

global Thoroughbred horse population” (doi:10.1038/s41598-019-57389-5), which contained several noteworthy points. First, the introduction states the following:

“the increasing use of small numbers of popular sire lineages, which may accelerate a loss of genetic diversity.”

“Inbreeding is often a consequence of selection, which in managed animal populations tends to be driven by preferences for cultural, aesthetic or economically advantageous phenotypes.”

“In Thoroughbred horse breeding selection of potential champion racehorses is a global multi-billion-dollar business, there is no systematic industry-mediated genomic selection or genetic population management. We hypothesised that the market-driven emphasis on highly valuable pedigrees and the common practice of inbreeding to successful ancestors in attempts to reinforce favourable variants in offspring has resulted in a global reduction in genetic diversity.”

The foregoing directly relate to the attempt to implement the mating cap referred to in “2.20 American Crisis Awareness” below. The following is from the conclusion of this paper:

“We report here a highly significant increase in inbreeding in the global Thoroughbred population during the last five decades, which is unlikely to be halted due to current breeding practices.”

### **2.18 Bottleneck Effect**

One of the existing papers cited in the latter paper above is titled “Founder-specific inbreeding depression affects racing performance in Thoroughbred horses” (doi:10.1038/s41598-018-24663-x), stating the following:

“Population bottlenecks that occurred during the ancestry of the Thoroughbred, including the domestication of the horse, and the foundation of the breed, might have increased the frequency of deleterious alleles through genetic drift. It is also possible that continued inbreeding of the Thoroughbred population over the past 300 years has inadvertently increased the frequency of deleterious variants in the population, potentially through hitchhiking on selective sweep regions.”

To put it simply, the foregoing means that “due to the bottleneck effect caused by 300 years of continuous, thoughtless inbreeding, the number of individuals carrying harmful genes increased.” For the “bottleneck effect,” please refer to Chart 51.

This means that the proportion of colors among the balls spilling out of a bottle with such a narrow neck changes from the original proportion of colors among all the balls inside the bottle. In other words, even if there were many, many more types of colors inside the bottle than shown in this figure, the repeated bottleneck effect causes the number of types to steadily decrease. Once they decrease, there is no going back. If you replace these balls with genes, you can see how this mechanism leads to a decline in genetic diversity.

Furthermore, the June 29, 2022 article in BLOODHORSE “Study Links Gene to Soundness in

(Chart51)

