



Euroopa Maaelu Arengu  
Põllumajandusfond:  
Euroopa investeeringud  
maapiirkondadesse

# OPU

# Ovum Pick-up

---

**Dr. Andres Arteaga DVM.,MVSc.**

**Bova-Tech Ltd.**



[www.bova-tech.com](http://www.bova-tech.com)



# Introduction

- Component of the IVF process
- Can be performed in heifers as young as 7-8 months of age, and surgically in 2-3 months
- OPU procedure is under the scope of veterinary practice in Canada.
- CETA grant OPU certification to veterinarians for production of IVF exportable embryos.

# Challenges

- Good aspiration equipment
- Good donor preparation
- Adapted superstimulation protocols.
- Transport medium and equipment
- **Excellent communication!**

# Donor Selection

- Before admission:
  - Breed
  - Age: from 7 mo to 14 yo
  - Condition: open or pregnant
  - Individual history: folliculogenesis = 60d
    - Last calving: beef vs dairy (70d)
    - Milk production
    - No disease
    - Flush history

# Donor Selection cont..

- Good Oocytes (eggs) make good embryos.
- Importance of choosing a good donors.
  - Increased number of embryos produced
  - Increased clients satisfaction.
- The “poor donor” profile.
  - Repeat breeders
  - High producers
  - Poor previous conventional flush results.
- **In the lab:** poor oocyte quality/competence, poor embryo rates, increased embryo mortality.

# Initial examination

- Normal General exam
- Repro exam
  - Normal repro tract
  - Ovary reachable
  - Follicular reserve
    - Very constant from cycle to cycle
    - From one lactation to another
    - Strategies to quantify the follicular population



# Client communication

- First contact
  - IVF advantages:
    - Most efficient ART over a defined period time
    - **Production of sexed embryos (female)**
    - Prepuberal donors
    - Pregnant donors
- IVF schedule.

# Female embryos over 60 days period, on average

---

	Conv. Flush	IVF	IVF
Semen	Non sexed	non-sexed	sexed
Frequency	1	4	4
Oocytes		38.8	38.8
Viable embryos	6.4	21.3	16.7
Female embryos	3.3	10.2	16.5
Gestation (U30)	2 (61%)	5.8 (57%)	9.2 (56%)
Gestation (U60)	2 (59.4)	5.3 (52%)	7.9 (48%)



# Schedule

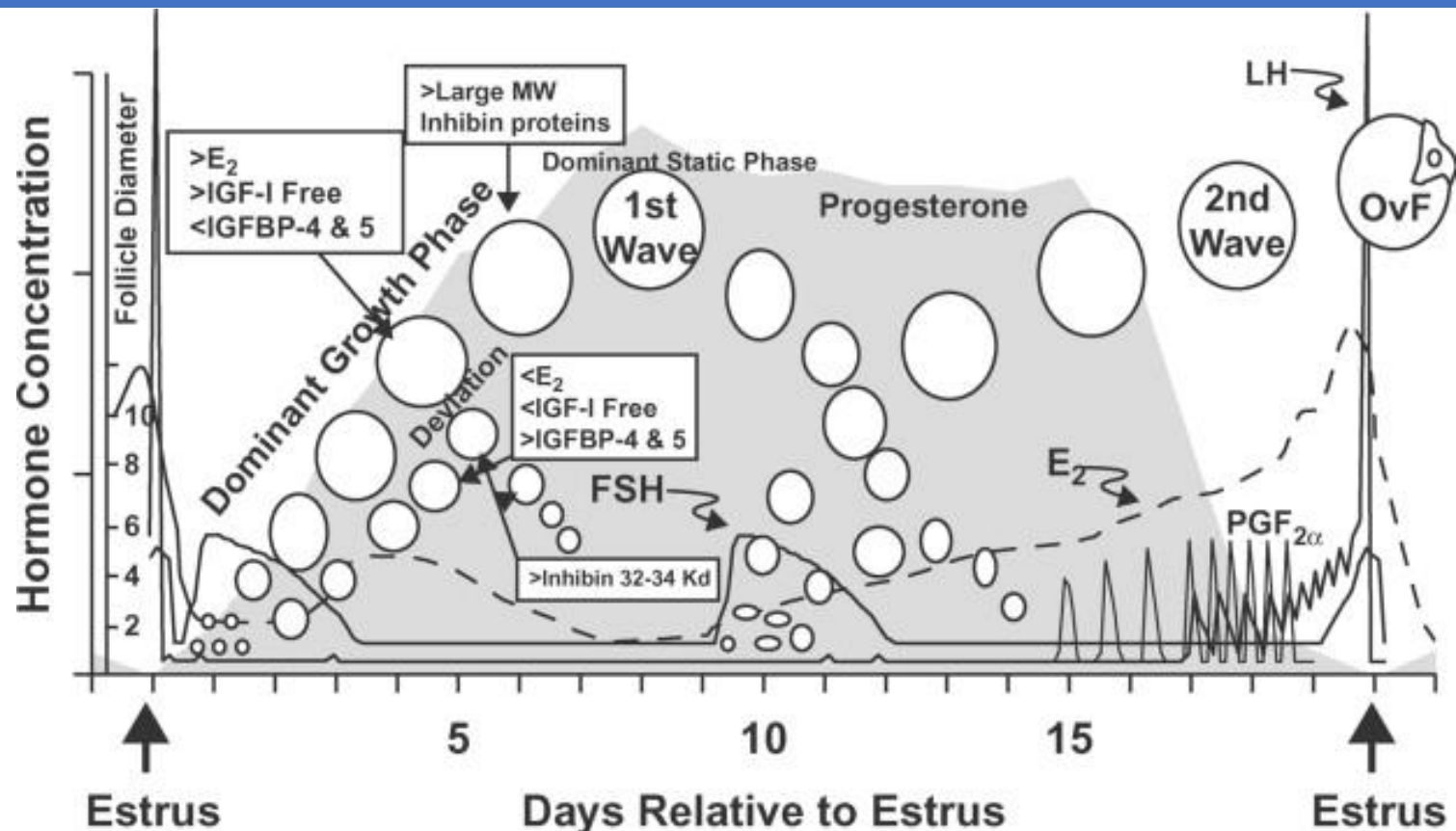
Initiation of follicular recruitment = DFR!!!

---

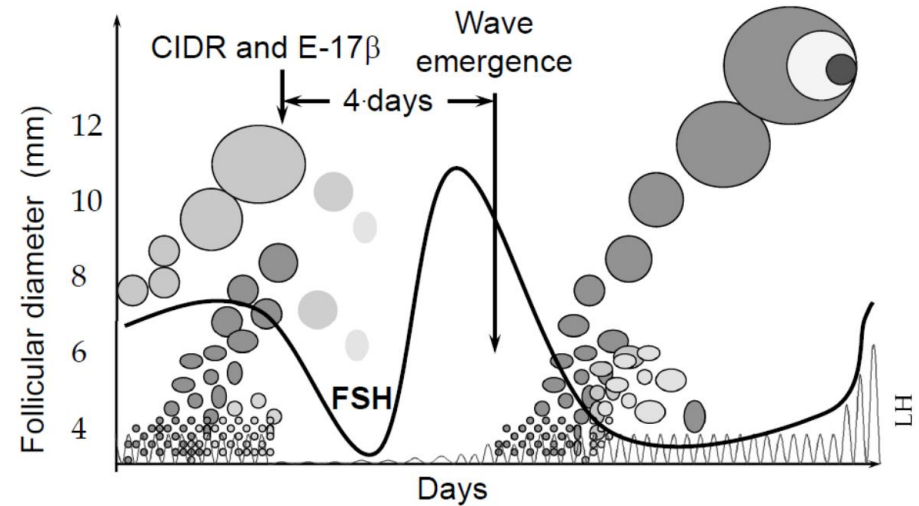
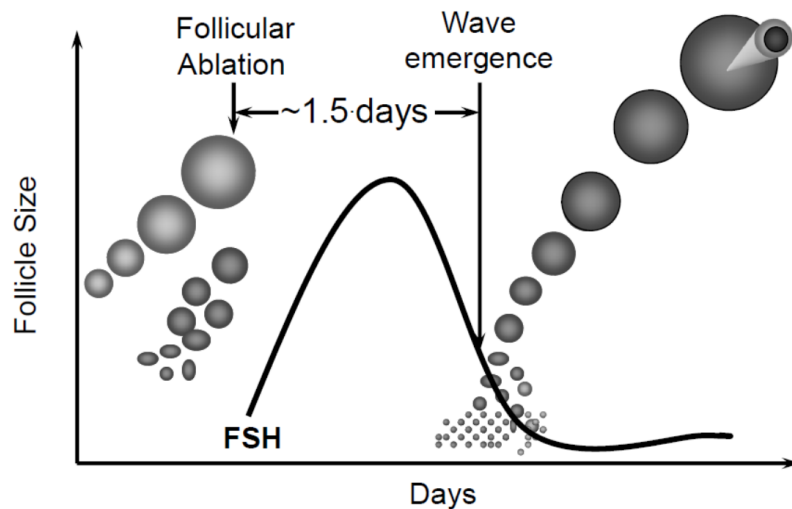
- Day 7-11 of the estrous cycle
  - Whenever in prepubertal heifers
  - Progesterone support : CIDR or Prids
  - Pregnant cows DFR
  - 36-48 hours ahead start superstimulation
-

# Schedule

Initiation of follicular recruitment = DFR!!!



# Controlling follicular development



# Adapted superstimulatory

---

- Many different protocols are used in practice
  - It is widely accepted that there is a significant animal variation when using the same protocol
-

# Typical BTL schedule

## OPU Superovulation Protocol

Day	Time	Intervention	Qt. (cc)
Tuesday	AM	CIDR	
Thursday	AM	Dom. Foll. Removal (DFR)	
Saturday	6:00 AM	Folltropin-V	2
Saturday	6:00 PM	Folltropin-V	2
Sunday	6:00 AM	Folltropin-V	2
Sunday	6:00 PM	Folltropin-V	2
Monday	6:00 AM	Folltropin-V	2
Monday	6:00 PM	Folltropin-V	2
Wednesday	AM	Oocyte collection	
Thursday		Fresh Implants	



# On-farm OPU Procedures

Oocyte collection



Bova-Tech Ltd.

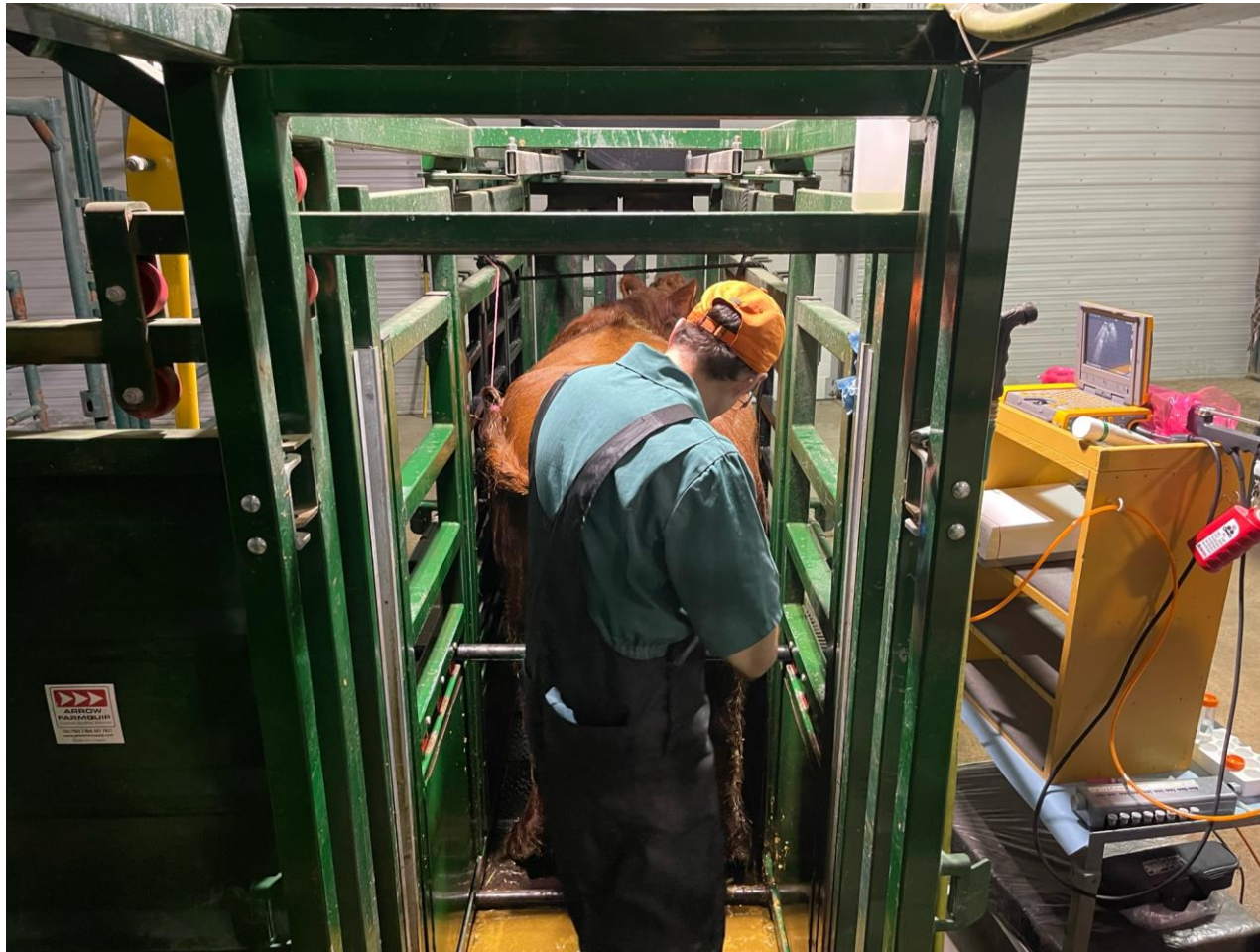


Embryo Transplants

[www.bova-tech.com](http://www.bova-tech.com)

# In-clinic OPU Procedures

---



# Equipment

---

## Ultrasound



**C90PU Probe**  
Ovum Pickup Probe and  
Handle  
[5-10 MHz]





# Equipment

## Vacuum pumps:

**Cook**



1. User Manual
2. Vacuum Pump
3. Disposable Vacuum Line with Hydrophobic Filter (K-DVLF-240)
4. Foot Pedal
5. Power Cord

**WTA**



# Equipment

Tube warmer

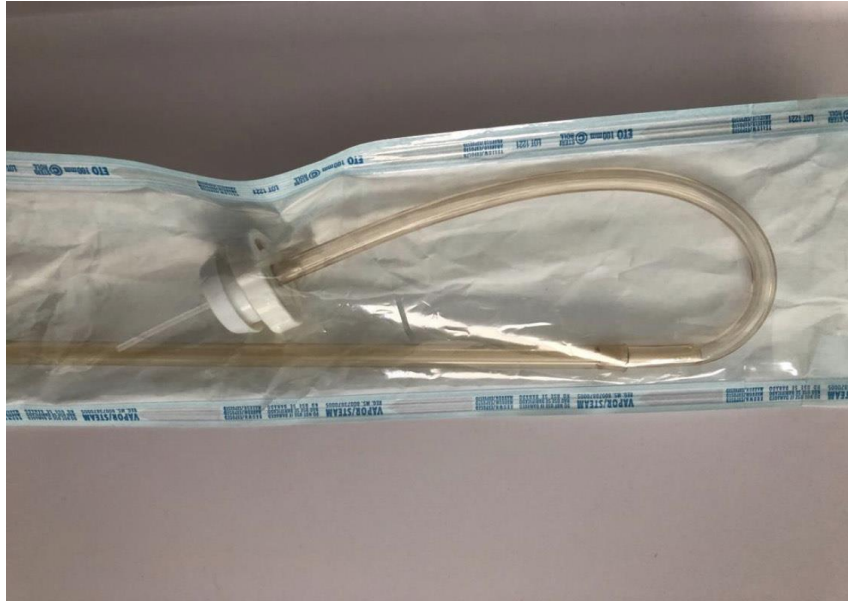


Rods and needles



# Equipment

## Full system



## 18G needle & rod



# Aspiration flow

---

25 to 35 ml per minute

110 mm Hg





# Equipment

## Lab set up



Bova-Tech Ltd.



Embryo Transplants

[www.bova-tech.com](http://www.bova-tech.com)

# Equipment

Warm stage





Bova-Tech Ltd.

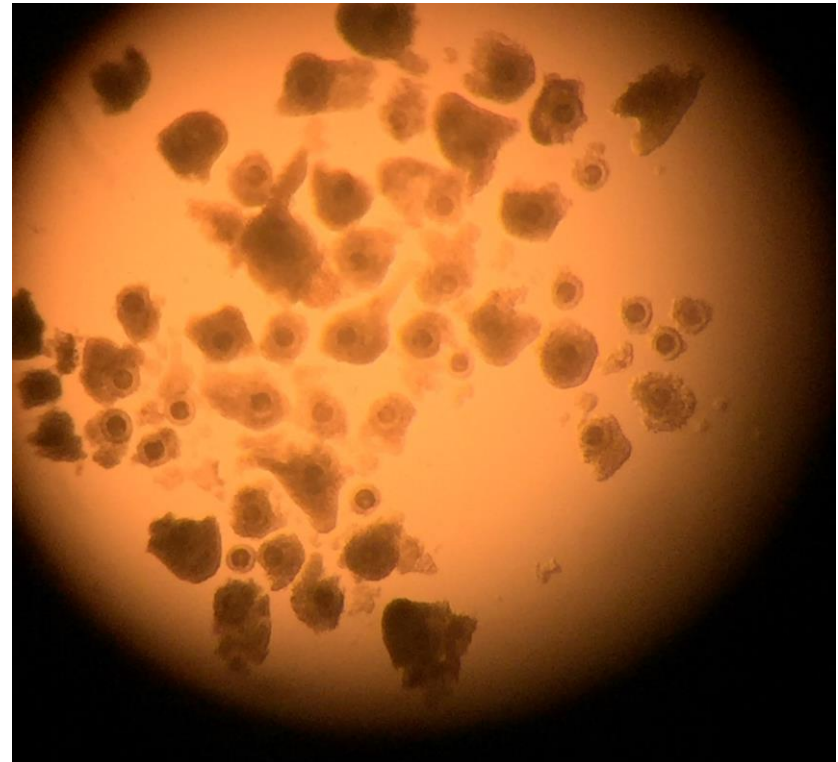
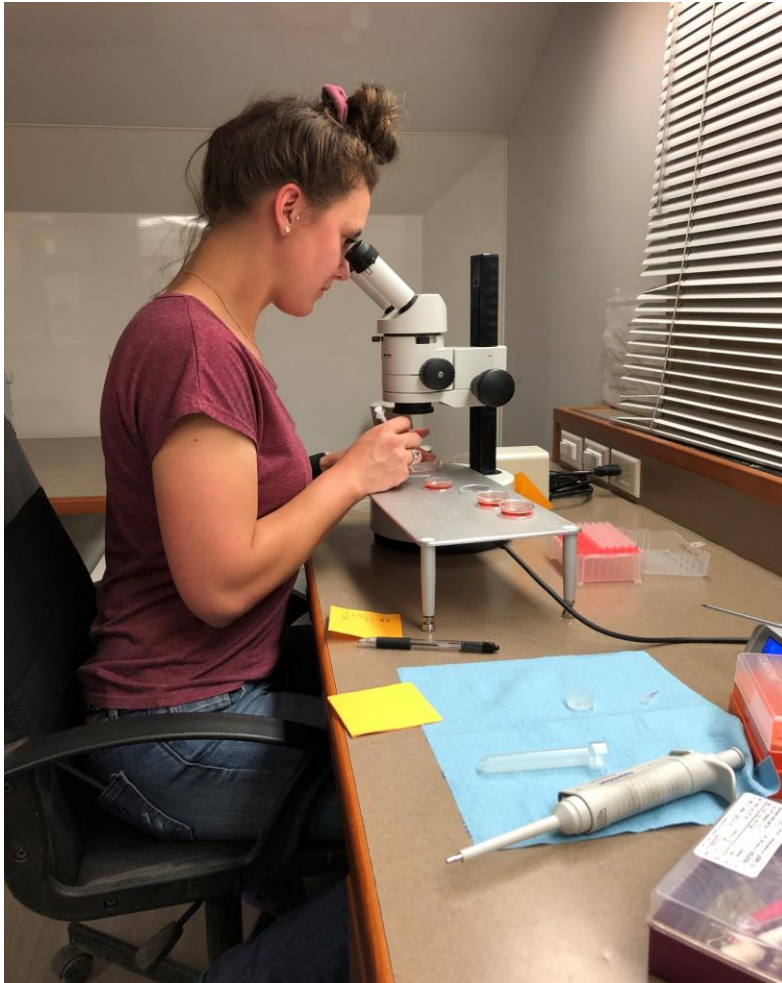


Embryo Transplants

[www.bova-tech.com](http://www.bova-tech.com)

## Searching and classifying

---



Bova-Tech Ltd.



Embryo Transplants

[www.bova-tech.com](http://www.bova-tech.com)

# Incubator (22-24 hours maturation)





\_\_\_\_\_

# Medium



## OPU Ovum pick-up medium

- For performing ovum pick-up and embryo flushing
- Enriched with amino acids to prevent amino acid depletion of oocytes and embryos
- Supplemented with heparin and gentamycin



## Wash Oocytes and embryo wash medium

- For the handling and washing of oocytes and embryos outside of the incubator (HEPES-buffered)
- Enriched with vitamins and amino acids to prevent amino acid depletion of oocytes and embryos
- Supplemented with gentamycin and bicarbonate



## BO-HEPES-IVM HEPES-buffered oocyte maturation medium

- For the *in vitro* maturation of oocytes outside the incubator
- Allows for the maturation of oocytes away from the laboratory and during transportation without an incubator
- Also suitable for traditional use in incubators
- Supplemented with low glucose, gonadotrophic hormones and gentamycin

# QUESTIONS??



**Bova-Tech Ltd.**

**P.O. Box 80142  
Airdrie, Alberta T4B 2V8**

**Tel: (403) 332-1567**

**E-mail: [info@bova-tech.com](mailto:info@bova-tech.com)**

**[www.bova-tech.com](http://www.bova-tech.com)**

**Donor Care  
Facility**

**Embryo Collection,  
Freezing & Transplants**

**IVF - In Vitro  
Fertilization**

**Export  
Certified**

**In-Clinic & On  
Farm Services**

**Recipient  
Programs**

