphasize that subfertility is not just a woman's issue, but a man's as well. Being correctly informed helps young people, couples, who suffer from genetic or chronic conditions to overcome such obstacles and have children. With this in mind, we insist and make the most of the 40 years' experience in the science of Assisted Reproduction and make all new data available to public'.*

Drawing on her many years of experience, the president of the Kyveli Association, Ms. Dimitra Drakopoulou, conveyed the following message to couples: *'Don't leave the creation of a family behind. Many things are indeed lost with the passing of time and they never return. Fertility is a question of time! We women must realize that we must regard fertility as a right to be retained!'*

The event was a part of the **3rd European Fertility Week, 2018** and is dedicated to its **'birthday'**!

We celebrate the 40th anniversary of the first successful IVF fertilization and wish a **#Happy Birthday** to Louise Brown, the first child in the world born after In Vitro Fertilization, as well as the **8,000,000** people to have been born since 1978 thanks to assisted reproduction. At the same time, we honor the families who have overcome infertility, the people who strive and struggle to become parents and those who continue their lives without children.

One in six couples globally, **25 million citizens in the European Union** alone, face fertility disorders. Every year the number of people consulting fertility clinics increases by between 8-9%. Organizations supporting fertility across Europe under the umbrella of Fertility Europe participate in actions during Fertility Week so that the general public can be informed and so that these people can be liberated from the 'taboo' of infertility,.

We wish to warmly thank Embryolab's eminent scientists and specialists in assisted reproduction who took part in the Fertility Week and elucidated in our event, in simple words, the choices which science offers to women and men of today.

The event was honored by the presence and addresses of the Mayor of Thessaloniki, Mr. Yannis Boutaris, Parliamentarian for Thessaloniki, Ms. Elena Rapti, the President of the Thessaloniki Municipal Council, Ms. Kalypso Goula and the General Director of Embryolab, Mr. Dimitris Nikolaidis.

10 years of successfully implementing the vitrification method

Embryolab is celebrating 10 successful years of putting into practice this method and is honored to welcome the Japanese scientists who firstly applied the in vitro method at a clinical level.

The vitrification method for the cryopreservation of oocytes and embryos comprised and continues to constitute a revolution in assisted reproduction. Japanese scientists announced in 2005 that they had achieved for the first time the safe preservation of oocytes and embryos with extraordinarily high survival rates.

The new method offered new possibilities, such as women's fertility preservation through the cryopreservation of their ova, while the success rate of having a child following an embryo transfer with cryopreserved embryos sky rocked!

Today, thanks to vitrification, many thousands of couples have become parents and thousands of women have had the opportunity to preserve their fertility!

Embryolab, practicing vitrification since 2008, was one of the first fertility clinics worldwide to apply this method at a clinical level.

Completing 10 years of vitrification at Embryolab, those groundbreaking scientists from Reprofile in Japan came to visit Embryolab. All the members of the Embryolab laboratory participated in a training day and had the chance to engage in discussions with these leading scientists, to take part in the actual development of the vitrification method, as well as to re-evaluate all the steps of this very important technique.

Embryolab seeks continuous training and development so that it may implement the most up-to-date assisted reproduction safely and successfully.

Pursuing our goal with ethos and passion for assisted reproduction, as well as respecting the dream so many couples share to have a child, we are eager to convert all this knowledge and experience into even more pregnancies and families!

MEDICAL BREAKTHROUGHS MAY COME OUT OF THE LAB. BUT THEY BEGIN IN THE HEART.

For more than a century, a very special passion has driven the people of MSD. Our goal is to develop medicines, vaccines, and animal health innovations that will improve the lives of millions. Still, we know there is much more to be done. And we're doing it, with a long-standing commitment to research and development. We're just as committed to expanding access to healthcare and working with others who share our passion to create a healthier world. Together, we'll meet that challenge. With all our heart.

MSD *Be well*

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