INTERNATIONAL

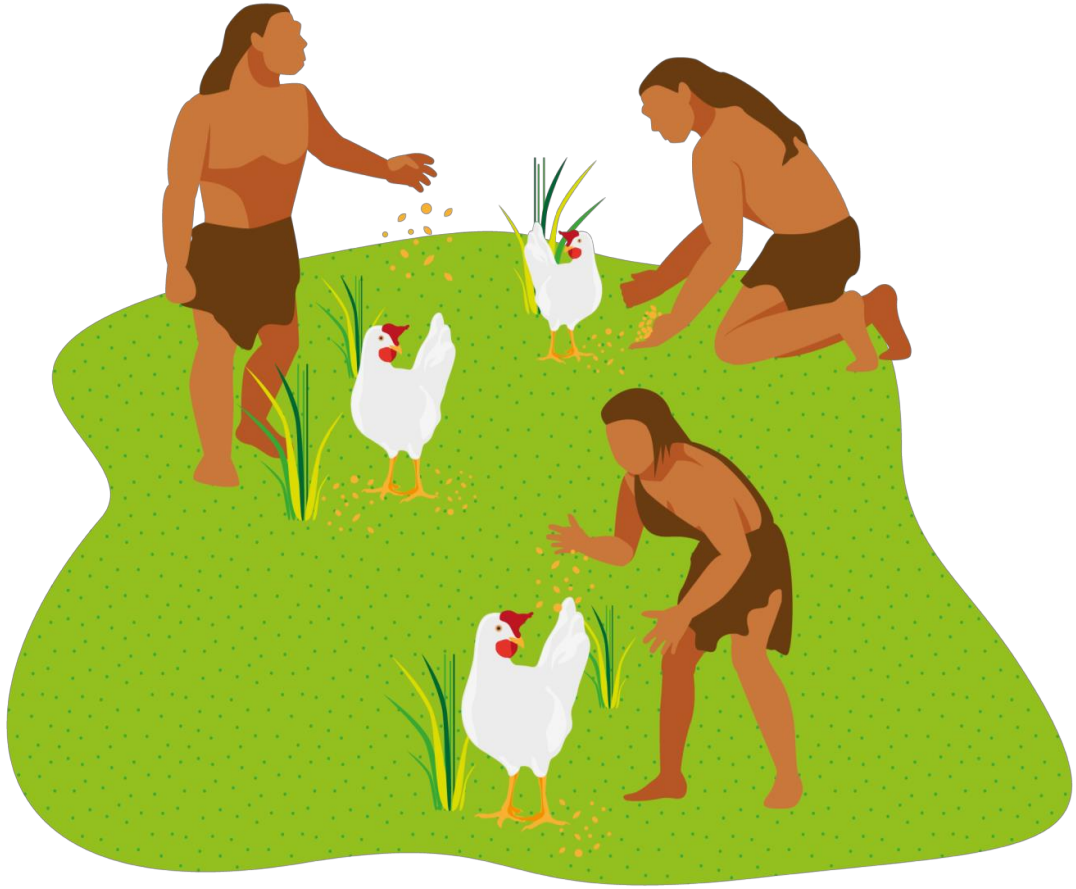
The key to your profit!

H&N Genetics and Breeding

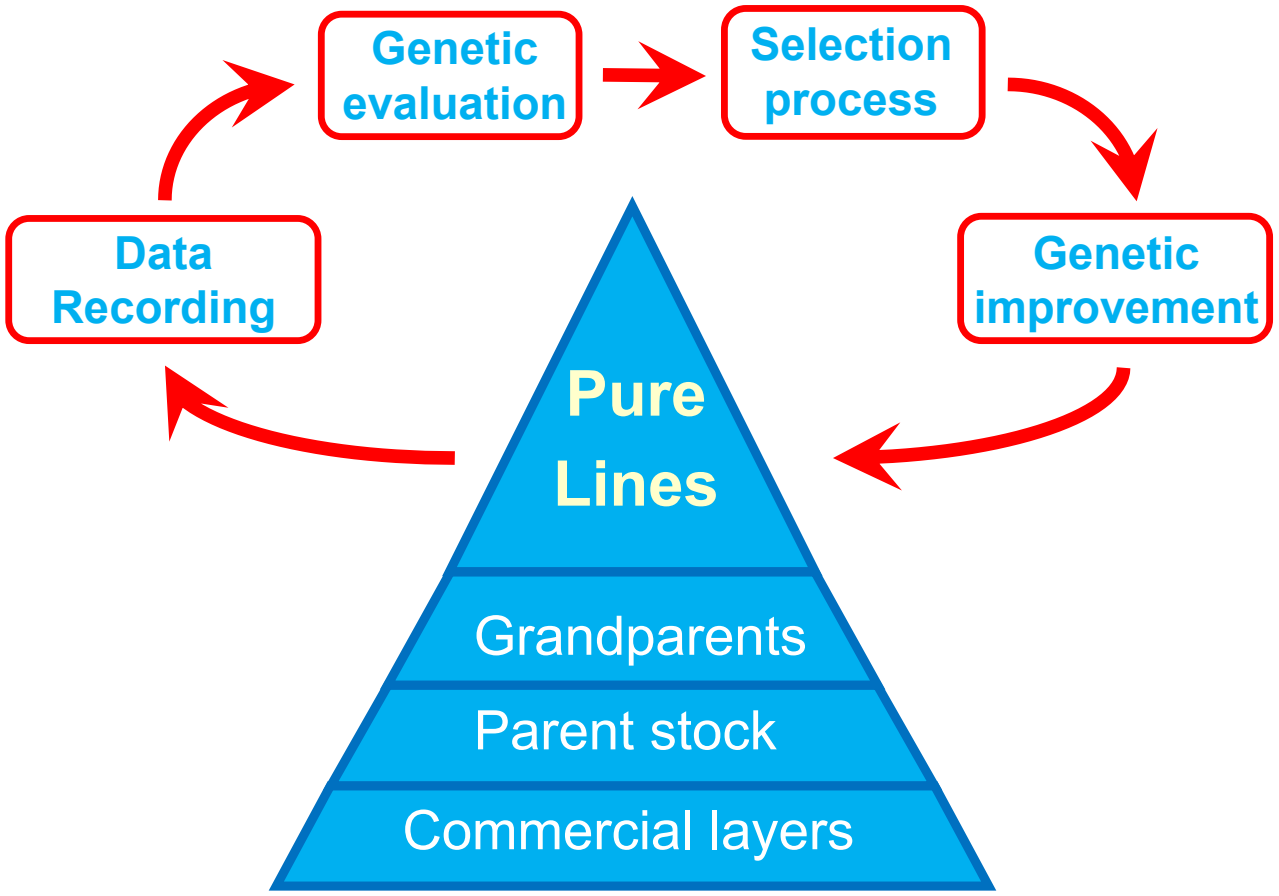
Dr. David Cavero Pintado

Animal Breeding is not new

Started with domestication



Structure of the Laying Breeding



Optimal Balance – Orchestrate all traits

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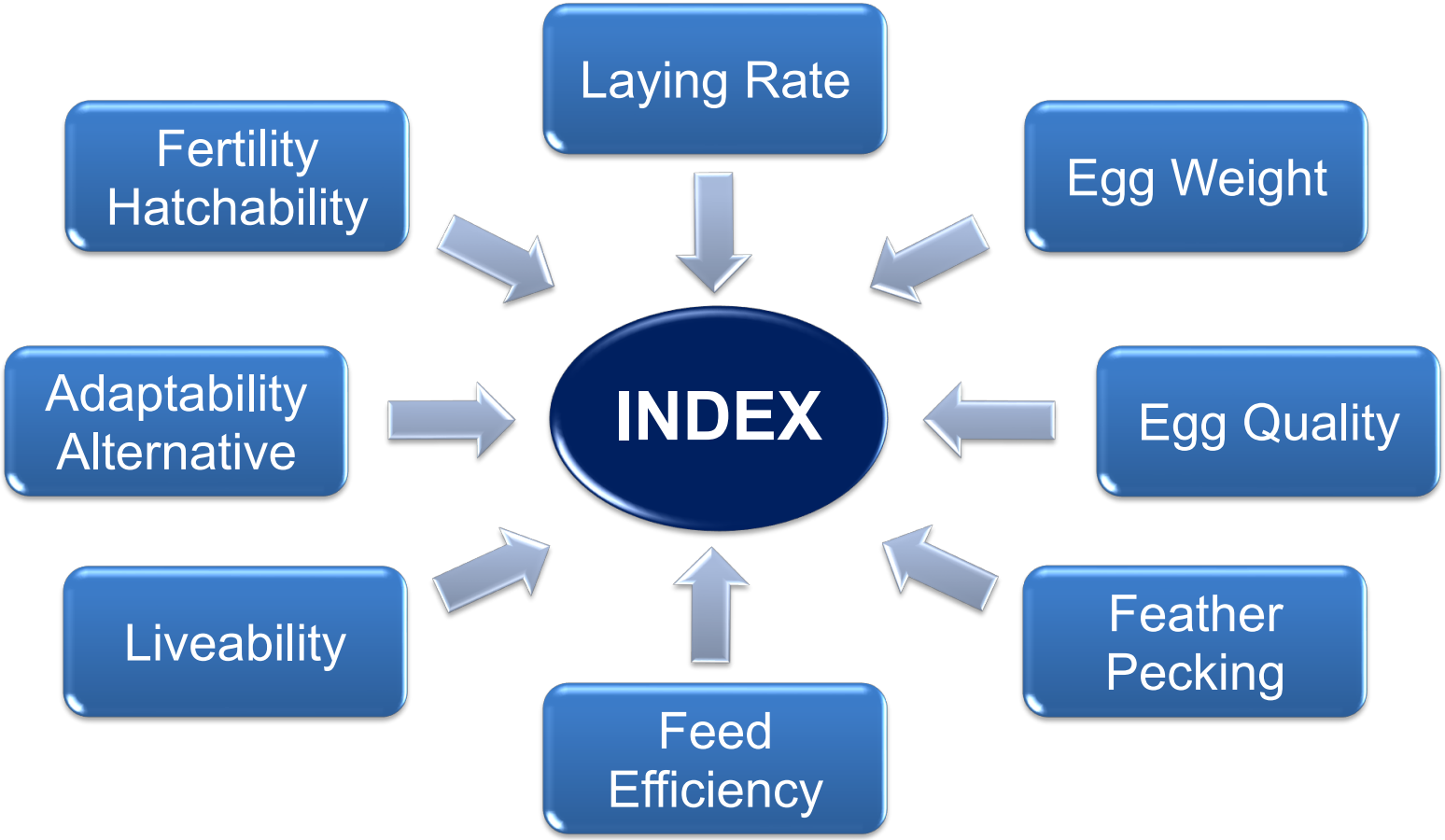
Selection for an overall index



Data Recording – Breeding Farms

Single Cages

- ✓ Rate of Lay
- ✓ Feed Intake
- ✓ Egg Quality
- ✓ Hatchability

Group Cages

- ✓ Rate of Lay
- ✓ Feather Cover
- ✓ Mortality

Floor System

- ✓ Use of Nests
- ✓ Feather Cover
- ✓ Mortality

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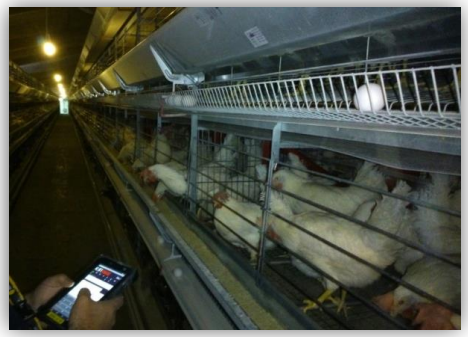
Data Recording – Commercial Farms

Group Cages



- ✓ Rate of Lay
- ✓ Feather Cover
- ✓ Mortality
- ✓ Adaptability

Free Range

- ✓ Use of Nests
- ✓ Feather Cover
- ✓ Mortality

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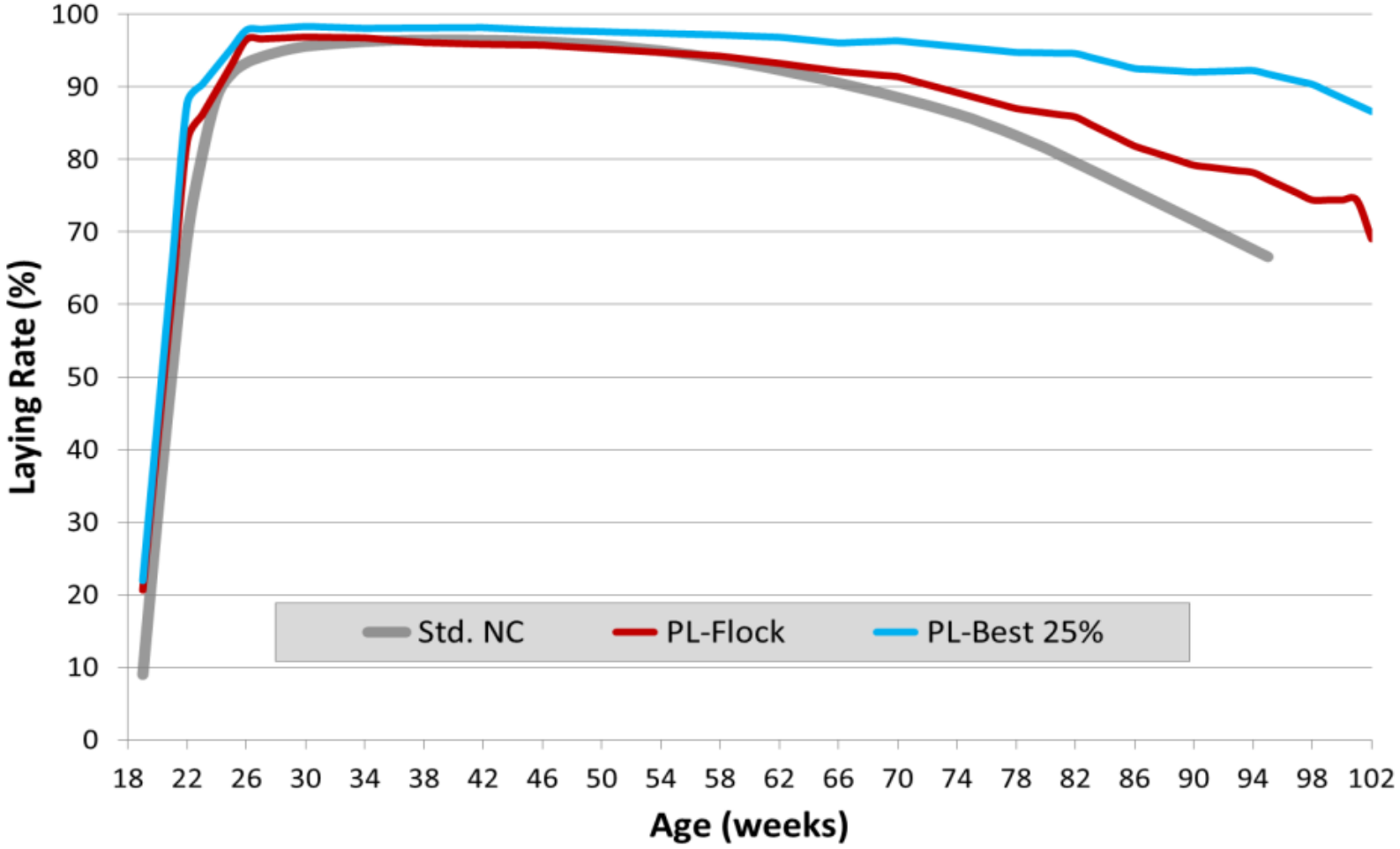
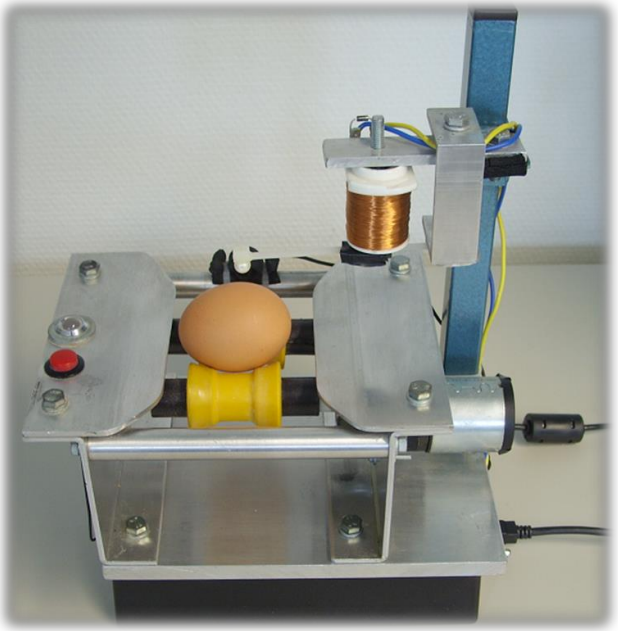
White Pure Line – 102 weeks



Better eggshell quality



Every day a saleable egg with an excellent shell!

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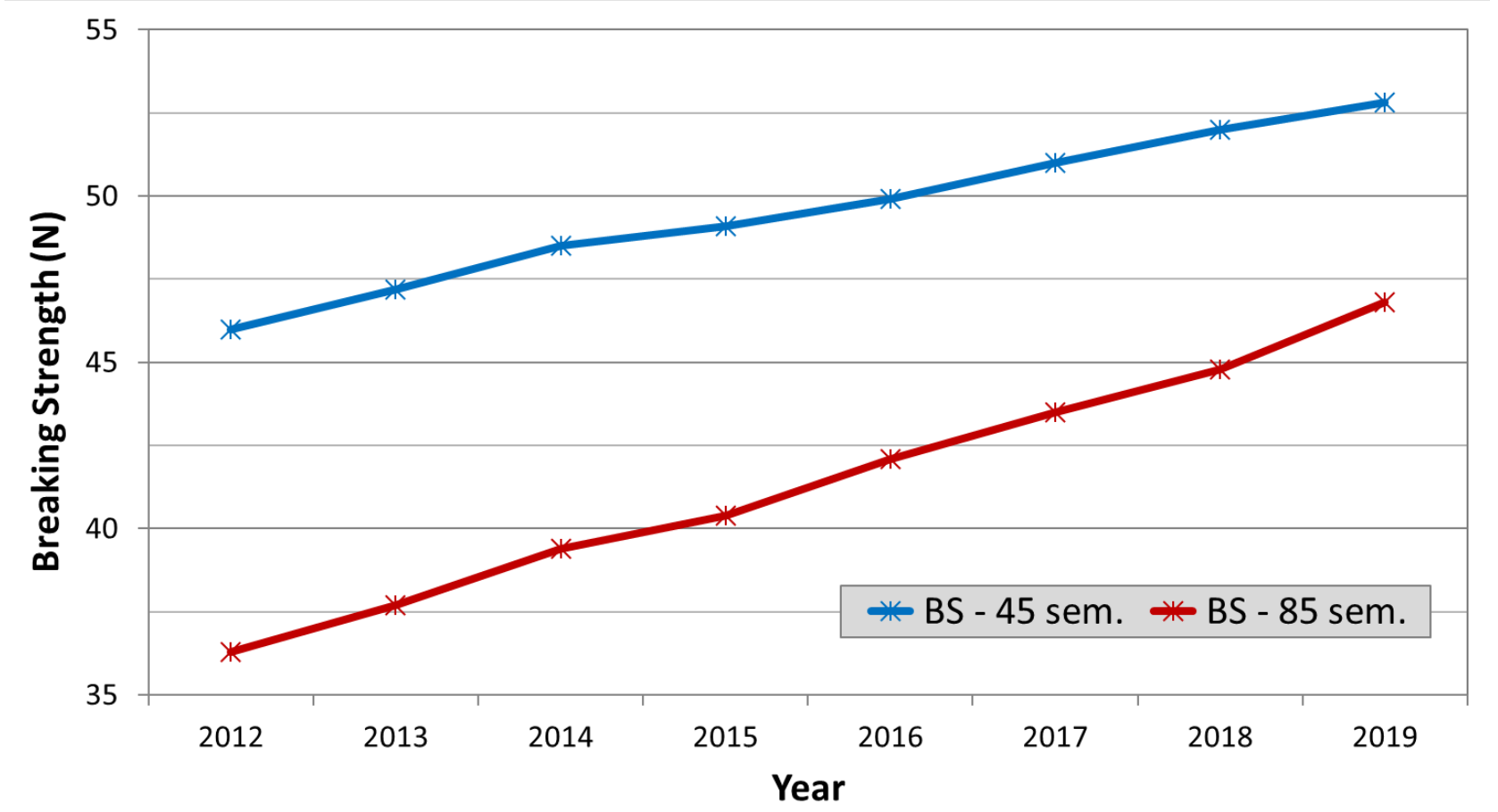
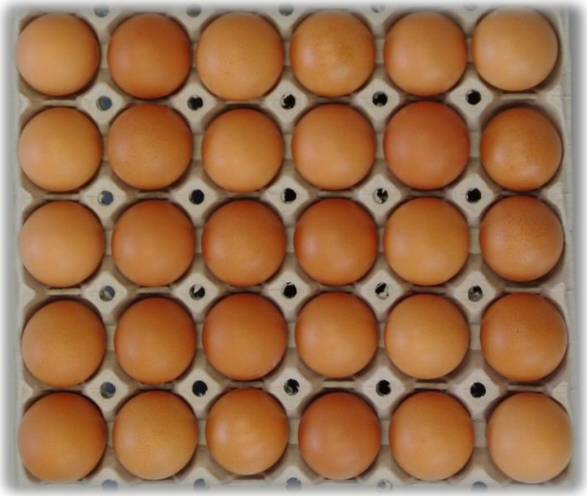
Breaking Strength – Genetic Trend



Selection for Eggshell Colour

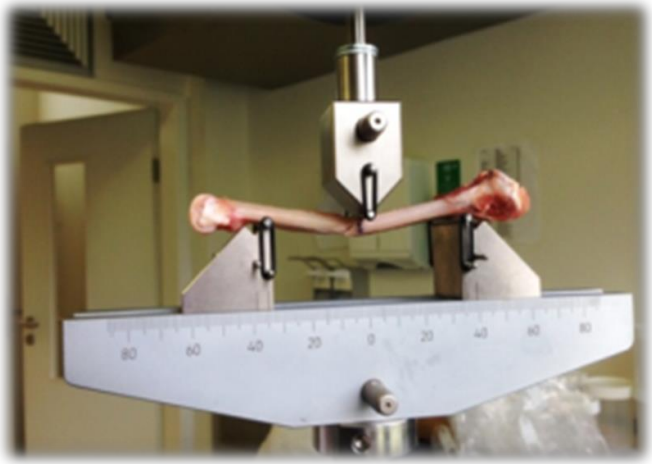
- A nice pure white or uniform brown shell
- Good shell colour until the end of production



Feed efficiency

- Recording individual feed intake at peak production
- **Sufficient feed intake at greatest nutrient demand**
- Focus is not only in FCR, but mainly in IOFC
- **Feed intake according to production**
- No special high-density diet – Flexible in raw material

Improve Bone Stability



Source: clker.com

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Rearing: An investment for the future

Not only Costs! - BW & Uniformity: The key for success!

Good Immune System

Feed Intake Capacity

Good Body Weight Development & Uniformity:

- ✓ **Good start in production**
- ✓ **Persistent egg mass production**

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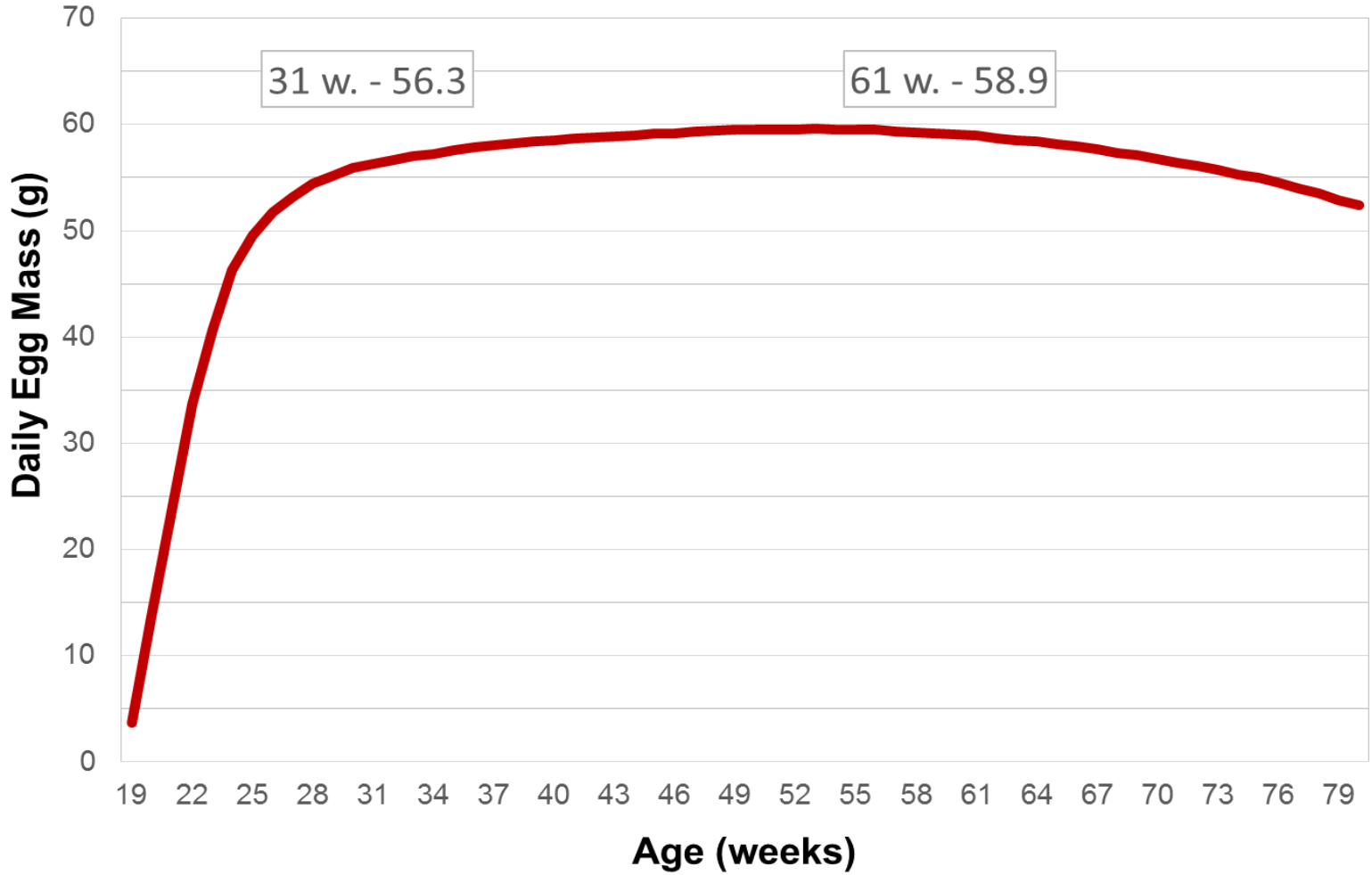
Daily Egg Mass Production (Std. Nick Chick)



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Selection for better feather condition

- Test relatives in breeding farms & field conditions
- Family cages (full-sibs or half-sibs)
- No beak treatment
- **Selection for low mortality and good feather cover**

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Selecting for better Beak Shape

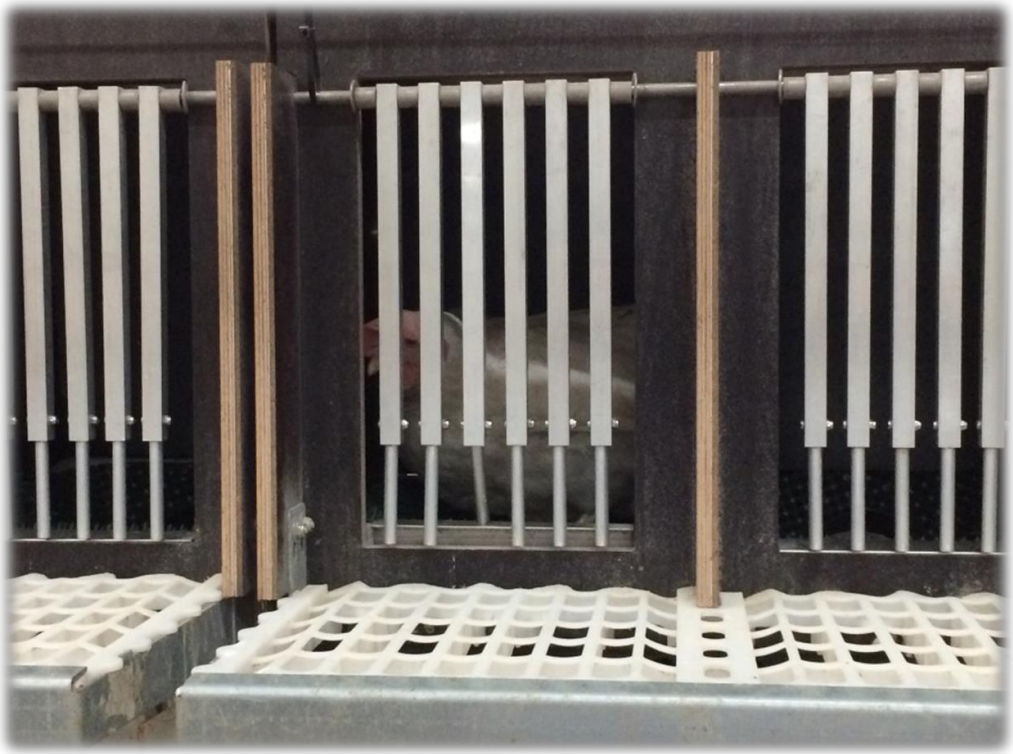
-0.20

Beak Length

Feather Cover

Test in Floor System

Nesting Behaviour



Less floor eggs

- **Commercial Layers:** more saleable eggs, better food safety
- **Parent Stock:** more and better chicks

Different environments









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Field test under commercial conditions

- Family cages 4-12 half-sibs/cage
- Several cages per family randomly distributed in the house
- No beak treatment at all
- Information is recorded based on cage number

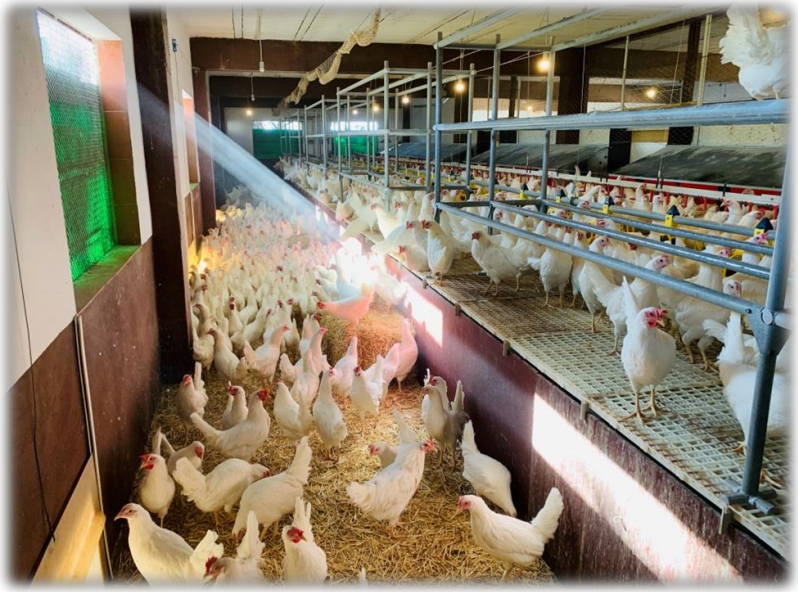


Field Test - Performance recording

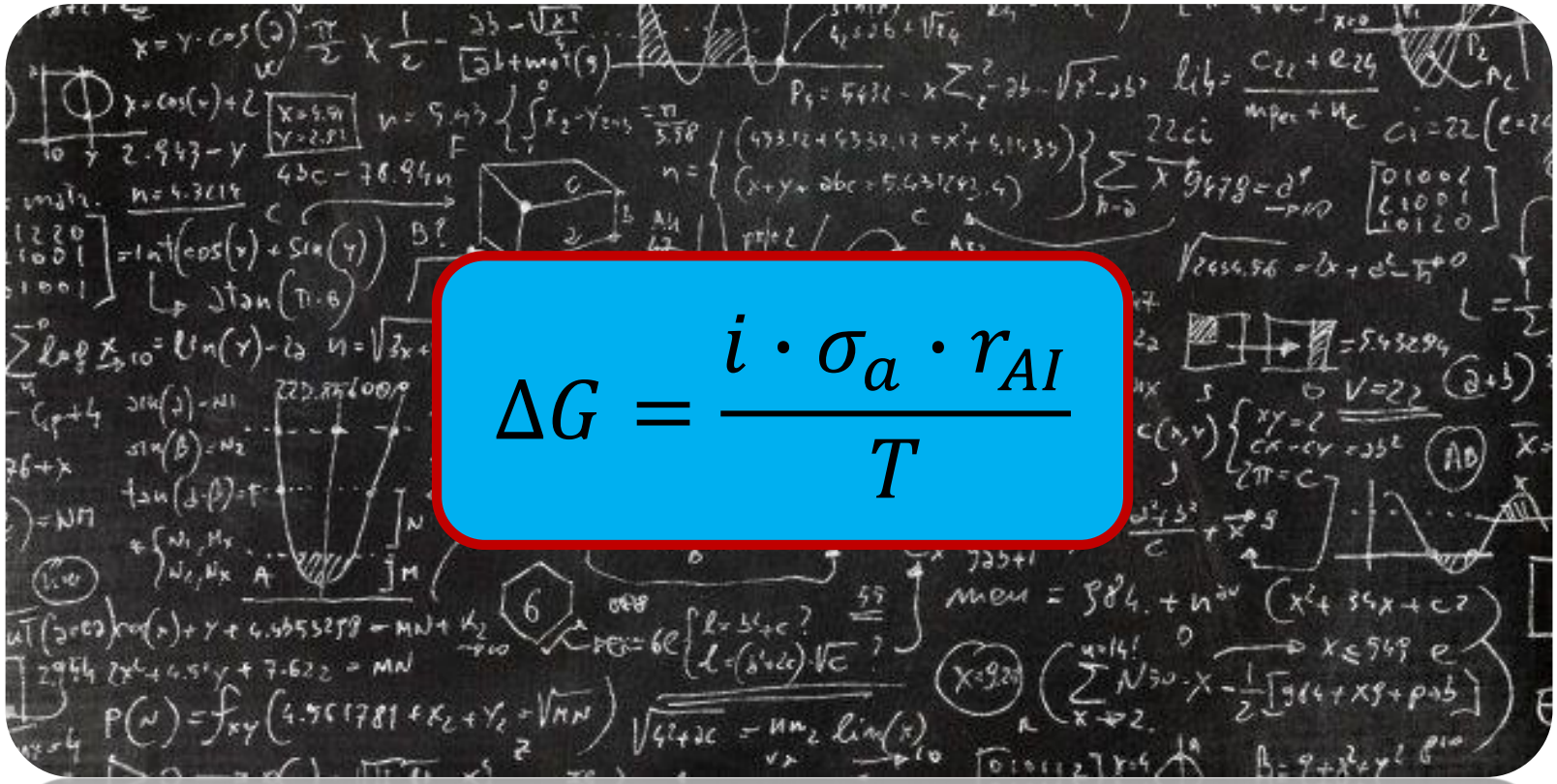
- ✓ Egg Production
- ✓ Egg Quality
- ✓ Livability
- ✓ Plumage Condition
- ✓ Pecking / Cannibalisms

Field Test in free-range

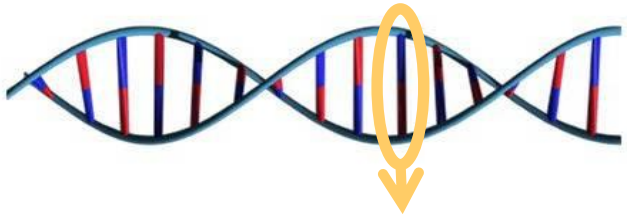
Two separated sides: control and low density diet



Genetic Progress Equation

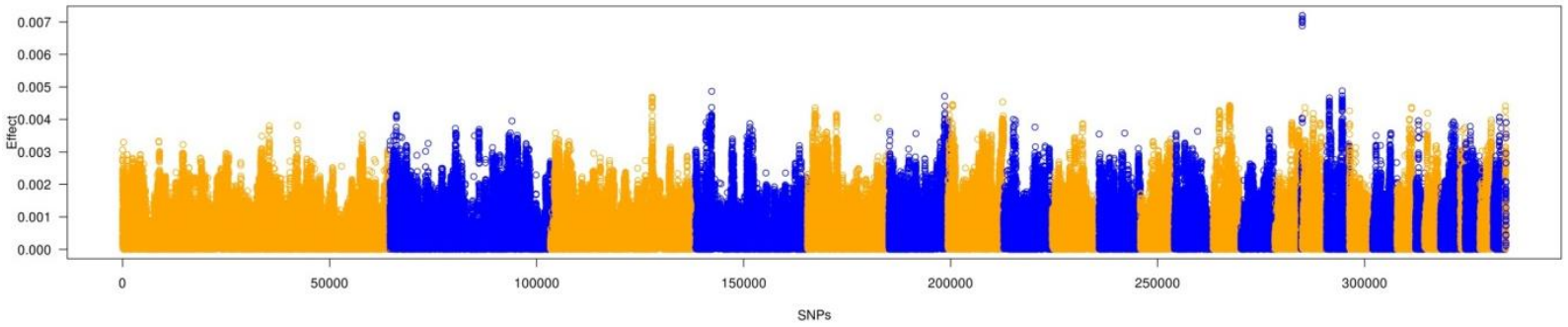


Genomic Prediction



M^+ or m^-

Allele substitution effects for all markers (**simultaneously** estimated)



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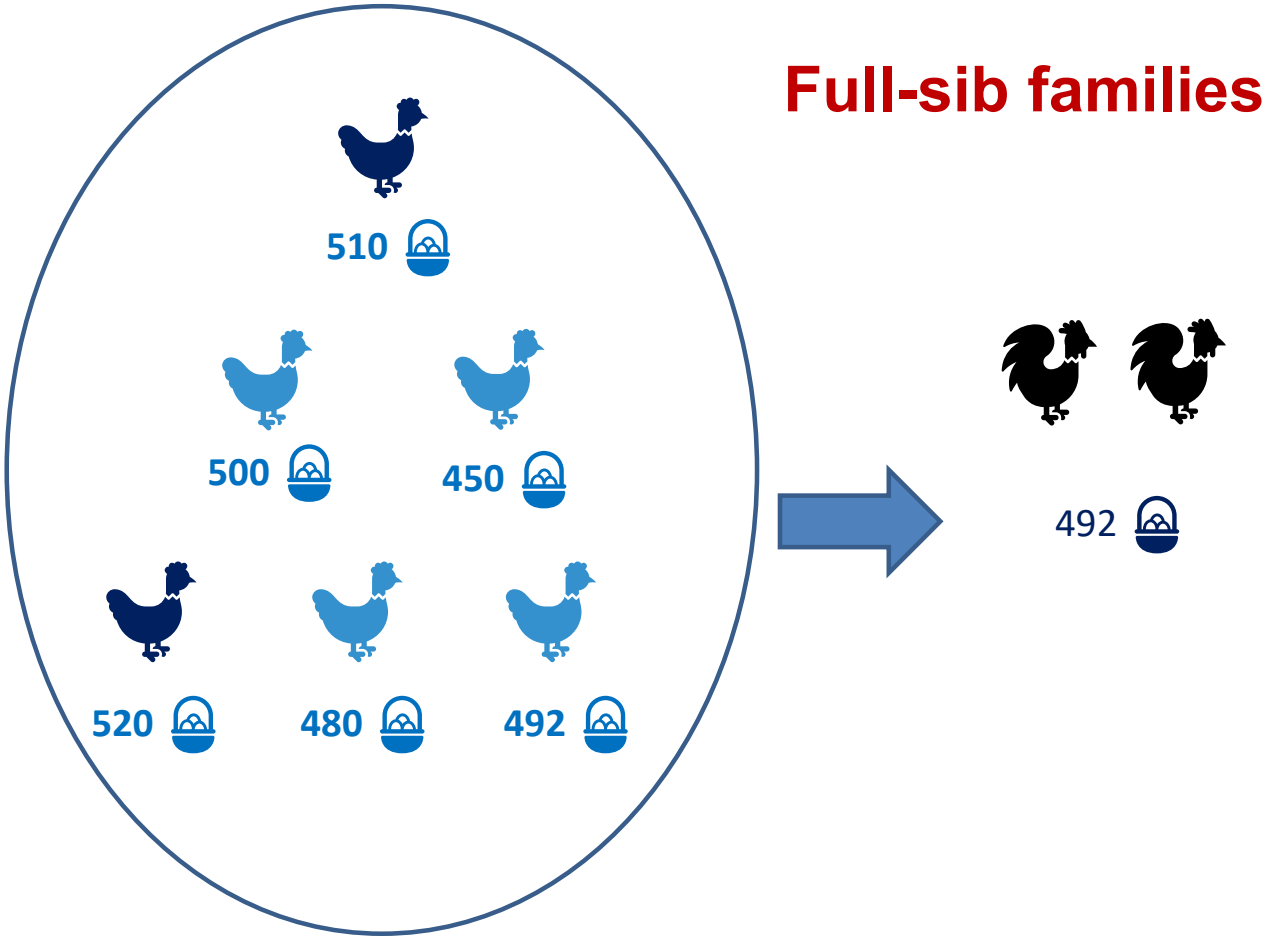
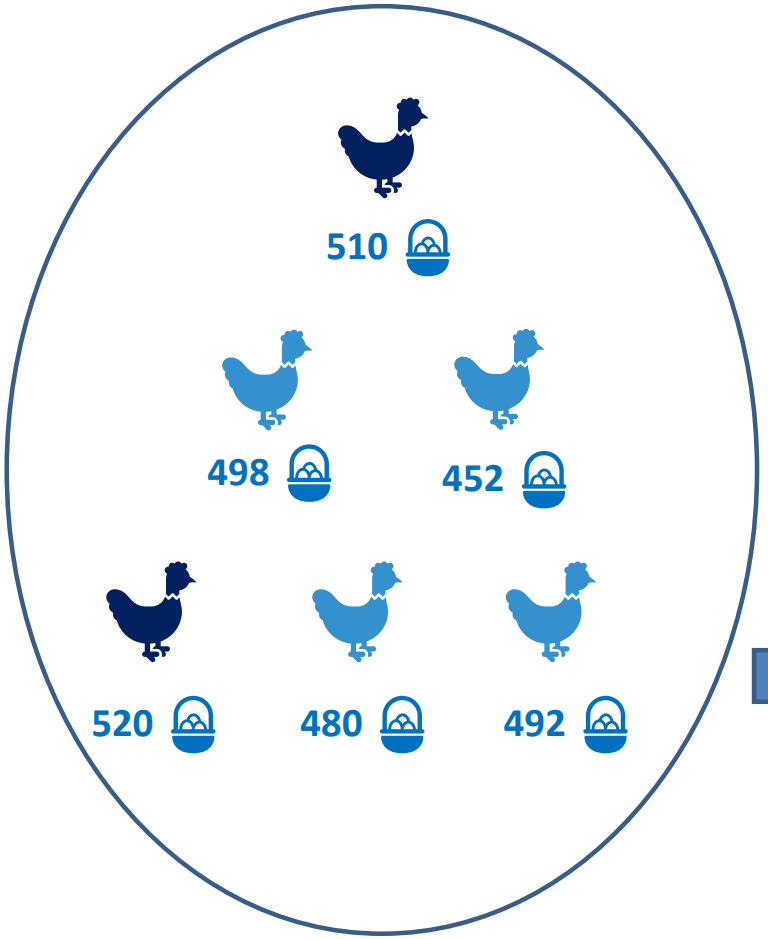
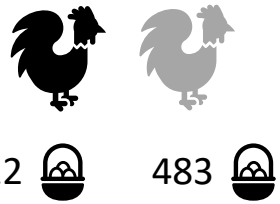
Past - Males Selection



Present - Males Selection



Full-sib families



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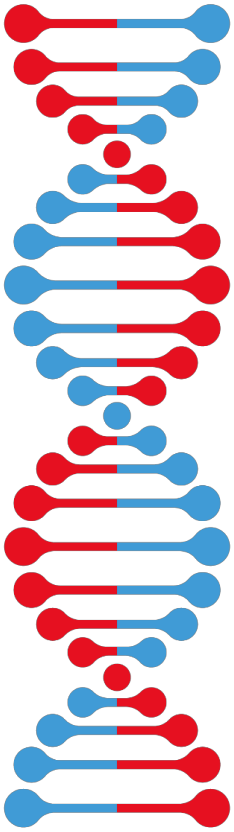
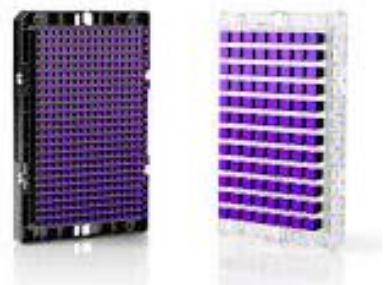
Genomic Selection



DNA Analysis

- MD 50k SNP-Array
- **Higher genetic progress in layers**
- Better use of genetic variation
- By-product: Pedigree check



Axiom® 384/96 Format (Affymetrix)

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New Traits - Artificial Intelligence

- Automatic data collection (sensors, cameras,..)
- Transform data to information:
  - ✓ Tracking the animal
  - ✓ Activity
  - ✓ Behaviour
  - ✓ Fitness

General Conclusion