

試験開始の合図があるまで、この問題用紙の中を見てはいけません

令和7年度個別学力検査(後期日程)

小 論 文

(共同獣医学課程)

試験時間 90分

注意事項

- 1 問題用紙はこの表紙と2枚目の白紙を含めて4枚です。
- 2 この問題用紙のほかに、解答用紙が2枚、下書き用紙(色のついた用紙)が1枚(両面)あります。
- 3 解答開始の合図の後、解答用紙の所定欄に受験番号を記入すること。
- 4 解答は、解答用紙の所定欄に記入すること。うら面に記入したものは採点しない。
- 5 問題用紙及び下書き用紙は、持ち帰りなさい。

問題. 以下の英文を読んで、問いに答えなさい。

Domestication Generally

Are domesticated strains separate species (either from one another, or from their wild ancestors)? The answer generally is “no,” under the conceptual framework of the Biological Species Concept. Breeds typically are interfertile and intercross if given the opportunity. When domesticates are sympatric with populations of the parent wild species (if the latter still persist), gene flow generally can occur. When is an animal truly domesticated? Hard definitions are elusive because domestication is a continuous transition, attributes differ by species, and genes and environment interact to produce selectable characters that may vary with circumstance. However, an interconnected and characteristic set of modifiable traits involving physiology, morphology and behavior are often associated with domestication. Critically, all domesticates manifest a remarkable tolerance of proximity to (or outright lack of fear of) people. Reproductive cycle changes such as polyestrousness and adaptations to a new (and often poorer) diet are typical. Common physical and physiological recurrences among domesticated mammals include: dwarfs and giants, piebald coat color, wavy or curly hair, fewer vertebrae, shorter tails, rolled tails, and floppy ears or other manifestations of neoteny (the retention of juvenile features into sexual maturity). Behaviorally too, domestication is not a single trait but a set of traits, comprising elements affecting mood, emotion, affiliative behavior, and social communication that all have been modified in some way.

The appreciable metabolic and morphological changes that often accompany behavioral adaptation to the human environment usually lead to a significant dependence on humans for food and shelter. However, domestication should not be conflated with taming. Taming is conditioned behavioral modification of an individual; domestication is permanent genetic modification of a bred lineage that leads to, among other things, a heritable predisposition toward human association. And domestic animals need not be “tame” in the behavioral sense (consider a Spanish fighting bull) and, conversely, wild animals can be quite tame (consider a hand-raised cheetah or tiger). A domestic animal is one whose mate choice is influenced by humans and whose tameness and tolerance of humans is genetically determined. Controlled breeding amounts to prezygotic selection, a critical element to domestication (because captive breeding allows for the strongest, most direct artificial selection). However, an animal merely bred in captivity is not necessarily domesticated. Tigers, gorillas, and polar bears breed readily in captivity but are nevertheless not “domesticated.” Likewise, Asian elephants are wild animals that with taming manifest outward signs of domestication, yet their breeding is not human controlled and thus they are not true domesticates.

Domestication of Dogs

The domestication of dogs and cats (today's two most popular companion animals) was a bit different from the barnyard animals. And although Darwin began *Variation* with a discussion of the dog and cat, the two could hardly be more different from each other (or from contemporary barnyard domesticates) in temperament, utility, and evolutionary origin. Farm animals were food items (“walking larders”) brought into the human sphere at the transition point from hunting-gathering to agriculture. Dogs, the earliest domesticate, proved useful as guards and as hunters for the hunting-gatherers, and perhaps offered necessary lessons for subsequent domestication of other species. By contrast, cat domesticates arose much later (~10,000 years before present), after humans built houses, farms, and settlements.

Domestication of Cats

The domestication of cats took a different trajectory. Wildcats are improbable candidates for domestication. Like all felids, wildcats are obligate carnivores, meaning they have a limited metabolic ability to digest anything except proteins. Cats live a solitary existence and defend exclusive territories (making them more attached to places than to people). Furthermore, cats do not perform directed tasks and their actual utility is debatable, even as mousers. [In this latter role, terrier dogs and the ferret (a domesticated polecat) are more suitable.] Accordingly, there is little reason to believe an early agricultural community would have actively sought out and selected the wildcat as a house pet. Rather, the best inference is that wildcats exploiting human environments were simply tolerated by people and, over time and space, they gradually diverged from their “wild” relatives. Thus, whereas adaptation in barnyard animals and dogs to human dominion was largely driven by artificial selection, the original domestic cat was a product of natural selection.

breeds:品種 sympatric:同所性の elusive:困難 attributes:特性、属性 polyestrousness: 1年に発情期が複数回あること(多発情) recurrences:再び起こること traits:形質 appreciable:顕著な taming:飼い慣らし、馴致 heritable predisposition:遺伝的素因 prezygotic:受精前の barnyard animals:家畜 Darwin:ダーウィン、進化論の著者 larders:食料庫、備蓄食料 trajectory:軌跡、道筋 mousers:ネズミを捕る動物

英文出典: Driscoll, C.A. et al. 2009, PNAS vol. 106, 9971-9978, 一部抜粋・改変)

- 問1. この英文記事は動物の家畜化について述べている。これを読んで、著者の考える家畜化の重要な2つの要素を挙げ、500字以内で説明しなさい。
- 問2. 著者は、猫の家畜化は特殊な例であると考えているが、その理由を犬と比較し100字以内で説明しなさい。
- 問3: 本文の内容を踏まえて、今後100年以内に食用として新たな動物を家畜化することができるか否か、理由も含め、あなたの考えを400字以内で述べなさい。