Grisen som model for nyfødte børn?

Er der ligheder i udviklingsmønstre og ernæringsbetingelser?

Hvordan reguleres udvikling (genetik–hormoner–ernæring)?

Kan ernærings-sygdomme behandles ens hos nyfødte husdyr og børn?

?

?

?

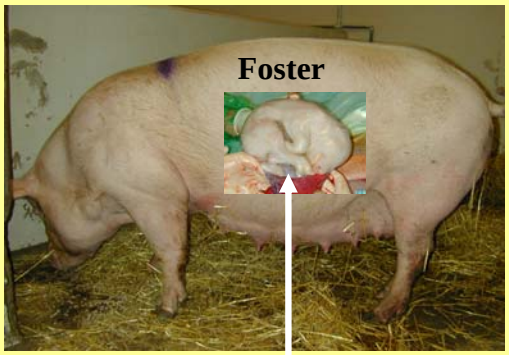
Kalve

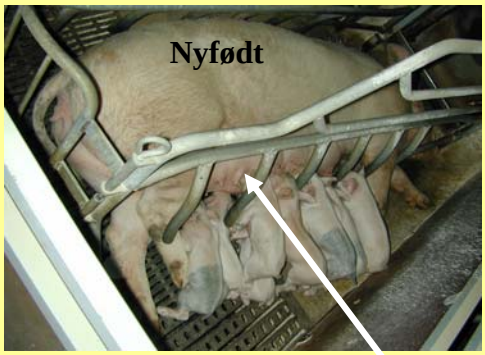
Lam

Grise

Mink

Skift i ernæringsforhold ved fødsel:





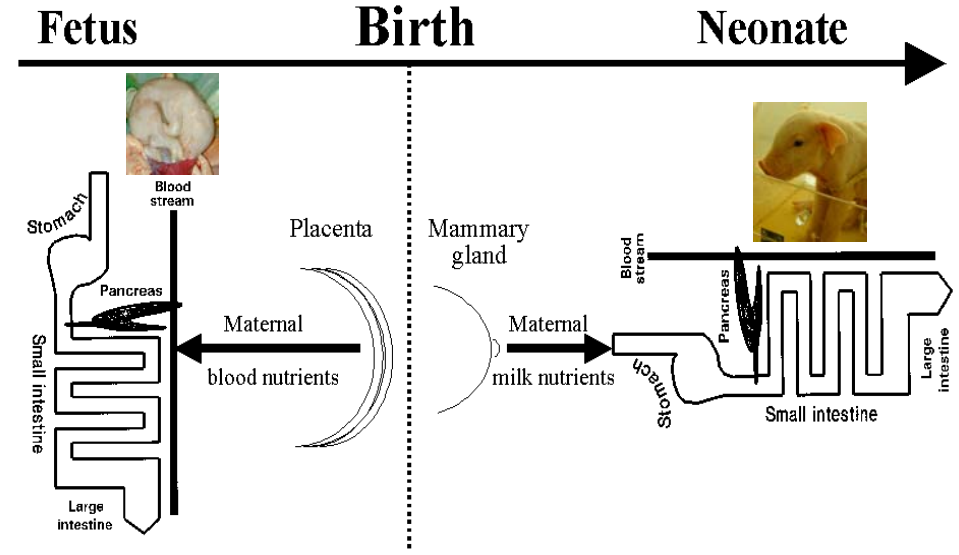
Fødsel

Parenteral ernæring via navle

Overlevelse:

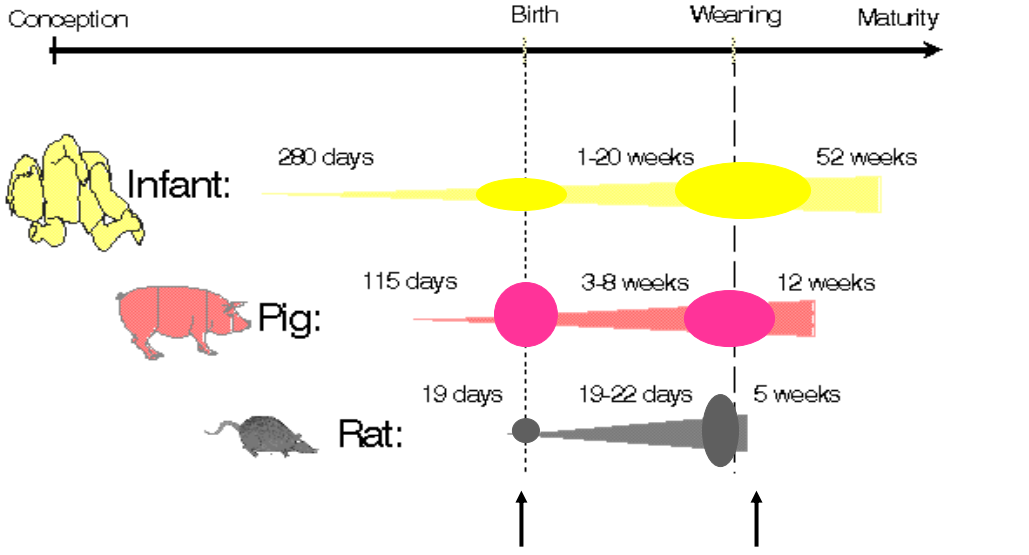
Svin	**87%**	**(75-95)**
Kvæg	**93%**	**(85-95)**
Får	**92%**	**(80-95)**
Heste	**91%**	**(85-95)**
Mennesker	**99%**	**(90-100)**

Nutritional transition at birth



"Total parenteral nutrition, TPN" **"Total enteral nutrition, TEN"**

Digestive system development in different species

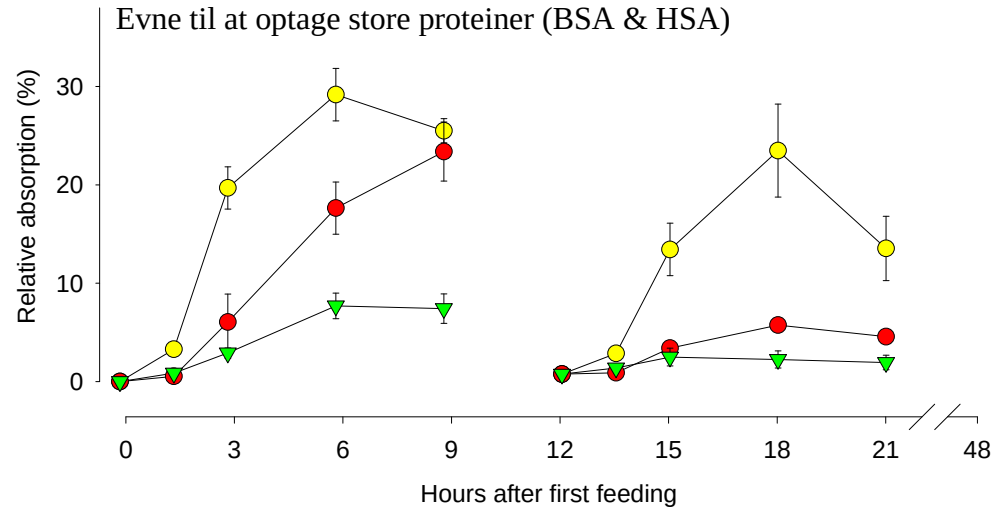


"Birth-cluster" of maturational changes

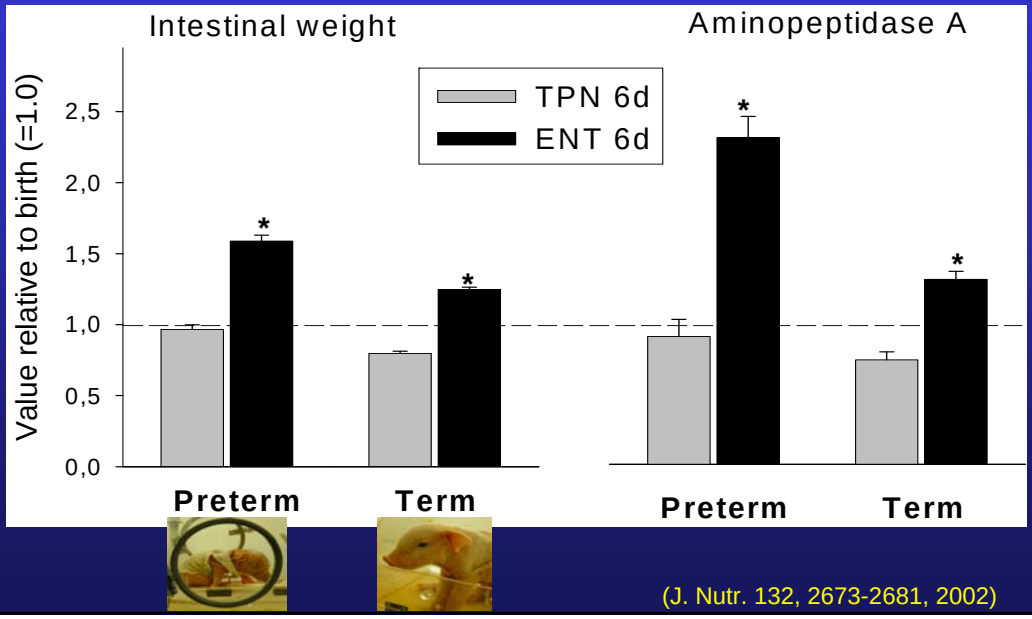
"Weaning-cluster" of maturational changes

Tyndtarmen i nyfødte er yderst ernærings-følsom - Hvilken type ernæring?

Nyfødte | 2d, so-kolostrum | 2d, ko-kolostrum+serum | 2d, mælke-erstatning



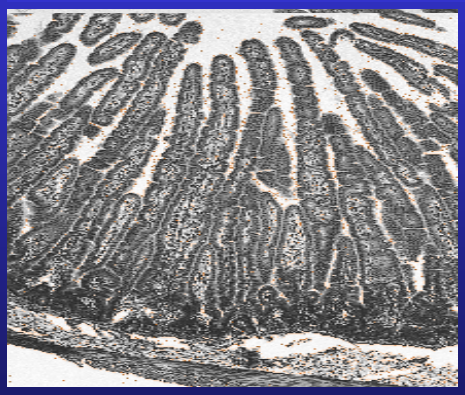
The preterm pig intestine is highly responsive to enteral nutrition



(J. Nutr. 132, 2673-2681, 2002)

Tarmen i nyfødte er yderst afhængig af ernæring

SULTEN TARM (+GLP-2)



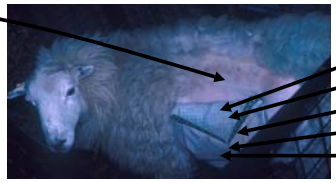
”SULTEN” TARM (TPN)

American Journal of Physiology 279, 2000

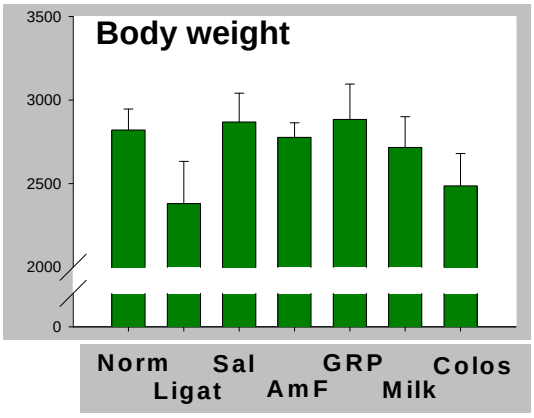
Kan man fodre undervægtige fostre før fødsel?

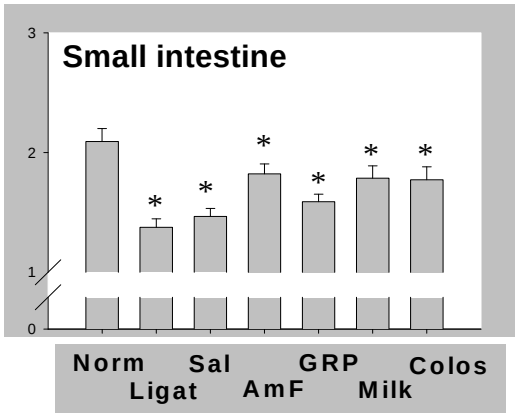
(Lam, 80-85% gestation, Reproduction, Fertility & Development 12, 2000**)**

Fostre uden adgang til fostervæske



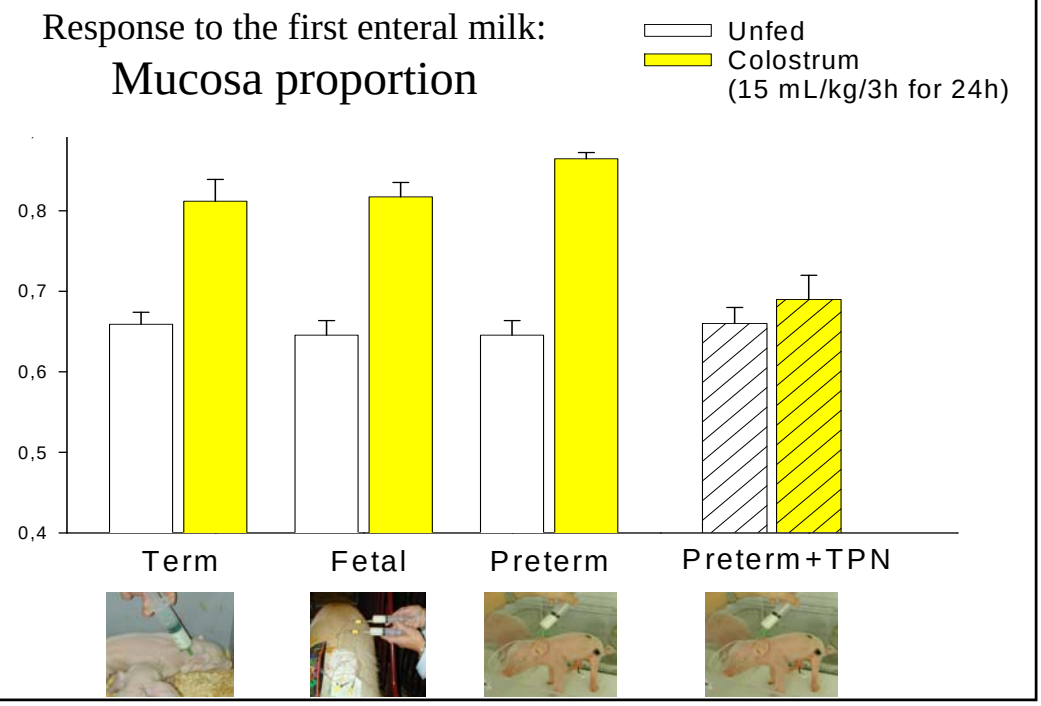
Saltvand (Sal)
Fostervæske (AmF)
Vækstfaktor (GRP)
Mælk, valle (Milk)
Råmælk, valle (Colos)





Response to the first enteral milk:

Mucosa proportion



KONKLUSION:

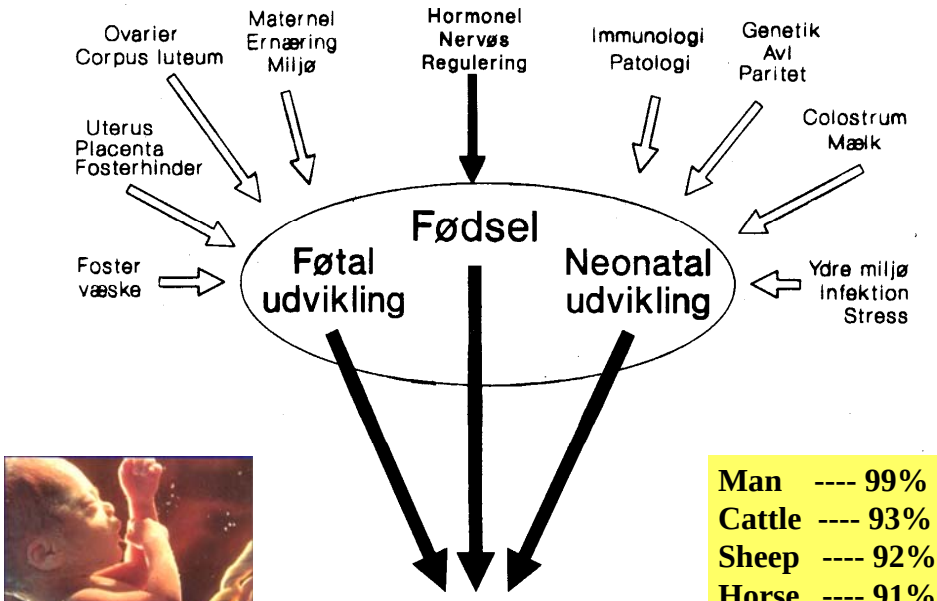
Tarmen i umodne og/eller små nyfødte er ekstremt følsom overfor ernæring - men virkningen afhænger af:

- Diæt type
- Modenhed

DYREART?

- blod vs. enteral ernæring
- Fødselstype

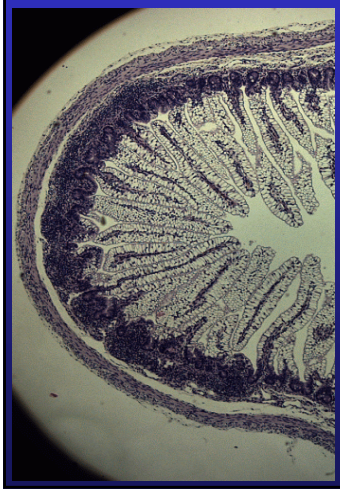
Hvad påvirker fostrets modning forud for fødslen?



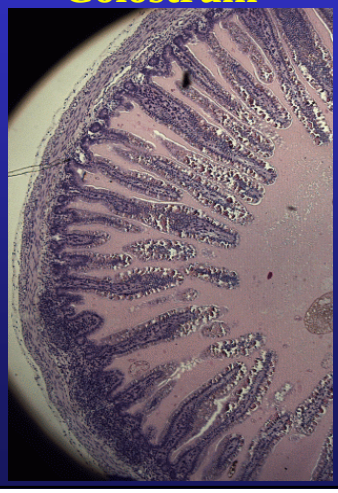
Man	**---- 99% (90-100)**
Cattle	**---- 93% (85-95)**
Sheep	**---- 92% (80-95)**
Horse	**---- 91% (85-95)**
Pig	**---- 87% (75-95)**

No NEC in fetal newborn pigs (litter 64)

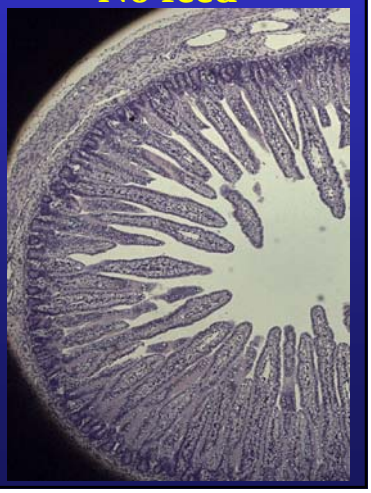
Formula



Colostrum

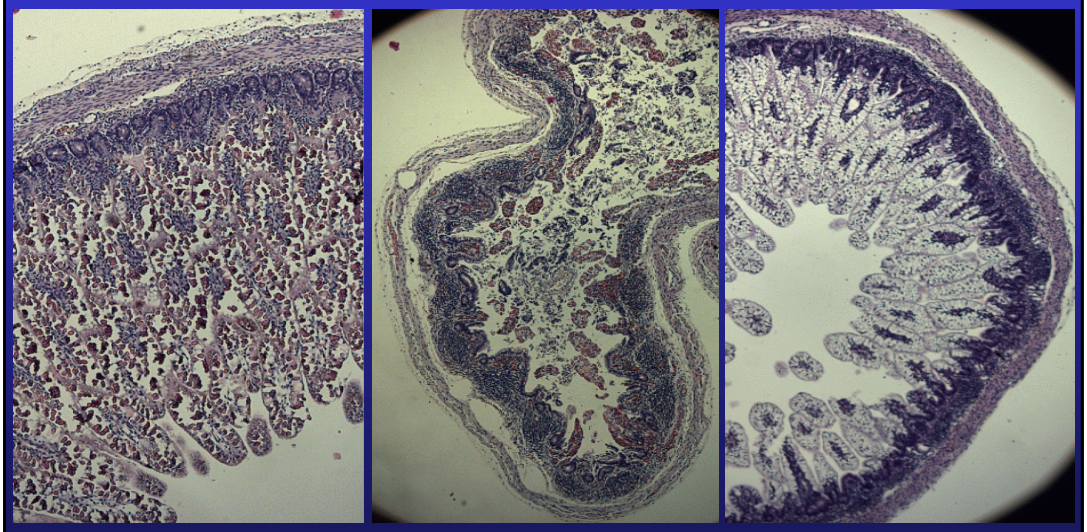


No feed

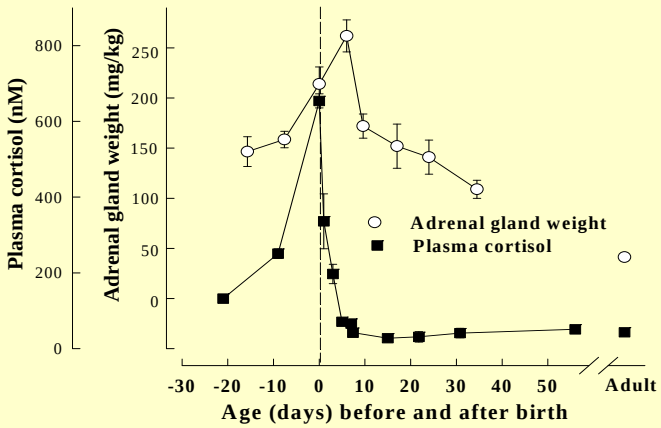


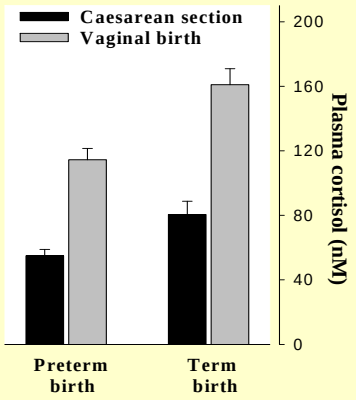
NEC in premature newborn pigs (litter 64)

Colostrum | **Formula-NEC** | **Formula-no NEC**



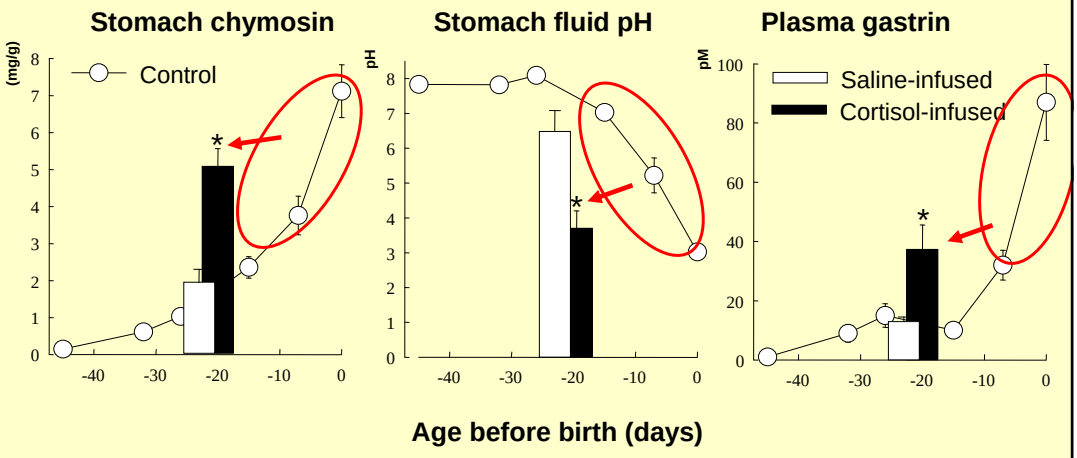
Development of plasma cortisol before and after birth





J. Pediatr. Gastroent. Nutr. 19, 1994; Exp. Physiol. 80, 1995

Cortisol mediates the normal maturational changes in the fetal pig stomach



Exp. Physiol. 80, 1995

CONCLUSION:

The immature GI-tract is highly sensitive to hormonal and nutritional stimulation

- but responses depend on:

- Diet type
- Age
- TPN vs. enteral
- Birth

SPECIES?

Perinatal gastroenterologi og ernæring

Veterinær og Lanbohøjskolen, København