

## THE JOY OF CREATION

***T***he IVF units at Assuta Ramat HaChayal and Assuta Rishon LeZion help thousands of couples achieve their dream of becoming parents \* This is the setting for evolution's most astounding process – the creation of an embryo \* Behind every petri dish and test tube are the fertility units' skilled managers and embryologists \* Their high-precision work helps them develop great things from small beginnings

Last year, the UK marked the 35th birthday of Louise Brown, the world's first test tube baby, whose birth was made possible thanks to the groundbreaking work of Dr. Robert Edwards. Edwards was able to carry out the conception of a child outside the human body, although he was criticized by both churches and colleagues for "trying to play God". Now millions of babies have been born through IVF and these treatments have become commonplace as well as highly desirable. Louise Brown is now a proud mother herself, and Prof. Edwards, who sadly died in April last year, was utterly vindicated when he received the Nobel Prize in Physiology or Medicine for his pioneering research.

The birth of a healthy baby is not always a guarantee. Around 15% of all couples trying to conceive have difficulties resulting from fertility problems. This means that



about 150 couples per thousand are not able to conceive naturally and instead turn to fertility treatments. At the end of a complex process that is often difficult and frustrating, they understand the mysteries and complexity of the process, and the importance of the IVF units that do everything possible to help them have a healthy pregnancy.

"This is a field involving lengthy processes, and therefore patience is of the utmost importance," says Dr. Shai Elizur, Director of the IVF Unit at Assuta Ramat HaChayal. "The average number of fertility treatments is quite high – around four rounds of treatment until a successful

pregnancy. When couples begin the process, I explain to them that it's more like a marathon than a hundred-meter sprint. They need to take a deep breath and realize that this is a long process, and we at Assuta do everything we can to make things easier for couples and ensure they get the most out of it."

Assuta runs two IVF units: one in Ramat HaChayal, Tel Aviv, and the other in Rishon LeZion, which is directed by Dr. Arik Kahane. "The units' activity has steadily increased over the years, and with it the number of successful pregnancies," says Dr. Kahane. "It's important to note that the overall average decreases as



women's ages rise, yet our average is still very high, both nationally and internationally. In addition, Assuta's two units are among the first in the country to achieve impressive results in terms of the number of pregnancies and births by freezing eggs using the vitrification method, which freezes the eggs within 12 minutes instead of an hour, improving egg survival rates."

### Don't Wait to Conceive

"An interesting pattern we've seen in recent years is the increase in patient age. Today, many couples wait longer to start a family due to issues related to finances, careers, and marrying

later. Even single women are now looking to become mothers, usually in their late thirties, but unlike men who produce sperm all their lives, women are limited in terms of the years in which they can conceive," Dr. Elizur explains. "Peak fertility among women is up till age 35, and then it begins to decline. At age 42-45 it is very difficult to get pregnant, and among women aged 44-45 the chances of treatment ending in a healthy pregnancy are only half a percent."

### In 2010, the "Egg Donation Law" was passed in Israel, allowing single and married women to freeze their eggs for use if they wish to become pregnant in the future. What does this law mean for IVF units?

"Since 2011," says Dr. Kahane, "around 250 women have had unfertilized eggs frozen at the two Assuta units. The law helps women who have not started a family yet, but want to retain the ability to use their eggs later in life. This is referred to as 'fertility preservation', but the term can be misleading. It's important that women who want to freeze their eggs for these reasons don't think that they can put off pregnancy indefinitely. The best time to freeze eggs is up to age 37, and then the egg freezing and thawing processes become less successful." It must be stressed that simply having frozen eggs does not guarantee that a pregnancy can actually be achieved.

In recent years, say Dr. Elizur and Dr. Kahane, Assuta's IVF units have focused on extensive research and training activities, working closely with the hospital's Clinical Trials Unit. "This year we will present some of these studies at the Israeli Fertility Conference," Dr. Kahane says. "The two Assuta units are considered to

be especially prestigious and are in great demand for professional training purposes. In the last two years, we have been visited by four groups of doctors and embryologists from around the world."

### What do people not realize about your work?

"An integral part of the supportive care given in the department is the social worker trained in fertility treatments who helps women and couples go through the process in the best possible way. Both of the units are staffed by nurses with extensive clinical experience who also have an academic background comprising advanced training and courses in fertility treatments. Treatment success stems from the work of a team of experienced doctors and clinical embryologists, as well as nursing staff, ultrasound technicians, and administrative staff – all among the best and most compassionate in the country. The laboratories are equipped with the latest leading technologies, and the units' administrators make it easier for the patients by providing special arrangements as well as a sympathetic ear. Without the teams that work alongside us, it would not be possible to achieve our current quality standard, and so I thank each of them with all my heart. Fertility treatment is a process that requires great mental, physical, and financial resources, and all staff members work to support patients in these areas, as each success or failure also personally affects the staff members who are involved with the patients," Dr. Kahane and Dr. Elizur conclude.

### Every Pregnancy is a Miracle

Embryology is a relatively new profession, as less than 40 years have passed since the birth of Louise Brown. "Some doctors treat couples,

and we, the embryologists, are the ‘doctors of the unborn’ – that’s the simplest way to describe our role,” say Michal Yonish and Dr. Pavel (“Pasha”) Itsykson, directors of embryology facilities at Assuta Ramat HaChayal and Rishon LeZion.

### How do you manage your relationship with the doctors?

“We work in parallel and in cooperation with the doctors to create the optimal conditions for a successful pregnancy,” Pasha says. “We decide how to fertilize the eggs and then, after the embryos have formed, closely monitor them to ensure they develop normally.”

### It could be said that you’re creating embryos.

“We don’t create or produce embryos. Every pregnancy is a miracle from our perspective. We provide the tools and platform, try not to interfere, and hope for a miracle. We let the embryos grow for two to six days and then the doctors place them back in the uterus. After that, it’s out of our hands.”

Recently, Assuta’s IVF labs have been using the EmbryoScope – an advanced, innovative new system that enables more effective selection of the best embryo to be implanted in the uterus. The EmbryoScope is a sophisticated incubator that maintains optimal growing conditions for fertilized eggs while simultaneously taking images and continuously documenting the development of the pre-embryos using an advanced HD camera. Images taken within

the incubator enable monitoring of the pre-embryos without the need to remove them from the incubator. This maintains uniform, constant gas and temperature conditions, reducing the risk of any harm coming to the pre-embryos.

The IVF process begins with a preparatory hormonal treatment that makes the ovaries produce more eggs than usual. The doctor draws follicular fluid, and then the embryologist retrieves the eggs, places them in a special environment, and fertilizes them with sperm cells that have undergone appropriate preparation.

Every day, the embryos are examined in petri dishes. “Because this is a very delicate, dynamic process, every step is immensely significant. The embryos are carefully examined on a precise schedule to ensure they are growing by the book, and select the embryos with the best potential to develop,” Pasha says. “The examination looks at the shape of the embryo, how many cells it has, if they’re the same size, if there are embryo fragments, or if everything is intact and beautiful, and so on.”

The lab’s work is judged to be successful if it results in a pregnancy with one embryo, that ends in the birth of a healthy baby,” say Pasha and Michal. “With young patients up to age 30, we implant one or two embryos in the uterus, in consultation with the attending physician, simply because being pregnant with one embryo has fewer complications. But when it comes to a woman who is older or who has had several

unsuccessful treatments already, we implant more embryos to increase the chances that at least one of them will successfully implant in the uterus. Regarding the number of embryos implanted, clear directives are given in a position paper from IFA, the Israeli Fertility Association.”

### What fascinating fact do most people not know?

“Within hours, the egg becomes a fertilized egg, a pre-embryo prior to implantation and then an embryo after implantation. It’s interesting to know that it’s not just the physical condition of the egg that changes, but also its legal status.”

### After so many years, does it still excite you?

**Pasha:** “Absolutely. It’s very exciting when our patients come to show us the babies who began their existence right here in our laboratory. We were the very first to see them and ‘hold them in our hands’ when they were just 100 microns in size. And now they are 3-4 kg of pure joy in a stroller.”

**Michal:** “I’m moved by the exceptional cases – when patients are successful despite great difficulties, or after trying for many years, when it’s something against all the odds. But I’m also moved by parents of a fifth or sixth child. It’s so exciting that our reputation has spread, so that our patients come from all over the world, including couples from different religions, Christians and Muslims, and everyone has a common goal – becoming parents.”