

DEVELOPMENT OF BEHAVIOR

Domestic animal behavior





OUTLINE

Terms and definitions

Development of
mammals

Species information

KEY TERMS



Key differences between mammals and other vertebrates

- **Mammals, warm-blooded, live birth of offspring in varying degrees of development**
- **Birds: warm blooded, final stages of development are in an egg**
- **Reptiles: cold blooded, eggs as in birds**
- **Amphibians: cold blooded, eggs fertilized and deposited in the environment**

KEY TERMS



- Precocial – newborn is relatively mature and mobile from shortly after birth or hatching
- Nidifugous – leave the nest or birth area shortly after birth – ducks & pigs, for example
- Altricial – newborn are not fully developed and are in need of close maternal care
- Gamete, embryo, fetus, birth or hatch

KEY TERMS



- Maternal-neonatal interactions is critical for mammals
- Most mammals lick or clean newborn:
 - Cleans airways
 - Stimulates breathing, then standing
 - Like a newborn massage
- Baby stays close to the mother when young – increasingly spends more time further from the mother
- Juveniles may leave the herd in some species (ex., wild pigs, adult males)

BRAIN DEVELOPMENT

- Cells (neurons) → Nerves → Tracks → Regions of the brain and spinal cord
- Supporting and structural cells, including immune cells
- The human brain has functional neurons about day 42 of pregnancy
- Neurons migrate in specialized directions to connect
- In humans, brain develops greatly over the first 2 years, but continues through life – the brain is 90% of adult size by age 6
- Neurons are lost with age, esp. after 60 y old



Fig. 1 Human embryo at Carnegie Stage 23, the end of the embryonic period (GW8). It is 30 mm long. Image from the Kyoto Collection reproduced with permission of Prof Kohei Shiota, Graduate School of Medicine, Kyoto University, and obtained with permission of Dr. Mark Hill, University of New South Wales, <http://embryology.med.unsw.edu.au/embryo.htm>

COMPARATIVE BRAIN DEVELOPMENT

Species	Gestation, days	80% Max brain weight, days after conception
Human	270	811 (2.2 y)
Cat	65	141
Mouse	18.5	52
Rat	21	51
Sheep	147	203
Ferret	41	118
Guinea pig	68.5	81

<http://translatingtime.org/predict>

CRITICAL OR SENSITIVE PERIODS

- Generally, a period in a young animal's life when it develops strong social and behavioral preferences – good or bad
- Some authors prefer the term sensitive period
- Imprinting is a special term first used with birds to denote when the species identity is determined (that is a bird, could think it is a human)



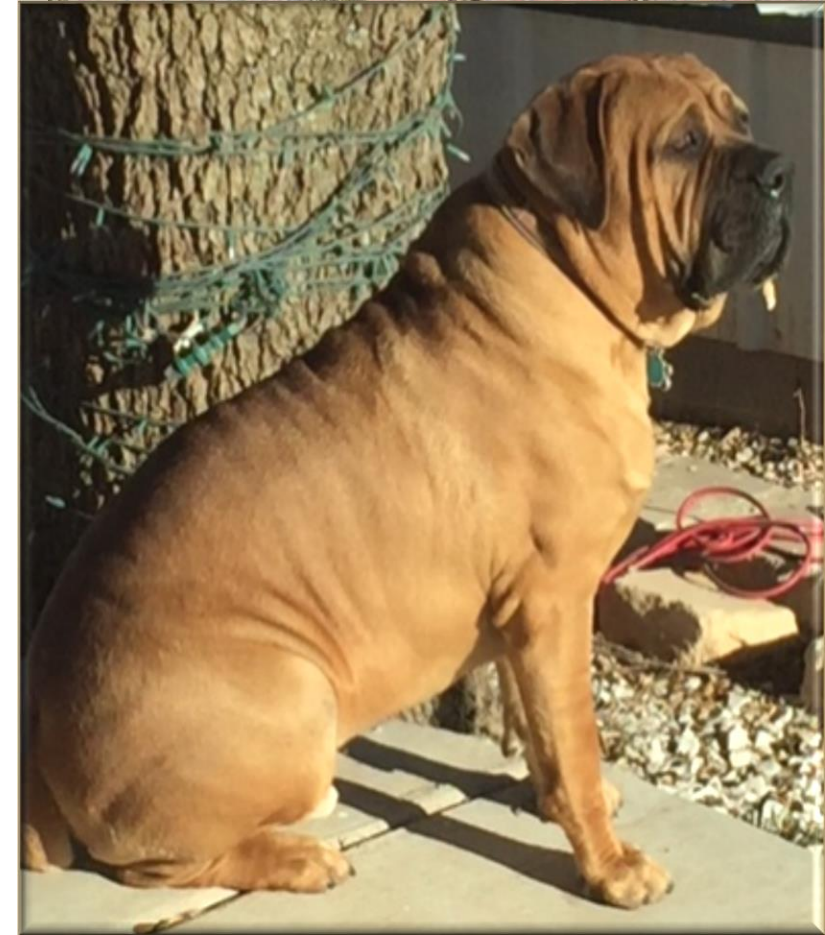


OTHER DEVELOPMENTAL CHANGES

- Play behaviors
- Sleep patterns
- Play fighting → real fights
 - Dogs initiate play by dropping their front or touching a human or animal; often with an open mouth and erect ears
- Sexual play → Adult sex

DOGS -- ALTRICIAL

- Neonatal period: 1-2 weeks of age
 - Transitional period: 3 weeks
 - Socialization: 4 to 14 weeks
 - ~12 weeks teeth erupt (much chewing)
 - Juvenile period: 14 weeks until sexual maturity
 - ~6 months, males lift their leg to urinate
 - Significant breed differences in development
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- Magnus reflex lasts 2 weeks; turn the pup's head and it extends its legs on the side you turn the head



CATS – ALTRICIAL

- Social sensitive period is 2 to 7 weeks of age
- Kittens should be handled every day from weeks 2 to 6 if possible
- The earlier kittens are weaned, the more they cry (same with other species)
- Genetics plays a large role in cat eventually personality
- Kittens increase playing from weeks 4 to 14, then play declines (but not to zero).
- Kittens learn predatory play from their mother and siblings
- Common behavioral problems with less socialized cats: aggression and nighttime play and other activities



HORSES -- PRECOICIAL

- Newborn foal usually stands in 15 minutes
- Foal stays close to mare at first, then further away as it ages
- Grazing slowly replaces nursing
- Best to feed foal with mare near
- Minimal water drinking until foal is older
- Play involves running and play with objects
- Flehmen starts early in colts; not as much in fillies ; declines over time
- Show facial snapping and yawning up until a few months old



PIGS -- PRECOICIAL

- Modern breeds of commercial pigs have 13 pigs born and 10 pigs weaned per litter
- Piglets show teat fidelity (ex., Meishan)
- Teat order is defended, but not absolute
- Newborn nurses in a few minutes
- Piglets seep, nurse, play
- Sow minimally interacts with piglets and less-so over time



SHEEP AND LAMBS -- PRECOCIAL

- Sheep have 1 or 2 offspring (sometimes more)
- Maternal licking start with the head and then moves down the body
- They learn plant selection from their mother
- Same play behaviors as other species (play, fight, mount)



CATTLE -- PRECOICIAL

- Cattle have 1 or 2 offspring. If a male and female in utero together, female may be infertile – Freemartin (rarely happens in other species)
- Same story with play as other mammals
- Inappropriate suckling on objects or other calves can cause serious health problems – non-nutritive suckling



HOUR EXAM

- Average = 84.4
- Low: 76
- High: 100
- A = 5
- B = 7
- C = 3
- D = 1

