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COMPARISON CATTLE AND RAT NUCLEOTIDES VIA MULT ALIN

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Abstract
This article compares the nucleotide similarities and differences between two mammals using the Mult alin tool. In the experience, it has been taken nucleotides of cattle (*Bos taurus*) and Wistar rat (*rattus norvegicus*). For this, we used the data available in the NCBI (National Center of Biotechnology Information) database. We can use the obtained results in polymerase chain reaction.

Keywords: cow (*Bos taurus*), Wistar rat (*rattus norvegicus*), NCBI (National Center of Biotechnology Information), Mult alin

Introduction

Mammals have remarkable biodiversity and have shown extreme flexibility in eco-morphology, physiology, life history and behavior throughout their evolutionary history. Clearly, mammals play an important role in ecosystems by providing essential services such as regulation of insect populations, seed dispersal, and pollination, and act as indicators of overall ecosystem health. However, the macroecological and macroevolutionary processes that underlie past and present patterns of biodiversity have only begun to be studied at a global scale. Also, in the face of a global extinction crisis, it is essential to understand these processes so that this knowledge can be used to prevent future loss of biodiversity and loss of ecosystem services. (Kate E. Jones1 and Kamran Safi1, 2011). Some researchers opened that closely related animals are assumed to be similar in body size, the degree of similarity has not been examined across the taxonomic hierarchy. Furthermore, little is known about the variation or consistency of body size patterns over geographic space or evolutionary time. They use a dataset of terrestrial, sessile mammals to identify and compare patterns across body size spectrum, taxonomic hierarchy, continental space, and evolutionary time. They use a variety of statistical methods, including sib-sib regression, phylogenetic autocorrelation, and nested ANOVA. For mammals larger than about 18 g, we find very high size similarity (heritability) among inbred species; the result is consistent across the size spectrum. However, for mammals up to about 18 g, there is no significant correlation between body sizes of inbred species. They believe that life history and ecological parameters are so tightly constrained by small-scale allometry that animals can adapt to new environmental conditions only by changing body size.

The overall size distributions for each continental fauna and the most diverse orders are quantitatively similar for North America, South America, and Africa, but are nearly non-overlapping in species composition. Differences in order composition are visible for quantitative differences between continents. Body size is highly conserved for most mammalian orders, although there is extensive overlap at all levels of the taxonomic hierarchy. The body size distribution for land mammals was probably established at the beginning of the Tertiary, and it has not changed significantly over the last 50 million years and across the major continents. Lineages have diversified to exploit environmental opportunities, but only within limits set by allometric, ecological, and evolutionary constraints (Felisa A Smith 1, 2004).

MATERIALS AND METHODS

In this article we use Cattle (*Bos taurus*) is a species of even-toed ungulate in the family *Bovidae* (>EG709277.1 nbm14d03.y1 Cow lens. Unnormalized (nbm) Bos taurus cDNA clone nbm14d03 5', mRNA sequence), Bos taurus (B. taurus), a member of the Bovidae family, consists of several hundred different breeds and forms the main part of domestic beef and dairy cattle distributed in America and Europe. Of these many breeds, several of the most common, including Holsteins and Ayrshires, are found in Wisconsin. Characteristic features of this family include: paraxonic arrangement of toes, fused metapodials (cannon bone), presence of true horns, four-chambered stomach, absence of upper incisors and canines, and general hypsodont tooth morphology typical of grasshoppers (Feldhammer 1999). .

Due to the amount of variation that exists between breeds, specific morphological characteristics should be provided tentatively. Attempts have been made to focus on breeds found in Wisconsin, primarily the Holstein, and the resulting data may not accurately represent all breeds of B. taurus. The average height at withers and nose to tail for Holstein cattle studied was 58-59 inches and 95 inches, respectively. -102 inches. Weight averaged 1,500 to 1,900 pounds, but there was significant variation among females at different stages of lactation. There are many color variations among species, with a common pattern of black or tan and white. Color patterns are unique to each individual, allowing for easy identification (Point, 2003).

Norway rat (*Rattus norvegicus*) is a species of rodent in the family *Muridae* that is widely used as an experimental model organism (>AH011206.2 Rattus norvegicus Pmca3 gene, complete sequence) Both of nucleotides of organisms compared via Mult Alin tool. The laboratory rat was the first mammal domesticated for research purposes. It is descended from wild Norway rats, Rattus norvegicus, which, despite their name, originated in Asia. Extremely adaptable, these rodents now live in almost

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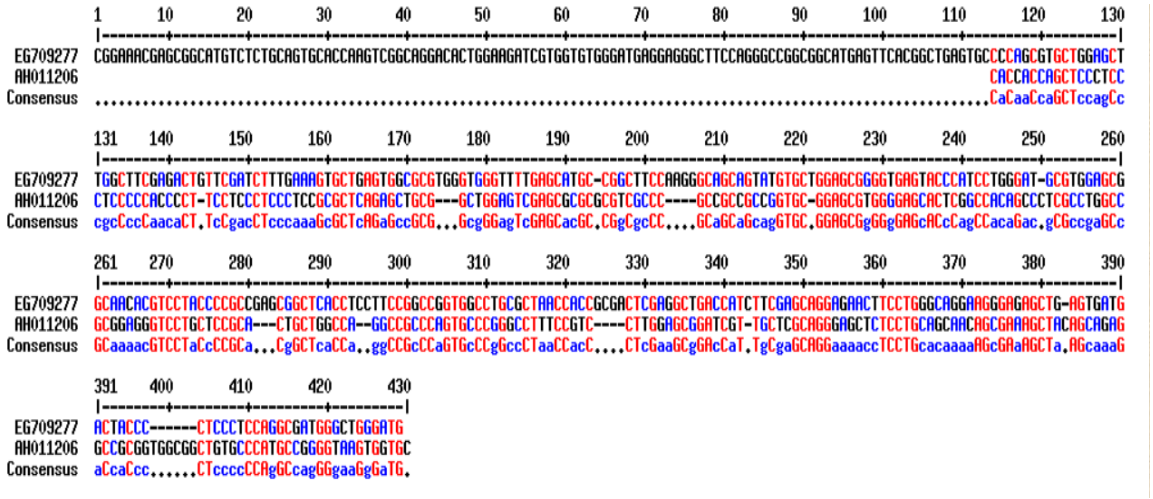
every environment on Earth, especially near human settlements where they are often seen as pests. Laboratory rats grow in captivity and their domestication has produced many inbred and inbred lines that are used for a variety of purposes, including medical testing and behavioral studies. Differences between wild Norway rats and their laboratory counterparts were first noted in the early 20th century, leading some researchers to later question its value as a model organism. Although these views are unfounded, the advanced domestication of laboratory rats suggests that continued study of wild rats may benefit the wider research community (Klaudia Modlinska Is a corresponding author, 2020).

RESULTS AND DISCUSSIONS



Comparison cattle and rat nucleotides via Mult Alin tool.

There are nucleotide similarities compared from 110 to 430 bp. In the obtained result above shows nearly same nucleotides between 220 and 230 bp. As the same result has been shown in this picture, between 270 and 280 bp. However, Adenine and Cytosine of cattle nucleotide has been changed in Guanine and Thymine in rat nucleotides. Nucleotides 131 to 140 bp are shown to be highly dissimilar. It is also shown between 391 and 400 bp.

We remind you that taking for 40 to 60% GC content with a 3' primer ending in G or C to enhance binding. This is known as the GC Clamp. Bases G and C have stronger hydrogen bonding and help stabilize the primer and not to have too many repeating G or C bases, as this can lead to primer-dimer formation. A good length for PCR primers is usually 18-30 bases. Specificity generally depends on length and annealing temperature. The shorter the primers, the more effectively they bond or anneal to the target. Since Tm depends on the length, it is important to keep the primers at the

shorter end. Bases also affect Tm, G and C, resulting in higher melting temperatures than A and T. Avoidance of secondary structure regions and a balanced distribution of GC-rich and AT-rich domains is essential. No repetition of 4 or more identical bases or dinucleotides (eg, ACCCC or ATATATAT) is required.

We conclude and give an overall characteristic for both mammals that are covered with hair or fur. They are warm-blooded (that is, their internal body temperature is maintained at a constant level regardless of external conditions). They are usually born alive and relatively well developed, growing in a special organ in the mother's body called the uterus. The time spent developing in the womb before birth is called the gestation period, and its length varies from species to species. After birth, babies are fed with milk produced by mammary glands. They have larger and more complex brains than any other animal group. It also provides a frame of reference for studying the similarities and differences between members of the animal kingdom and how these characteristics relate to the environment and the lifestyles of individual species.

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