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THE LARGEST CENTER FOR EMBRYO PRODUCTION FROM SUPERIOR COWS

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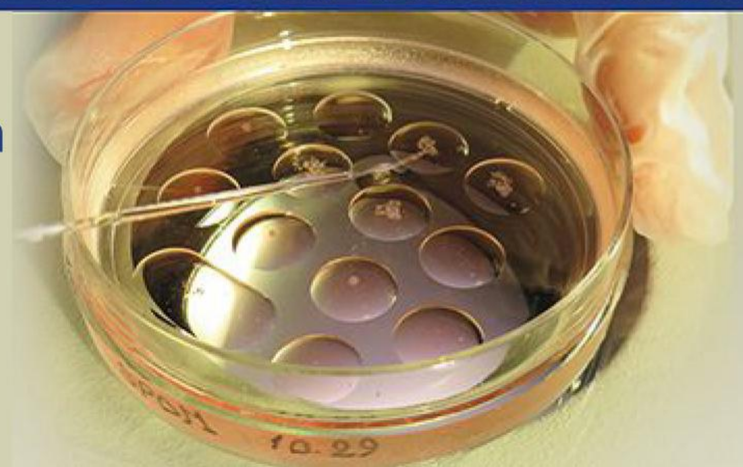
Microdroplets of culture medium containing in vitro-matured oocytes



ABOUT US

- The largest commercial center for the laboratory production of embryos from high-yielding cows using IVF technology in Iran.
- With 15 years of expertise and annual production capacity of 10.000 embryos, the company stands as a pioneering center at both national and regional levels.
- Our company has ISO 9001:2015 and HSE certificates for producing embryos from elite dairy, dual-purpose, and beef cattle breeds.

ACHIEVEMENTS

- Pioneered the successful birth of a lamb through in vitro fertilization and produced cloned embryos in Iran
- Established as the sole knowledge enterprise in Iran Specializing in producing embryos from elite cattle using the Ovum Pick-Up (OPU) technique
- Obtained the first official operating license for a laboratory-based bovine embryo production center in the country
- Successfully marketed embryos to prominanat national livestock holding enterprises
- Produced elite male calves and marketed them to sperm production stations to support the propagation of superior genetics

What Issues Does the Use of Embryos Address?

Short Term:

The use of embryos provides quick, cost-effective, and easier access to a purebred herd of high-yielding cattle. This is particularly important considering the high prices of genetically superior heifers, whether domestically available or imported.

Medium Term:

By increasing the number of elite animals in the herd, significant economic effects will be realized, including:

- Gradual reduction in production costs by up to 30%
- Extending the economic lifespan of the herd by retaining animals with superior traits
- Increased profit margins for farmers through the breeding of higher-yielding cattle

Long Term:

- Savings in feed costs and reduces dependence on imports
- Achieving self-sufficiency in milk, butter, and meat production by breeding high-yielding cattle
- Prevention of foreign currency outflow resulting from the importation of breeding livestock

Embryo Production Technology in Our Company

- Ultrasound-guided oocyte retrieval from elite cattle, followed by in vitro maturation (IVM) of the oocytes for a 24-hour period in the laboratory.

- In Vitro Fertilization (IVF) of matured oocytes with sex-sorted semen. This process includes the co-culture of sperm and oocytes for 24 hours.

- In Vitro Embryo Culture (IVC) for 7 to 8 days, followed by the cryopreservation of the embryos.

In recent years, there has been a significant global increase in IVF-based embryo production. In the United States for instance, 800,000 embryos were produced using this method in 2024.

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Charolais, Limousin, and Blonde d'Aquitaine Elite Beef Breeds

Benefits:

- Efficient feed conversion ratio, providing approximately 20% higher income for farmers compared to fattening other cattle breeds.
- Exceptional growth rates of male calves, with an average weight of around 750 kg by 16 months of age.
- Higher carcass yield of up to 65%, significantly outperforming dairy breeds, which typically yield around 50%.

Fleckvieh Elite Dual-Purpose Breed

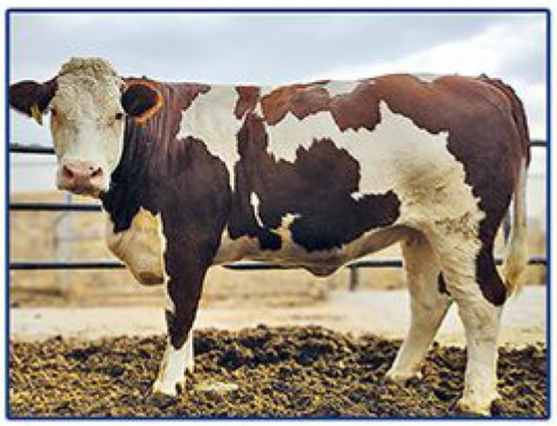
Benefits:

- High-quality milk production (4- 4.5% fat and 3.5% protein).
- Superior fattening performance compared to dairy breeds, with growth rates of 1.5 _ 1.7 kg/day and a better feed conversion ratio.
- Reduced incidence of metabolic disorders such as lameness, abomasum displacement, ketosis, negative energy balance, and milk fever.
- Heat stress tolerance.
- Longer herd longevity (5 - 6 parities).

Blonde d Aquitaine Cattle

Charolais Cattle

Limousin Cattle



Simmental Cattle

Breeds Used in Embryo Production

Jersey Breed – The Queen of Dairy Breeds

Benefits:

- High-quality milk production (5-6% fat, 4% protein, and 13% dry matter)
- Higher income due to the premium price of Jersey milk, despite lower daily milk yield (25-30 kg/day).
- Lower maintenance costs (by approximately 20-25%) owing to smaller body size
- Greater longevity in the herd (typically 5- 6 parities)
- Higher heat tolerance, attributed to smaller body size
- Reduced veterinary expenses (around 20%) due to higher resistance to lameness and mastitis
- Earlier puberty (11-12 months of age) and better fertility performance

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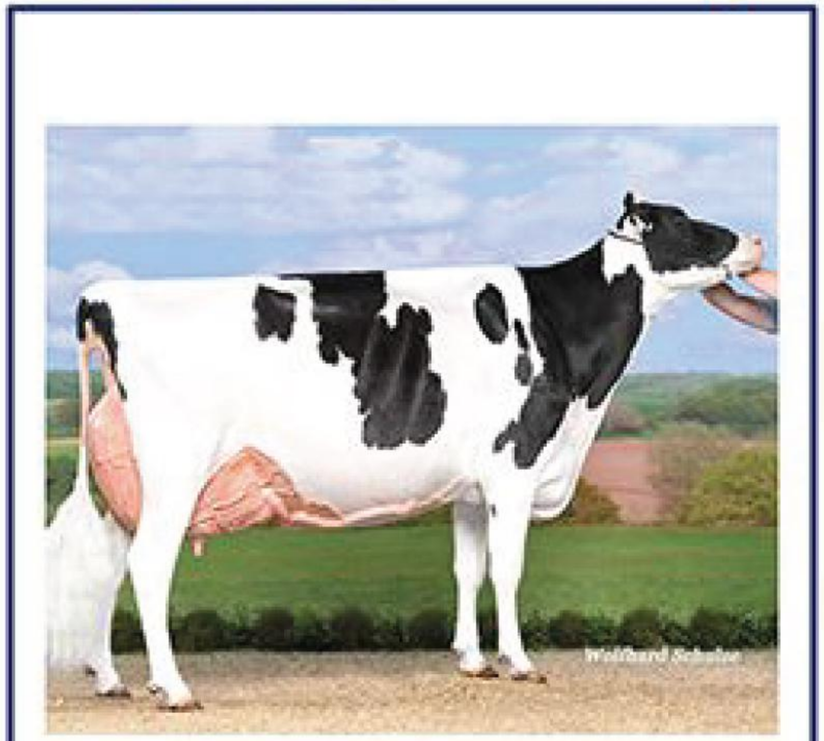
High-Producing Holstein – A Leap in Productivity

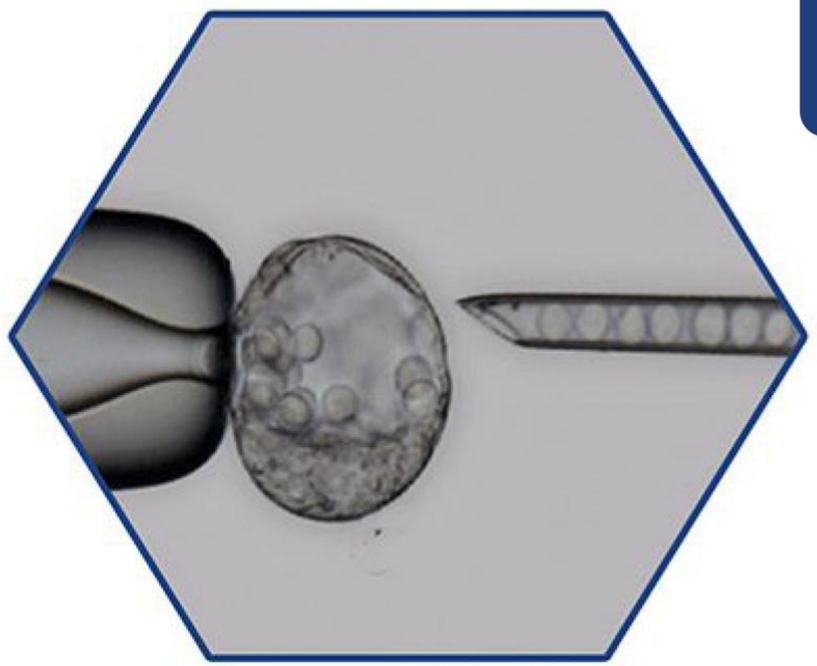
- High lactation performance during the lactation cycle (14-16 tons of milk)
- Extended productive lifespans and optimal fertility
- Highest Income Over Feed Cost (IOFC) and superior phenotypes
- Potential for establishing a homogeneous herd and subsequently enhancing productivity

High-producing Holstein Breed



Production of Simmental offspring from Holstein cattle

Birth of Jersey calves from Holstein recipients



Capabilities

- In vitro production of embryos in farm animals (IVM, IVF, IVC, ICSI)
- Cloning in cattle and sheep under laboratory conditions
- Embryo transfer in both laboratory and farm animals
- Cryopreservation of oocytes, sperm, embryos, stem cells, testicular and ovarian tissues in farm animals
- Assisted hatching of embryos
- Gamete and embryo micromanipulation techniques including:
- Enucleation
- Nuclear and cytoplasmic transfer
- Pronuclear microinjection
- Zona drilling
- Embryo biopsy
- Embryonic stem cells injection (ESCs)

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Collaboration Types

Selling Embyos

1

In this model, our company sells its produced embryos to the other party, and all calves resulting from the embryo transfer will belong to the buyer.

Participation in Calves Production

2

In this project, cow embryos of agreed breeds will be produced and transferred to recipient cows from the other party free of charge. At the conclusion of the project, the calves produced (at 6 months old) will be divided between the parties based on an agreed percentage.

Technical Knowledge Transfer

3

In this model, the technical knowledge of "in vitro production of cow embryos" is transferred to the other party over a period of 6 months. Afterwards, the receiving party can establish an embryo production laboratory in their own country and produce embryos under the license of this company.

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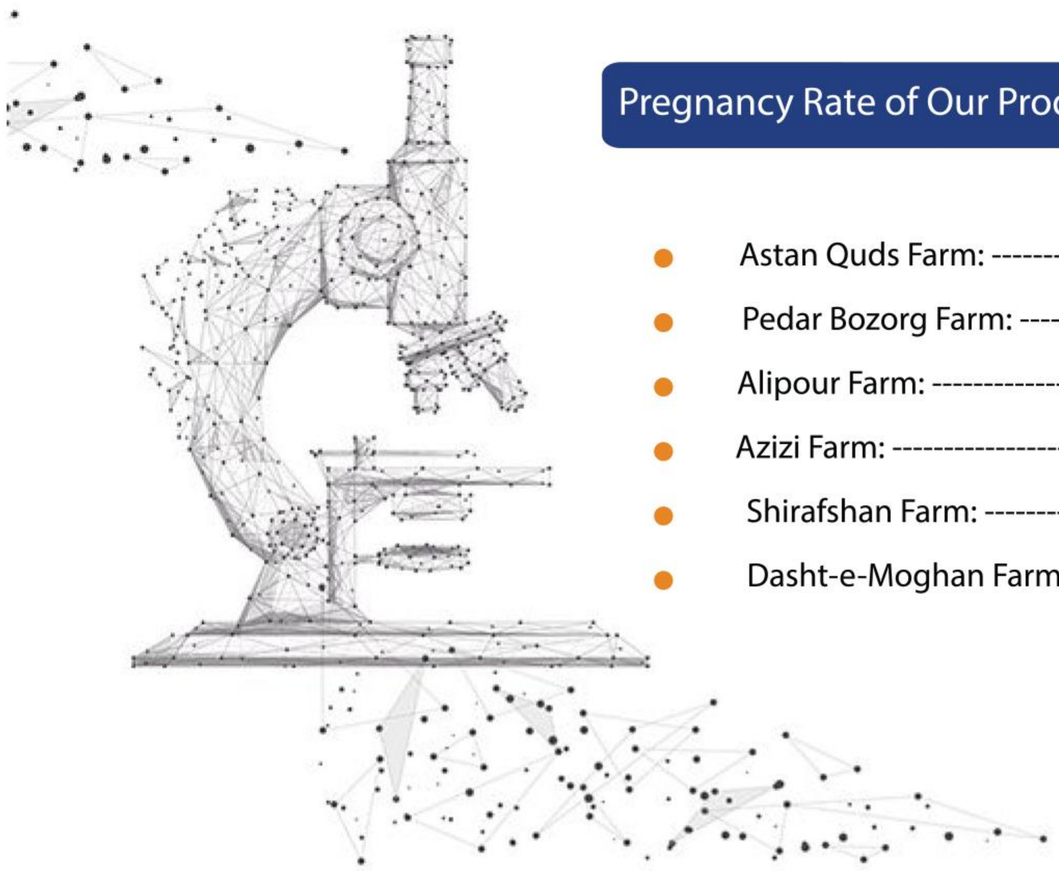
Reasons for the High Conception Rates of Embryos Produced by This Center

- Implementation of proper nutritional protocols in the recipient herds
- Provision of stress-reduction guidelines for recipient cows
- Application of the updated embryo cryopreservation
- Utilization of experienced personnel for embryo transfer procedures



Pregnancy Rate of Our Produced Embryos

- Astan Quds Farm: ---------- 43%
- Pedar Bozorg Farm: ---------- 69%
- Alipour Farm: ---------- 39%
- Azizi Farm: ---------- 46%
- Shirafshan Farm: ---------- 45%
- Dasht-e-Moghan Farm: ---------- 40%

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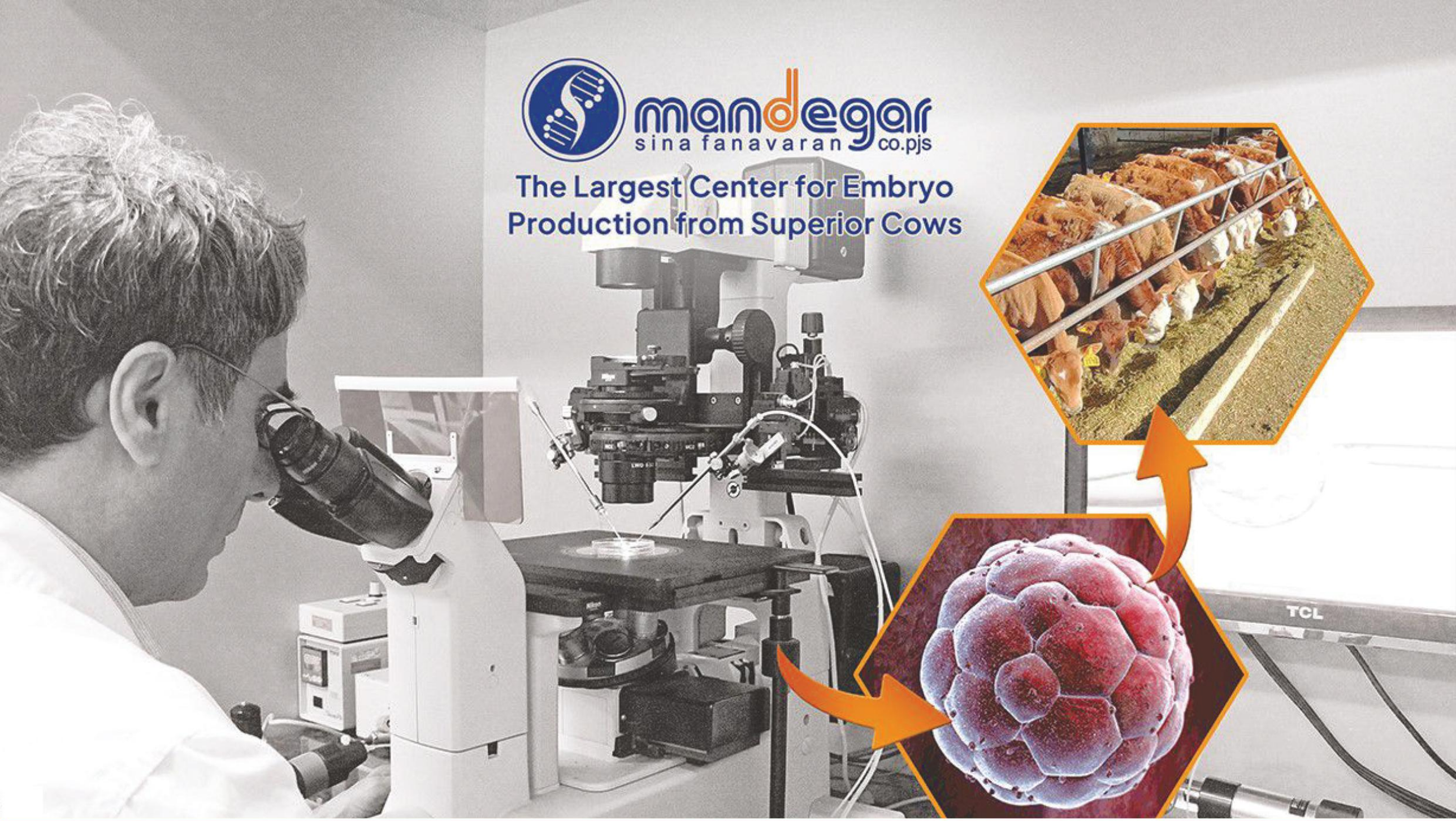

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