

DOMESTICATION

Domesticated: Evolution in a Man-Made World. By Richard C. Francis. 2016. W.W. Norton. (ISBN-13: 978-0393353037). 496 pp. Paperback, \$17.95.

A pair of green eyes is imploring me to stop typing and head to the kitchen to open a can of cat food. That this mass of purring feline is related to a once fearsome predator of early humans is incongruous at first thought. Using genetic and fossil history, author Richard Francis examines the evolutionary journey of domestication taken by our cats and by dogs, rodents, and other now tamed animals, including humans.

As can be seen today in the multitude of existing dog breeds, humans select for single traits by manipulating reproduction, and this genetic interference can effect changes in other, seemingly unrelated traits. Francis cites the

experiments of Russian geneticist Dmitry Belyaev in the 1940s. Belyaev selected for tameness in wild foxes, some of which, by the sixth generation, demonstrated the desire for human companionship. The selection for this trait of tameness resulted in the selection of other traits, such as floppy ears, curled tails, and different hair colors. This is an example of “pleiotropy,” in which one gene that is selected for affects the selection of other traits. How these traits, which seem to be unrelated, are in fact related needs to be viewed in terms of the “hypothalamic-pituitary-adrenal” (HPA) axis, which determines the response to environmental stress. Stress-related hormones seem to be less pronounced in foxes for which tameness is selected. The physiological changes in the HPA axis in animals in which tameness is selected for correlate with some juvenile traits being preserved and new traits, such as skeletal changes, being introduced. These are restricted changes, according to Francis, who describes them as “tinkering at the margins of what has previously evolved. The Pekingese is a tinkered wolf, not redesigned wholesale from its wolf ancestors” (p. 5).

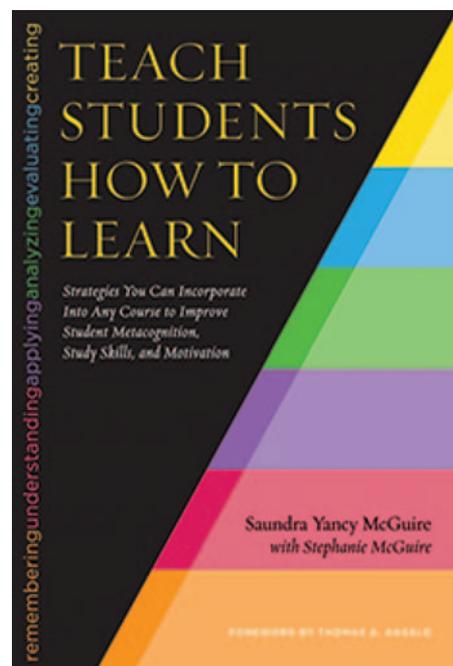
The journey undergone by our domesticated animals – such as dogs, cats, rodents, pigs, cattle, sheep, goats, reindeer, camels, and horses – is discussed by Francis using genetic and historical evidence. In each chapter, he compares the animal we currently know to its ancestral relative and how environmental and genetic factors interacted in its current manifestation. The domestication of humans is the topic of the final chapters. Francis poses the question of humans selecting for domestication and how this has affected us as a species.

I would highly recommend this book for an AP biology class or an undergraduate biology class. Francis supplies rich evidence of evolutionary processes and ties in human evolution. The examples he provides, as well as his extensive footnotes and dense, insightful appendices, can

facilitate more profound understanding of evolutionary processes.



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LEARNING STRATEGIES

Teach Students How to Learn: Strategies You Can Incorporate into Any Course to Improve Student Metacognition, Study Skills, and Motivation. By Saundra Yancy McGuire with Stephanie McGuire. 2015. Stylus Publishing. (ISBN 9781620363164). 288 pp. Paperback, \$32.00.

Most of us have a fixed mindset about intelligence. For a variety of reasons, we expect or act on the assumption that some of our students are not capable of learning advanced material,