
Postgraduate Certificate in Livestock Genomic Breeding

Ethical Issues in Genomic Breeding

Allele: A variant form of a gene. Each parent contributes one allele for a particular gene to their offspring.

Biotechnology: The use of biological systems, organisms, or derivatives to develop products or improve processes.

Cas9: A type of CRISPR-associated protein that acts as a pair of molecular scissors to cut DNA at a specific location.

CRISPR: Clustered Regularly Interspaced Short Palindromic Repeats. A technology used to edit genes by precisely modifying DNA sequences.

Designer Babies: Offspring whose genetic makeup has been selected or modified to ensure specific traits.

Embryo: An early stage of development before birth or hatching, in mammals, birds, and other animals.

Ethical Issues in Genomic Breeding: Concerns and dilemmas related to the moral implications of using genetic techniques in livestock breeding.

Gene Editing: The process of making precise changes to the DNA of a cell or organism.

Genetic Diversity: The variety of genes within a species or population, which enables adaptation to changing environments.

Genetic Engineering: The deliberate modification of the characteristics of an organism by manipulating its genetic material.

Genetic Modification: Altering the genetic material of an organism using biotechnology.

Genetic Testing: Analyzing a person's DNA to identify changes or mutations that may be associated with genetic disorders.

Genetics: The study of genes, heredity, and genetic variation in living organisms.

Genome: The complete set of genes or genetic material present in a cell or organism.

Genomic Selection: A breeding method that uses genomic information to predict the genetic merit of individuals.

Genotype: The genetic makeup of an organism, as opposed to its physical characteristics (phenotype).

Heritability: The proportion of observed variation in a particular trait that can be attributed to genetic factors.

Heterozygous: Having two different alleles for a particular gene.

Homozygous: Having two identical alleles for a particular gene.

Marker-Assisted Selection: A breeding method that uses genetic markers to assist in selecting for specific traits.

Mutation: A permanent change in the DNA sequence of a gene.

Phenotype: The observable characteristics or traits of an organism, resulting from the interaction of its genotype with the environment.

Recombinant DNA: DNA that has been artificially combined from different sources.

Selective Breeding: The process of choosing and mating individuals with desirable traits to produce offspring with those traits.

Single Nucleotide Polymorphism (SNP): A variation at a single position in a DNA sequence among individuals.

Transgene: A gene that has been transferred from one organism to another.

Transgenic: Refers to an organism that contains genes from another species.

Whole Genome Sequencing: Determining the complete DNA sequence of an organism's genome.

Zygote: A fertilized egg cell formed by the union of a sperm and an egg.

These terms are essential for understanding the ethical issues surrounding genomic breeding in livestock, as they provide the foundational knowledge required to engage with the complexities of genetic technologies and their implications. By familiarizing oneself with these terms, individuals can better navigate the ethical considerations involved in utilizing genomic breeding techniques in the livestock industry.