Lambs and kids whenever you want: out-of-season breeding

E.N. Escobar, Ph.D.
University of Maryland Eastern Shore
Princess Anne, Maryland 21853
enescobar@umes.edu

UMES

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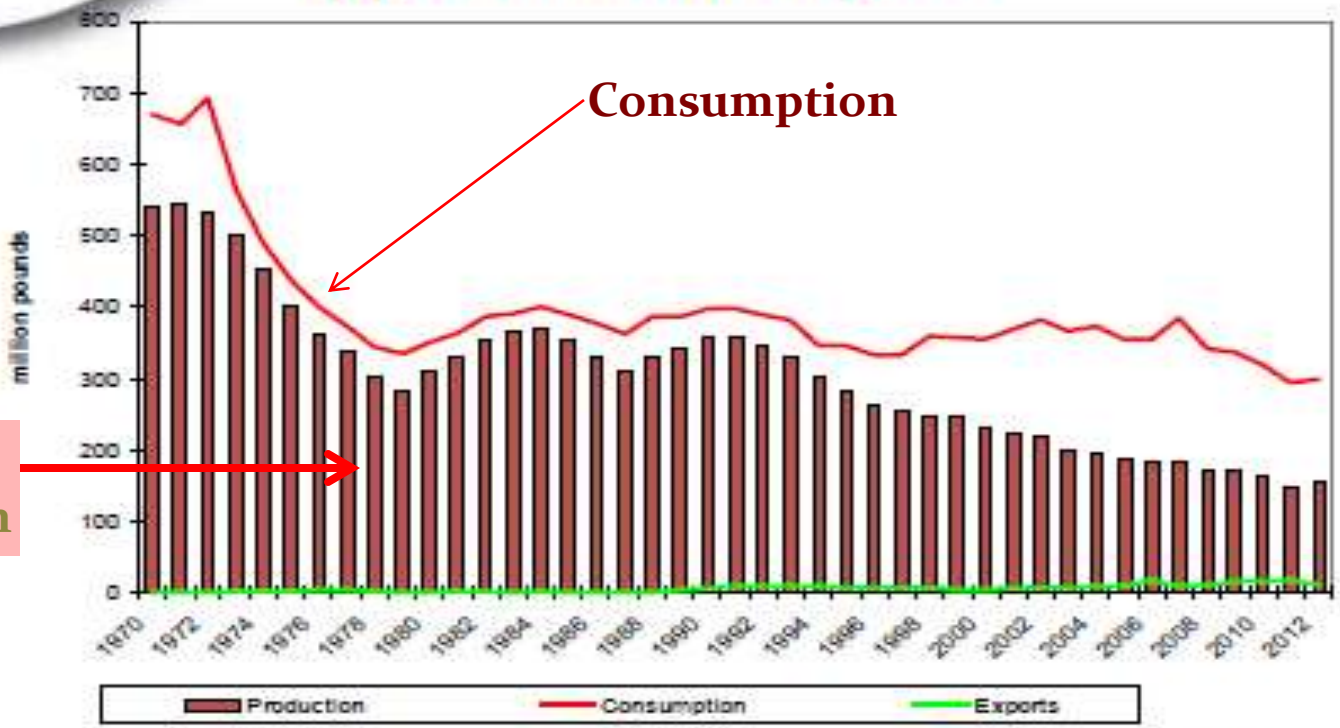
WHY?

fairly stable consumption and exports, declining production create greater opportunities for imports



Source: Economic Research Service, based on data from Livestock, Dairy and Poultry Outlook, Various Issues and USDA, FAS , Foreign Trade Statistics

United States Department of Agriculture
Economic Research Service

Meat goat production in USA has declined in contrast with the consumption creating a gap filed by imports and an opportunity for local producers. (Jones, 2013).

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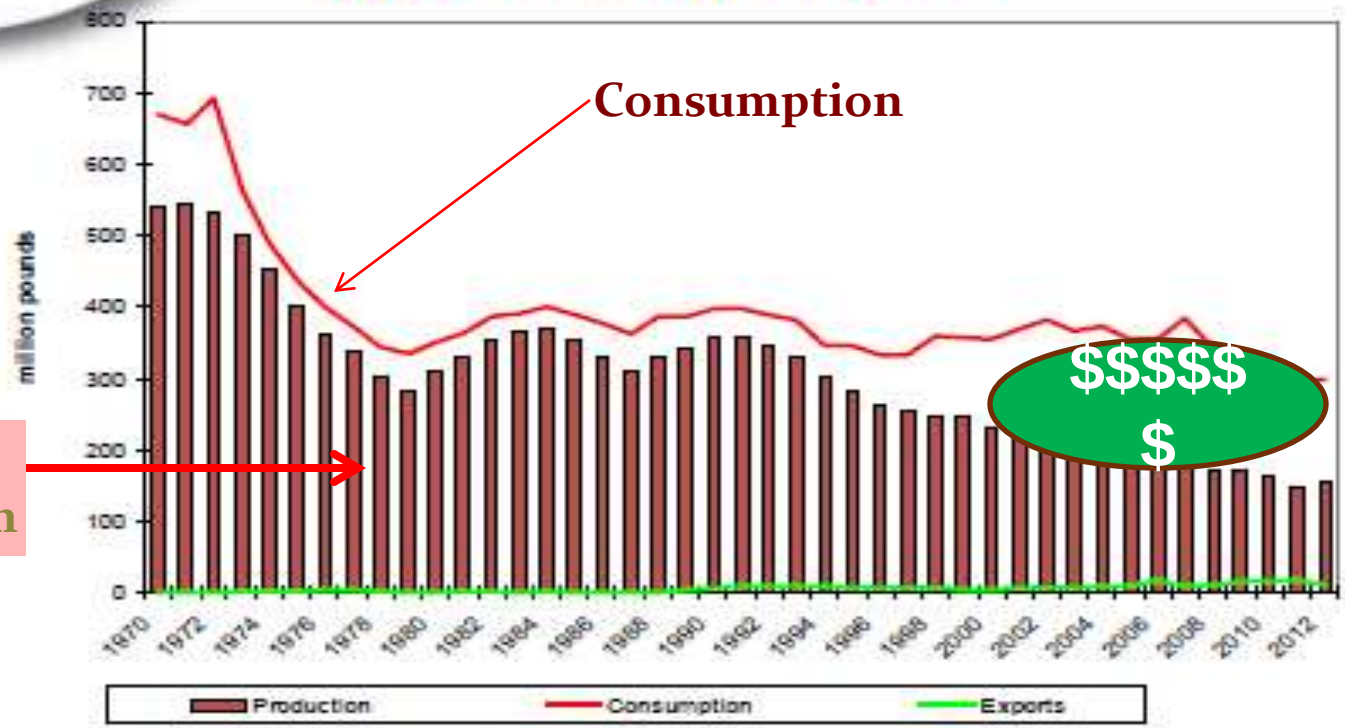

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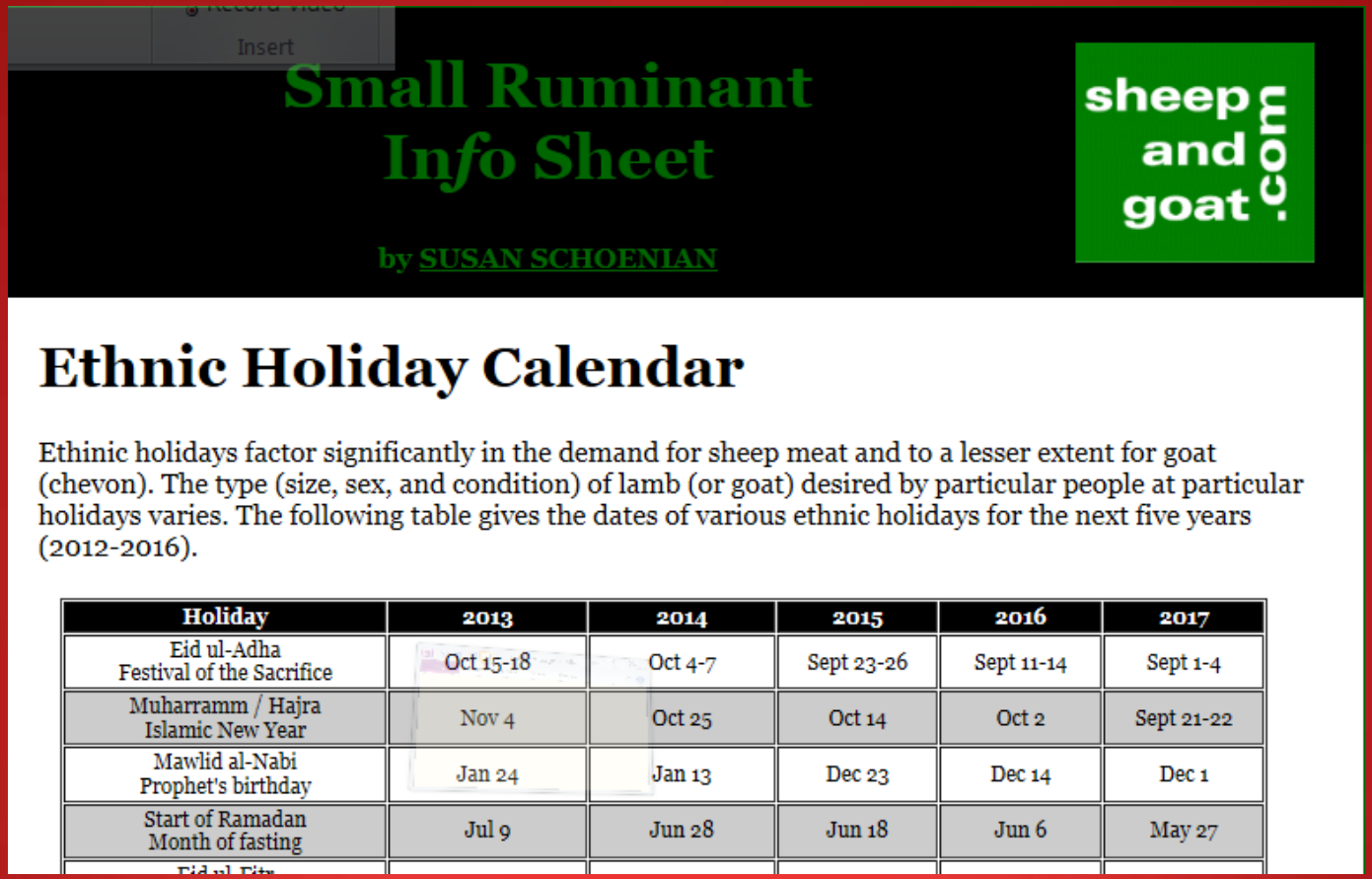
Meat goat production in USA has declined in contrast with the consumption creating a gap filed by imports and an opportunity for local producers. (Jones, 2013). Maybe producers would like to target demand peaks during the year.

Most lamb or chèvon (goat meat) demand peaks are related to ethnic holidays

http://www.sheepandgoat.com/articles/ethniccalendar.html



Insert

Small Ruminant Info Sheet

by SUSAN SCHOENIAN

sheep and goat .com

Ethnic Holiday Calendar

Ethinic holidays factor significantly in the demand for sheep meat and to a lesser extent for goat (chevon). The type (size, sex, and condition) of lamb (or goat) desired by particular people at particular holidays varies. The following table gives the dates of various ethnic holidays for the next five years (2012-2016).

Holiday	2013	2014	2015	2016	2017
Eid ul-Adha Festival of the Sacrifice	Oct 15-18	Oct 4-7	Sept 23-26	Sept 11-14	Sept 1-4
Muharramm / Hajra Islamic New Year	Nov 4	Oct 25	Oct 14	Oct 2	Sept 21-22
Mawlid al-Nabi Prophet's birthday	Jan 24	Jan 13	Dec 23	Dec 14	Dec 1
Start of Ramadan Month of fasting	Jul 9	Jun 28	Jun 18	Jun 6	May 27
Eid ul-Fitr					

HOWEVER…most sheep and goats breeds are "short day breeders"

- Varies by location
  - Highly seasonal: northern latitudes
  - Low seasonality: near the equator
- Sheep and goats are short day breeders
- Longest day of the year is June 21st
- Shortest day of the year is December 21st
- In Maryland ewes and does start cycling around August 20 to September 8

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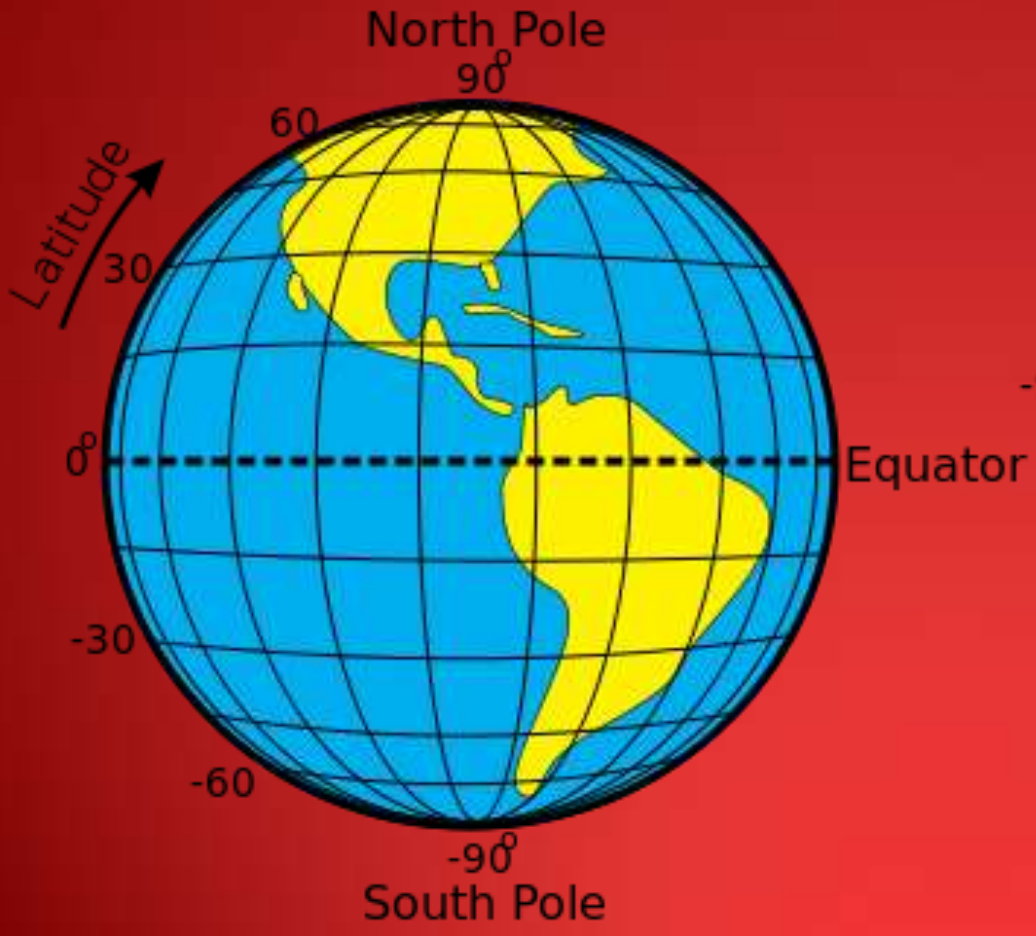
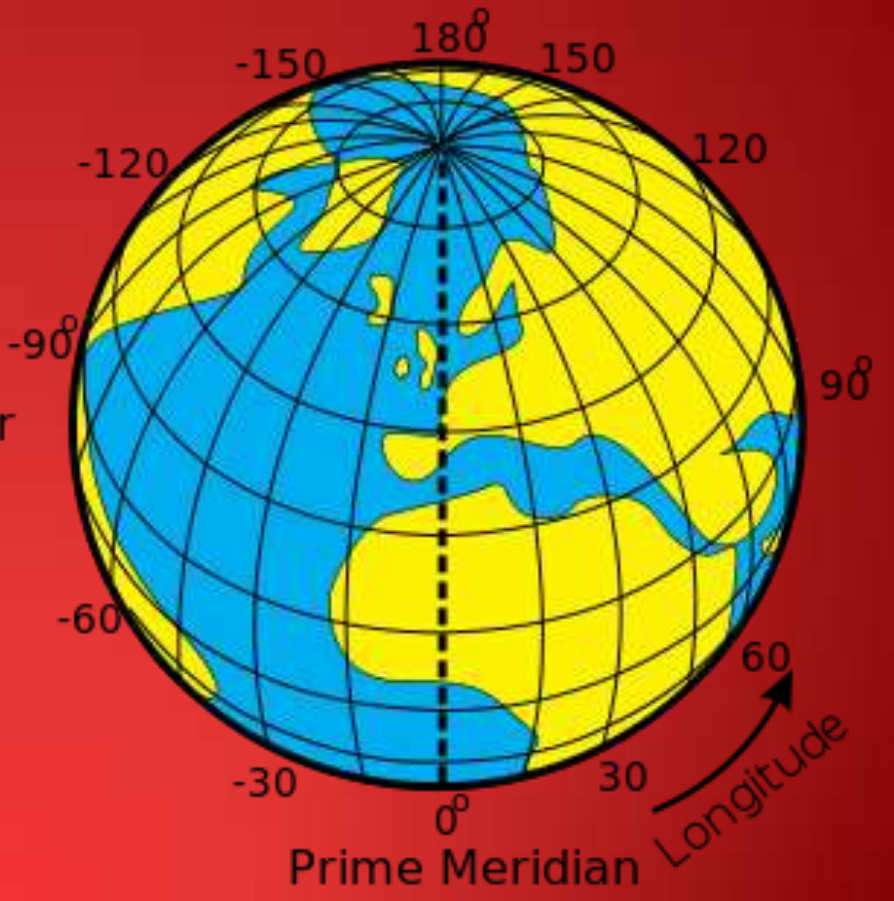




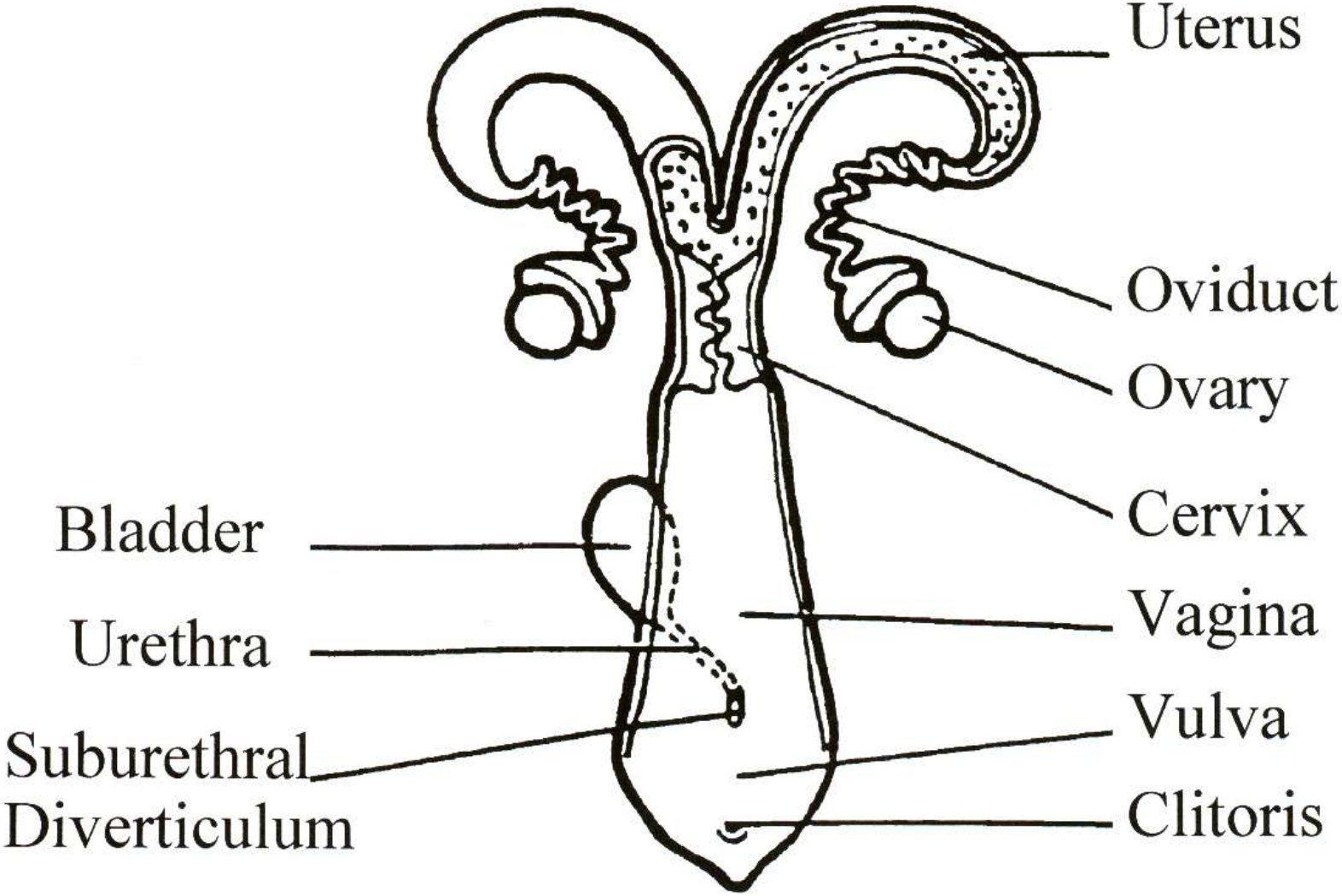
First things first…

…the estrous cycle

- **Does' estrous cycle is 20-21 days. (just like cows)**
- **Ewes' estrous cycle 13-19 days, average 17 days**
  - **Proestrus - 1 day**
  - **Estrus (heat)** - 12-24 hours**
  - **Ovulation - 12-36 hours after onset of standing estrus.**
- **Pygmy does 18-24 days.**
- **Highly variable during transition (fall – August, the first cycles are irregular).**

- ** Estrus (heat) is the period of time when the ewe or doe is receptive to the ram or buck and will stand for mating. It lasts approximately 24 to 36 hours.

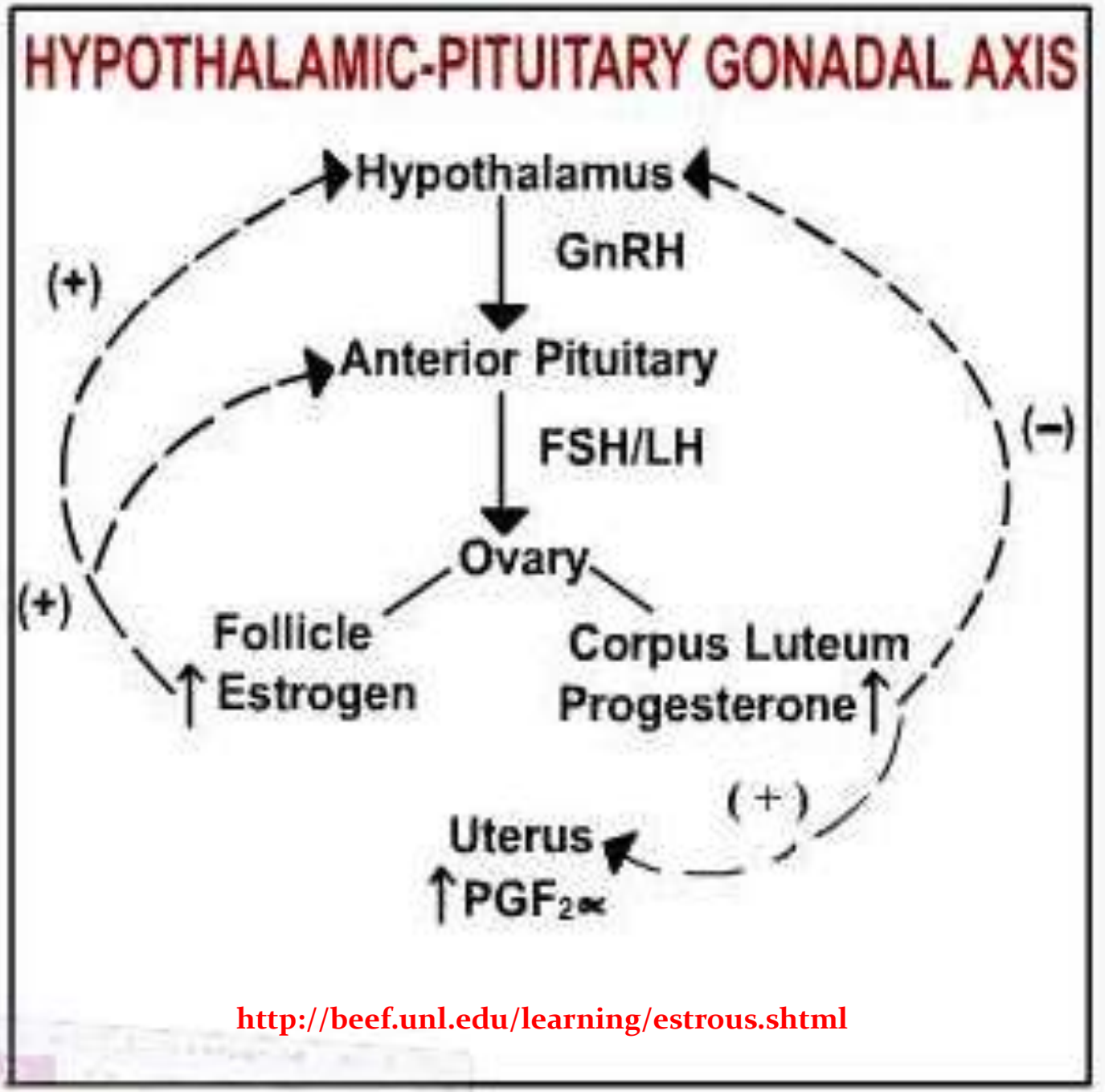
Parts of the Reproductive Tract: Doe



The hypothalamus and the pituitary gland

- **The hypothalamus is present in all vertebrates**
  - ✓**in humans it is the size of an almond**
  - ✓**In sheep and goats it is about the size of a big pearl**
- **Located under the brain**
- **It synthesizes and secretes certain neurohormones, often called releasing hormones or hypothalamic hormones**
- **The pituitary gland is just bellow the hypothalamus**

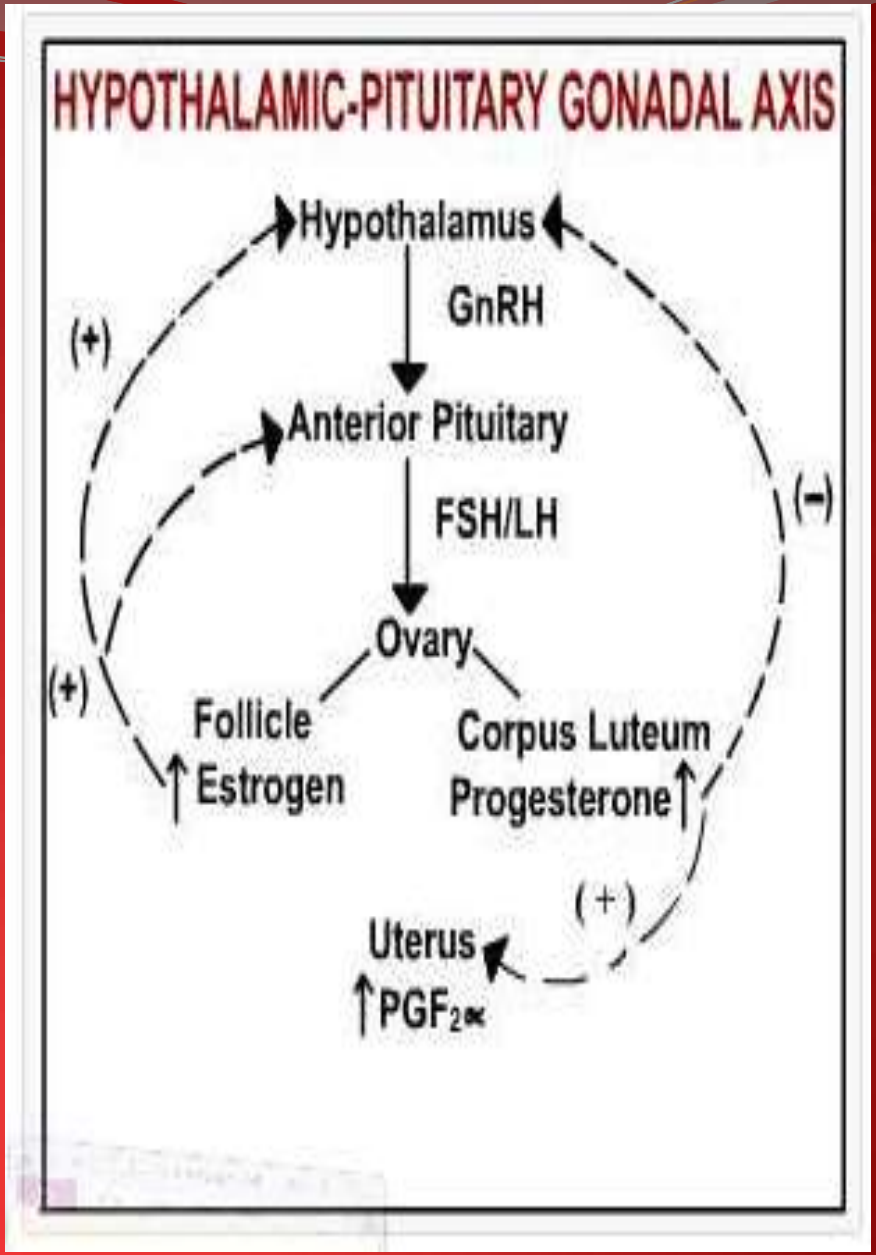
The hormonal feedback loop



http://beef.unl.edu/learning/estrous.shtml

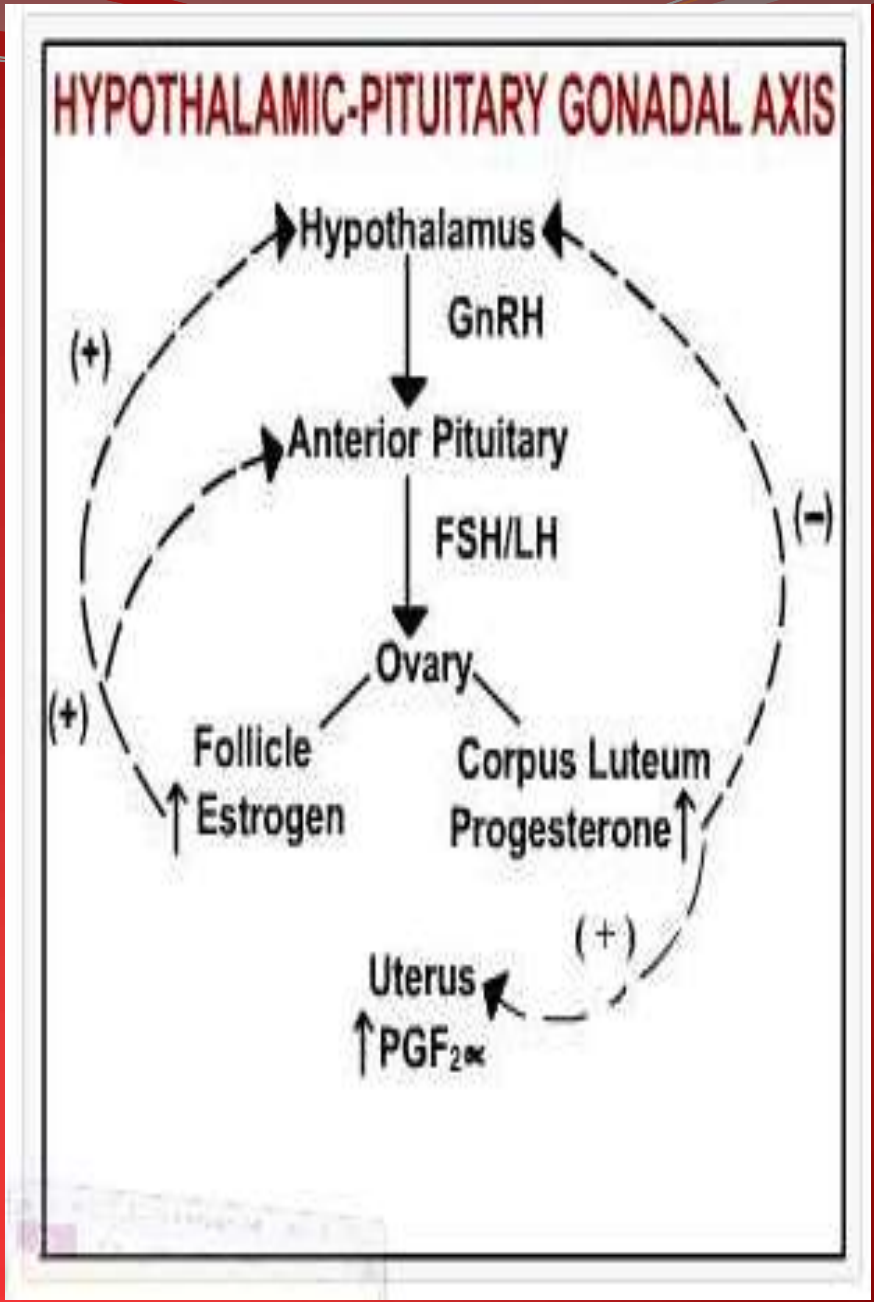
GnRH

- Gonadatropin Releasing Hormone
- Produced by the hypothalamus
- Pulse of GnRH causes release of LH and FSH from the pituitary gland
- Is sometimes used to treat cystic ovaries



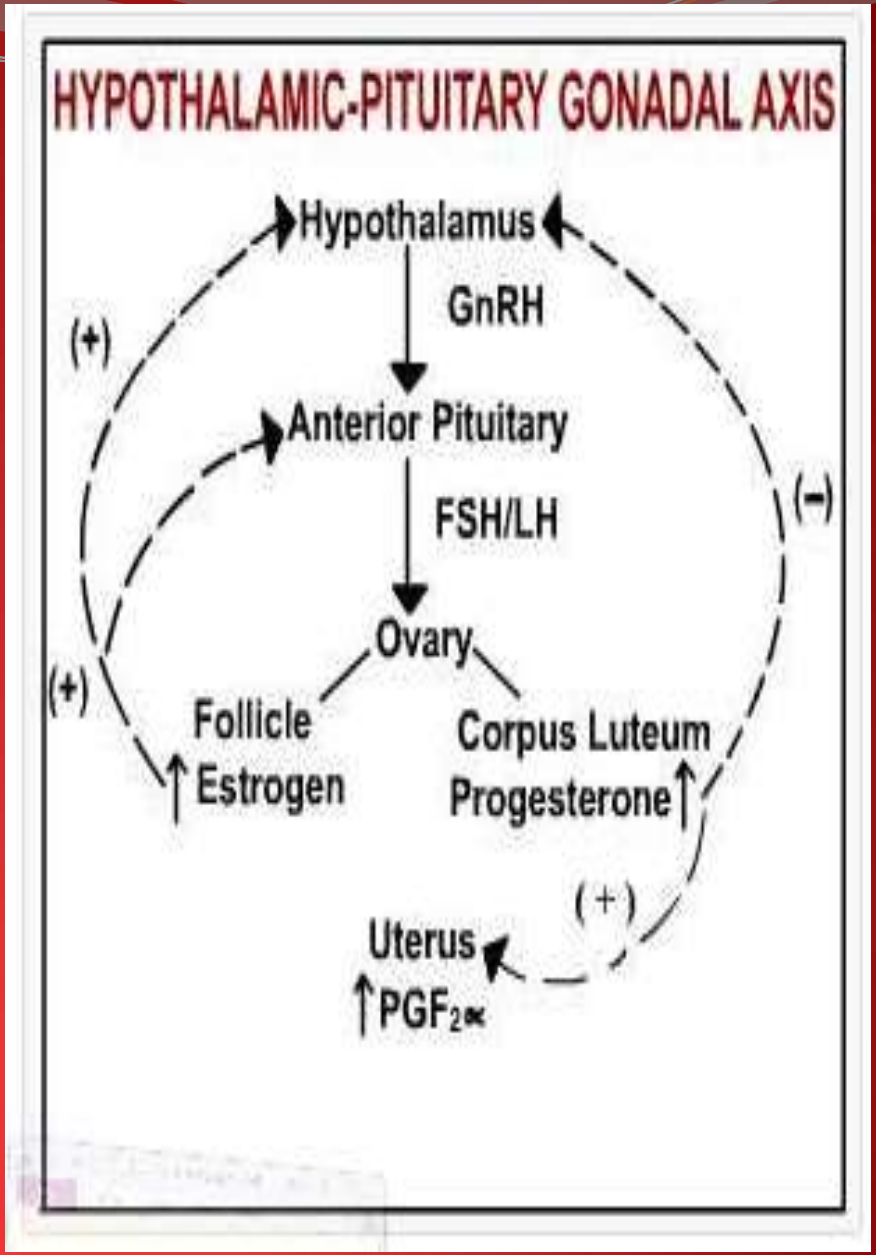
FSH

- Follicle Stimulating Hormone
- Produced and released by the pituitary gland in response to GnRH
- Function: stimulate the development of a *follicle* (fluid-filled structure in the ovary that contains an egg; days 17-21 of cycle)
- With LH: stimulates estrogen secretion from the follicle (days 18-21)
- Stimulate production of sperm cells in testes



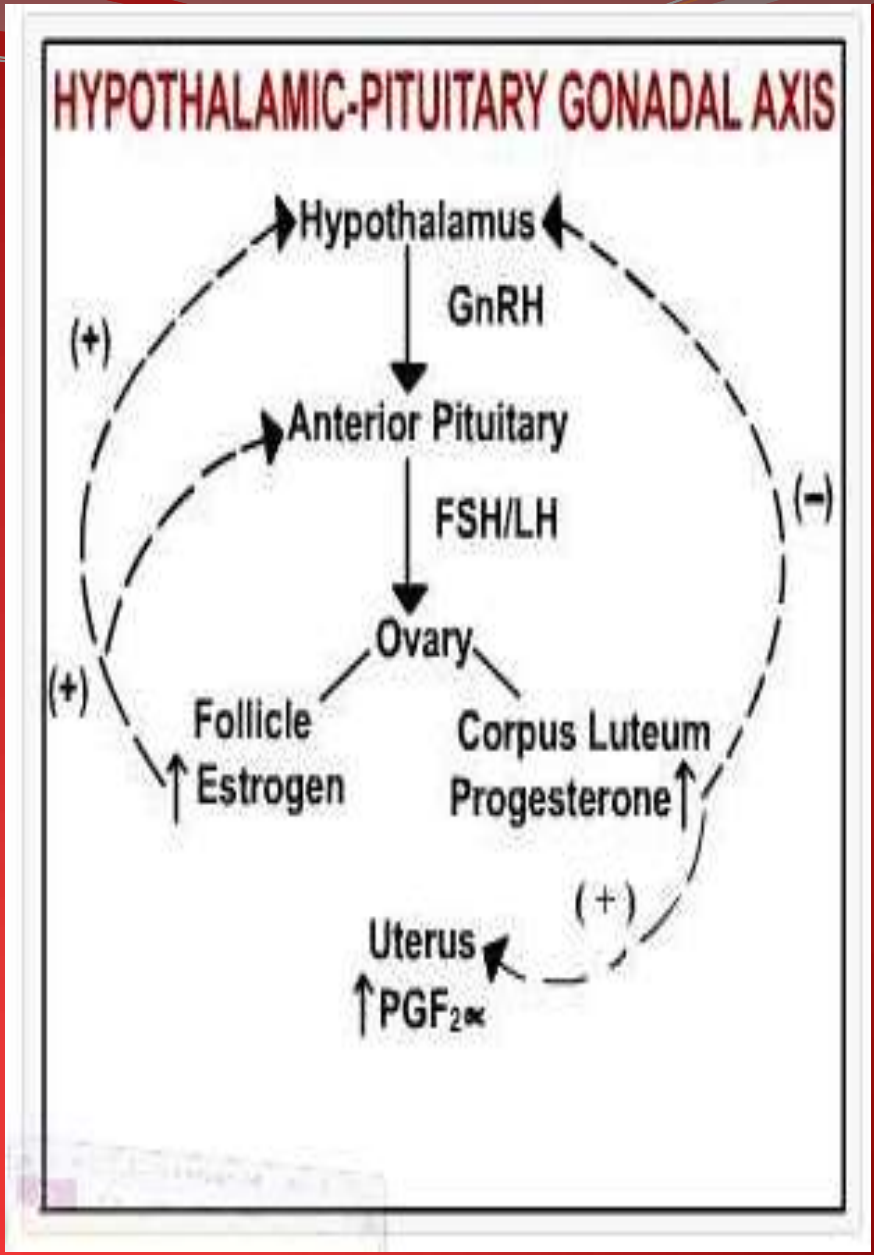
LH…

- Luteinizing Hormone
- Produced and released by the anterior pituitary gland in response to pulse of GnRH
- Works with FSH to stimulate follicle to produce **estrogen** (days 18-21 of cycle)



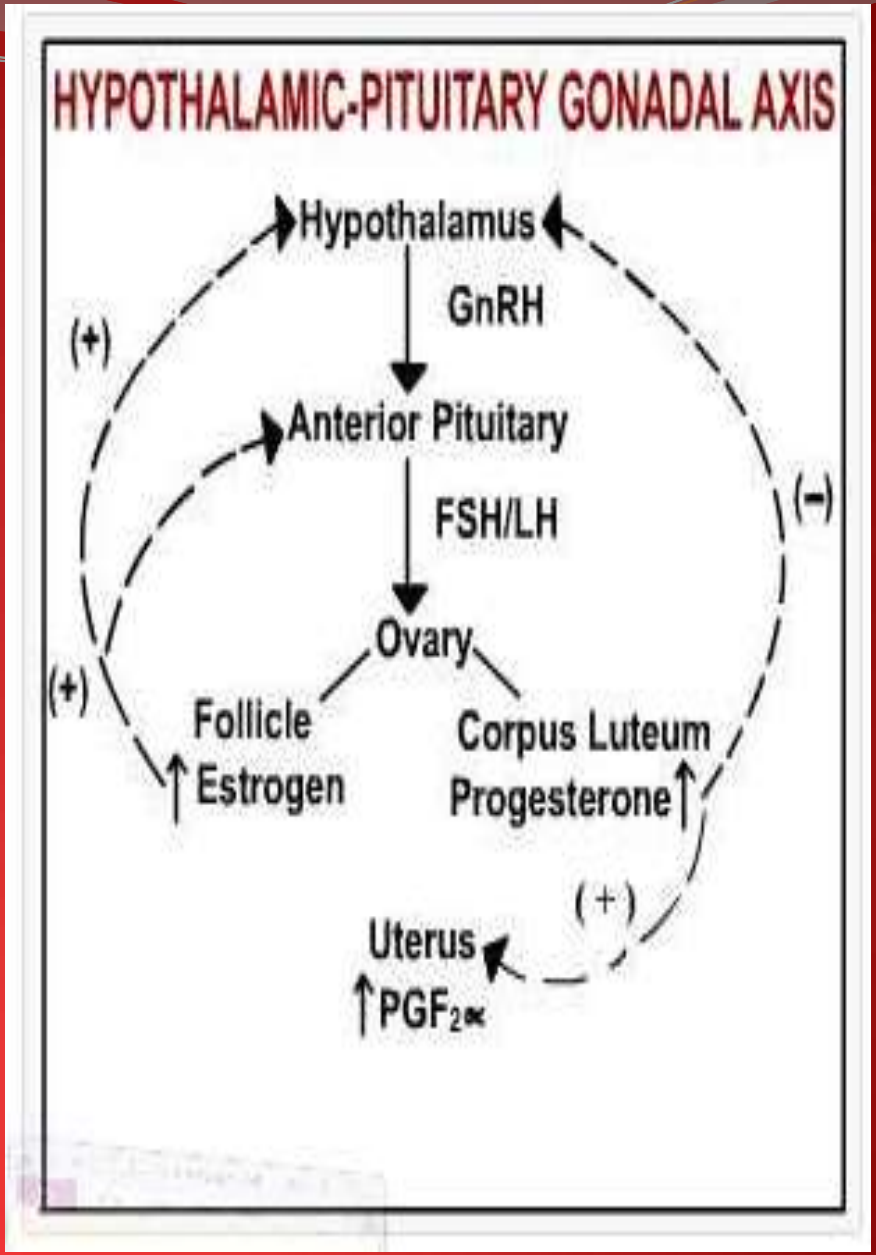
…LH

- Stimulates ovulation 24 hours after LH peak
- “Luteinizes” the ruptured follicle which creates and maintains the Corpus Luteum, which produces progesterone, days 4-16)
- Stimulates testes to produce testosterone

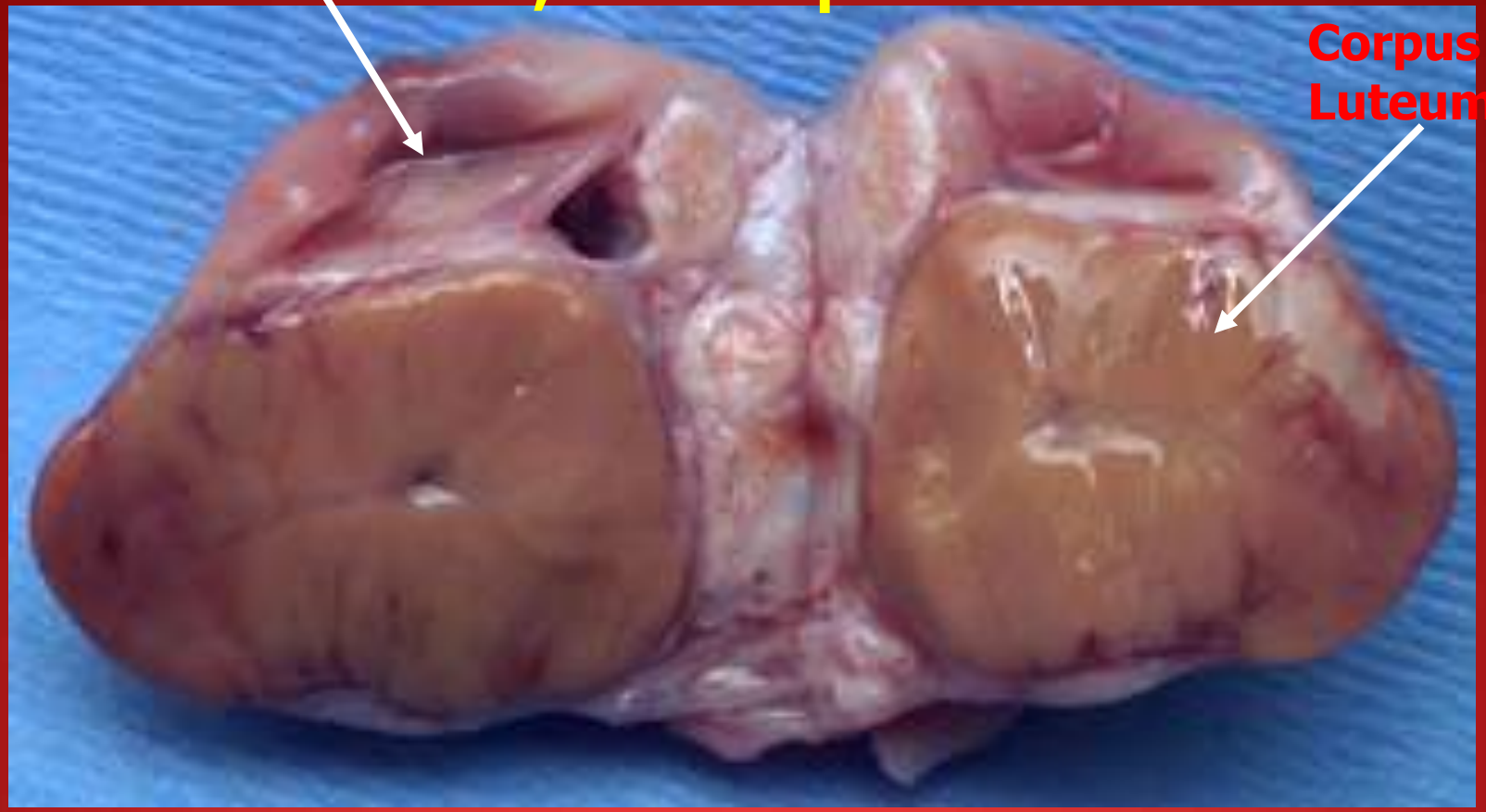


Progesterone

- **"The hormone of pregnancy"--prepares uterus for implantation and prevents uterine contractions**
- **Produced by the Corpus Luteum until the end of the cycle or end of pregnancy**
- **Helps prepare uterus for implantation,**
- **Maintains pregnancy**
- **Causes some mammary duct growth**



Transected, collapsed follicle



Ovary with transected C.L. and follicle.
Note yellow color of C.L.

From http://lam.vet.uga.edu/lam/LM000026.HTML

Signs of Estrus

- Bleating
- Pacing
- Squatting
- Frequent urination
- Drop in milk (if lactating)
- Swollen vulva
- Tail wagging
- Decreased appetite
- Clear vaginal discharge

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Control of the Estrous Cycle

1. **Doe's & ewe's hormones (**Very old technique, more than 30 years)
2. **Controlled Internal Drug Releasing device (CIDR)**
3. **Day length (season or artificial light)**
4. **Presence or absence of bucks or rams**

CIDRs

- Controlled Internal Drug Release Devices (CIDRs) have been used extensively for synchronization of estrus in cattle, sheep and goats since the early 1990's.
- CIDRs are composed of a progesterone-impregnated medical elastomer and function by slowly releasing progesterone when placed intravaginally.

NOTICE: mention of a commercial product does not mean endorsement

EAZI-BREED™ CIDR®

(progesterone) Sheep Insert

SUPPLIED: 20 EAZI-BREED CIDR Sheep Inserts per bag
Each EAZI-BREED CIDR Sheep Insert contains 0.3 gram of progesterone in molded silicone over a flexible nylon spine.
Attached to each EAZI-BREED CIDR Sheep Insert is a nylon tail.
NADA 141-302, Approved by FDA

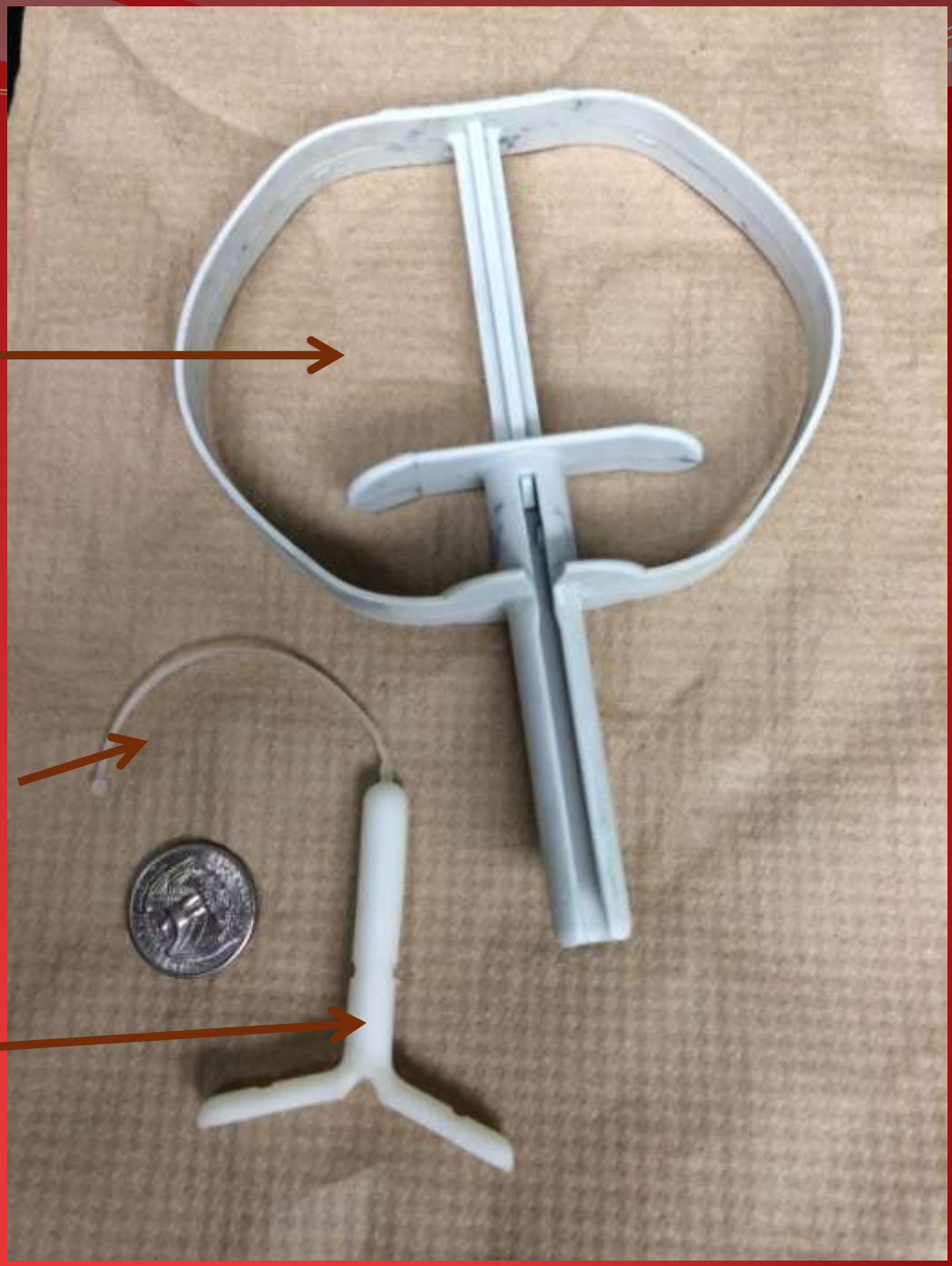
It cost about $5 per insert

Pfizer

Applicator

Clear plastic tail

CIDR



We use Nolvasan to disinfect applicators between animals. Rinse applicator with water before use.

How does it work…???

- The progesterone works by targeting the hypothalamus via a negative feedback response **to inhibit** GnRH release.
- When the CIDR is removed, the progesterone is quickly metabolized.
- The dramatic decrease in progesterone signals the animal that it is not pregnant and behavioral estrus will occur within a very predictable time period, usually within 24 to 48 hours.

Status in the USA…

- **In the United States the EAZI-BREED CIDRs were approved for use in sheep in October, 2009.**
- **The research conducive to the approval of EAZI-BREED CIDR-G (0.3 g of Progesterone) for sheep was sponsored by the NRSP-7 Minor Use Animal Drug Program, North Central Region, Iowa State University, Ames, Iowa 50011.**

…. Status in the USA ……

- **Presently, Iowa State University, Texas A&M University and the University of California are conducting the CIDRs studies for FDA approval for goats (Efficacy of CIDR-Gs for Synchronization of Estrus in Goats, ADR: 324, GCP Study No. 07-324-EFF) sponsored by NRSP-7 Minor Use Animal Drug Program North Central Region (Iowa) and Western Region (California).**
- **The field trials are done, the preparation of the final technical report for approval for goats is in progress.**

Research at UMES…

- **Since Fall 2010 UMES researchers have been conducting preliminary trials with sheep and goats at the UMES Small Ruminant Farm.**
- **When breeding in June-July, researchers have noticed that estrus is consistent in treated ewes and inconsistent in does**

Research at UMES…

SHEEP	GOAT	SHEEP	GOAT
5 TO 8 EWES 1 RAM + CIDR	5 TO 8 DOES 1 BUCK + CIDR	5 TO 8 EWES 1 RAM No CIDR	5 TO 8 DOES 1 BUCK No CIDR

x 2

Bucks and rams were fitted with marking harnesses

Research at UMES…

- **However, a lot of potential benefits were observed, i.e., the lambing and kidding period was limited to no more than 10 days when the CIDRs were used in contrast to 28 days when the ewes/does were not synchronized**
- **The UMES flock is composed of crossed bred Katahdin ewes and the doe herd has Kiko and Boer cross bred does.**
- **For the preliminary trials Dorper and Katahdin rams and Kiko and Boer bucks were used.**