

Effects of Poisonous Plants on Reproduction

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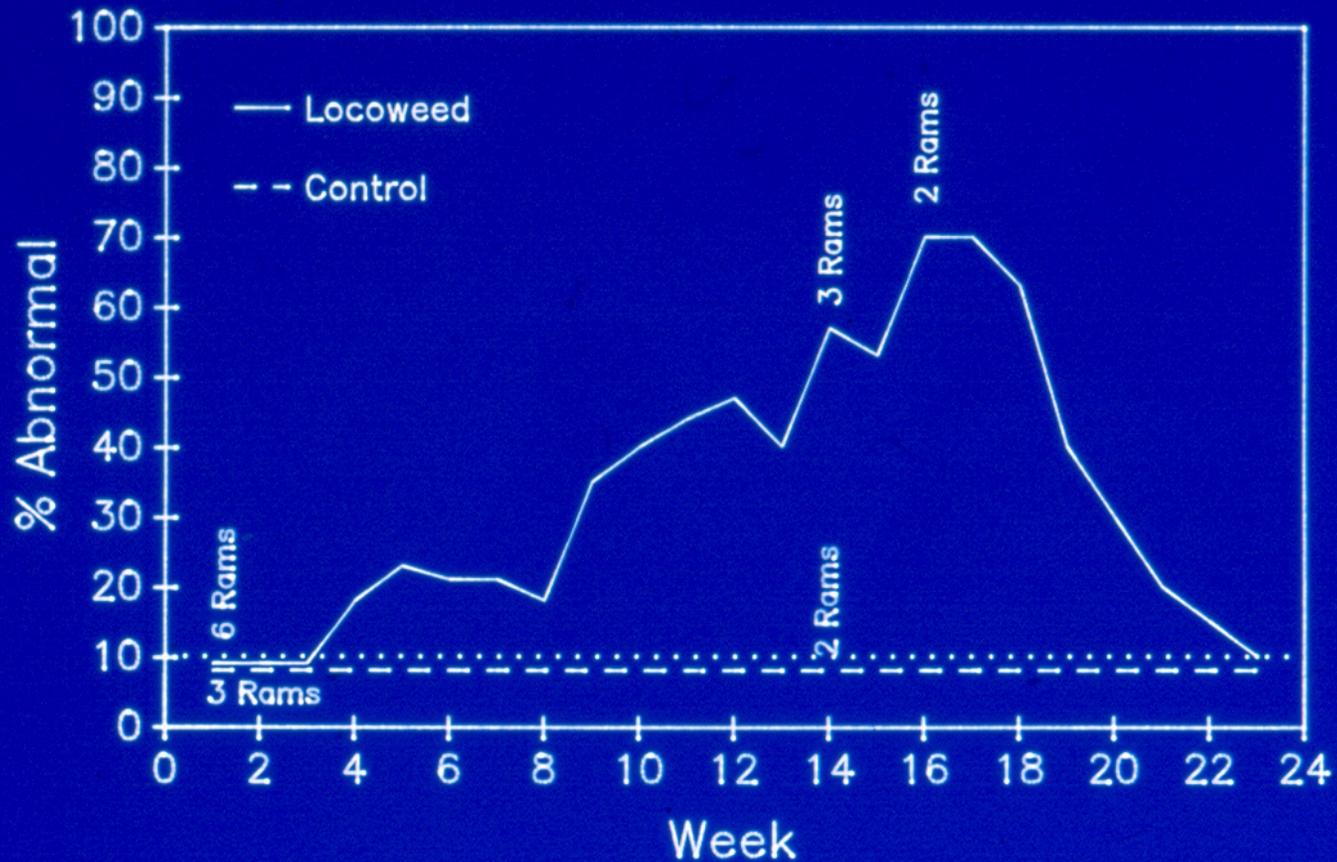
Locoweeds



Locoed ram



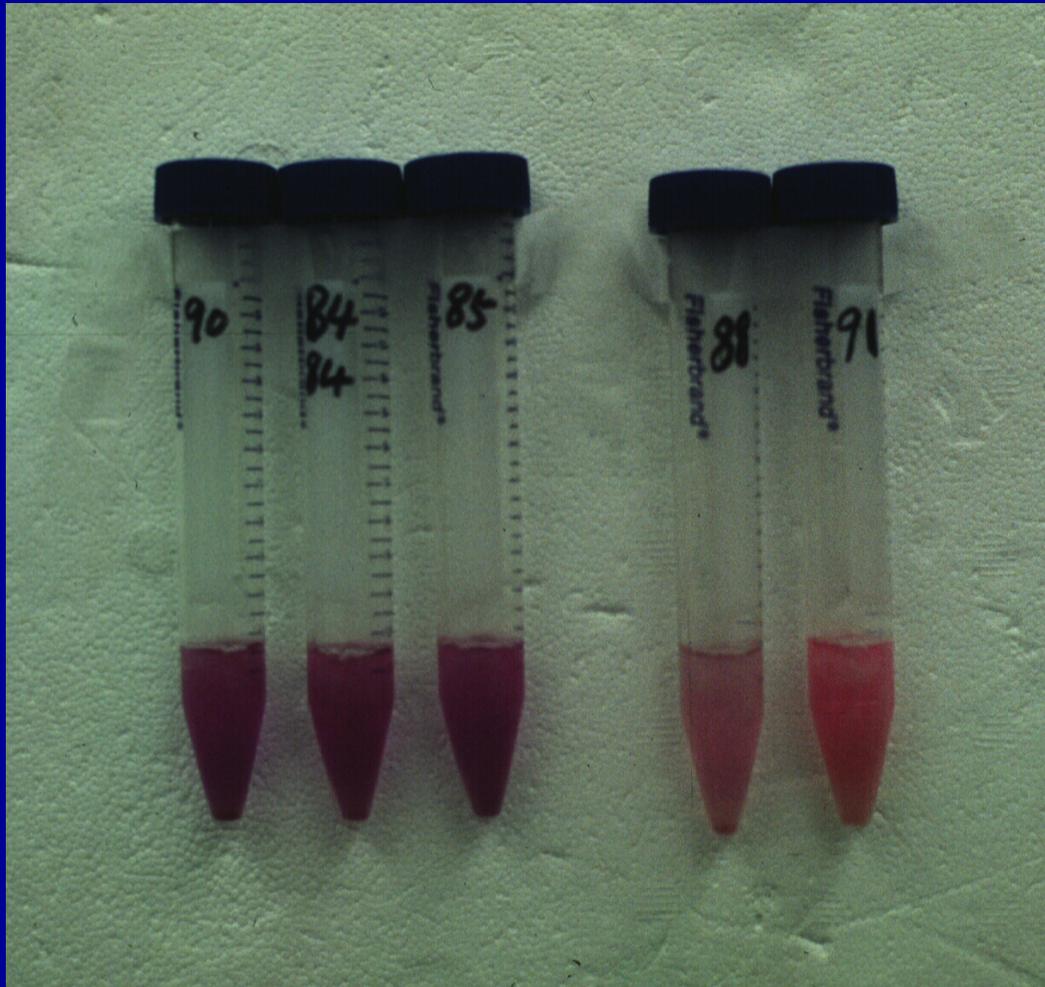
Abnormal sperm



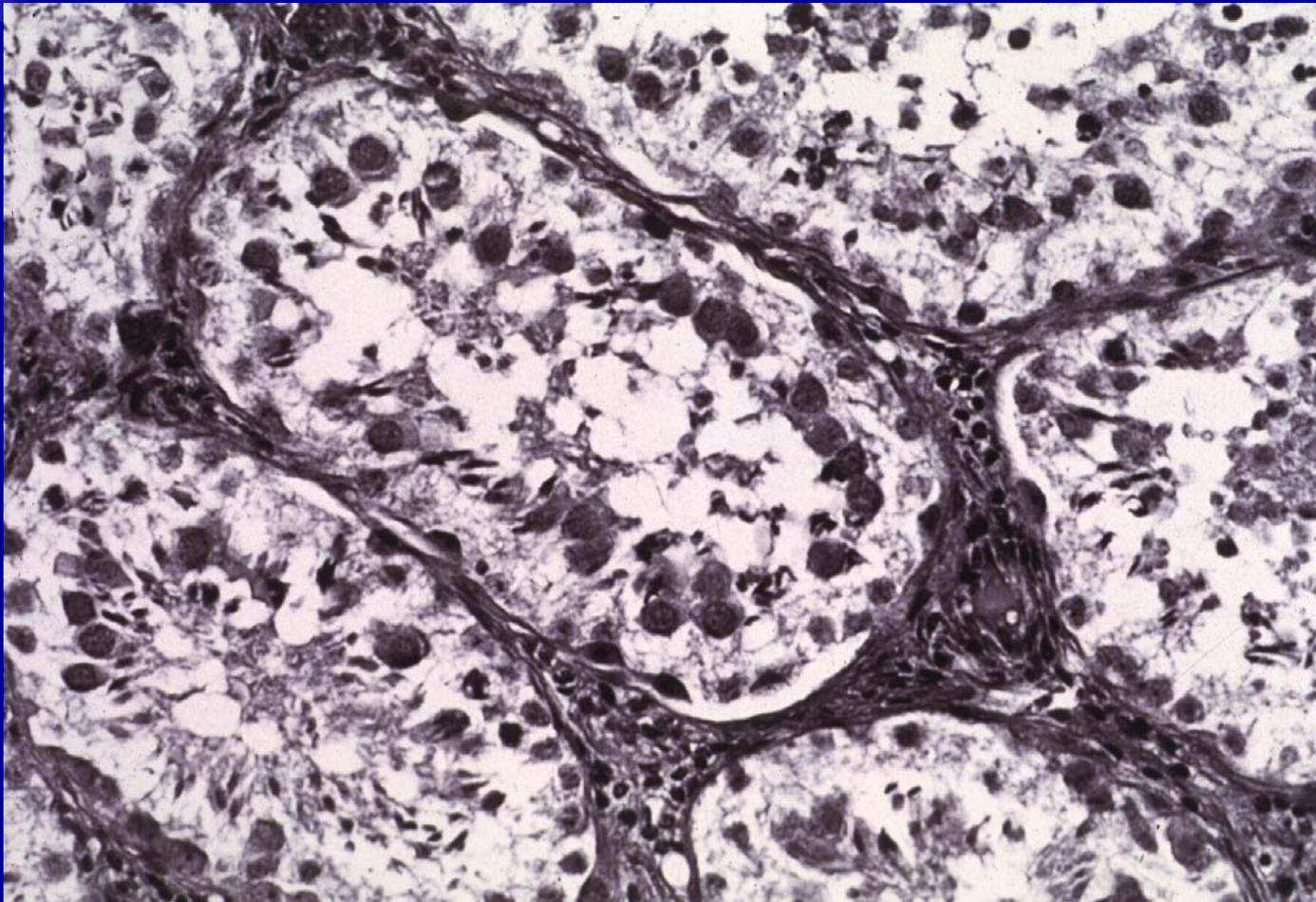
Sperm cells



Reazurin red dye reduction



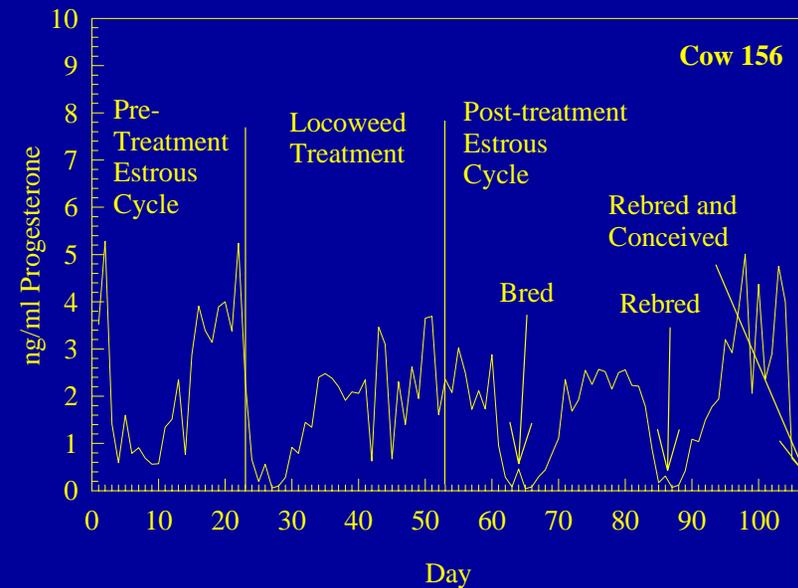
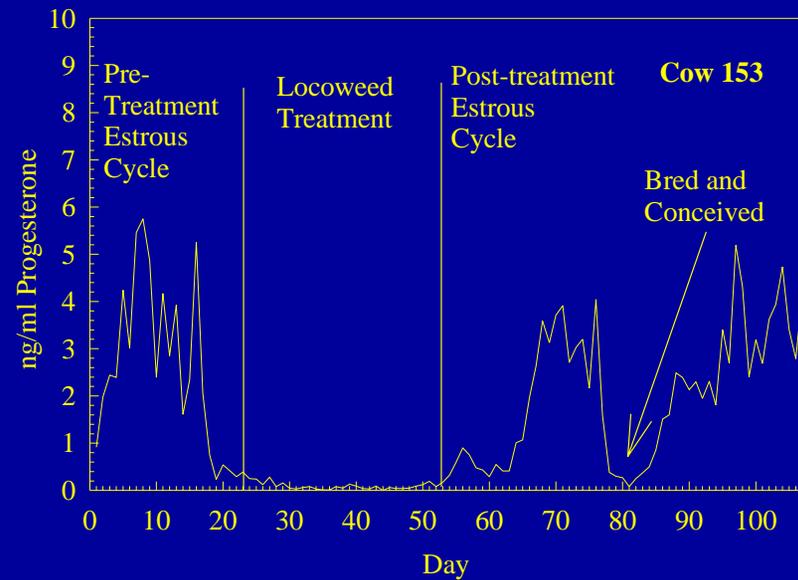
Pathology of the seminiferous tubules



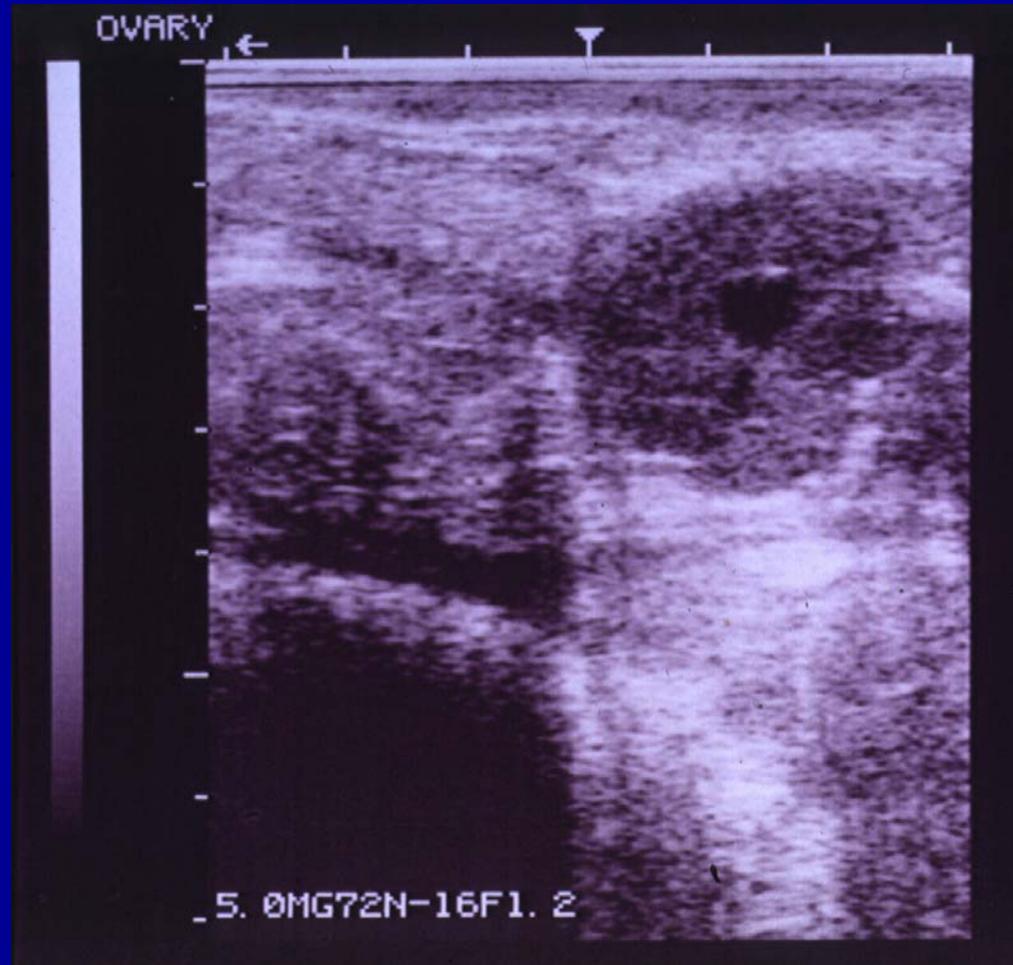
Pig uterus comparison



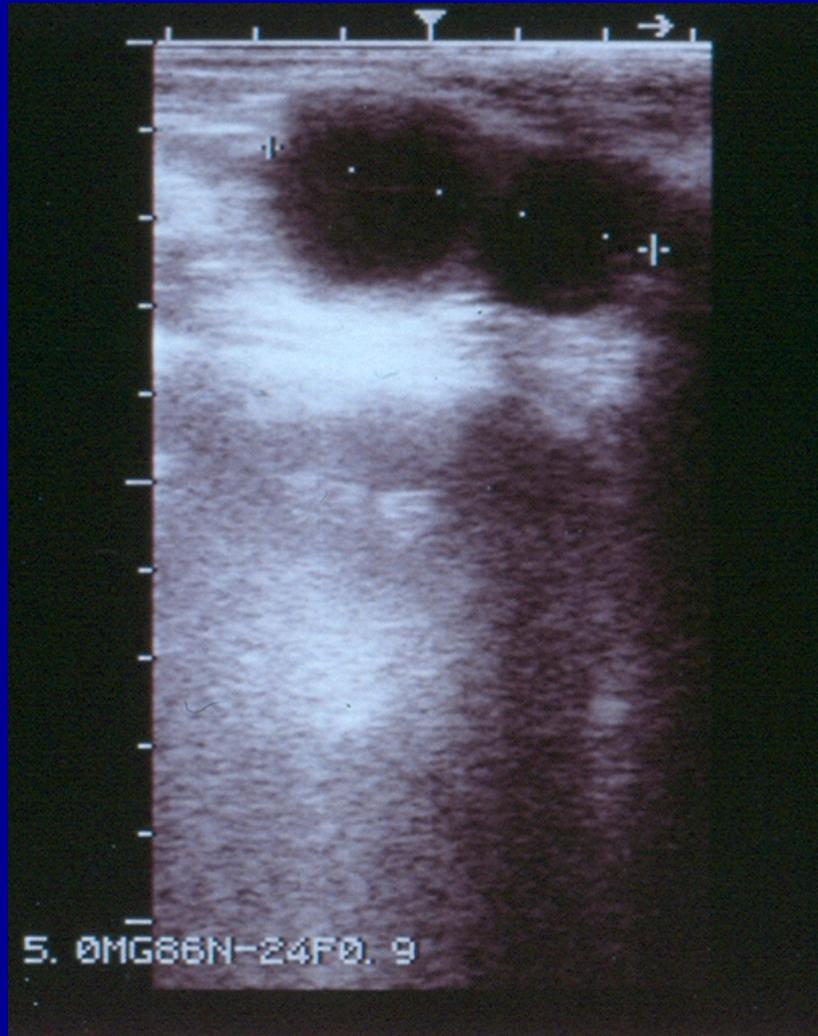
Estrous cycle of locoed cows



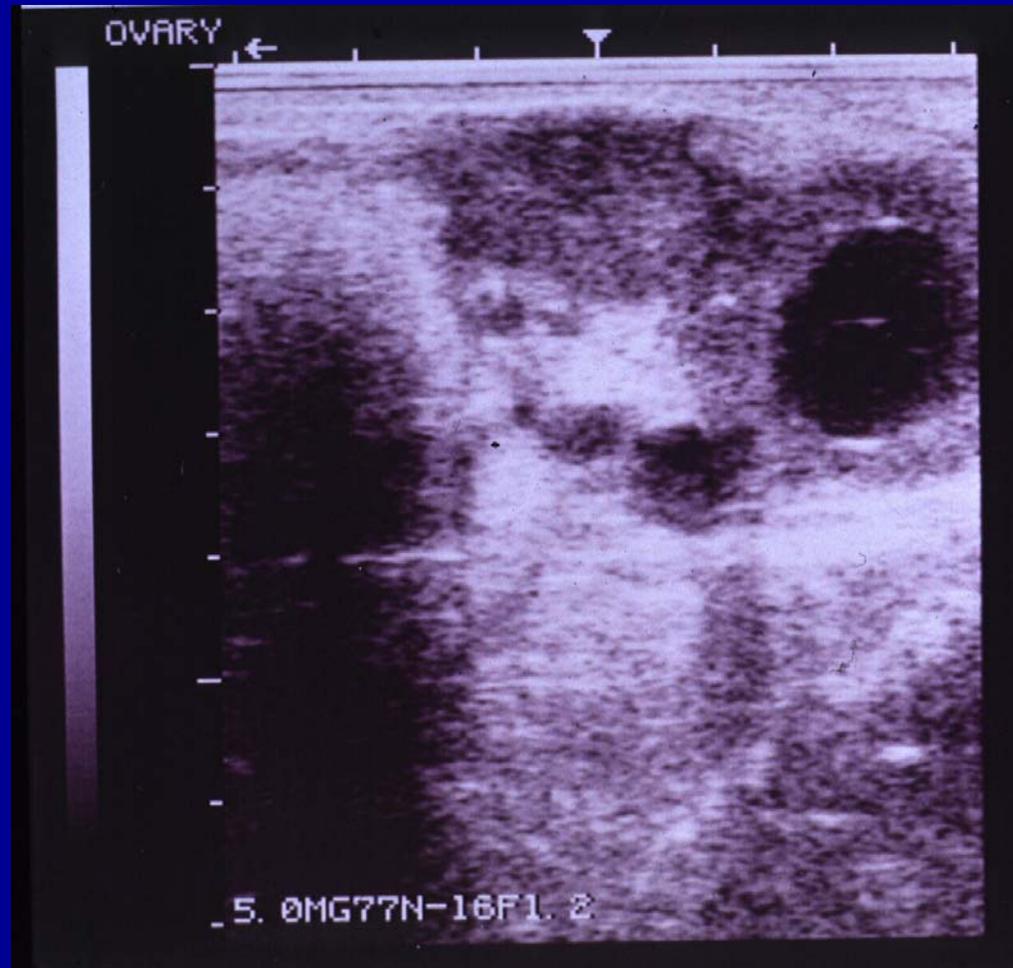
Ultrasound—control ovary



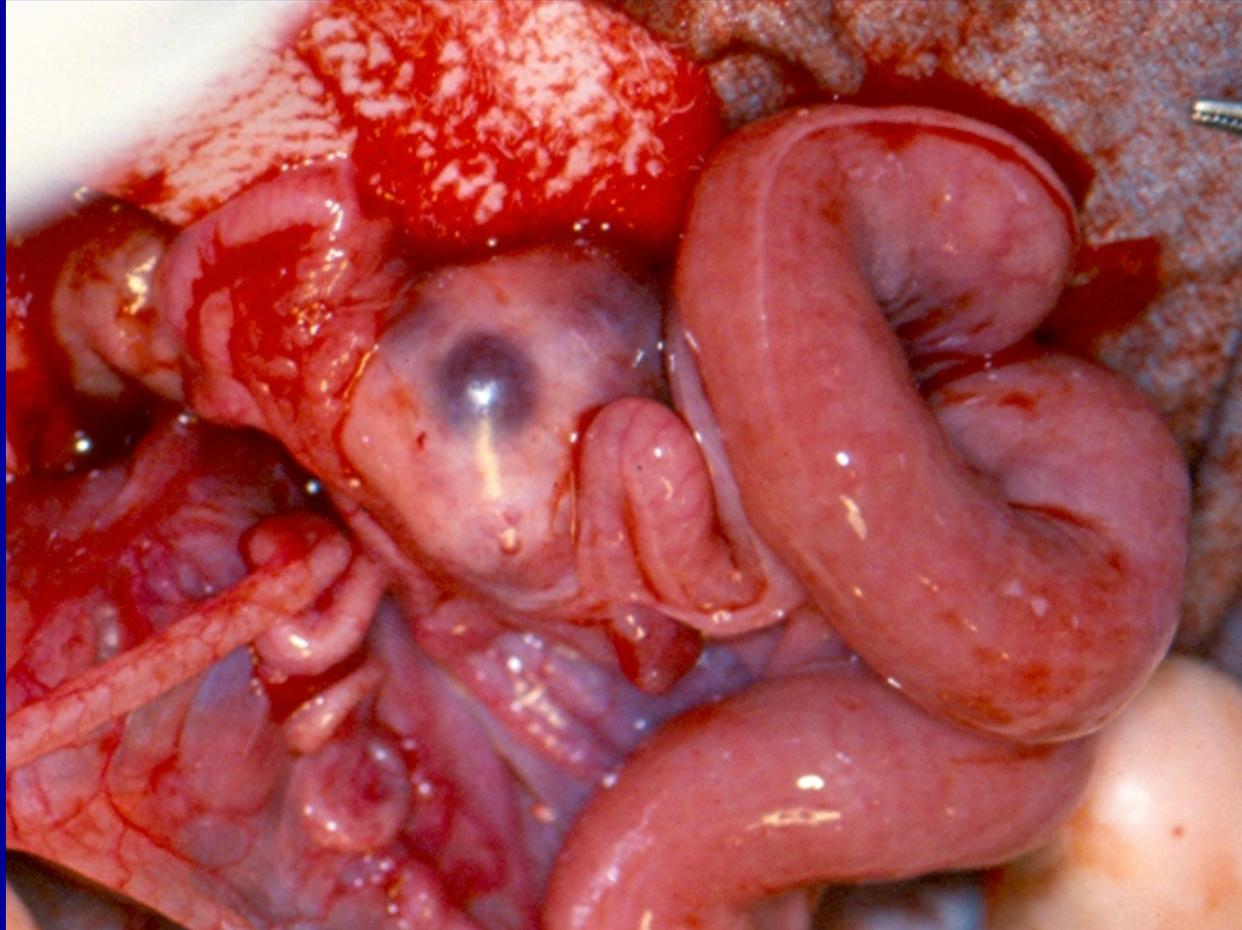
Ultrasound—low dose locoweed ovary



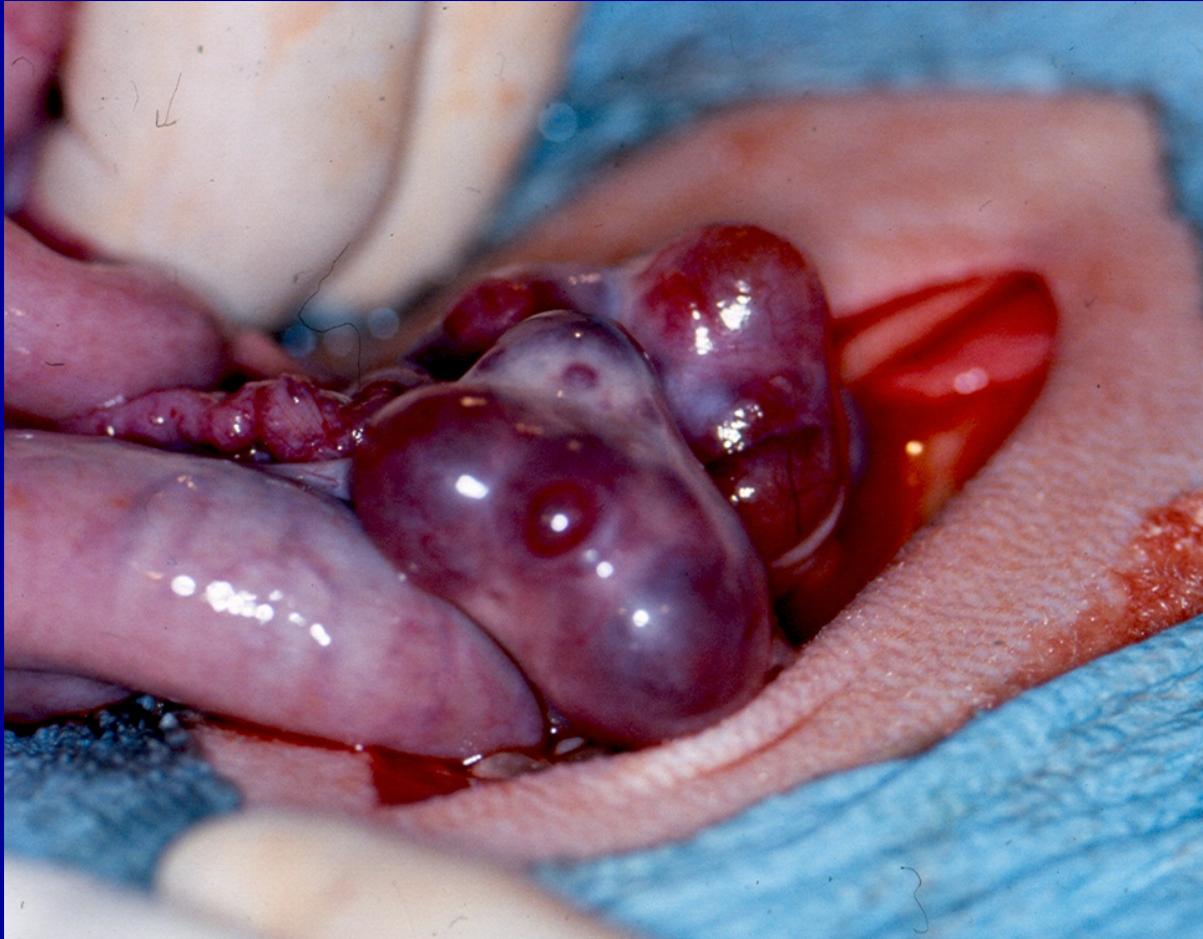
Ultrasound—high dose locoweed ovary

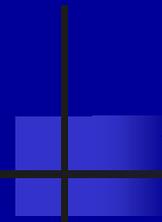


Sheep ovary—control



Sheep ovary—locoweed, 14 days





Loco eaters

Fed locoweed for 30 days at 20% of the diet
(1.2 mg/kg/day swainsonine)

179 Bred 7 days; conceived

153 Bred 25 days; conceived

178 Bred 13 days; rebred 18 days; conceived

156 Bred 11 days; 20 days; 21 days; conceived

Loco eaters

Fed locoweed for 30 days at 20% of the diet (1.2 mg/kg/day swainsonine) starting at 7 months gestation

179	Control	80 lb calf, 32 lb fluid/placenta
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178	Control	58 lb calf, 75 lb fluid/placenta
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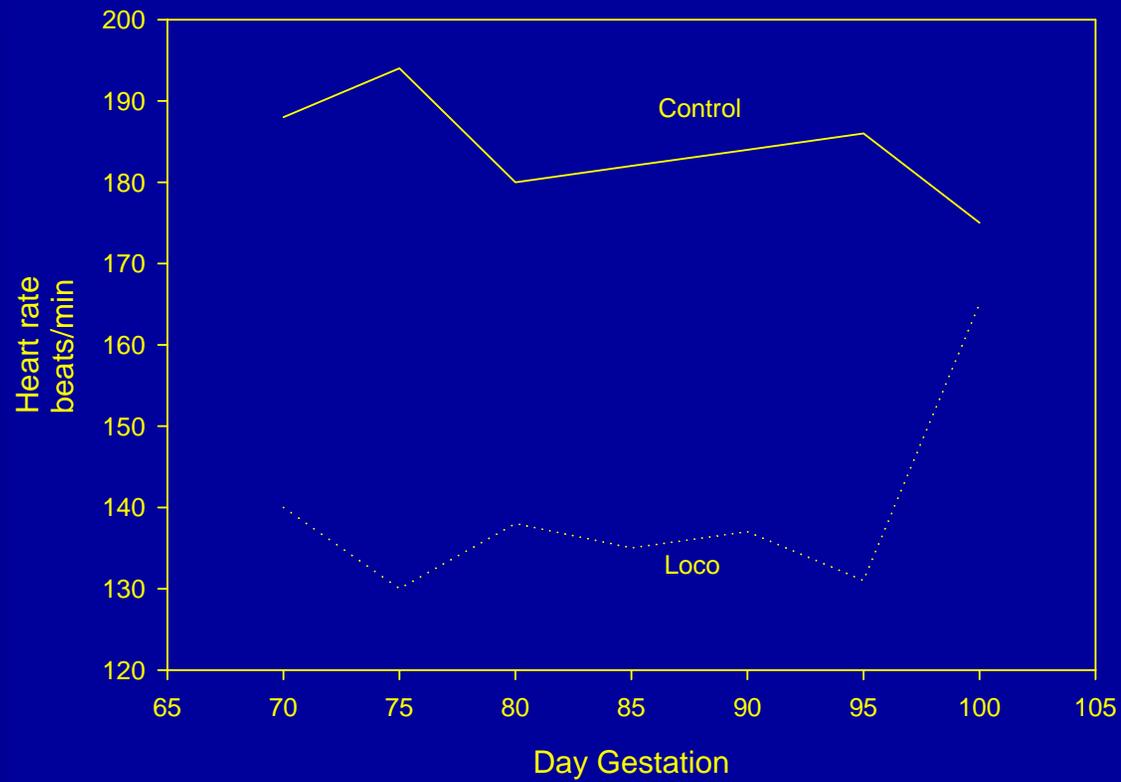
156	Loco	65 lb calf, 101 lb fluid/placenta
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153	Loco	43 lb calf, 121 lb fluid/placenta; aborted
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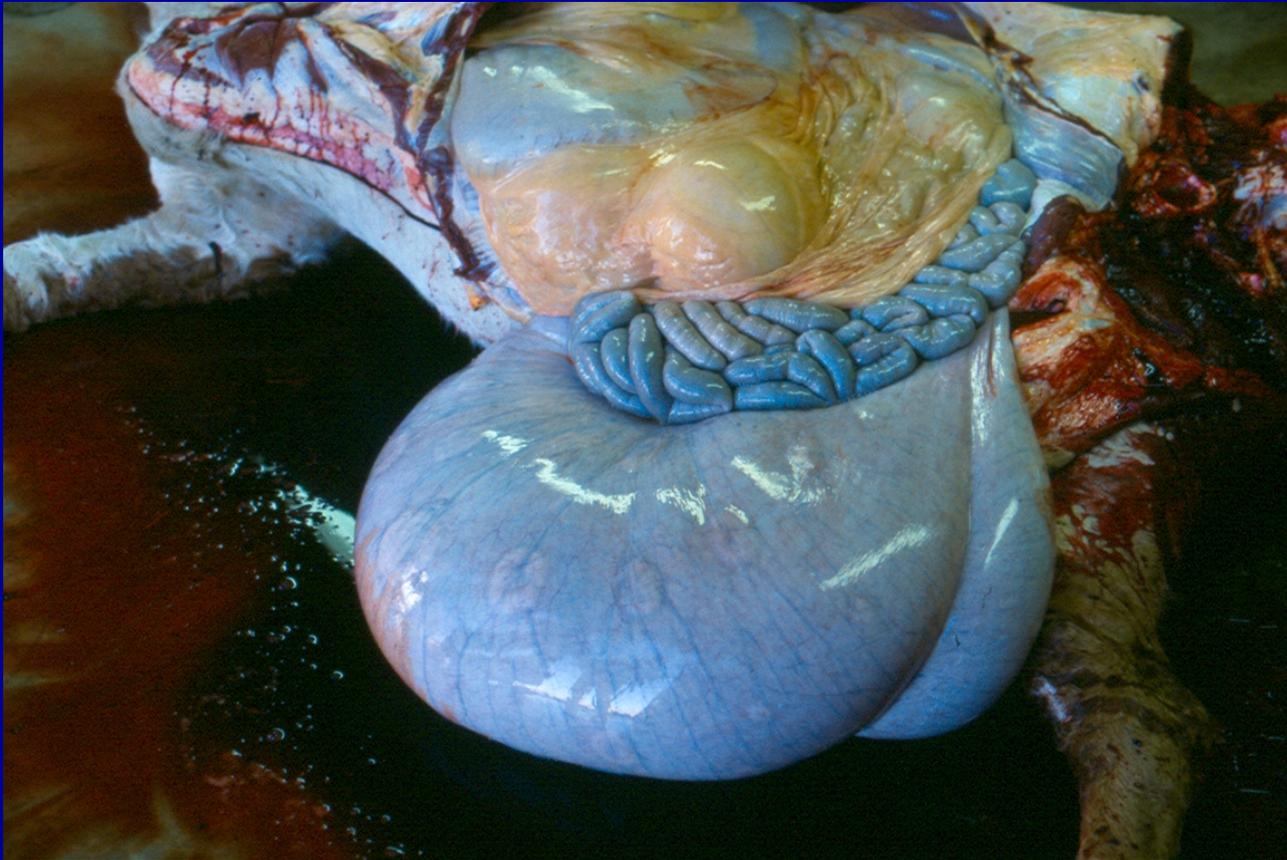
Aborted fetus



Fetal heart rate



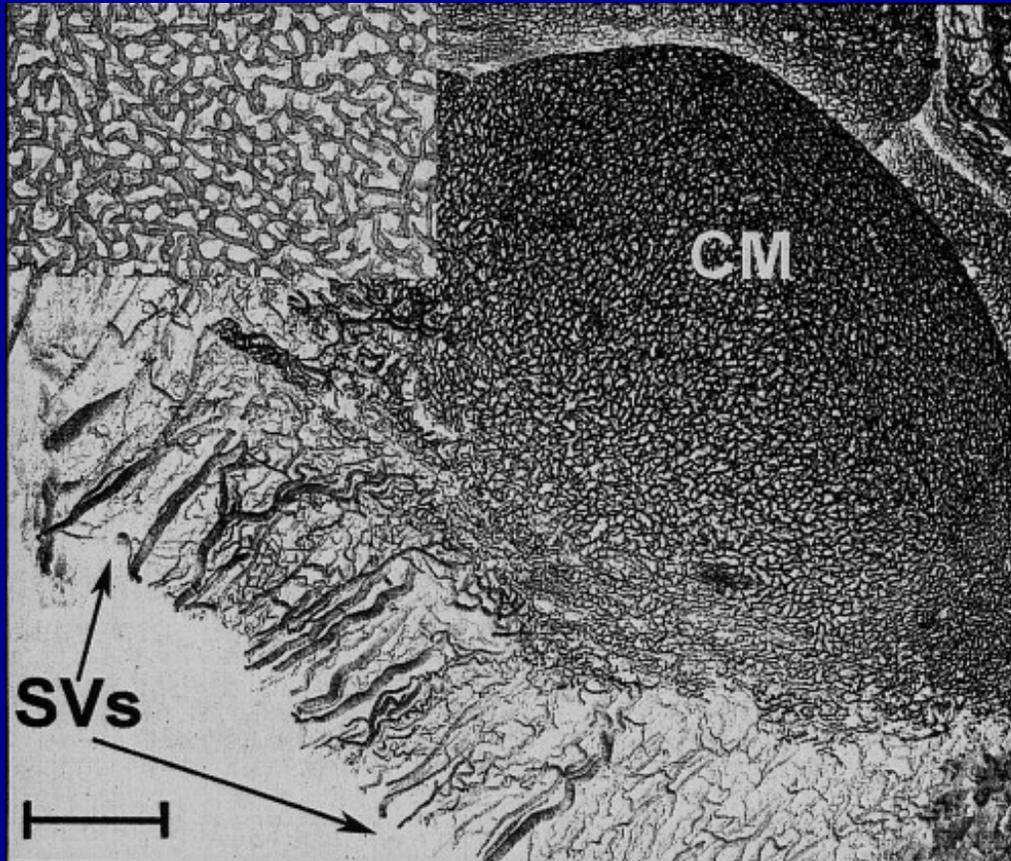
Hydrops uterus



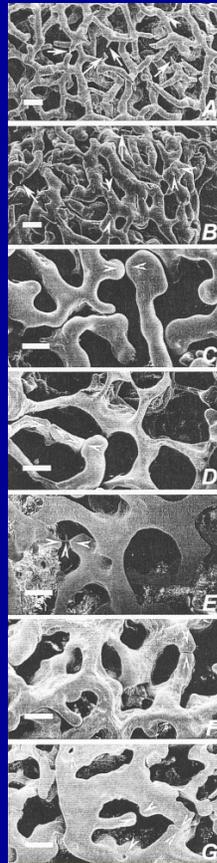
Hydrops calf in uterus



Locoweeds



Caruncular vasculature



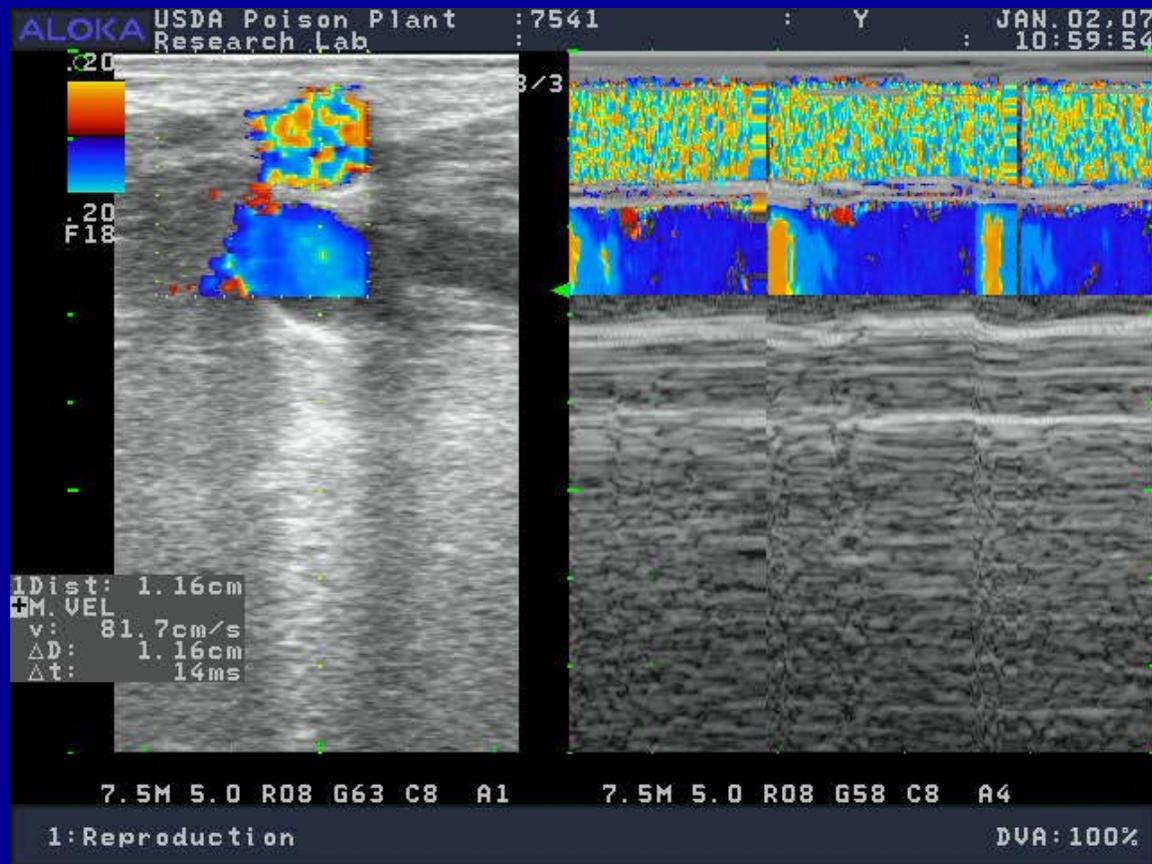
Effects of Pines and Related Species on Reproduction in Cattle



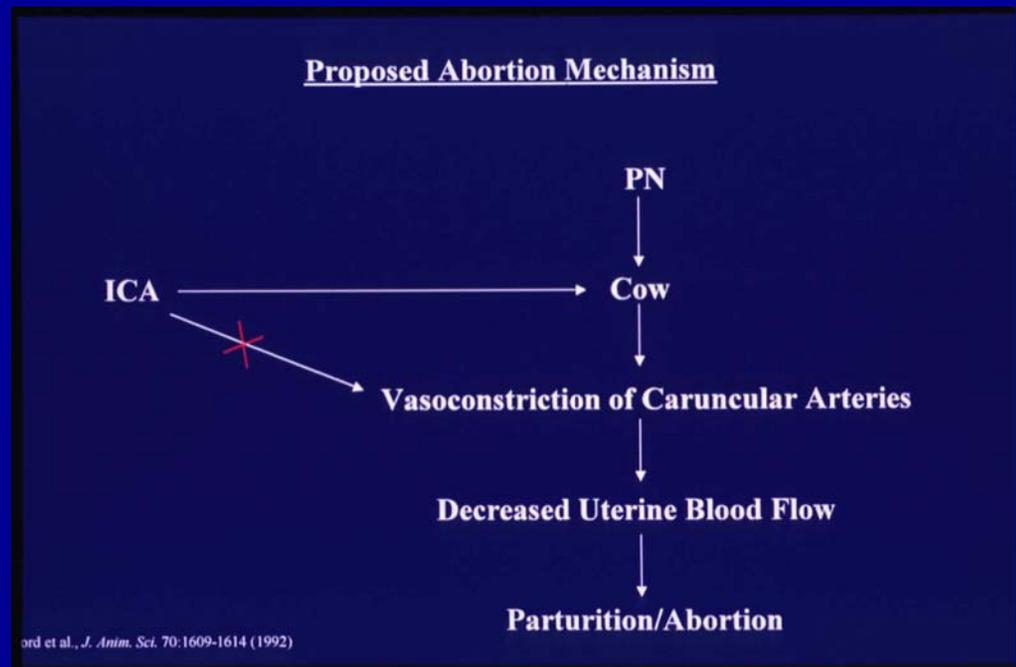
Effects of pine needle consumption



B/M mode blood flow



Proposed mechanism for ICA abortion



Plants that Cause Birth Defects



Veratrum and Solanum spp.



Veratrum californicum



Solanum spp.

Veratrum Insult Periods

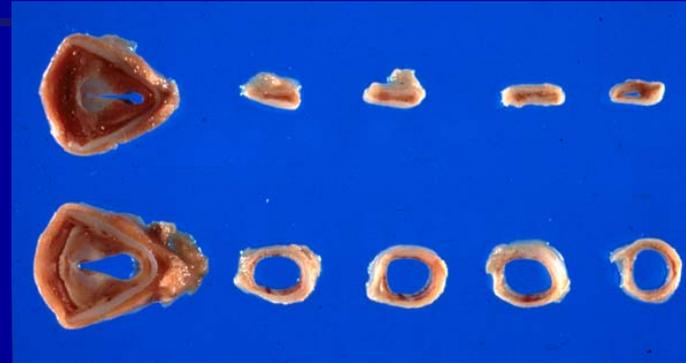
Cyclopic Defect
14th day



High Embryonic Death Losses
14-19 days

Veratrum Insult Periods

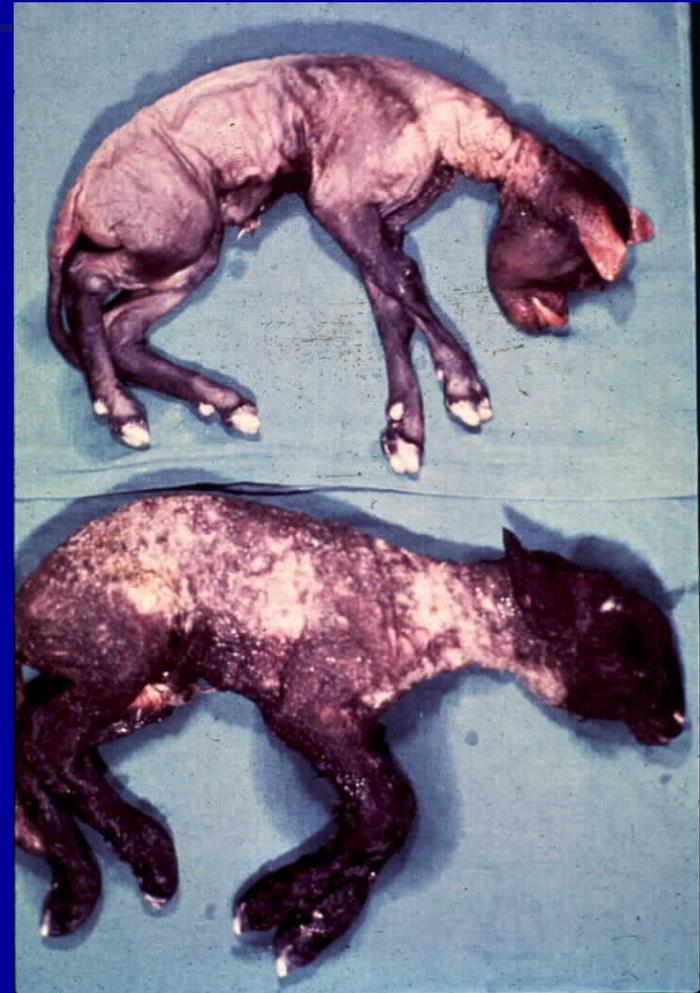
Tracheal Stenosis
31-33 days



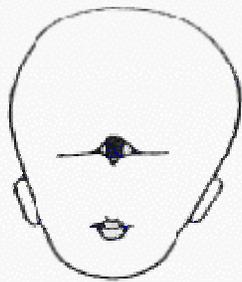
Limb Defects
27-32 days



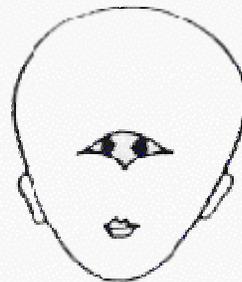
Prolonged Gestation/Narrow Insult Period



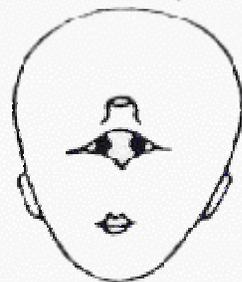
Human Anomolies



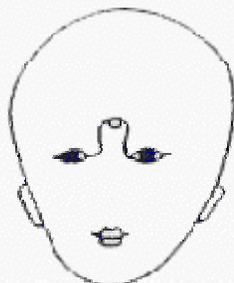
A



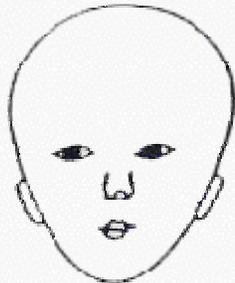
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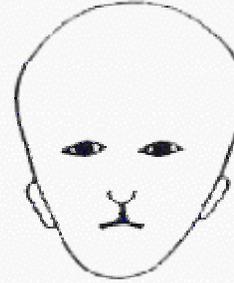
C



D



E



F

Over Expression or Ectopic Signaling of SHH



Conium, Nicotiana, and Lupinus spp.



Lupines (*Lupinus* spp.)



Poison-hemlock (*Conium maculatum*)



Nicotiana spp.
(*Nicotiana tabacum*,
N. glauca)

Historical Aspects



Poison-hemlock:
Cleft palate/
MCC pigs

Nicotiana spp.:
Cleft palate/
MCC pigs



Lupine-induced
Crooked Calf Disease



Teratogenic Effects



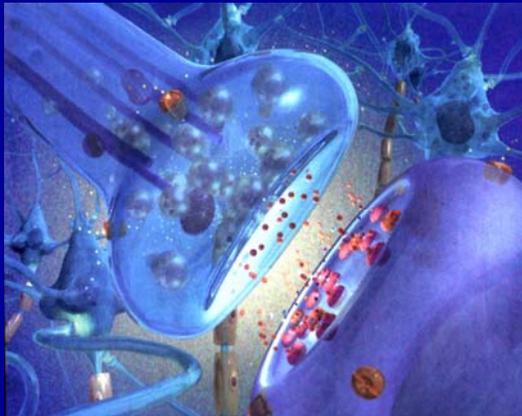
Arthrogryposis



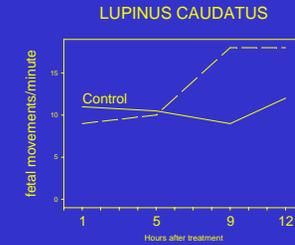
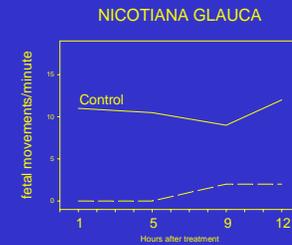
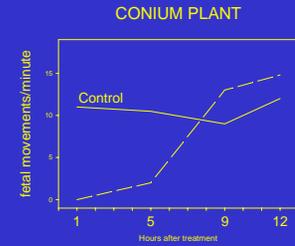
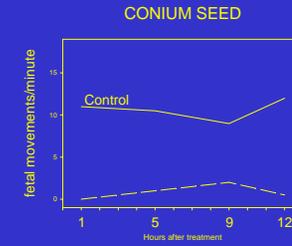
Scoliosis

Mechanism of Action

Alkaloid-induced reduction in fetal movement



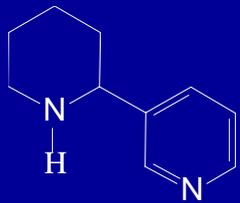
Blocks neuromuscular junction



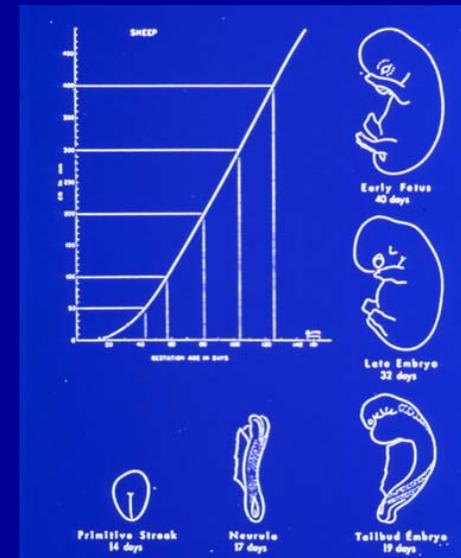
Goat Model



- Developed to study mechanism of action of lupine-induced Crooked Calf Disease
- Utilizes *Nicotiana glauca* (anabasine)
- Cleft palate induced during days 32-41 of gestation



Anabasine



Cleft Surgery

