Tárgytematika / Course Description
Genetic basics of animal husbandry

N_DMA62

Tárgyfelelős neve / Teacher's name: Dr. Tempfli Károly
Félév / Semester: 2024/25/1
Beszámolási forma / Assesment: Vizsga
Tárgy heti óraszáma / Teaching hours(week): 0/0/0
Tárgy féléves óraszáma / Teaching hours(sem.): 14/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

Genetic basics are presented with a focus on domestic animal breeding, both generally and specifically for farm animal species. Our aim is to highlight genetic discoveries that can be efficiently utilized in students' future research. The course emphasizes the applicability of genetic methods and statistical analysis. It builds on genetic knowledge acquired in previous undergraduate studies and is closely connected to molecular genetics and animal breeding.

TANTÁRGY TARTALMA / DESCRIPTION

1	The structure of nucleic acids; DNA replication and transcription; central dogma
2	The process of translation; the genetic code
3	Contemporary gene definition and the structure of genes
4	Gene and genome of prokaryotes and eukaryotes
5	The ideal population; the Hardy–Weinberg equilibrium
6	Mutation as a source of variability and its influence on genotype frequency
7	Genetic drift; bottleneck effect; effective population size; genetic distribution of populations
8	Definition of fitness; absolute and relative fitness
9	The significance of the h^2 value and its application in animal breeding; correlation and regression
10	Selection: levels and types of selection; selection models; connection between selection and drift
11	Genetic polymorphism of natural populations
12	Quantitative genetics; calculation of genetic variance, artificial selection

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Oral examination or writing a review paper, graded on a 5-point scale.

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Simm, G., Pollott, G., Mrode, R., Houston, R., Marshall, K. (2020): Genetic Improvement of Farmed Animals. CABI Publishing, Wallingford, UK, 484 pp.
Spangler, M.L. (2022): Animal Breeding and Genetics. Springer, New York, NY, USA, 418 pp.

AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL

Watson, J.D., Barry, A. (2003): DNA: The Secret of Life. Knopf, New York, NY, USA, 464 pp.