



Third Edition

Genetics and the Behavior of Domestic Animals

Edited by
Temple Grandin



Genetics And The Behavior Of Domestic Animals

Alain Boissy, Hans W. Erhard



Genetics And The Behavior Of Domestic Animals:

Genetics and the Behavior of Domestic Animals Temple Grandin, Mark J. Deesing, 2013-04-22 Different tests have been developed for evaluating the temperament of cattle pigs and sheep and some studies appear to have conflicting results This may be due to confusion between the basic emotional systems of fear and separation distress panic Methods used for temperament tests can alter results such as how tightly an animal is restrained in a squeeze chute during temperament evaluation Animals with a more reactive fearful temperament will exhibit greater agitated behavioral reactions when suddenly confronted with novel objects Animals can be habituated to new things but learning is very specific Habituation to one type of strange object may not transfer to other types of objects Animals with smaller diameter leg bones and slender bodies may be more reactive fearful Facial hair whorl position is related to a vigilant temperament and it may be more evident in populations with more diverse genetic backgrounds

Genetics and the Behavior of Domestic Animals

Temple Grandin, 2022-07-03 Genetics and the Behavior of Domestic Animals Third Edition offers the latest and most valuable information on animal science and behavioral genetics carrying on the book's legacy since its original publication in 1998 This book synthesizes research from behavioral genetics and animal and veterinary science bridging the gap between these fields The objective is to show that principles of behavioral genetics have practical applications to agricultural and companion animals The continuing domestication of animals is a complex process whose myriad impacts on animal behavior are commonly under appreciated Genetic factors play a significant role in both species specific behaviors and behavioral differences exhibited by individuals in the same species Leading authorities explore the impact of increased intensities of selection on domestic animal behavior Rodents cattle pigs sheep horses herding and guard dogs and poultry are all included in these discussions of genetics and behavior making this book useful to veterinarians livestock producers laboratory animal researchers and technicians animal trainers and breeders and any researcher interested in animal behavior Genetics and the Behavior of Domestic Animals Third Edition is the most valuable resource for researchers and practitioners in animal and veterinary science animal behavior genetics ethology and similar fields Advanced undergraduate and graduate students in these disciplines will also benefit from the global expertise featured in this newest edition Provides full and thorough updates to all chapters ensuring dissemination of the latest data and research Synthesizes research from behavioral genetics animal science and veterinary literature Broaches fields of behavior genetics and behavioral research Includes practical applications of principles discovered by behavioral genetics researchers Covers many species ranging from pigs dogs foxes rodents cattle horses and cats

Genetics and the Behavior of Domestic Animals Temple Grandin, Mark J. Deesing, 2013-04-22 The partnership between humans and domestic animals is natural The human brain is hard wired to emotionally respond to animals Beginning with the domestication of wolves this chapter covers the process of domestication and reviews the early work of behaviorists and ethologists who refused to accept emotional states in animals Modern behavior research employs

methods developed by behaviorists and ethologists combined with neuroscience and genetics Emotional systems in the brain drive behavior Confusion between different emotional systems may explain conflicting findings in the behavior literature Behavior in an open field test may be motivated either by fear separation distress or novelty seeking Each emotion is controlled by separate subcortical systems A novel open field arena can frighten a prey species but it may activate seeking in a predator Genetics affects the strength of fear novelty seeking and separation distress Behavior is shaped by a complex interaction between genetics and experience

Genetics and the Behavior of Domestic Animals Per Jensen, Dominic Wright, 2013-04-22 In this chapter we begin by defining domestication as a genetic process whereby animals change phenotypically and genetically as a response to living under human supervision This has caused a convergent set of phenotypic modifications across numerous different species through a combination of relaxed natural selection increased human selection and correlated responses The genetic mechanisms underlying these processes are discussed in addition to genetic drift and inbreeding The driving types of mutations are dealt with as is the way in which genes are organized in the genome to give rise to a specific genetic architecture facilitating selection responses The different methods used to discover genes and mutations are divided into either top down approaches where one starts with the phenotype and uses mapping methods to find the causative genes or bottom up where the genetic polymorphism is the starting point and the phenotype the desired response variable A number of examples of single genes and mutations that have been coupled to behavioral variation are given among them genes showing pleiotropic effects on pigmentation and genes involved in regulation of the effects of neuropeptides Finally the relatively novel area of behavioral epigenetics is examined in particular with its possible relation to domestication effects

Genetics and the Behavior of Domestic Animals Kathryn Lord, Lorna Coppinger, Raymond Coppinger, 2013-04-22 The domestic dog has many phenotypic and behavioral forms In this chapter we describe five different kinds of dogs and how each has been derived We trace the background village dog adapting to the age of agriculture with the coincident transformation of human behavior to permanent settlement Over centuries this village dog has changed adapting to its different geographies and to local agricultural activities In tandem people began sorting through the village populations for dogs with appropriate behaviors and these eventually became the founding stock for breeding programs In recent centuries samples of these working and hunting breeds have been collected by kennel clubs and sexually isolated becoming at best historic representations of the working or hunting breeds More commonly they are used as pets or household dogs sometimes with sport competitions in the show or agility ring

Genetics and the Behavior of Domestic Animals Temple Grandin, Mark J. Deesing, 2013-04-22 Behavior is shaped by both genetics and experience nature and nurture This book synthesizes research from behavioral genetics and animal and veterinary science bridging the gap between these fields The objective is to show that principles of behavioral genetics have practical applications to agricultural and companion animals The continuing domestication of animals is a complex process whose myriad impacts on animal behavior

are commonly under appreciated Genetic factors play a significant role in both species specific behaviors and behavioral differences exhibited by individuals in the same species Leading authorities explore the impact of increased intensities of selection on domestic animal behavior Rodents cattle pigs sheep horses herding and guard dogs and poultry are all included in these discussions of genetics and behavior making this book useful to veterinarians livestock producers laboratory animal researchers and technicians animal trainers and breeders and any researcher interested in animal behavior Includes four new chapters on dog and fox behavior pig behavior the effects of domestication and horse behavior Synthesizes research from behavioral genetics animal science and veterinary literature Broaches fields of behavior genetics and behavioral research Includes practical applications of principles discovered by behavioral genetics researchers Covers many species ranging from pigs dogs foxes rodents cattle horses and cats

Genetics and the Behavior of Domestic Animals William M. Muir, Heng Wei Cheng, 2013-04-22 Many behaviors in poultry can be modified by genetic selection Selection of laying hens for maximum egg production had the unfortunate side effect of increased rates of beak inflicted damage on other birds Selective breeding has eliminated broodiness and has either increased or decreased other behaviors such as hysteria fearfulness appetite in broilers social dominance ability and damage to other birds Genetic selection can be used to reduce behaviors that cause welfare problems However it must be approached with caution to avoid unintended consequences that would be detrimental to welfare A calm docile bird that appears behaviorally calm may take longer for its heart rate to return to normal after it is frightened The use of group selection instead of single bird selection can be effectively used to reduce undesirable behaviors such as feather pecking and to maintain high egg production An entire group of birds is selected instead of selecting individuals

Genetics and the Behavior of Domestic Animals Jean Michel Faure, Andrew D. Mills, 2013-04-22 In these classic experiments quail chicks were selectively bred for the behavioral traits of fear and social reinstatement Over a period of 20 generations four separate genetic lines were created They were high and low fear and high and low social reinstatement The duration of tonic immobility was used as a measure of fear and social reinstatement was measured with a treadmill test In this test the time that a bird will walk on a treadmill to stay close to its flockmates is measured Since the publication of this chapter in 1998 many scientists have carried out with these genetic lines Duration of tonic immobility does not all measure all types of fear Fear maybe multidimensional because selection for tonic immobility has little effect on behavioral reactions to novelty More recent research has also discovered linked traits such as low social reinstatement birds have stronger ultradian rhythms

Genetics and the Behavior of Domestic Animals Lotta Rydhmer, Laurianne Canario, 2013-04-22 Research in behavioral genetics is important for pig welfare Consequences of the ongoing selection for high production on pigs behavior need to be studied as well as possibilities to select directly for changed behavior The Farm Animal Welfare Council's definition of welfare is based on five freedoms related to hunger and thirst discomfort pain injury or disease fear and distress and normal behavior All these freedoms are associated with pig

behavior Maternal behavior related to piglet survival and aggressive behavior of pigs kept in groups are especially important for welfare Pig breeding programs could be further developed by including behavioral traits relevant for welfare *Genetics and the Behavior of Domestic Animals* Temple Grandin, Mark J. Deesing, 2013-04-22 Over selection for production traits has caused animal welfare problems such as feather pecking in hens tail biting in pigs and overly aggressive animals In dogs over selection for appearance traits has caused neurological problems such as deafness Both feather pecking and tail biting may be displaced foraging behaviors because these behaviors are reduced by providing foraging materials such as straw Another problem is hunger in broiler breeder hens and breeding sows Animals that have been selected for rapid growth are also selected for a huge appetite If breeder animals eat to satiation they will become obese and have health problems High roughage feeds may improve welfare Researchers suggest that new genetic breeding tools could be used to select against harmful behaviors and still have a productive animal Breeders must avoid creating animals that will have poor welfare even when they are housed in the best environment *Genetics and the Behavior of Domestic Animals* Anna V. Kukekova, Lyudmila N. Trut, Gregory M. Acland, 2013-04-22 Dog domestication involved long term genetic selection for behavior The genetics centered view of domestication is supported by experimental selection of farm foxes *Vulpes vulpes* that began in the 1950s Selection of foxes separately for tame and for aggressive behavior has yielded two strains with markedly different genetically determined behavioral phenotypes Tame strain foxes communicate with humans in a positive manner and are eager to establish human contact Foxes from aggressive strains are aggressive to humans and difficult to handle Although selected solely for behavior changes in physiology morphology and appearance with significant parallels to characteristics of the domestic dog were observed in tame strain Ongoing research is focused on identification of molecular genetic mechanisms associated with selection of foxes for behavior Identification of behavioral loci in the fox genome in the region which is homologous to the region in the dog genome that differentiates dogs from wolves lead to the hypothesis that domesticated behavior in dogs and foxes may have similar genetic bases *Genetics and the Behavior of Domestic Animals* Alain Boissy, Hans W. Erhard, 2013-04-22 This chapter provides an overview of the current behavioral and cognitive aspects of emotions in animals and explore the impacts of emotional experiences on the animal s adaptation to its current challenging circumstances There is evidence that animal welfare results from the animal s perception of its environment and its background The chapter is structured in four complementary sections The first one addresses the nature of emotions that the animals can feel which is validated from commonalties in physiological and behavioral responses to dangers across and within species The second section presents advanced features of the relationships between cognition and emotions originally studied in humans which are now developed in animals to better access their affective states The third section is devoted to the relevance of the personality concept as resulting from both genetics and developmental experience for assessing animal individuality in emotional behaviors and stress The last section explores some approaches that can alleviate fear and induce

positive affective states with the potential to mitigate detrimental stress induced effects on the welfare and health status by eliciting positive emotions in animals

Genetics and the Behavior of Domestic Animals Mark J. Deesing, Temple Grandin, 2013-04-22 Since the late 1990s there has been a substantial increase in horse behavior genetics research This chapter reviews recent work in molecular genetics pre and postnatal effects on behavior the relationship between hair whorls and temperament and lateralization in the nervous system These factors are critical to understanding individual differences Advancements in molecular genetics have identified genes associated with novelty seeking and gaited horse traits Foal imprint training procedures are reviewed and a gentle method for training foals is presented Finding appropriate methods for reducing fearfulness in horses has important practical implications High hair whorls are associated with reactivity but differences are less apparent in calm breeds Behavioral asymmetry is a fundamental feature of animal brains Left eye systems control avoidance behavior and right eye systems control approach behaviors An understanding of the cognitive and perceptual abilities is necessary to ensure horses receive proper training handling management and care

Genetics and the Behavior of Domestic Animals Peter J. Chenoweth, Antonio J. Landaeta-Hernández, Cornelia Flöercke, 2013-04-22 This chapter describes the reproductive and maternal behaviors of different livestock species cattle horses pigs goats and water buffalo with an emphasis on those traits which are genetically conserved All of the species discussed are polygynous and promiscuous and females undergo estrous cycles in which males are mainly attracted by movement and posture cues Major differences in both reproductive and maternal behaviors are observed between prey and predator type species Genetic variation also occurs within species with breed and line differences being observed in all of the behaviors discussed allowing selection for optimal reproductive and maternal behaviors However modern livestock systems which emphasize production traits can diminish reproductive and maternal traits and increase detrimental behaviors such as piglet crushing and savaging in sows With modern selection tools greater emphasis on positive reproductive and maternal traits is achievable within the context of profitable production

The Behavior of Domestic Animals Benjamin L.

Hart, 1985 Social organization communication and aggressive behavior Sexual behavior of females and males Maternal behavior and mother young interaction Feeding and eliminative behavior Genetic influences on behavior Early experience and behavior Animal learning Hormonal influences on behavior Contributions of behavioral science to issues in animal welfare

The Ethology of Domestic Animals Per Jensen, 2017-09-27 Completely updated revised and redesigned in colour throughout this classic bestselling text continues to provide a concise introduction to the important fundamentals of animal behaviour from genetics physiology motivation learning and cognition through to social and reproductive behaviour abnormal behaviour and human animal interactions This text remains a highly respected essential resource for both students and lecturers in animal and veterinary science animal welfare zoology and psychology

Domestic Animal Behavior for Veterinarians and Animal Scientists Katherine A. Houpt, 2024-07-11 Fully updated revision of a classic text of fering a

thorough understanding of the normal behavior of domestic animals The Seventh Edition of Domestic Animal Behavior for Veterinarians and Animal Scientists is a fully updated revision of this popular classic text offering a thorough understanding of the normal behavior of domestic animals Maintaining the foundation of earlier editions chapters examine key behavior issues ranging from communication to social structure The Seventh Edition adds enhanced coverage of behavioral genetics animal cognition and learning considering new knowledge and the very latest information throughout Each chapter covers a wide variety of farm and companion animals including dogs cats horses pigs sheep cattle and goats Major additions are chicken and donkey behavior as well as the microbiome The cognitive skills of the different species are discussed in the learning chapter Each chapter covers a particular behavior subdivided by species The information has been updated using information published in the past five years To aid in reader comprehension and assist in self learning a companion website provides review questions and answers and the figures from the book in PowerPoint Sample topics covered in Domestic Animal Behavior for Veterinarians and Animal Scientists include Communication patterns perception vocalization visual signals social behavior sleep and activity patterns and detection of emotions in others Maternal behavior pain and fear induced aggression feeding habits and behavioral problems such as cribbing offspring rejection and anxiety Aggression and social structure stereotypic behavior free ranging versus confined behavior and maternal behavior such as recognizing the young Sexual behavior development of behavior and sleep behavior including ultradian circadian annual and other rhythms Ingestive behavior food and water intake hyperactivity and narcolepsy and overall learning behavior The role of genetics the environment and the microbiome in behavior The Seventh Edition of Domestic Animal Behavior for Veterinarians and Animal Scientists is an essential reference for students of animal science and veterinary students as well as qualified veterinarians and animal scientists seeking a more thorough understanding of the principles of animal behavior

Library of Congress Subject Headings Library of Congress,2013 **Domestic Animals #b Genetics and Behavior** Carmichael J.A Wallace,1998 **The Behaviour of Domestic Animals** Elsayed Saad Eldin Hafez,1975

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