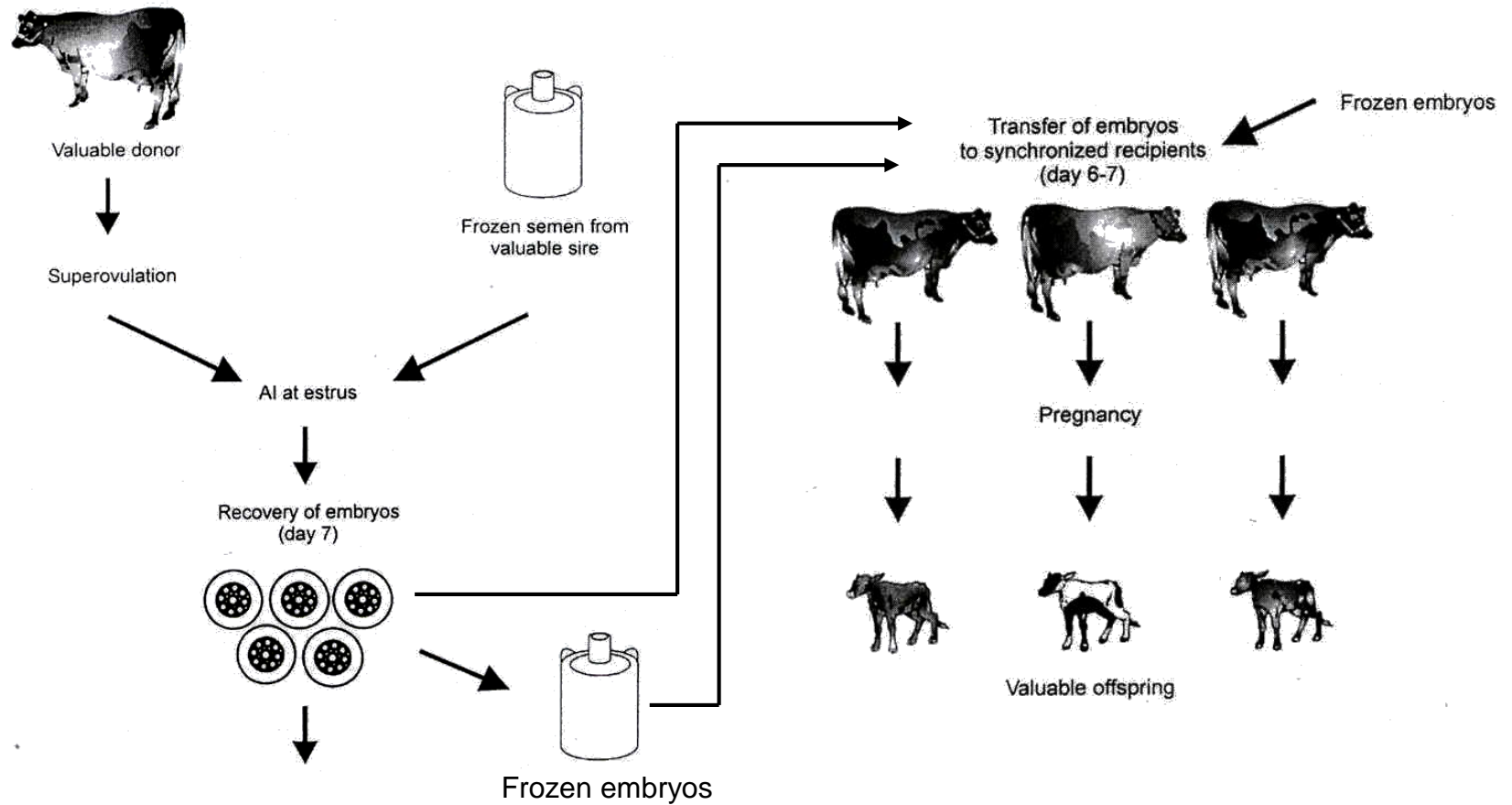

Przenoszenie zarodków: Przygotowanie dawczyń i biorczyń

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Katedra Chorób Dużych Zwierząt z Kliniką
Szkoła Główna Gospodarstwa Wiejskiego w Warszawie

Steps associated with embryo production *in vivo*



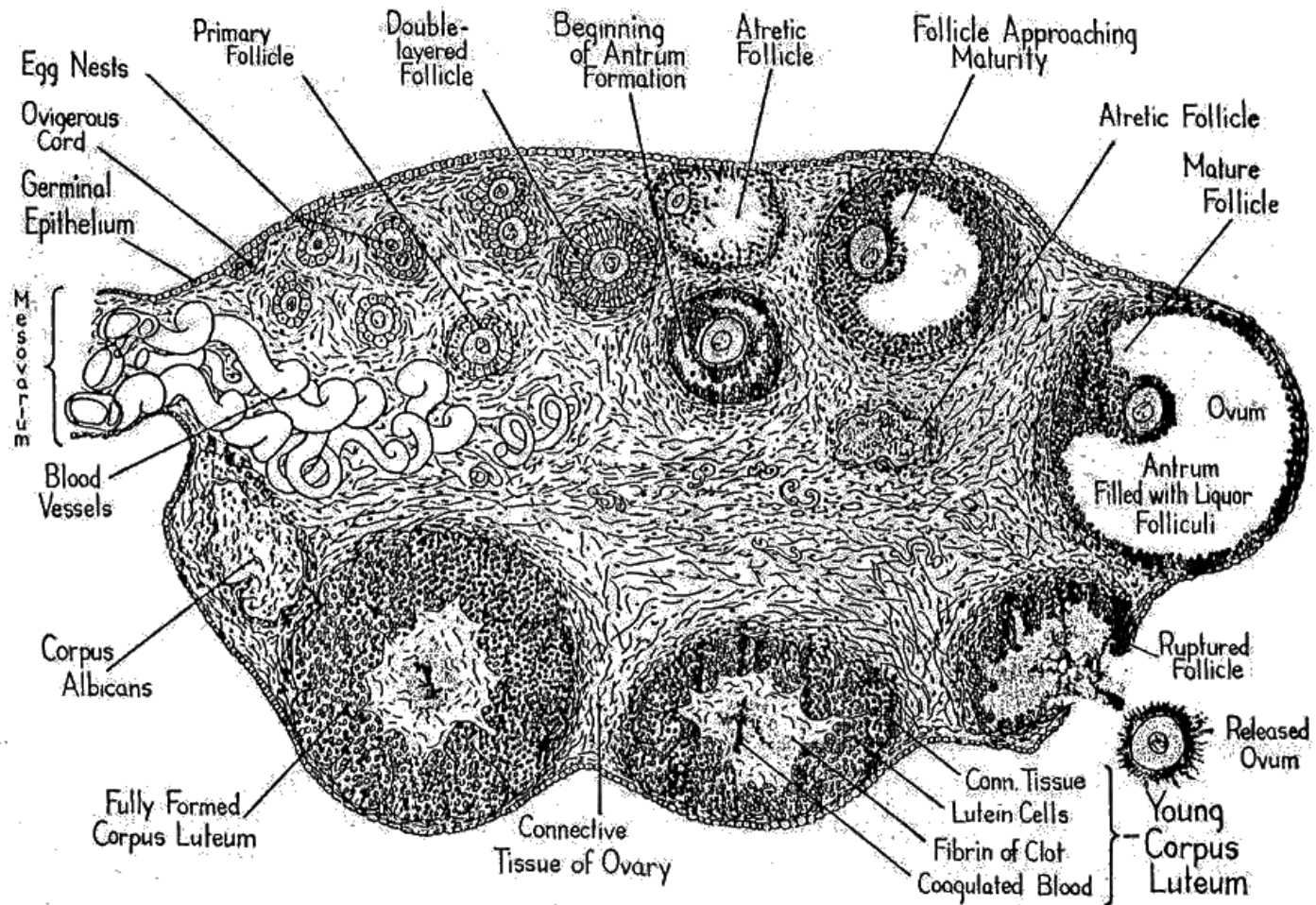
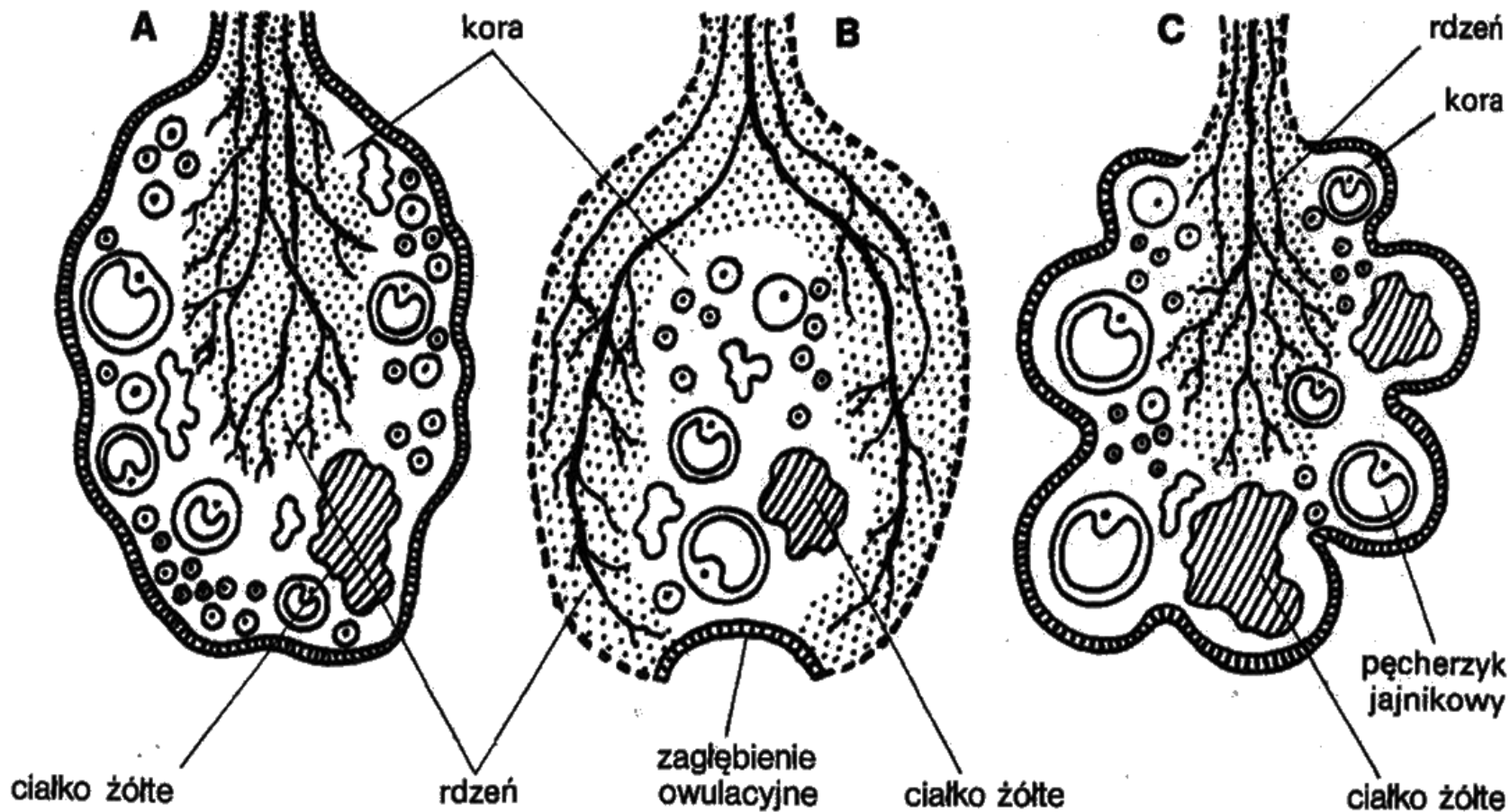


Fig. 9-3. Schematic diagram of an ovary, showing the sequence of events in origin, growth, and rupture of an ovarian (Graafian) follicle and formation and retrogression of the corpus luteum. Follow clockwise around ovary, starting at the mesovarium. (B. M. Patten, Human Embryology. Courtesy of Blakiston Division of McGraw-Hill Book Co., New York, NY, 1946).



Ryc. 6.1. Schemat budowy jajników ssaków: *A* – krowy; *B* – kłaczy; *C* – świni

Ryc. 6.2. Dojrzewanie pęcherzyka jajnikowego u ssaków: *A* – pęcherzyk pierwotny; *B* i *C* – pęcherzyki wzrastające; *D* – dojrzały pęcherzyk jajnikowy

Embriotransfer

1. Selekcja dawczyń i biorczyń
 2. Synchronizacja rui u dawczyń i biorczyń
 3. Superowulacja u dawczyń
 4. Inseminacja dawczyni
 5. Pozyskanie zarodka od dawczyni
 6. Ocena zarodków
 7. Przygotowanie biorczyń
 8. Transfer zarodków
-

Selekcja dawczyń i biorczyń

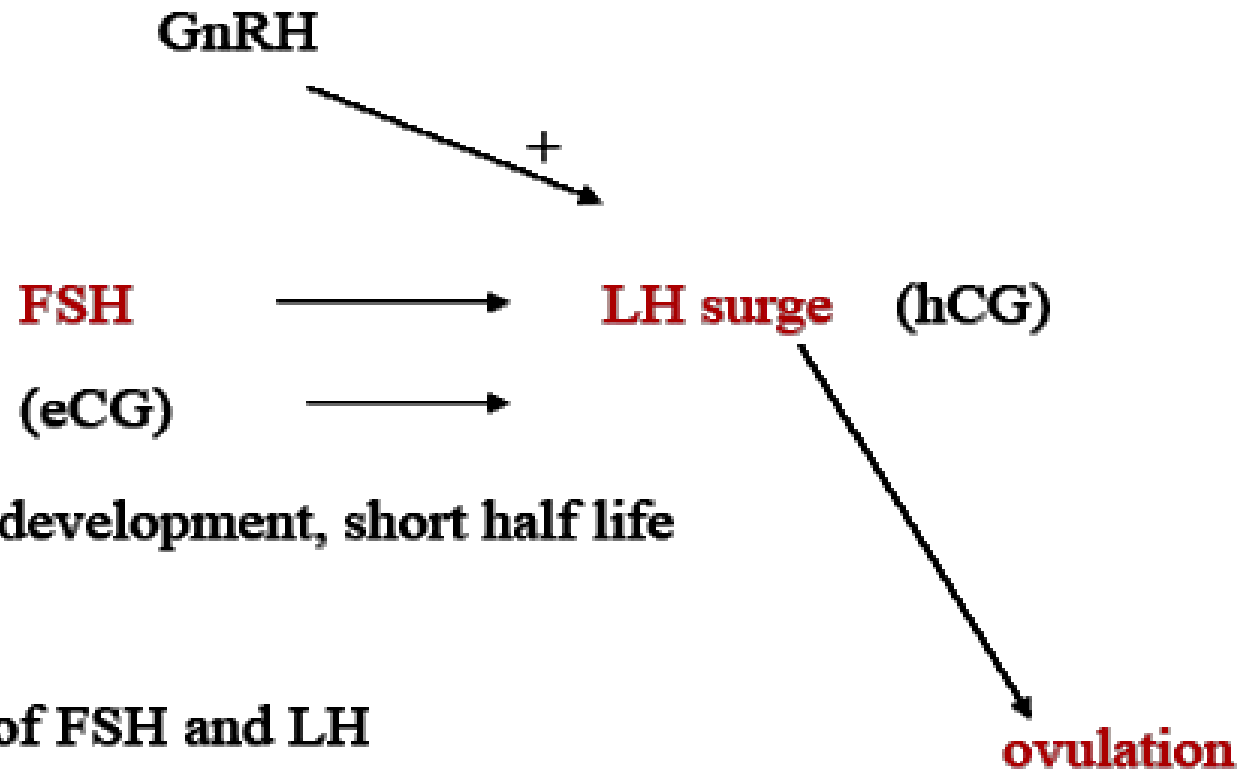
■ Idealna dawczyni:

- ❑ krowa o dużej wartości hodowlanej (wysoka wydajność mleczna, dobry pokrój, prawidłowa budowa wymienia)
- ❑ Krowa o regularnych i wyraźnych rujach, z prawidłowo rozwiniętym układem rozrodczym
- ❑ pomiędzy 3 a 10 rokiem życia, najlepiej po minimum jednym wycieleniu (zwraca się także uwagę na przebieg przebytej ciąży i porodu)
- ❑ szczepiona zgodnie z wymogami, u której wykluczono choroby zakaźne

Selekcja dawczyń i biorczyń

- Idealna biorczyni:
 - zdrowy układ rozrodczy i układ ruchu, aby zmniejszyć ryzyko zagrożenia ciąży i komplikacji przy porodzie
 - Wykazujące tzw. łatwość wycieleń
 - W dobrej kondycji:
 - BCS (Body Condition Scoring) 3-4 u krów mlecznych
 - BCS 6 u krów mięsnych

Superowulacja



- **FSH: follicular development, short half life**
- **LH: ovulation**
- **GnRH: release of FSH and LH**
- **PGF: induces regression of CL and contraction of ovarian smooth muscle**
- **eCG (PMSG): mimics FSH and stimulates follicular growth; long half life**
- **hCG: mimics LH and induces ovulation**

Protocols for superovulation

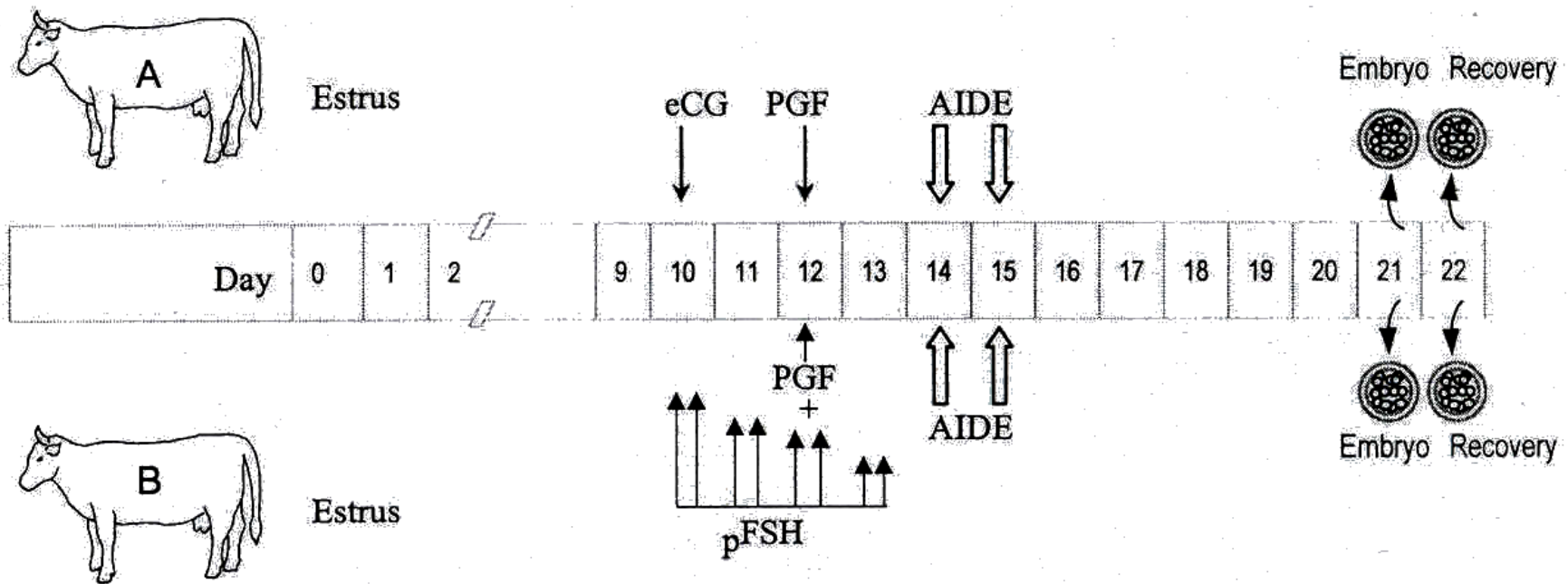


FIGURE 29-4. Protocols for superovulation for cattle and buffalo based on a gonadotropins. (A) eCG + PGF_{2α}; (B) pFSH + PGF_{2α}. eCG = equine chorionic gonadotropin; pFSH = porcine Follicle Stimulating Hormone; PGF = prostaglandin F_{2α}; AIDE = artificial insemination at detected estrus.

eFSH Protocol in mares

- **Step 1.**
Five or six days following ovulation, ultrasound mare and begin twice daily injections of 1 mL eFSH (12.5 mg/mL).
 - **Step 2.**
Administer a single injection of prostaglandin (Lutalyse or Estrumate) on the second day of treatment
 - **Step 3.**
Continue injections until the majority of follicles are greater than 35mm, then administer 2,500 IU of hCG and discontinue eFSH.
 - **Step 4.**
Continue to ultrasound daily, to confirm the number of ovulations.
 - **Step 5.**
Perform embryo recovery, 7 or 8 days after the first ovulation(s).

 - **Notes:**
 - a) *If mare has follicle greater than 30mm at the initial exam (day 5 or 6), they will be less likely to superovulate.*
 - b) *If multiple follicles are not obtained after 10 days, treatment should be discontinued.*
- *A commercial, lyophilized, sterile reagent preparation that contains eFSH activity equivalent to 25mg of B-FSH (Bioniche Animal Health USA)

Necessary Equipment for Embryo Transfer (continued)

- FSH



- Prostaglandin (Lutalyse)



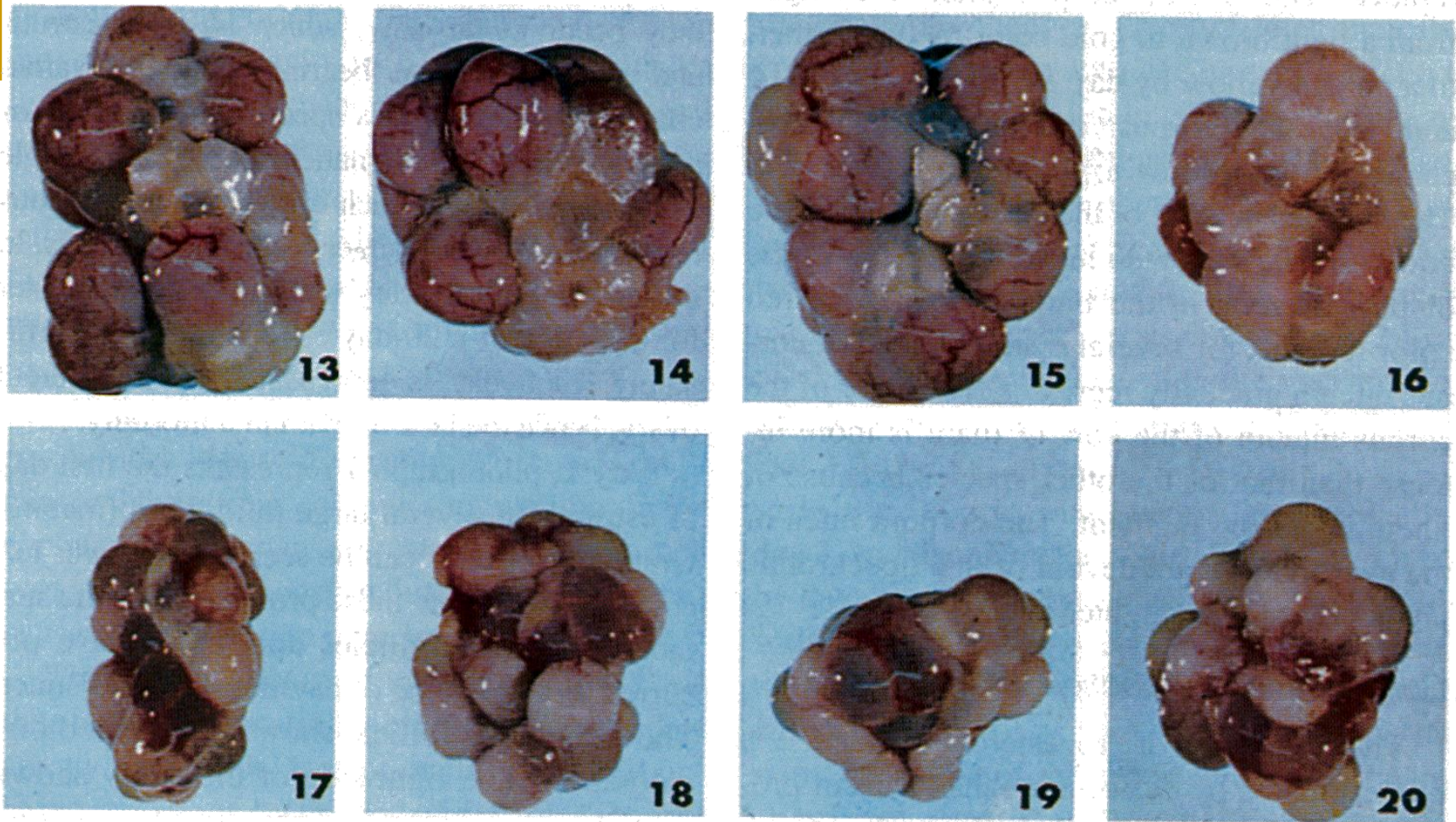


Fig. 9-24. Photograph depicting the cyclic changes in the sow ovary during a 20-day estrous cycle. Photograph 1 is the first day of estrus or day 0 of the cycle. Photographs 1 and 2 are ovaries obtained during estrus. Photographs 3 and 4 (days 3 and 4) obtained during metestrus. Photographs 5 to 16 obtained during diestrus. Photographs 17 to 20 are during proestrus. See text of this chapter for more complete discussion. (From: E. L. Akins and M. C. Morrissette, *Am. J. Vet. Res.* 29:1953, 1968).

Pozyskiwanie zarodków





Sprzęt używany do embriotransferu

- Medium do płukania zarodków
- Kateter Foley'a
- Filtr do wypłukiwania zarodków
- Wąż z końcówką Luer



Sprzęt używany do embriotransferu



Sprzęt używany do embriotransferu

- Mikroskop / Stereomikroskop



- Słomka



- Pistolet do przenoszenia zarodków



Sprzęt używany do embriotransferu

■ Penicillin



■ Lidocaine



Sprzęt używany do embriotransferu

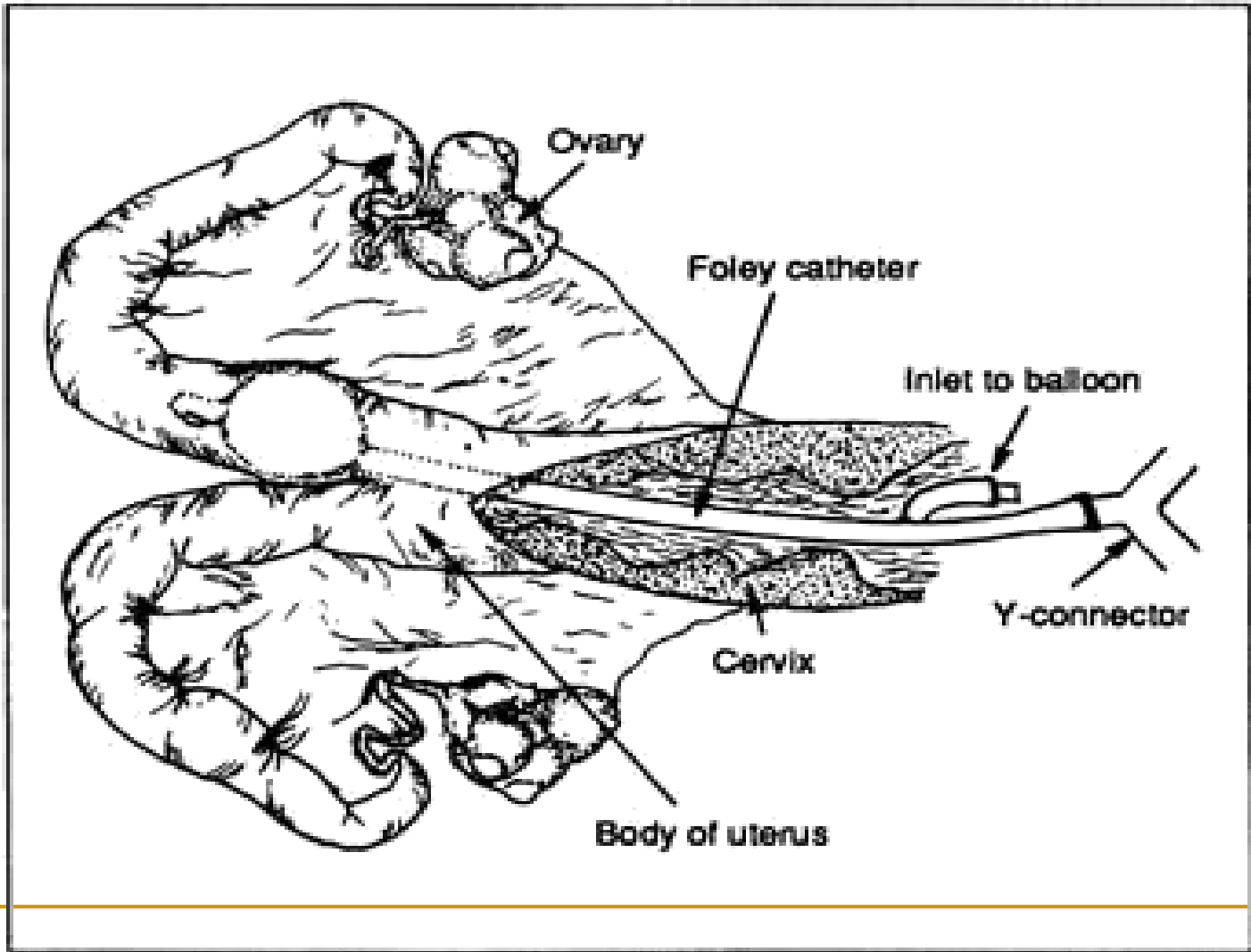
- Rękawice rektalne

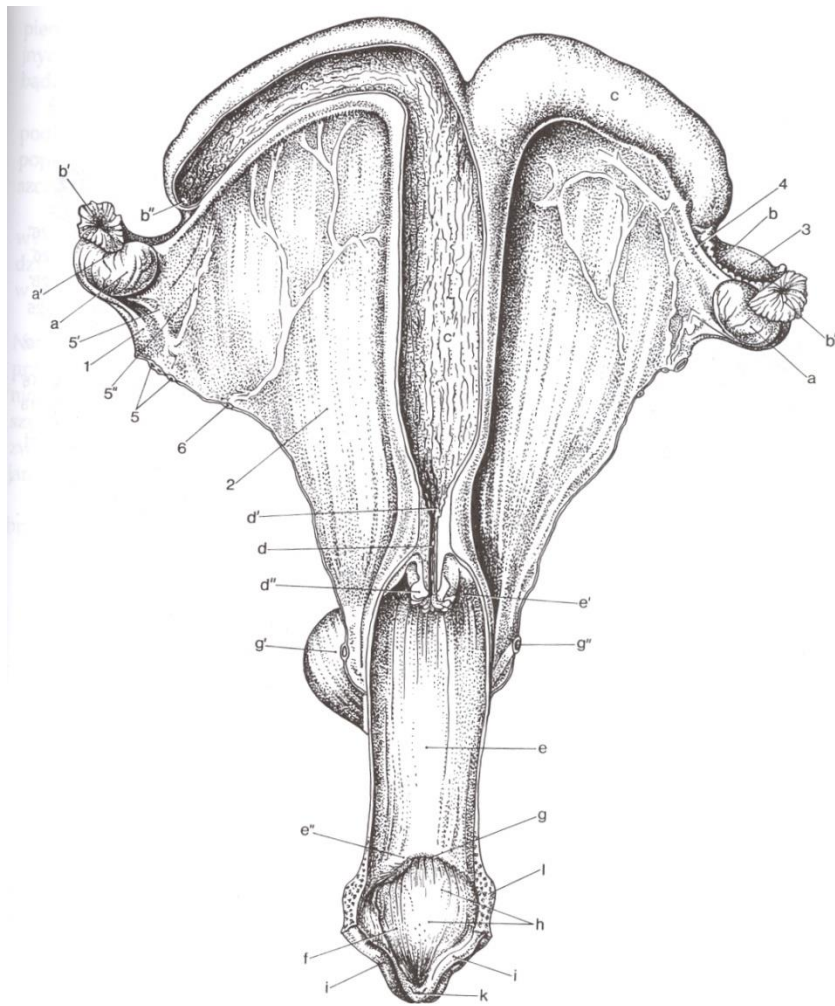


- Nasienia

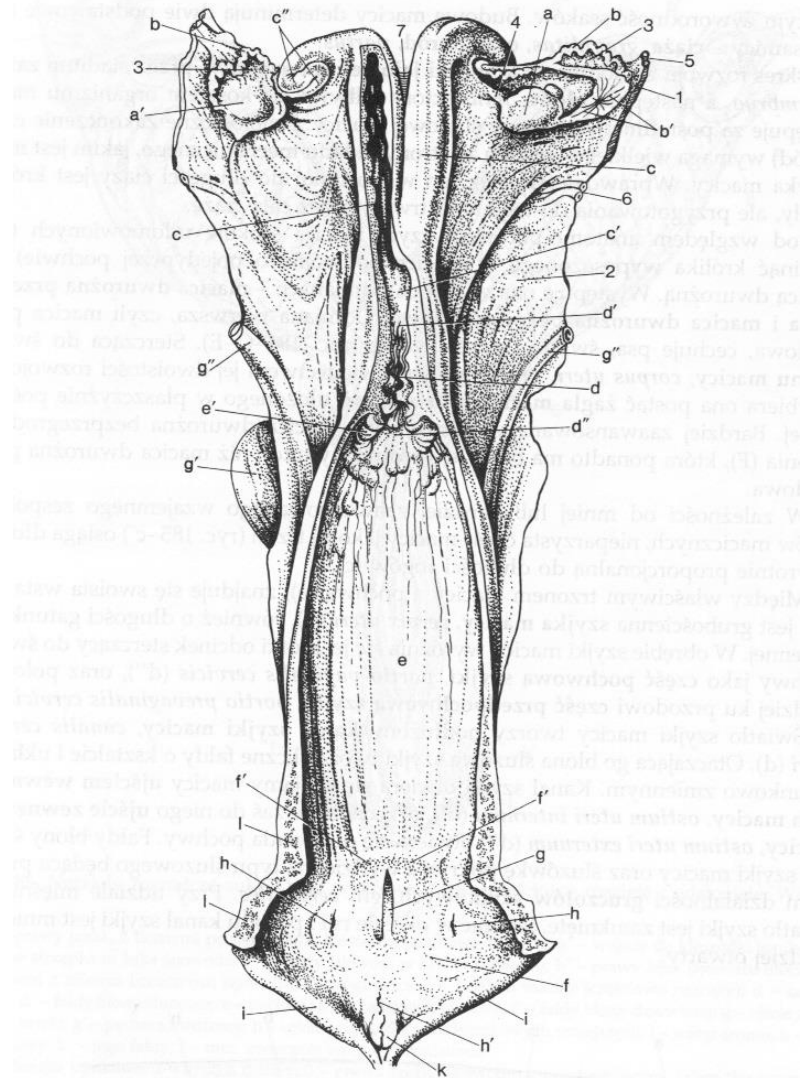


Position of Foley catheter for uterine horn flush





mare

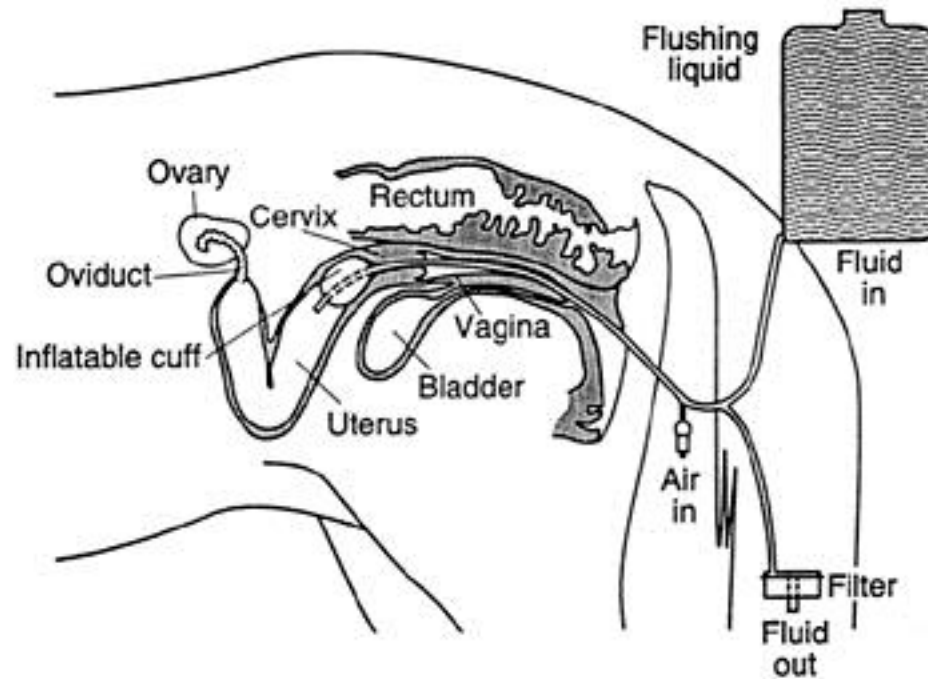


COW

Embryo Collection Catheter

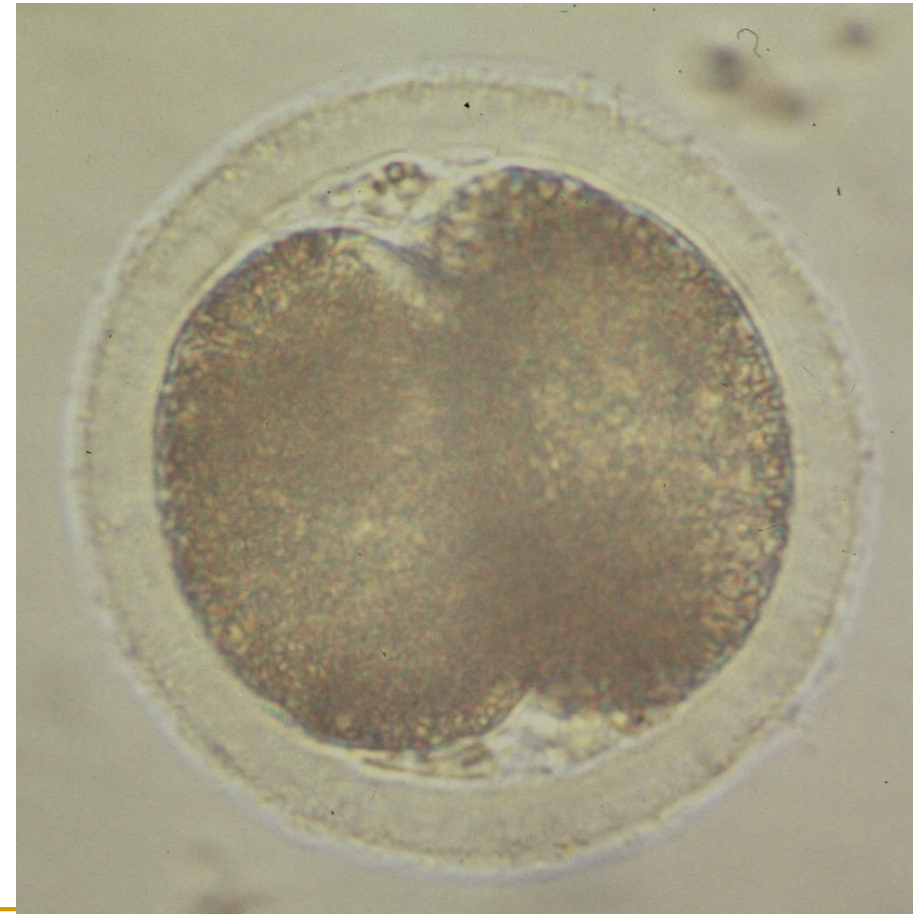
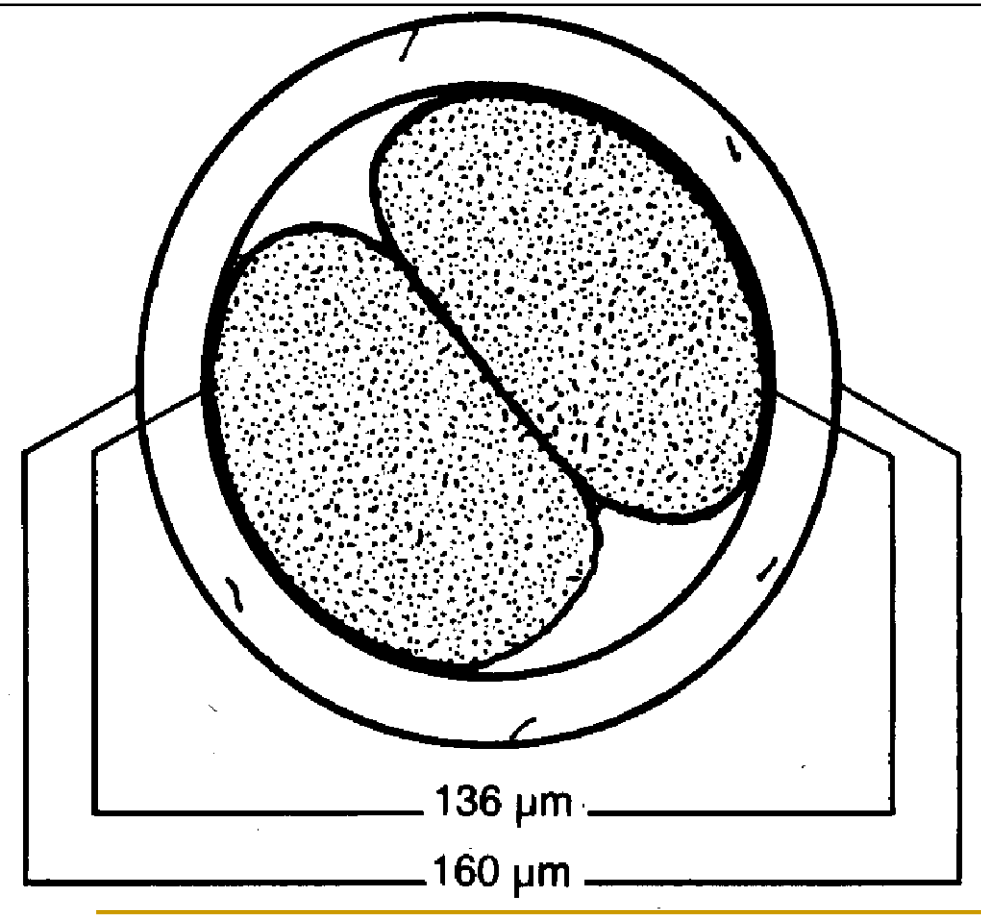


Flushing Mare



Embryon stade deux blastomères

J 2



Przenoszenie zarodków (Embryo Transfer – ET)



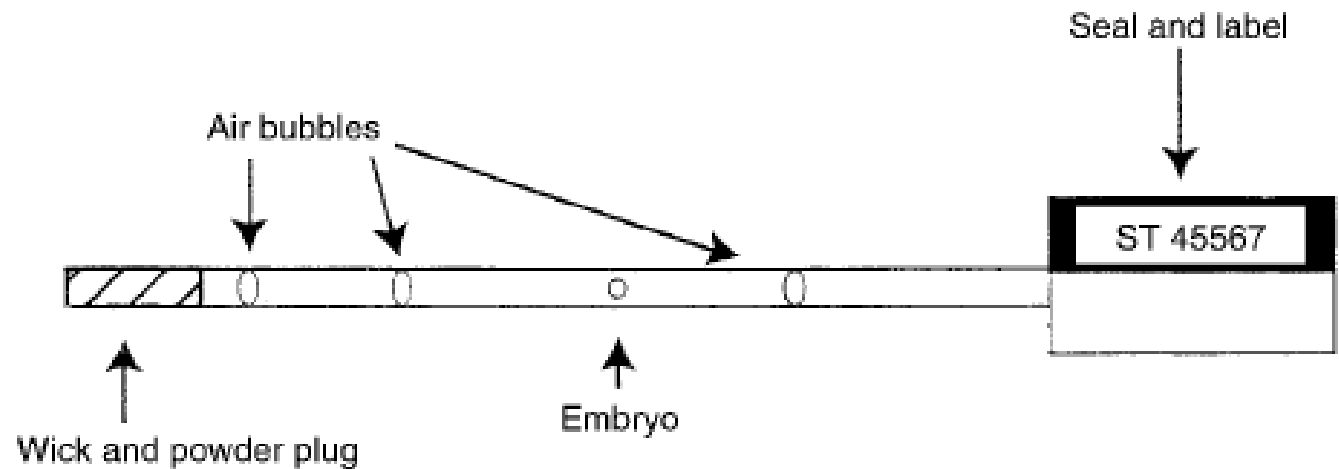
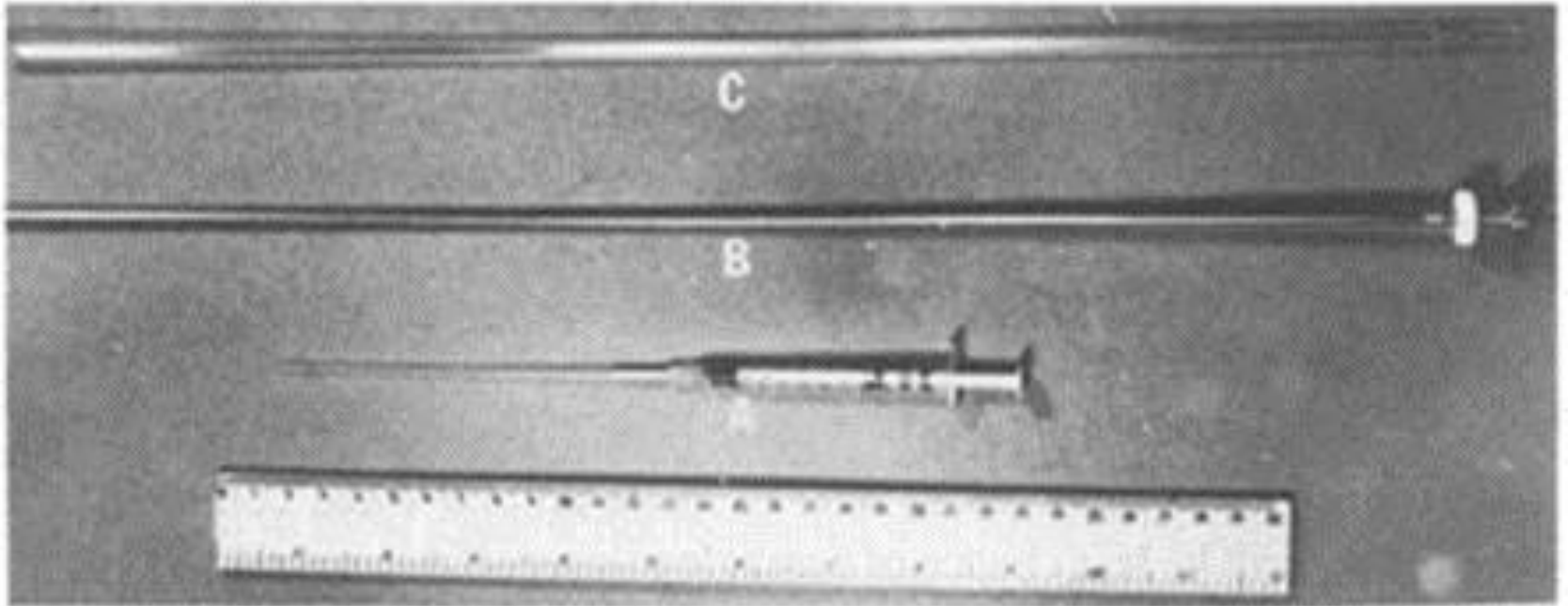


Fig. 8.1. The plastic straw as an embryo-freezing container. Diagram of a plastic straw loaded with an embryo and columns of either glycerol or ethylene glycol cryoprotectant solution separated by air bubbles. (From Hasler, 2002.)

Pistolet Cassou



Portable Incubator

for the transport of embryos and oocytes within a chamber filled with metal balls.

Your advantages

- secure temperature maintenance due to the use of metal balls
- easy fixation of vials and straws
- absolutely dry and hygienic environment

Product features

- electronic temperature control
- customized temperature setting: +35°C to +42°C
- power supply: 12 V DC (car battery) or rechargeable dry battery



Ref. No. **19180/0000**

Accessories

Rechargeable dry battery 12 V/10 Ah,
capacity at +25°C: approx. 56 h

Ref. No. **19180/1210**

Charger for dry battery

Ref. No. **19180/1200**

Power supply unit for portable incubator,
230 V

Ref. No. **17165/1324**

Plastic vial with screw cap, 100/package

2 ml, Ref. No. **19180/5002**

5 ml, Ref. No. **19180/5005**

