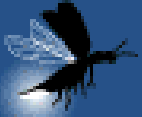



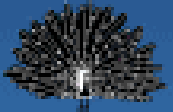







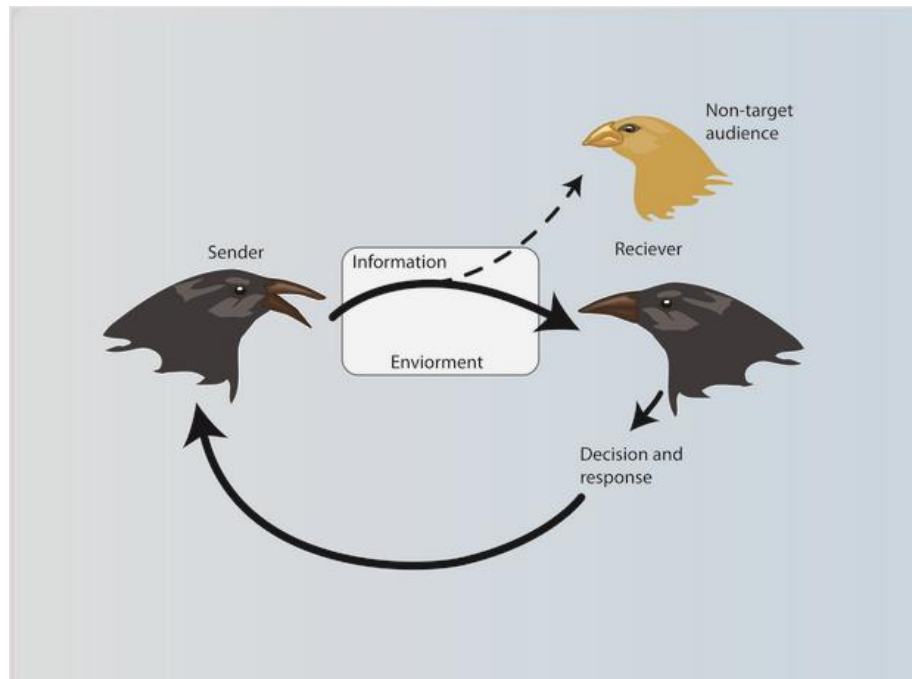


ANIMAL COMMUNICATION

Examples of Animal Communication			
 <p>Fireflies glow to attract mates.</p>	 <p>Elephants use their trunks to talk to other herds over long distances.</p>	 <p>Dogs lick their pups to bond, clean and stimulate their development.</p>	 <p>Cats rub against objects to mark them with their scent.</p>
 <p>Peacocks use their elaborate tails during courting rituals.</p>	 <p>Male whales use their song to communicate with females.</p>	 <p>Baboons use touch to show affection and groom each other.</p>	 <p>Ants use pheromone trails to follow each other.</p>
 <p>Cobras inflate their hood to scare other creatures.</p>	 <p>Wolves howl to call to other wolves in the pack.</p>	 <p>Horses kick other horses to establish dominance.</p>	 <p>Skunks use their signature smell to deter predators.</p>
Visual	Auditory	Tactile	Chemical

Communication

- What is communication?
 - Wilson (1970) – Action on the part of one organism (or cell) that alters the probability pattern of behavior in another organism (or cell) in an adaptive fashion.
- **Transfer of information from a signaler to a receiver**

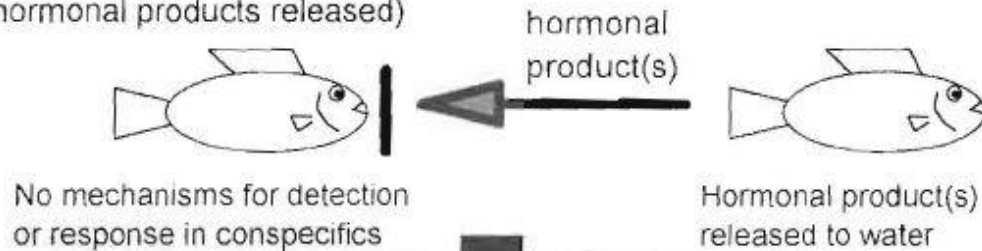


Cue vs. Signal

- Cue- any feature that an organism can use as a guide to display a particular behavior or series of behaviors.
- Signal- a perceivable behavior or feature that has evolved and has acquired the specific characteristic of conveying information about the signaler or the signaler's environment.
- Can a cue become a signal? How?

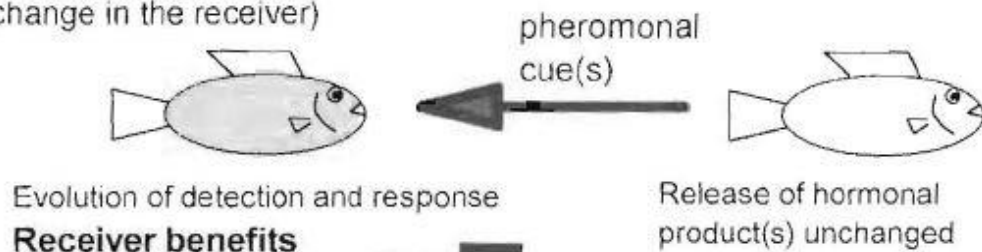
Pre-adaptation

(hormonal products released)



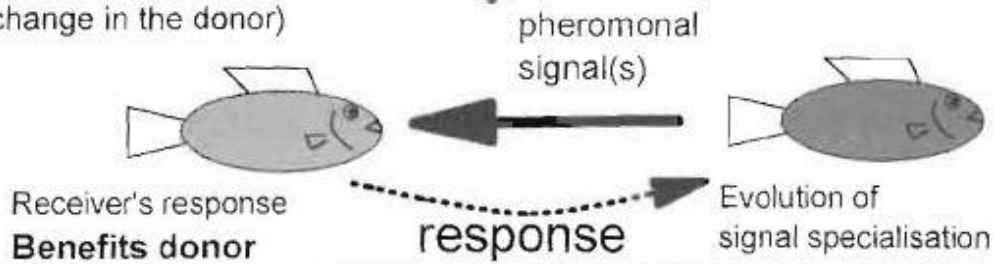
Spying

(change in the receiver)

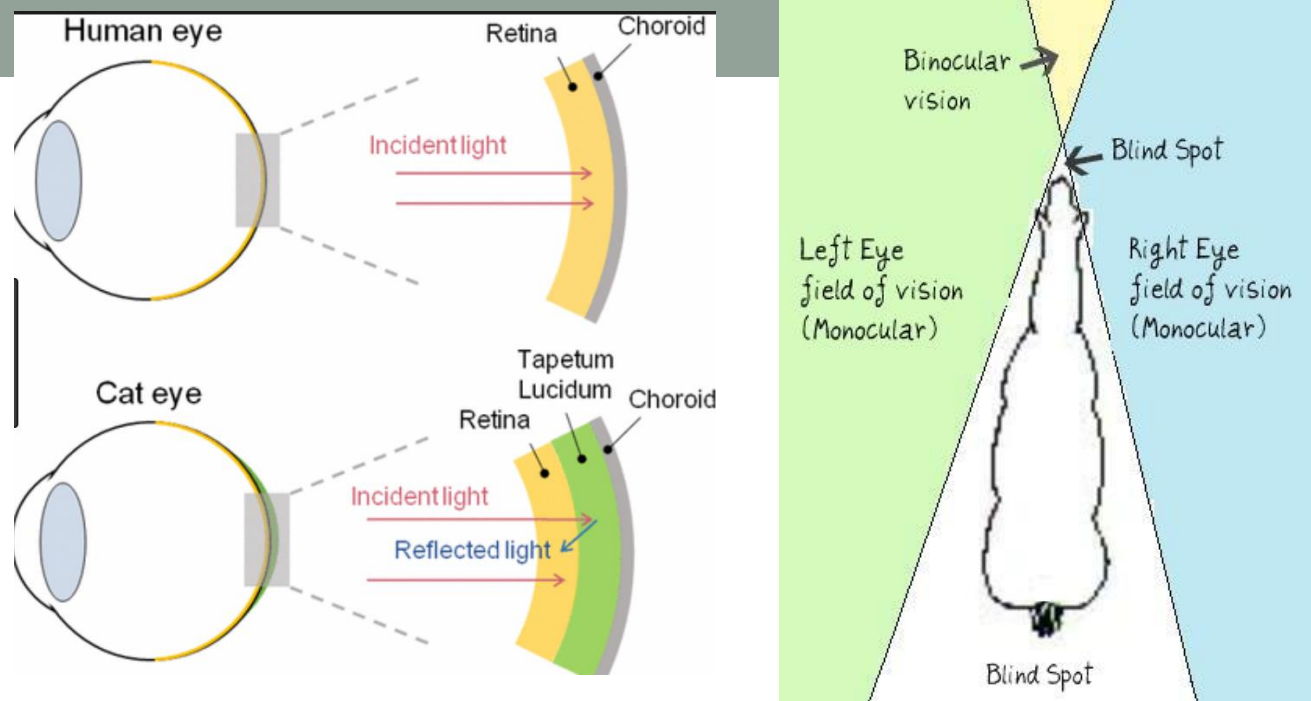


Communication

(change in the donor)



Vision



- Visual acuity
- Tapetum lucidum-exploit incoming light and is possessed by cats, dogs, horses, and cattle.
- Color Vision-all animals can discriminate based on color but color not as relevant to these animals compared to birds, fish and primates. Why?
- How can you tell predators from prey species (on average)? Why?

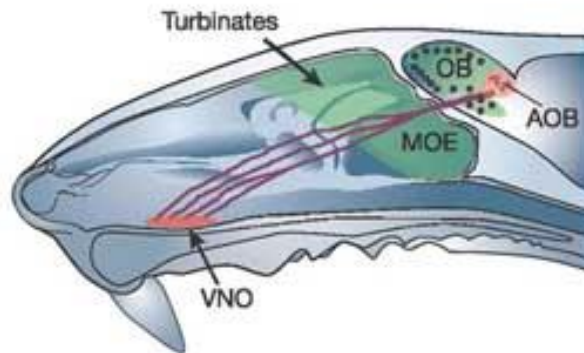
Audition Acuity

- Cats and dogs hear a greater range than humans.
 - Cats can hear more octaves but have more problems locating the source.
 - Cats, dogs, and sheep have more cochlear nerve fibers which allows them to detect higher frequencies.
- What is the advantage to having cupped ears?

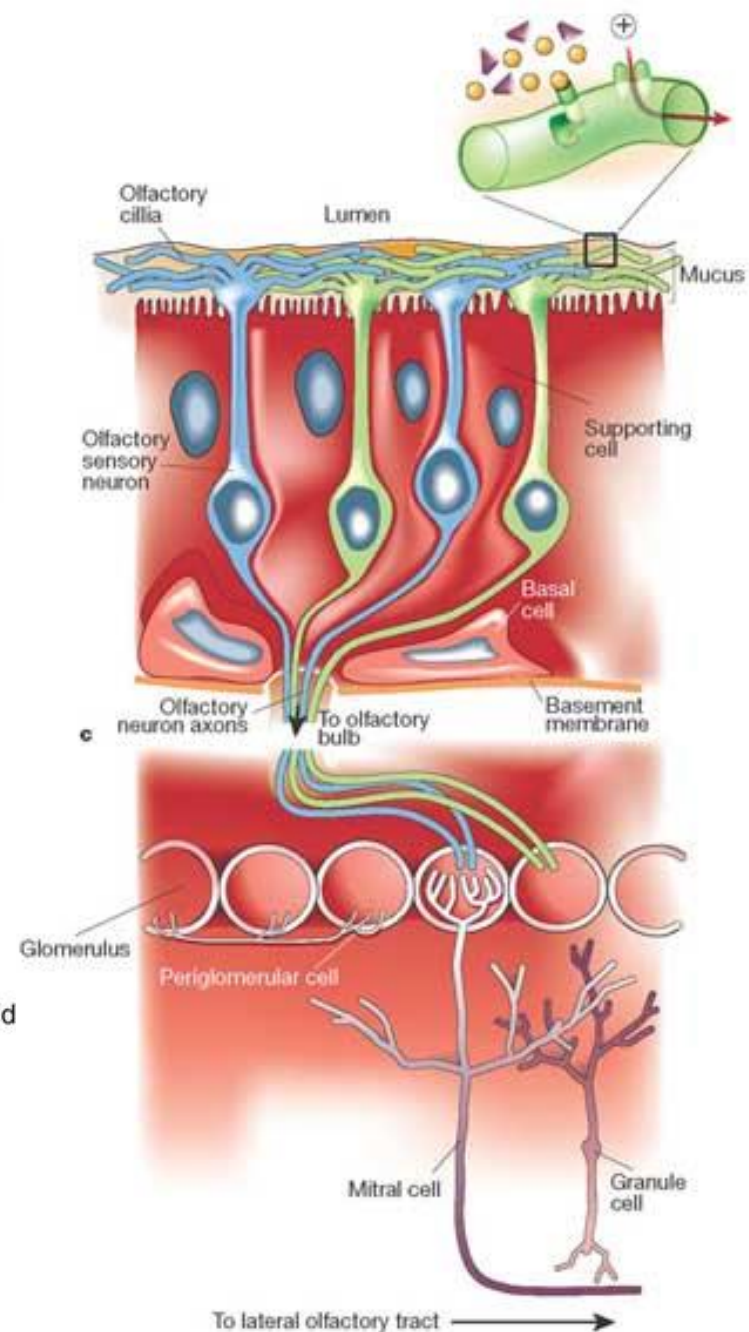
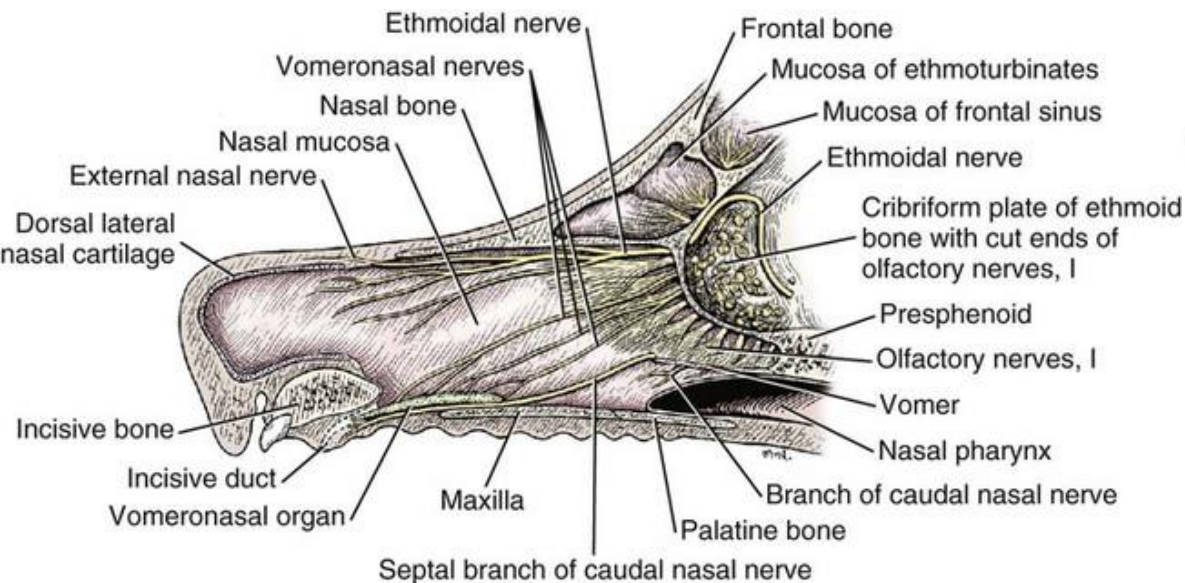


Olfactory acuity

- Olfaction is to animals what writing is to humans-transmission of a message in the absence of a sender.
- Olfaction probably the most important sense of domestic animals.
- Dogs have the greatest olfactory acuity?



MOE = main olfactory epithelium.
OB = olfactory bulb.
AOB = accessory olfactory bulb.
VNO = vomeronasal organ.



Dog Auditory Signals

- Bark
- Whine
- Howl
- Growl



Bark



- Defend territory and demarcate boundaries (different types).
 - Stray dogs rarely bark but owned dogs will.
- Barking occurs in wild canids but has been selected for in domesticated dogs.
- Vocal cordectomy to lower pitch and strength of the bark. Is this an animal welfare issue? Electronic collars?

Whine and Howl

- Whining: care-soliciting call of the dog
- Howling: not well deciphered, home-site season (more in wild canids, huskies)
- Wolves can discriminate strange adult howls from strange pup howls, unclear for dogs



Growl

- Aggressive call in dogs

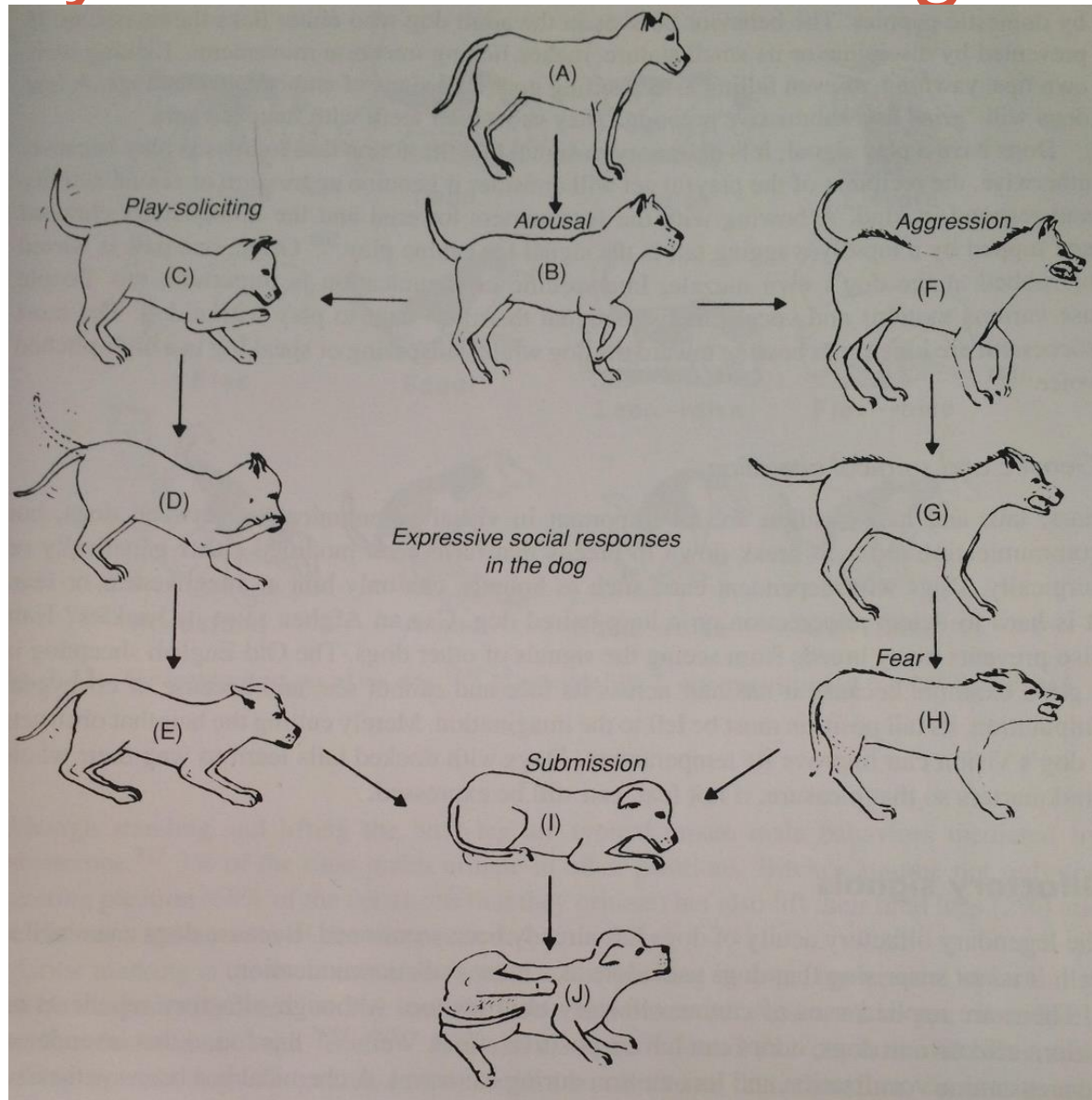


Visual Signals

- Dog's emotional state can be determined by observing its ears, mouth, facial expression, tail, and hair on its shoulders and rump as well as body position and posture.



Body Postures of the Dog Diagram



(from textbook)

Posture

- Care taken when **lifting of the lip** is present, may be only prediction of defensive aggression or fear biting.
- **Licking**-puppies lick mothers' faces to beg for regurgitated food in wild canids. Regurgitation not common in domestic dogs but behavior still exists in puppies.
- **Play signal**-bowing with forequarters lowered and hindquarters elevated with a rapidly wagging tail.



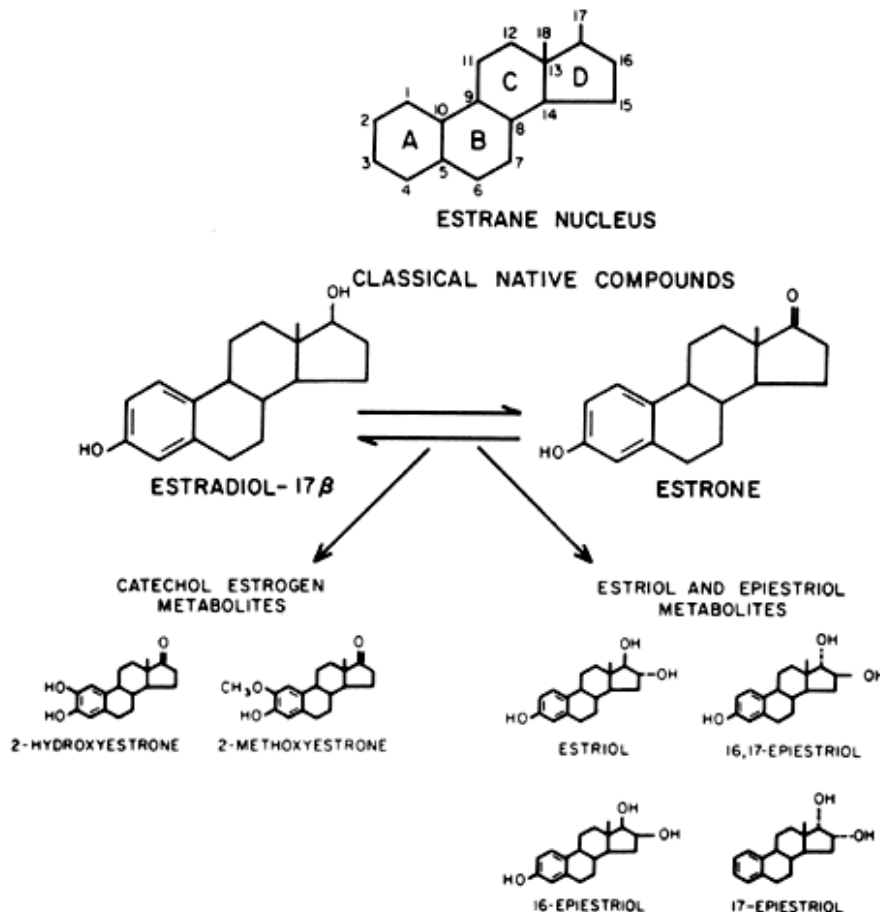
Dog Olfaction

- Male dogs scent mark vertical objects by urinating on them. Species, sex, and individuals can be identified from the urine.
- Dogs scent mark much more frequently in areas where other dogs have marked. Why?
- Castration and anosmia reduce scent marking.



Dog Urine

- Most powerful means of olfactory communication is the urine of an estrous bitch. Highly attractive for males compared to vaginal or anal sac secretions. Why?



Dog Anal Secretions

- Dogs, on meeting, usually sniff under each other's tails. The purpose is identification. What else might an animal be able to deduce from anal sac secretions or feces?



Dog Behavior Problems

- Excessive Barking
 - Solve: Positive reinforcement and **TIMING** (Why?)
- Urine Marking
 - Solve: Castration or Progestins
 - Ignore the submissive urination

Feline Pure calls

- Murmur
- Purr
- **Squeak**
- Growl
- Shriek
- **Hiss**
- Spit
- **Chatter**



<https://www.youtube.com/watch?v=wMTQqQmJkGA>

Complex calls

- Estrus call
- Howl and yowl of an aggressive act
- Mowl male cat sexual context
- Mew-high-pitched, medium-amplitude vocalization. Sounds like a long 'e'. Occurs in mother-kitten interactions.
- Moan-low frequency and low duration. Given before regurgitating hairball or begging to be released to hunt.
- Meow-characteristic call given in a variety of situations.

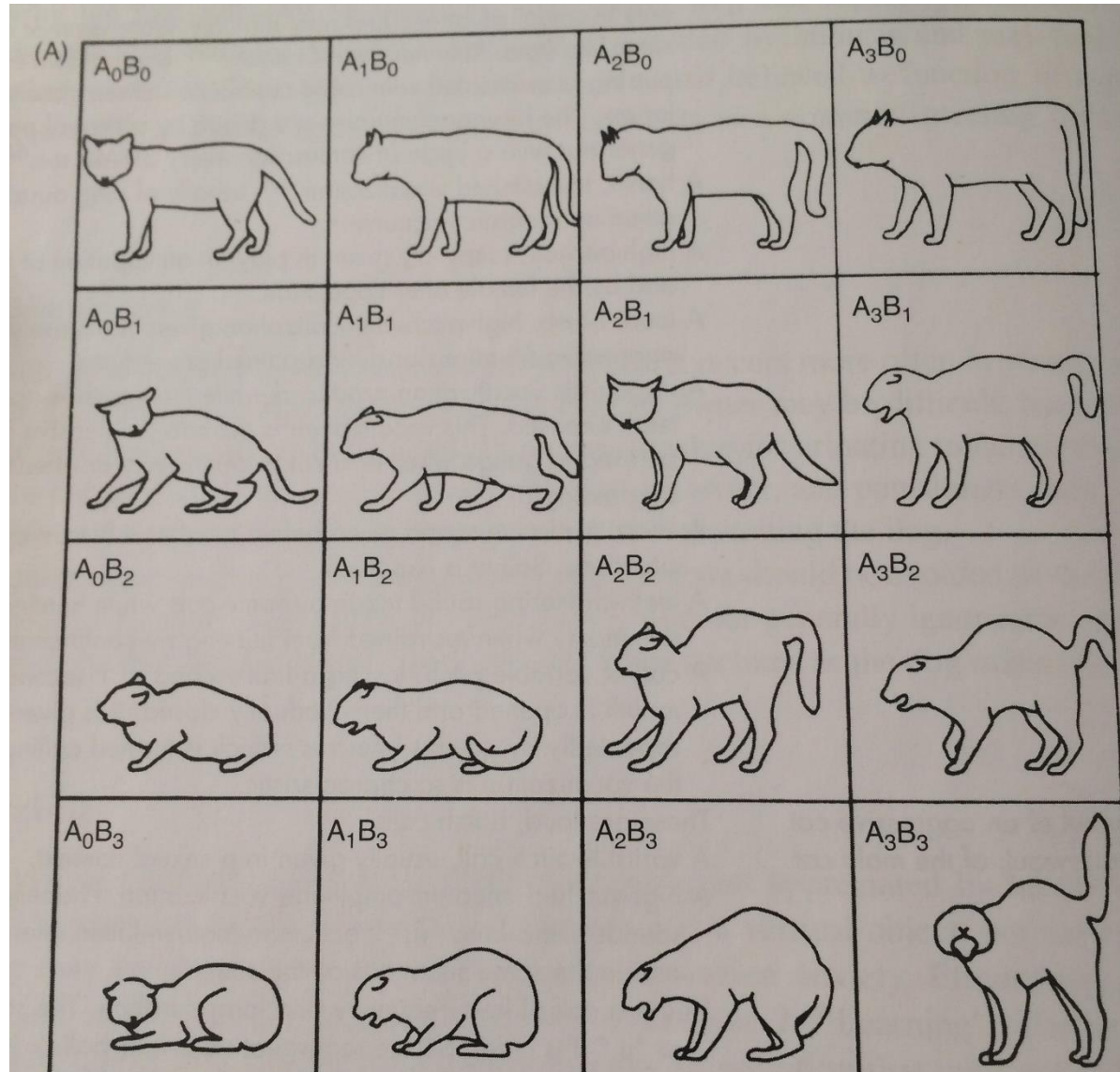
Cat Visual Signals

- The Tail
- The Body
- The ears
- The eyes



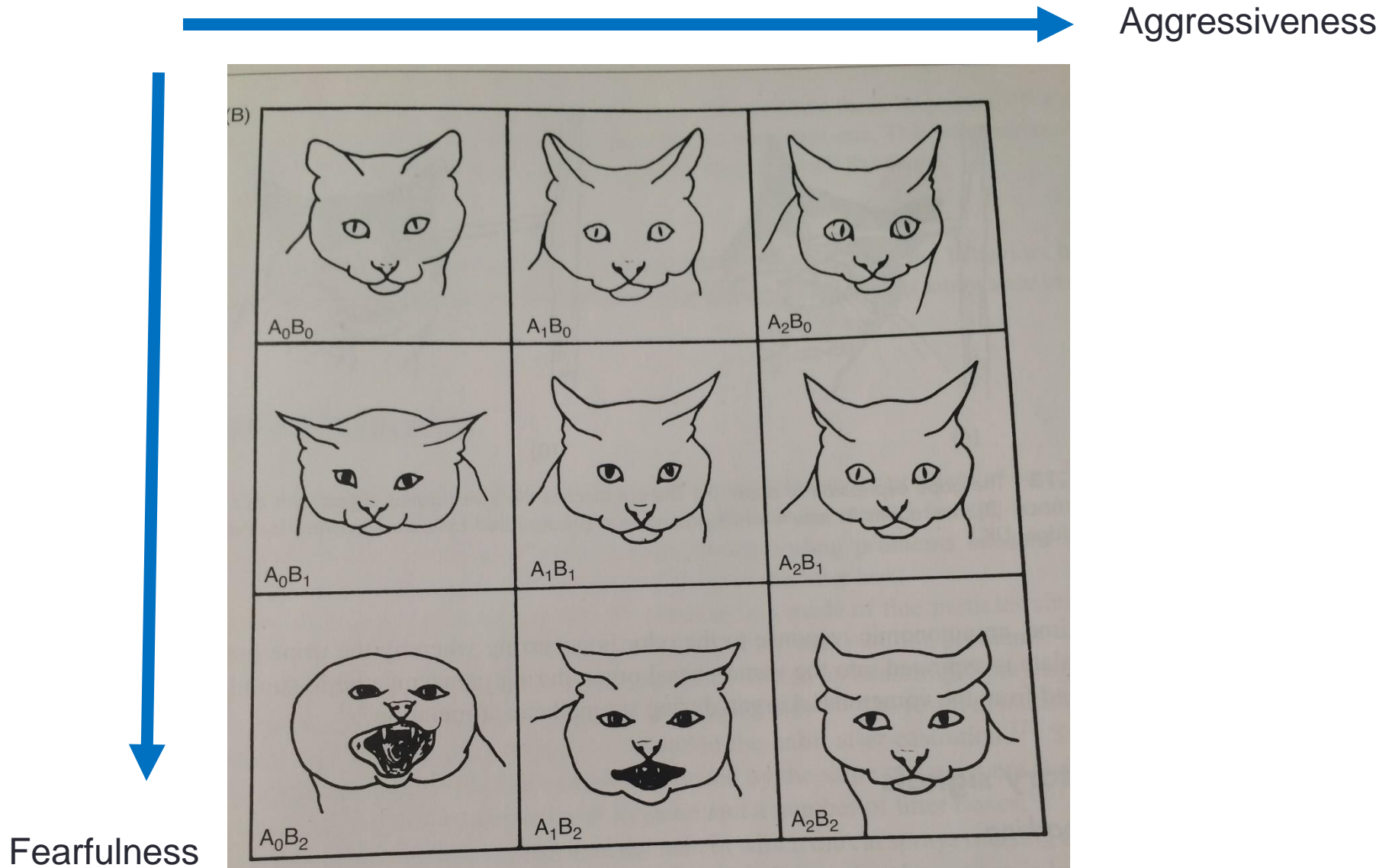
Visual Postures Diagram

Aggressiveness



Fearfulness

Visual Postures Diagram



Cat Expressions



- Frightened cat crouches with ears flattened to its head, salivates, and spits. Pupils are dilated.
- Eye of the cat is considered to be the prominent signal of a cat's mood.
- The gape-response to a strange smell is equivalent to Flehmen in ungulates.

Cat Olfaction

- Scent Marking
- Anal secretions
- Rubbing
- Scratching



Behavioral Problems

- Soiling
 - Diagnosis
 - Causes
 - Treatment



Behavioral Problems

- Clawing and Scratching
 - Cause
 - Treatment



Horse Auditory Signals

- Neigh (separation)

https://www.youtube.com/watch?v=-Fby-7z_JpE

- Nicker (care-giving or soliciting)

<https://www.youtube.com/watch?v=qr6ZPTwA75w>

- Roar (stallion directed toward a mare)

- Snort (alarm/frustration call)

<https://www.youtube.com/watch?v=VtxecUYUH8A>

- Squeal (defensive greeting, hierarchies)

<https://www.youtube.com/watch?v=pwnOZyfEojE>

Horse Visual Signals

- Ears
- Mating Face in mare
- Pain

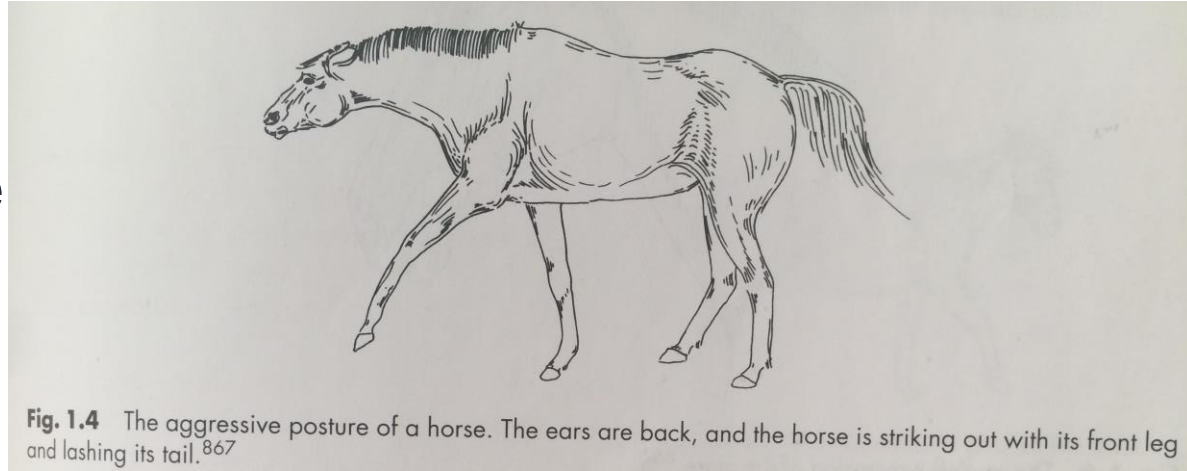


Fig. 1.4 The aggressive posture of a horse. The ears are back, and the horse is striking out with its front leg and lashing its tail.⁸⁶⁷

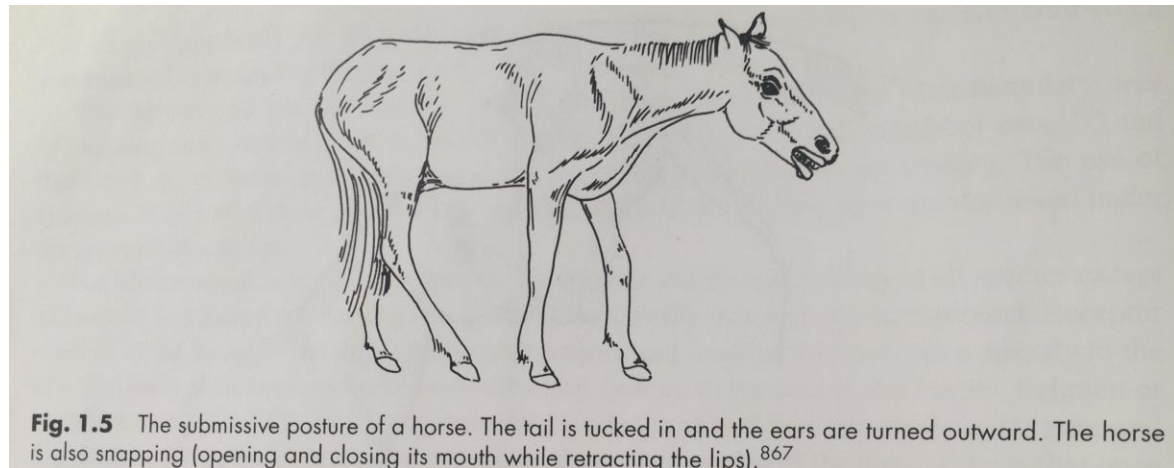


Fig. 1.5 The submissive posture of a horse. The tail is tucked in and the ears are turned outward. The horse is also snapping (opening and closing its mouth while retracting the lips).⁸⁶⁷

The Equine Pain Face

by Karina Bech Gleerup

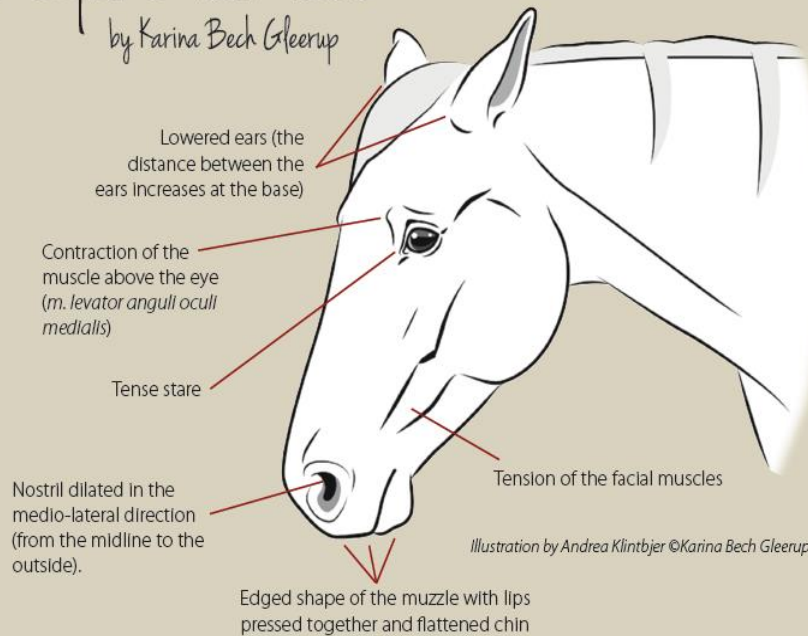


IMAGE ON RIGHT:

Can you spot the facial expressions of pain described in the illustration? This horse is in pain. (Photo courtesy Karina Bech Gleerup).

IMAGE BELOW LEFT:

The nostril dilated in the medio-lateral direction (from the midline to the outside) is one of the facial expressions of pain. (Photo courtesy Karina Bech Gleerup).

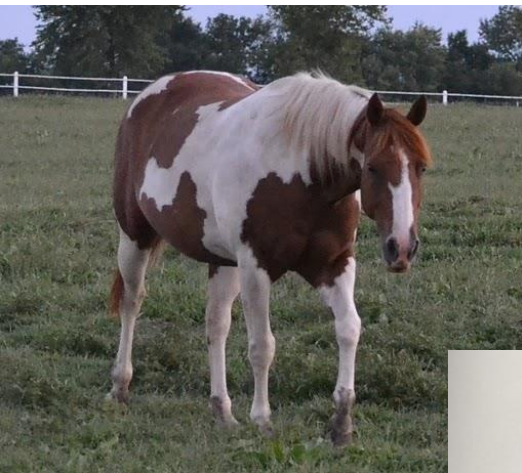
IMAGE BELOW RIGHT:

Can you spot the contraction of the muscle above the eye and the tense stare? This horse is in pain. Photo courtesy Karina Bech Gleerup).



Horse Posture

- Indicator of mood



<https://www.youtube.com/watch?v=X0huEJB9MG4>

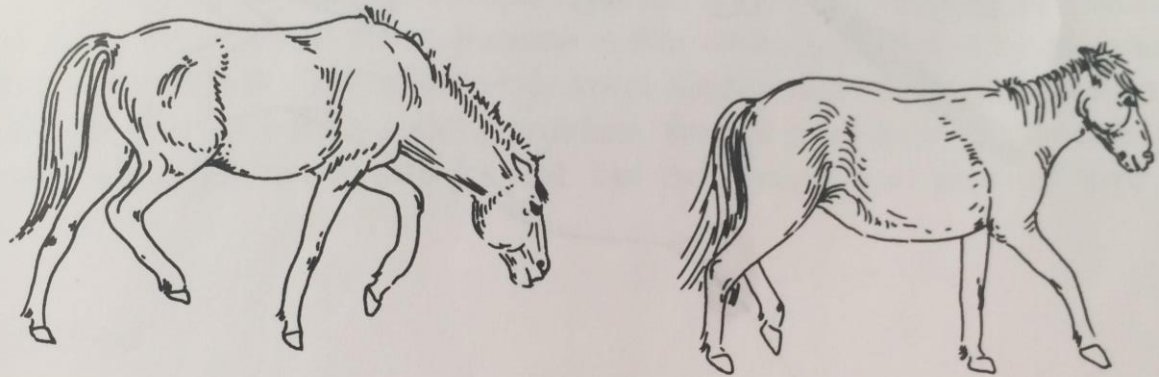


Fig. 1.8 Driving posture of the horse. The stallion, left, drives a mare. This behavior is also called snaking herding, or driving (rounding).⁸⁶⁷

Horse Olfactory Signals

- Flehmen response in stallions near urine of estrous mare.
- Manure used to find a way home.

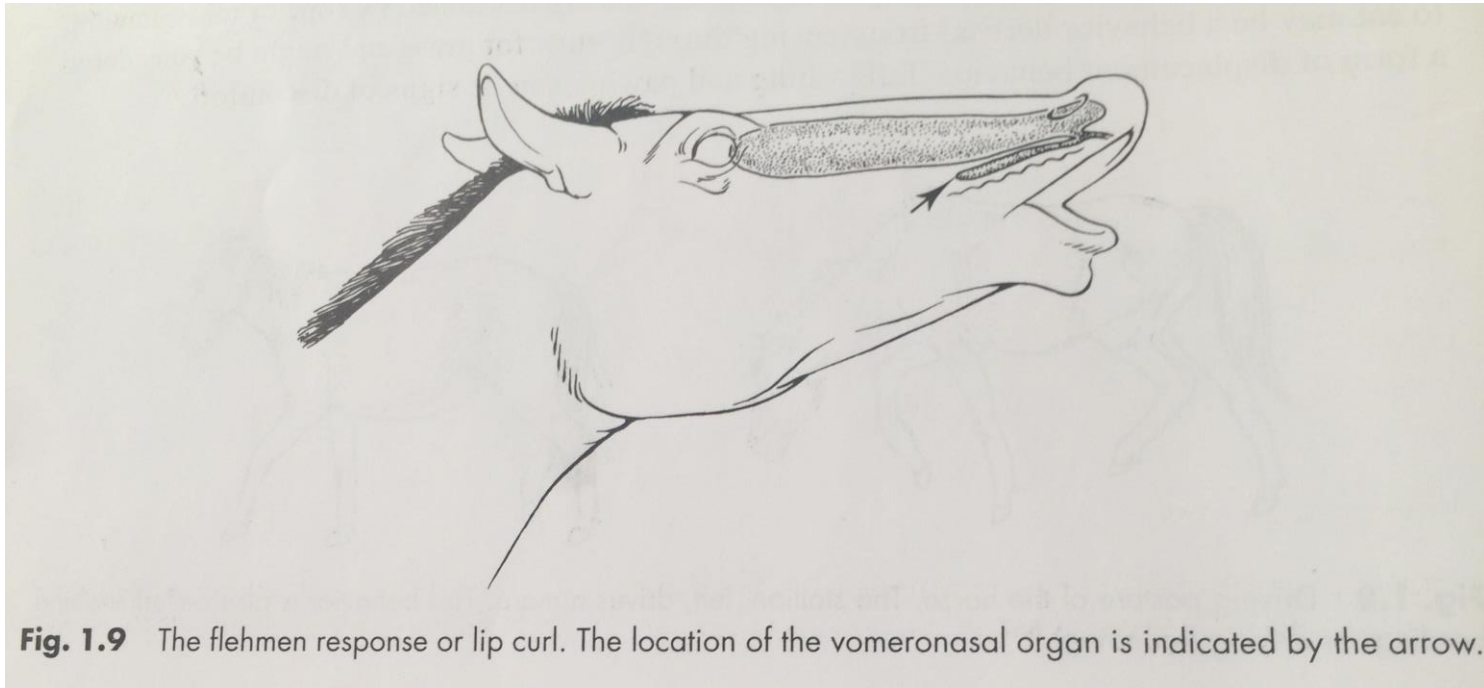


Fig. 1.9 The flehmen response or lip curl. The location of the vomeronasal organ is indicated by the arrow.

Pig Auditory Signals

- Most important means of communication in pigs.
- Common Noises
 - Grunt
 - Bark
 - Squeal



<https://www.youtube.com/watch?v=NR4P5G4aAj8>
(0:14)

Pig Visual Cues

- Visual signals not as important as other animals.
- Thermoregulation
 - Warm piglet sprawled out
 - Cold piglet crouch with legs under the body
- Tail (well-being)
 - Curled tails ?
 - Straight one?



<https://www.youtube.com/watch?v=jTXEnE37FyM>

Pig Olfactory Signals

- Boars can use pheromones to determine sexual receptivity of the sow.
- Females can identify intact males via androgen metabolites found in **saliva** and **preputial** secretions.
- Olfactory stimuli serve to identify pigs individually. Pigs prefer ventral body surface for sniffing.

<https://www.youtube.com/watch?v=VEO7JDEJheY>

Cattle and Sheep Signals



- Vocal communication in a prey species, like cattle commonly transmits information about safety or danger.
- Goats and cattle can distinguish conspecifics via urine.
 - Flehmen response used by males to determine females in estrus.



Grooming Behaviors (tactile)

- Pigs
- Horses
- Cattle



Grooming Behaviors



- Cats and Dogs
 - Common maternal behavior
 - Self-grooming important as adults
 - Allogrooming (maternal, **cohabited**)
- Feline grooming is an important part of daily activities.
 - Licking of the nose (**after gape**)
 - Licking of the lips (**after eating/drinking**).
- Feline face washing is a stereotyped behavior.

Body washing ?

<https://www.youtube.com/watch?v=uF0IH6ztAWc>

<https://www.youtube.com/watch?v=B9Qj7NlkXGM>

Disease detection via observation

- Manipulation of a painful area (escape attempts or attacks)
- Tense muscles in the painful areas
- In cattle: the grunt test / wither pinch test
- Lameness and colic in horses.
- Pressing the head against the wall and or/ changes in temperament (intracranial distress)



Disease detection via observation

- Decreases in activity or rapid tiring (heart disease)
- Straining to urinate (urethral obstruction)
- Head tilt of a dog
(otitis or vestibular problems)
- Anorexia (illness), good prognostic sign if an animal resumes feeding during treatment.

