



Genetics in the Animal Industry



Objective: Discuss the importance of selection and genetics in alternative animals.


How do genetics affect the animal industry?



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Importance of Genetics

<p>Natural Selection</p> <ul style="list-style-type: none"> - "Survival of the Fittest" - If the animal has characteristics to survive, it reproduces - No human intervention 	<p>Artificial Selection</p> <ul style="list-style-type: none"> - Humans control which animals reproduce based on presence of desirable characteristics
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Importance of Genetics

<p>Natural Selection</p> 	<p>Artificial Selection</p> 
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Which do we use in Agriculture?




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Importance of Genetics


Why use artificial selection in agriculture?


- More rapid improvement of livestock
- More ability to control and perpetuate desired characteristics
- Agricultural products are higher quality and more consistent



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Importance of Genetics


<p>Phenotype</p> <p>Observable, physical characteristics</p>	<p>vs</p> 	<p>Genotype</p> <p>An organism's genetic code represented by a pattern of letters (genes)</p>
Phenotype= Black		Genotype= BB or Bb



B. Recognize & describe the interrelationship between genetics and the environment

Heredity vs Environment


- **Heredity**= the POTENTIAL an animal has to show specific traits or performance due to it's genetic information



Secretariat
(1973 Triple Crown Winner)

Bold Ruler



Something Royal




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Heredity vs Environment

- **Environment**= The EXTERNAL conditions that affect the traits and performance of an animal

Desert Range or lush green pastures?



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Heredity vs Environment


Environment

+

Genetics
(Genotype)

=

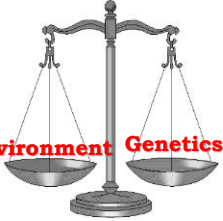
Traits & Performance
(Phenotype)




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Heredity vs Environment

- Some traits are influenced more by environment
- Other traits are influenced most by genetics




Environment **Genetics**



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What characteristics do farmers and ranchers look for when selecting which animals they breed?



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Identifying Genetic Strengths

- Breeders identify genetic strengths based upon their goals
 - Examples: Meat production, Temperament, Coat Color, etc.
- Not every animal should pass on it's genetics
 - In the pet industry, these animals are sterilized (spayed or neutered)
 - In the livestock industry, they are usually raised for terminal markets





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Identifying Genetic Strengths

Example:
 A Standard Poodle dog breeder with the goal of raising show dogs will NEVER breed a poodle that is not solid colored because AKC breed standards only recognize solid colored Standard Poodles.

However... A Standard Poodle dog breeder with the goal of raising family pets will breed "parti" (2 colored) poodles because people like them and sometimes pay more for their unique coloring.





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Identifying Genetic Strengths Alternative Animals

Genetic preferences vary **according to breed standards and purpose** of animals. Genetic strengths for alternative animals may include:

- Correct size
- Correct coat texture & color
- Correct structure
- Litter Size/number of young
- Mothering ability
- Growth rates
- Muscling
- Temperament
- Birthing Ease
- Uniqueness (especially pets)
- Free from genetic defects/diseases



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Identifying Genetic Strengths Alternative Animals

Since there is so much variation in desirable genetic traits among species, research what the desirable genetic traits are for your chosen alternative animal species!

Record your answers in *Section 2: Genetics and Selection* of the *Alternative Animal Production Worksheet*.

