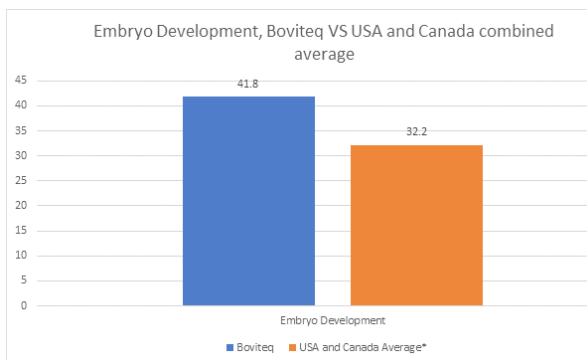




WHAT IS THE BOVITEQ DIFFERENCE

Oocyte quality is key to creating excellent embryos. Our technical experts and veterinarian partners work with clients to create customizable approaches to donor stimulation. We don't believe in a one size fits all model. Instead, we focus on personalized treatment to ensure the maximum number of excellent quality oocytes per donor is produced. Tools like dominant follicle removal, addition of progesterone, precisely-timed FSH injections and coasting periods allow us to tap the potential of each individual donor.

We put the same quality emphasis on the bull side of the equation. When Semex purchased Boviteq, along with that relationship came +60 years of semen research. Conventional, sexed and reverse sorted semen all act differently, as do different bulls, and we treat them accordingly. Not only do we have a tremendous database to use as a resource for optimizing bulls, but we also have tools to test new sires to maximize fertilization.



Once the eggs are fertilized, the embryos are cultured in our unique 3-step media, designed to mimic the oviduct and uterus. Because our culture conditions are more like the natural environment that an embryo should mature in, and we start with good quality oocytes and optimized fertilization conditions, our embryo development is higher than the US and Canada national averages of all IVF labs. Consequently, our final product is similar to an in vivo embryo.

High quality embryos produced with Boviteq's proprietary in vitro culture system are as resistant as in vivo (flushed) embryos to traditional freezing. All embryos frozen by Boviteq are direct transfer-ready for ET. In the final research trial done by our team, +500 embryos were transferred, resulting in +60% pregnancy rates at day 60 of gestation.

To ensure consistency across the board, Boviteq has a Quality Assurance/Quality Control Program that monitors all commercial IVF activities.

Specialized personnel responsible for this program work closely with Boviteq's exclusive veterinarian partners assuring the best procedures from farm to lab.

Most importantly, keeping our clients informed and being transparent every step of the way guides us in creating excellent client experiences and more live calves per donor.

All put together, it is a big difference.... The Boviteq Difference!

Our difference is more than just one thing!

FREQUENTLY ASKED QUESTIONS

What is IVF?

IVF stands for in vitro fertilization, that translates into fertilized outside the organism, like in a test tube or culture dish. In IVF embryo production, not only does fertilization take place outside of the body of the cow, but so does the 24 hours of egg/oocyte maturation and the seven days of culture for embryo development. Conventional embryo recovery, or flushing, is when the cow acts as the incubator, producing in vivo embryos, meaning "inside the organism."

How is IVF different than conventional embryo collection?

- IVF offers more opportunities to collect elite donors, as young as seven months of age, during the first trimester of pregnancy and as often as every two weeks
- A more efficient use of conventional and sexed semen
- Conventional semen can be reverse sorted, allowing calves of the desired sex to be possible from nearly any bull
- Oocytes are shipped to the lab and fertilized the day after collection
- Embryos are cultured in media designed to mimic the uterus for six days then shipped for fresh transfer within 24 hours or kept at the lab for freezing on day seven

What is the preparation and collection process?

- The veterinarian begins the donor set up by either giving GnRH or performing dominant follicle removal, then provides the client with a shot protocol for each donor, specific to her breed, age and stage of gestation



- 100% compliance to the shot protocol is important to optimize oocyte quality and the number of resulting embryos
- Oocytes are collected by the veterinarian then evaluated and placed in media for transport to the lab by a trained embryologist

How do I get semen to the lab?

- Conveniently, Boviteq will order semen in five-unit increments from our local AI company representatives
- You may send semen at any time to the lab and we will place it in your inventory. Sending it with other clients may save shipping charges; be sure to check in with your veterinarian before shipping

Which females make the best donors?

The ideal donor is reproductively sound and free from the stresses of lactation, heat and nutrition. However, we can work with donors that may not perform well in a conventional flush environment, as well as young and pregnant donors.

What is pooling?

At Boviteq, oocytes from 2-3 donors can be placed in a dish together as long as they are being mated to the same sire and there are less than 60 oocytes. This saves on IVF cycle costs for the producer. The resulting calves will need to be DNA tested to determine the dam.

Does a certain kind of semen work best in IVF?

There are several factors that affect semen quality and fertilization in IVF. Most impactful are the age of bull at collection and how the semen has been handled before it arrives at the lab. Sexed semen may require additional units and reverse sort semen requires a back up bull choice in the event the sort does not work well.

What is reverse sorting?

Frozen, conventional semen is thawed and sorted for X or Y-bearing sperm for fertilization, resulting in 90% female or male calves, respectively. The term refers to semen that is frozen, then sorted upon thawing versus sexed semen that is sorted then frozen. Because the sorting process greatly reduces the final number of sperm cells available for fertilization, typically a minimum of two units are required.

What is a morula report?

The morula report is a prediction; a preliminary embryo report generated on day six. The report contains the number of oocytes, cleavage (the number that began cell division following fertilization) and the number of morulas developed. In addition, the number of embryos that could be frozen and other important information is available at this time.

Why are there changes between day 6 to day 7?

Because the morula report is only a prediction and embryos continue to grow and change, we generate a final report on day seven that details which embryos were frozen and which were shipped. Boviteq is meticulous in producing the very best embryos and will not send or freeze embryos that do not meet our high quality standards.

Once the morula report is generated, then what?

We will send any fresh embryos requested to the client to arrive the morning of day seven for transfer into recipients that were in heat seven days earlier. Any embryos to be frozen will remain at the lab for freezing on day seven and are then stored at Boviteq until the request is made to ship them back to you.

What kind of embryo production results can I expect?

The range of the number of oocytes, embryo development, and number of embryos created is quite varied and depends on a donor's reproductive potential as well as her stimulation and the bull choice. On average, a donor will produce 12-20 oocytes and approximately 40% of those will develop to an embryo, resulting in 5-8 embryos per donor.

What kind of pregnancy results can I expect?

Fresh embryos typically result in pregnancy rates of 45-50%, whereas frozen embryos result in 55-60% in well-managed recipients. The reason why Boviteq frozen embryos result in higher pregnancy rates than fresh is that we select only the best for freezing, whereas the fresh numbers include all grades.

How are embryos frozen?

All Boviteq embryos are frozen in ethylene glycol for direct transfer.

Are there recipients available?

While Boviteq does not own a recipient herd, we do work with several cooperator herds for both dairy and beef recipients, and we can reach out to these parties on your behalf. If interested in these services, please inquire prior to your donor being aspirated.

How do I find an OPU vet?

You can contact our US lab at 608-838-2504 or our Canadian lab at 450-774-7949. You can also visit our website at www.boviteq.com and check under the OPU Centers tab.

***Boviteq Has
The Industry's
Best Quality
Standards***

Boviteq[®]

INNOVATIVE IVF SOLUTIONS

Boviteq specializes
in IVF technologies,
accelerating
genetic progress.

BOVITEQ

The industry's
best direct transfer
**frozen
embryos**

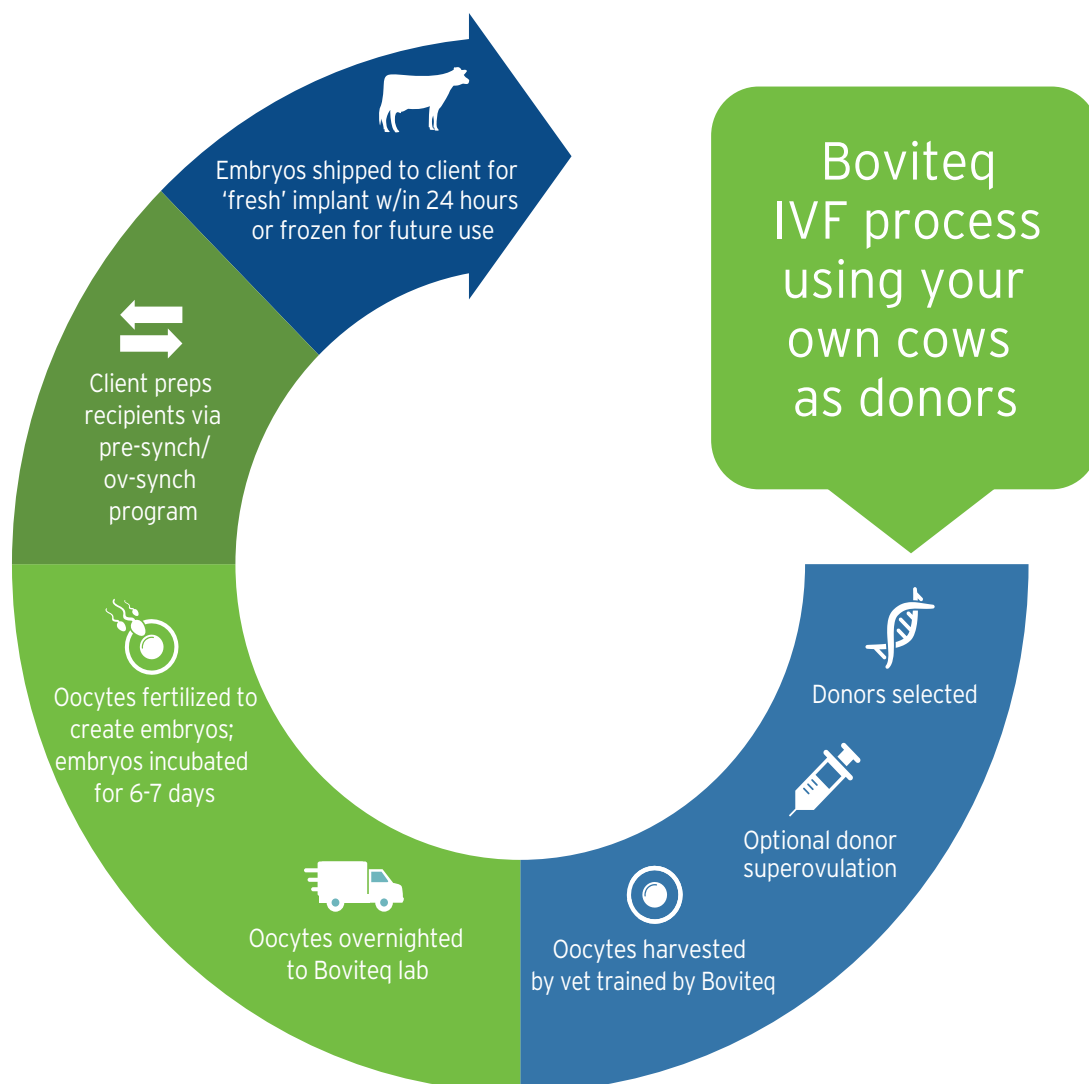
**Industry
leader**
in reproductive
technologies

310,000+
embryos produced
in 2024

State of the art
Labs in US, Canada,
Australia, Brazil

Licensees in UK, France,
Italy, Switzerland, Portugal,
Spain, Japan and
Western Canada

SIMPLE PROCESS



BENEFITS



Faster genetic
progress

7

Can work with
heifers at 7 mos.



More calves/
donor/year



Frozen IVF embryos
show higher
conception % during
heat stress periods



Fertilize multiple
donors' oocytes
with a single unit
of semen

100

Collect
oocytes up
to 100 days
pregnant

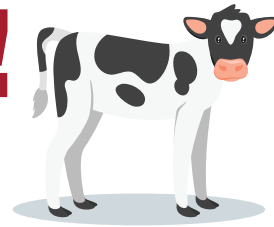
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Can collect
every 2 weeks

2025

FSH WORKS!

Here's How!



Mimics natural follicular waves



Give in 12 hour intervals
– gone after 13 hours



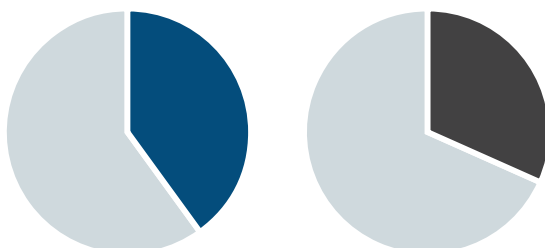
American Embryo Transfer
Association Stats 2017
says FSH vs No FSH nets

3.1
more
embryos
per donor
(5.6 v 2.5)

30% better embryo
development

More Pregnancies With FSH

Conception Rate



44% vs 35%

Pregnancies Per Donor



2.5 vs 0.9

Source: Katae et al., 2019

Boviteq[™]
INNOVATIVE IVF SOLUTIONS



MINIMIZE STRESS

- Stress can impact oocyte quality for 60-90 days
- Stresses can be associated with nutrition, calving and lactation, weather and temperature (heat/cold), illness, transport and socialization with other cattle
- Low stress handling should be used when sorting and transporting animals
- Donors should have access to shade or shelter in times of extreme heat or cold

***There's no one key
to success, rather an
entire protocol that nets
the best results***

NUTRITION

- Diet can significantly impact oocyte quality and donor performance in an IVF program
- Donors should be fed a consistent diet not competing with other cattle for feed or bunk space and not exceeding 15% crude protein
- Ideal body condition score for beef donors on collection = 6
- Avoid feedstuffs that are high in palmitic acid
- Regular testing of feedstuffs is as important as quality and composition of feed, which can vary based on crop year and conditions
- Moving cattle to grass can alter performance; consider pasture conditions and supplementation

- A well-balanced vitamin and mineral program can improve donor performance
- Consult a nutritionist or veterinarian when questions arise

DONOR SET UP

- Donors should be at least 30 days post-partum and have had one natural heat since the most recent conventional embryo flush
- Ill or Injured donors are not good candidates for OPU and should be treated by a veterinarian
- Dominant follicle removal (DFR) prior to collection is the best set up to ensure a new healthy follicular wave and consistent results
- Progesterone is necessary for development of good quality oocytes and to avoid irreversible in vivo maturation; CIDRs should be inserted following DFR and replaced immediately if lost prior to OPU
- Shots should be given at precise 12-hour intervals as deviation from this schedule can cause follicles and the oocytes inside to decrease in quality and even die prior to collection

RECIPIENTS

- Recipients should be 70 days post-partum
- The same nutrition and body condition score considerations for donors apply to recipients
- Heat detection is critical for identifying the best recipients; Age of a CL cannot be determined by ultrasound or palpation
- Embryos should be transferred 6.5-8 days following estrus
- Keep good calving records and induce recipients that haven't calved by their due date