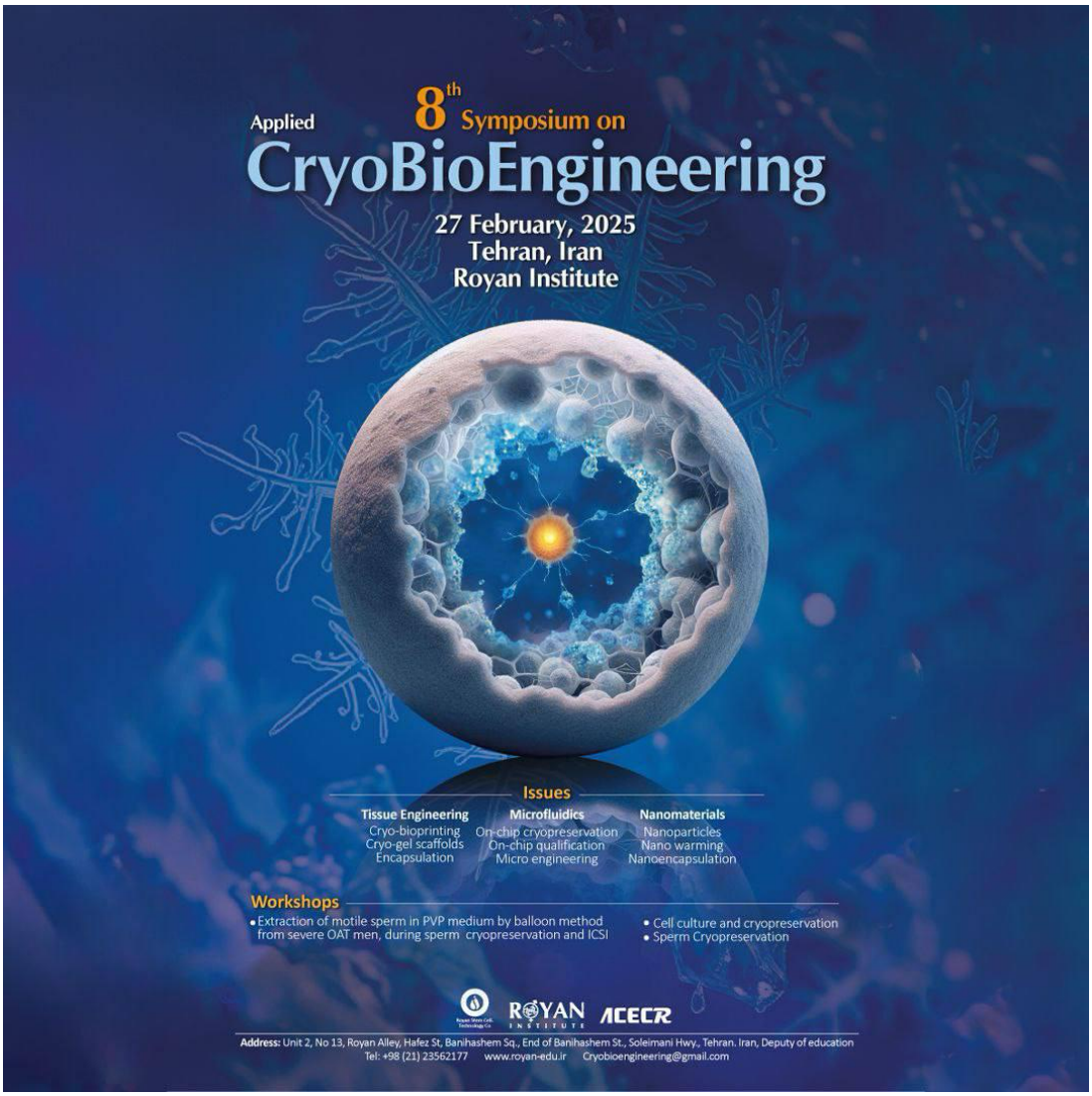
Report on the 8th Royan Institute Symposium on Cryobiology, entitled as "Applied CryoBioEngineering" ACECR, Tehran, I.R. Iran Thursday, February 27, 2025

The 8th round of Cryobiology Symposium was held here at Royan Institute, under the supervision of scientific secretary of Dr. Somayeh Tavana and Executive Secretaries Mrs. Jahangiri and Mr Palay on Thursday, February 27, 2025.

In the main program, which was held under the title of the 8th Symposium of Cryobiology Royan Institute, entitled "Applied CryoBioEngineering", in the conference hall of Royan Institute, lectures were made by the professors in the field of engineering and Cryobiology, joining the event from different universities and research centers all over Iran, USA, Australia gave speeches.



At the beginning of the program, and following the recitation of the Quran and the national anthem of the Islamic Republic, Mr. Professor Abdul Hossein Shahverdi, the Head of the Royan Institute, who is one of the well-known researchers in the field of sperm biology and its freezing, made his speech focusing on the importance of this interdisciplinary field of science and activity, it means Cryobiology and its vital role concerned with infertility treatment.

Then the scientific secretary of the symposium, Dr. Somayeh Tavana, while welcoming the participants, presented a short report on how this round of symposium came into existence, following previous successful symposiums put into effect though last years and the preliminary consensus and decisions made to plan and implement the 8th Symposium of Cryobiology Royan Institute, entitled “Applied CryoBioEngineering”.

In short, The Cryobiology Symposium was held at the Royan Research Institute in 1995 and was held for six years under the same title, Cryobiology, which addressed the basics of cryobiology, cryo injuries, ways to reduce the damage of the association, and its applications in the field of biomedicine and animal and human biobanks. The seventh symposium, held in 2024, was introduced for the first time under the title Cryobioengineering (CBE). The main reason for choosing this title, which expresses the interdisciplinary nature, falls on this fact that many questions and challenges cannot be answered by a single scientific discipline. Perhaps, it is possible to be very precise in solving these challenges with the knowledge and skills coming from wide range of disciplines. This synergy will not only improve research results but will also pave the path ahead toward new innovations. In addition, it is easier to secure interdisciplinary research funding and is more focused on this area. Another reason was the numerous interdisciplinary projects that have been or are being carried out in the Embryology research group of Royan Research Institute (including the use of magnetic and electric fields, nanotechnology, microfluidic systems, and tissue engineering). The aim of this interdisciplinary collaboration is to hold the 8th Cryobiology Symposium entitled Applied CryoBioengineering, and we do believe that this idea can bring a bright future to our research and increase the efficiency and quality of storage of reproductive samples and multiple fertility for patients.

Through previous years, the Royan Cryobiology Symposium has hosted prominent researchers such as Professor Silber, Professor Bucak, Professor Acker, and Professor Dini. This year, we were also honored to have Professor Warkiani from the University of Technology Sydney, Australia, Dr. Ravanbakhsh from the University of Akron, USA, and Dr. Bagheri from the University of South Australia. Ten of the country's leading and distinguished professors from reputable scientific centers including Amirkabir University, Tabriz University of Medical Sciences, Modares University of Tehran, Mashhad University of Medical Sciences, Kermanshah University of Medical Sciences are collaborating with us. This one-day scientific event focused on three areas in the field of Applied Cryobioengineering:

1- The first session was on the application of tissue engineering in cryopreservation, which discussed topics such as cryobioprinting, cryogel scaffolds, and encapsulation.

The second session addressed the use of microfluidics in cryopreservation to increase the viability and storage of gametes and embryos.

3-


lab-on-a-chip (LOC) technique
and higher output
rocedures, portability, and reduced costs
risks
sorted samples
ages
paration principle
Target cells
Main advantage(s)
lift and drag forces
WBCs, RBCs, Cancer cells
- High volumes of cells can be separated
oustic radiation force
WBCs, RBCs, platelets
- Non-contact therefore less damaging to cell membranes - High throughput
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Neutrophils, platelets
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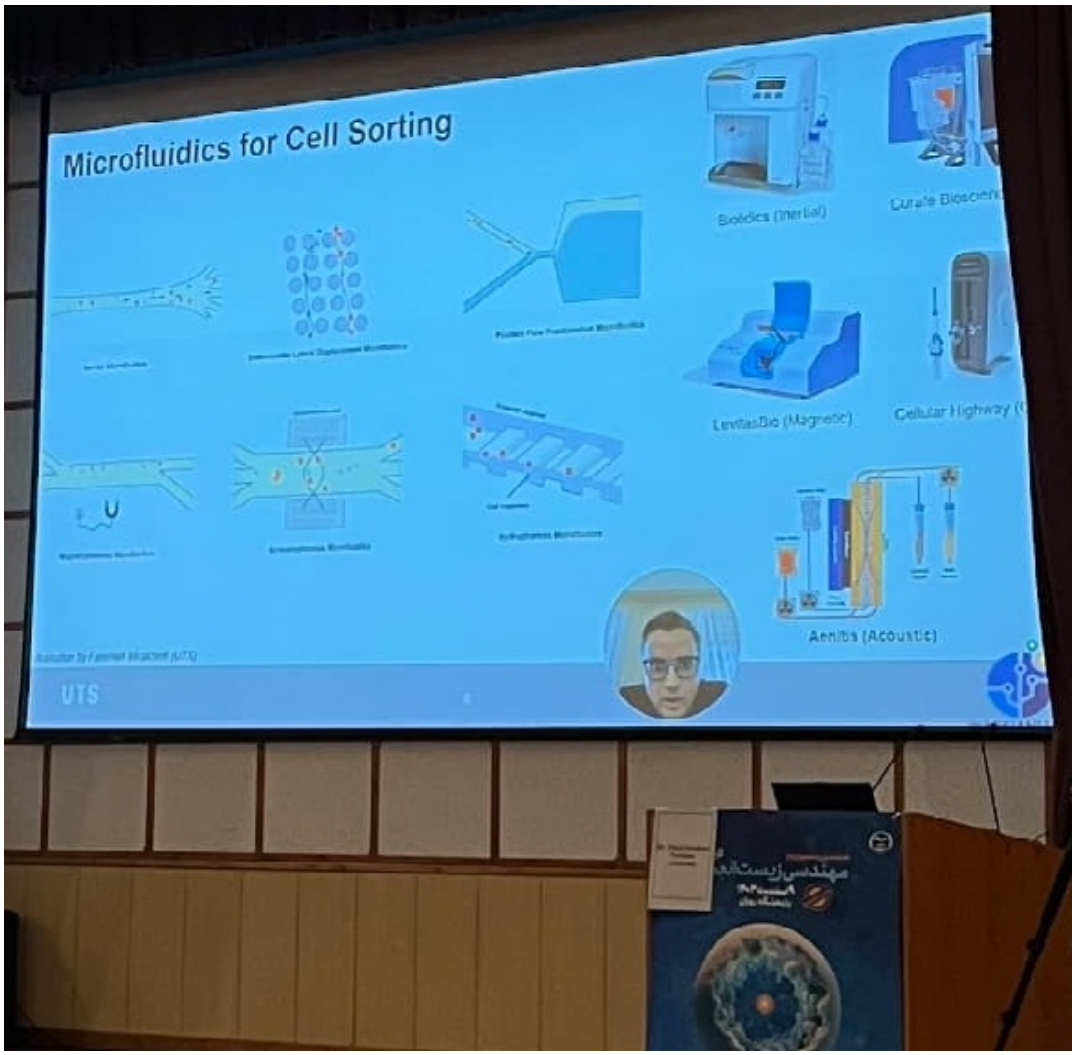
Blood cells, cancer cells
- High throughput
Dr. Mehdi Yousefi (Iran)
هشتمین سمپوزیوم
مهندسی زیست انجم
۹ اسفندماه ۱۴۰۳
پژوهشگاه رویان



3-And the main attention of the last session addressed the use of nanotechnology, including the nanoparticles and nanowarming in the cryopreservation of reproductive samples.


Dr. Mehdi
Hajian
(Iran)
کاربردی
۹ اسفندماه ۱۴۰۳
پژوهشگاه رویان

At the end of the symposium, in order to appreciate the active participation of the listeners, the winner of the best listener in scientific lectures was honored and awarded prizes. This symposium was held with the financial support of the Royan Stem Cell Technology Company with the CEO Mr. Morteza Zarrabi, and 120 people officially registered. This symposium provided a practical and scientific ground for all scientists, researchers and students of related fields of science to exchange their latest achievements and findings under the umbrella of mutual cooperation. It has also played an important role in advancing knowledge and technology in the realm of Cryobiology and tissue engineering, microfluidics and nanotechnology.


سمپوزیوم CryoBioEngineering
یا مهندسی زیست انجماد